



**ALGONQUIN COLLEGE  
DESIGN GUIDELINES**

**May 2004**

### PURPOSE

This document is intended to record the standards and preferences of Algonquin College with respect to the planning, design and product selection for new construction and renovations of its physical plant on the Woodroffe Campus, Ottawa, Ontario.

It has been compiled under the direction and with the support of the Physical Resources Department. Accordingly, it is also intended as a standard for the maintenance of its facilities.

A further purpose is to compile existing relevant standards prepared within other departments of the College that influence the design and operation of its facilities.

### ORGANIZATION

The document is organized in four parts.

**Part 1** encompasses the planning of a project and incorporates standards for space allocation and organization, security and safety, accessibility, indoor environment including air quality and lighting, and exterior elements such as pedestrian and vehicular access. Certain procedures for project implementation are also included in Part 1.

**Part 2** lists the more specific requirements for design and construction. Included are descriptions of performance requirements and minimum standards for the indoor environment and project-related site work.

**Part 3** is a guide to specifications, consisting of a compilation of products and systems that are preferred by the College, based on past performance, standardization, maintainability and other factors.

**Part 4** lists those standards prepared by the College that will influence the planning, design, construction and maintenance of a project. This is a reference list, and copies of the relevant documents may be obtained from Physical Resources.

### MAINTENANCE

The Physical Resources Department of Algonquin College is responsible for maintaining the document. It is essential that this document be kept up to date to ensure that any time that it is called on for reference, the very latest changes or information are contained in it. To accomplish this, the complete document when complete and approved by the Strategic Leaders will be kept on electronic file by the Records Management Officer. On January 2<sup>nd</sup> and July 2<sup>nd</sup> of each year, the Records Management Officer will ask each of the Strategic Leaders to sign off indicating that they do or do not have any changes or modifications to the document. If there are changes or modifications indicated, the Records Management Officer will initiate a meeting with the Strategic Leaders to formulate agreement on any change or modification offered, and updates the document. Should any of the Strategic Leaders determine that changes or modifications are necessary to be considered between review dates, they would notify the Records Management Officer who would initiate a meeting of all the Strategic Leaders to formulate agreement on any changes or modifications offered, and to update the document.

**PART 1 PLANNING**

**Introduction**

The intent of Part 1 of this document is to describe the general requirements for the planning of new construction, maintenance and major refurbishment of existing buildings and the application of the following building standards.

**Applicable Codes**

All construction and renovations shall, at a minimum, conform to the requirements of the Ontario Building Code (OBC). In addition, new construction shall comply with the Model National Energy Code for Buildings 1997 (NECB).

**1. SPACE PLANNING GUIDELINES**

**1.1. SITE WORK**

**1.1.1. Accessibility**

**1.1.2. Roads and Walks**

**1.1.3. Parking**

**1.1.4. Landscaping**

**1.1.5. Lighting**

**1.1.6. Utilities**

**1.1.7. Smoking**

Smoking is not permitted in any of the College buildings. Accordingly, there is no requirement for any special ventilation to accommodate smoking. Smoking shelters are provided by the College outside the buildings, and must be taken into consideration in developing the over-all design concept.

**1.2. CIRCULATION**

**1.2.1. Main Entrances**

Main entrances should be:

- prominent and readily identifiable,
- protected by a canopy,
- equipped with power-assisted automatic operators
- provided with glazed doors, and
- provided with a vestibule.

**1.2.2. Vestibules**

The vestibule must have:

- glazed inner doors,
- equipped with power-assisted automatic operators
- space for fire alarm and security panels and telephone, notice and directory boards,
- durable finishes and mat sink, drained if possible,
- mats and provision for boot cleaning in winter
- lighting in vestibules should have provision for activation by motion detectors.

**1.2.3. Secondary entrances and Exits**

Secondary entrances and exits should be designed to comply with the OBC but shall be designed to discourage unauthorized use such as storage. Auxiliary exit doors are to allow exiting but prevent entering.

**1.2.4. Stairs, Elevators**

Stairs should be designed and located to encourage regular use for communication between floors. Perimeter locations are preferred, and glazing of exterior walls is preferred. The mechanical and architectural design should accommodate solar heat gain, and heat loss in winter.

Handrails must be provided on both sides of stairs as required by code.

Finishes should be durable and cleanable.

Elevators are required for barrier-free access and for service functions. The selection must balance these needs with economy, durability and serviceability. Hydraulic units are preferred. Elevators must be served by emergency power supply.

**1.2.5. Corridors**

Corridors provide the prime circulation through a facility and between buildings.

Accordingly, they must be planned to promote and facilitate traffic movement with a minimum of confusion and difficulty, amid a pleasing aesthetic environment.

Primary corridors should be a minimum of \_\_\_ feet (\_\_\_m) in width and \_\_\_ feet (\_\_\_m) clear height; secondary corridors should be \_\_\_ feet (\_\_\_m) and \_\_\_ feet (\_\_\_m) respectively.

Finishes must be durable as well as aesthetic. Flooring should be smooth but with a non-slip surface; avoid quarry or ceramic tile flooring because of the use of wheeled traffic.

Provide for as much natural lighting as possible.

Plan for lockers in corridors; do not provide a separate locker room or area.

**1.3. OCCUPANCY SPACE STANDARDS**

**1.3.1. Offices**

In general, office space is provided in the form of private closed offices and open office configuration using modular workstations, according to the following standards:

Administrative Standards:

President	designed to meet needs	private office
Vice-president	designed to meet needs	private office
Sector Directors/ Directors	180 sq ft (includes meeting area)	private office
Sector Manager/ Managers	150 sq ft (includes meeting area)	private office
Coordinator	110 sq ft	private office
Support Service Officer	110 sq ft	private office
Clerical	100 sq ft	open area
Clerical-Reception	150 sq ft	open area
Technician/Technologist	100 sq ft	private office

*NB: The walls of private offices must extend to the underside of structure above.*

Faculty Standards:

Faculty areas are to be designed to maximize privacy. The construction should promote both this concept of privacy yet give the College the flexibility to modify the faculty areas with minimum cost and renovation. The design will call for 80 square feet (7.43 m2) per station, including circulation space.

**1.3.2. Classrooms**

Moveable desks and chairs: Provide 20 square feet (1.86 m2) per station, plus teacher/demonstration area at front of room, plus access/egress.

Fixed desks and chairs: Provide 12.9 square feet (1.20 m2) per station, plus areas described above for moveable seating.

Table/Chair unit: Provide 8 square feet (0.74 m2) per station, plus areas described above for moveable seating.

**1.3.3. Laboratories**

The requirements for laboratories will vary depending on the nature of the activity. In general, demising or separating walls will have a fire-resistance rating and rooms or suites of rooms will require rated separations from adjoining rooms. Those separations must be clearly described.

Special attention shall be given to the client requirements document for the lab, for equipment to be accommodated, special environmental requirements (temperature, humidity, radiological or biological isolation or protection, explosion hazards).

Computer and electronics labs may require raised access flooring.

**1.3.4. Conference and Meeting Rooms**

Where a conference room is required, guidelines on size, equipment and finishes will be provided depending on the level of Conference Room.

Meeting or “breakout” rooms (approximately 3 m x 5 m) should be provided, one for every 230 m<sup>2</sup> of floor area, distributed through the office area. Partitions should extend through the ceiling to underside of structure. Separate ventilation and control should be provided, designed to avoid sound transmission and comply with acoustic requirements described in Part 2. Walls shall be protected from abrasion from chair movement.

Meeting or “breakout” rooms shall have independent ventilation exhaust fans for odours when used as lunchroom by employees.

**1.3.5. Washrooms**

Washrooms, both male and female, are preferred on each floor, except that in certain circumstances, they may be located one floor up or down in accordance with the Canada Labour Code.

Barrier-free accessibility must be provided.

The open entry concept is preferred, and special attention must be given to privacy (line of sight). Acoustic separation, durability of fixtures and finishes, lighting and ventilation must receive attention.

Washroom shall be equipped with adequate ventilation exhaust fans.

Hands-free operation of plumbing fixtures is preferred.

**1.3.6. Copy & Coffee Rooms**

The copy and/or coffee rooms must be conveniently located within the workspace.

Provision must be made for adequate electrical power for copy machines, printers and scanners, and for coffee makers, coolers, microwave ovens and dispensing machines.

Cupboards for paper and coffee supplies should be built in. Copy rooms will require data and telephone connections; coffee rooms should have a telephone connection. A storage room is required for stationery and other office supplies.

**1.3.7. Service Rooms**

Service rooms include mechanical heating, cooling and ventilating, electrical, data/telephone rooms, elevator machine rooms and janitors closets.

Spaces for incoming services, such as electrical, water or gas, shall conform to relevant applicable codes.

Space must be provided for the storage, servicing and recharging of floor cleaning machines, and services must include appropriate plumbing, ventilation and electrical supply.

Rated separations are required in compliance with the OBC.

Planning of these rooms must allow adequate space for access to and servicing of the equipment; special attention should be given to the lighting, floor drains, ventilation and exhaust, waterproofing and finishes. The use of combustible materials should be avoided.

Access to service rooms should be internal to the building; roof top access should be avoided.

Mechanical ventilation equipment should be located within the building; in general, rooftop locations will be permitted for only exhaust fans and heat rejectors.

#### **1.4. SAFETY AND SECURITY**

##### **1.4.1. Personal Safety**

The Personal Security Committee of the College has prepared the document *Personal Safety Guidelines for Campus Planning, Design and Renovation, 2003*, as a guide to the planning of new facilities and of renovations.

#### **1.5. ACCESSIBILITY**

##### **1.5.1. General**

As a minimum, the requirements of the Ontario Building Code will apply to new construction projects. For renovation projects, every effort will be made to comply; however, practical limitations may dictate lesser measures. Each case will be considered on its merits.

##### **1.5.2. College Standards**

The College maintains a Centre for Students with Disabilities, which will review all projects in the planning, design and implementation phases, to provide expert opinion on accessibility issues. Note that this may exact a higher standard than that imposed by the OBC.

#### **1.6. WAYFINDING**

##### **1.6.1. General**

The planning of new facilities, and to the greatest extent possible, renovations of existing, should incorporate wayfinding as an inherent component of the process. The physical layout of a facility should itself promote an understanding of circulation within the facility and through it to other parts of the campus.

##### **1.6.2. Colours**

The College is in the process of establishing colour palettes for the campus, to enhance aesthetics, improve the image and assist in wayfinding across the campus. The adopted palettes will apply to all components of the campus.

##### **1.6.3. Lighting**

Lighting will be a major component of wayfinding, particularly at night and outside the buildings. Within the buildings, lighting must also be carefully considered as a useful tool in giving directions, designating modal points and enhancing safety and security.

##### **1.6.4. Signage**

Provide building signage for identification, direction and emergency requirements. However, signage itself should not be considered as the only response to the need for wayfinding.  
Note additional requirements for identification of mechanical and electrical services.

**1.7. EXISTING CONDITIONS**

**1.7.1. Refurbishments**

Refurbishment of existing buildings may require special attention during demolition and renovation.

Where the refurbishment process affects existing fire suppression and/or detection systems, acceptable alternative measures must be implemented to ensure continuity of protection.

Measures must be incorporated to ensure safe access and egress from occupied spaces, and to protect the occupants from noise, vibration and dust generated by the refurbishment.

Request and obtain record documents relevant to existing conditions and which may affect the project.

**1.7.2. Subsurface Conditions**

The College will initiate and pay for the investigation of geotechnical conditions on the site of new construction.

**1.7.3. Hazardous Materials**

Industrial hazards include asbestos, PCBs, mercury and mould. The College will initiate and pay for the investigation of existing conditions within existing facilities.

**1.7.4. Physical Plant Capacity**

The College has undertaken studies of existing plant capacity for heating and cooling, and for electrical power.

**1.7.5. Utilities**

The College has record drawings of existing utilities on the campus. However, while every effort has been made to record existing conditions, the College does not warrant the accuracy or completeness of the information. Supplementary investigations will always be necessary to verify the information.



*The following articles are generally derived from the Generic Technical Specification document, and are in no particular order.*

## **DIMENSIONS**

In general, allow for the following minimum clear ceiling heights, from finished floor to finished ceiling finish or u/s of exposed structure (or as required to suit design. Refer to space data sheets):

- Corridors, stairwells, public areas: 2700mm
- Classrooms, breakout rooms, computer labs: 2700mm
- All other instructional and support areas: 2700mm
- Offices, storage, administration areas: 2600mm
- Washrooms, change rooms, lockers. 2600mm
- Mechanical, electrical and service areas 2400mm

## **ACOUSTICS**

Classroom Standard: Instructor can be easily heard in a full classroom, from any position, classroom listening, not talking; 55db full occupancy.

## **VENTILATION**

Classroom Standard: comfortable if dressed for summer; 20-22 degC, 75% RH

Must be able to occupy classroom, with door closed, a minimum of 3 hours, without feeling the effect of a closed environment: 5-6 air changes/hour, 30 cfm/person fresh outdoor air

Max. CO2 level: 650 ppm

## **CLASSROOM LIGHTING:**

Student Desks: no shadows, glare or reflections; Controllable (on/off/dim), 8 point font readable at 16", 20/20 vision.

Classrooms to have two level controls. Time/occupancy sensors controls are required.

Lighting systems are to be designed to meet the functional criteria of each area and specific lighting task.

The lighting system should be equally flexible and responsive. Luminaires should be arranged so that desk locations will not be dictated by the lighting.

Classroom luminaires can be arranged in a variety of patterns; however, special consideration shall be given to the orientation of the luminaires with regard to the following factors:

- Predictable or unpredictable position and orientation of desks
  
- Location of whiteboard
  
- Location and proximity of windows
  
- Ceiling height
  
- Photometric characteristic of luminaires
  
- Flexibility of the space for other functions
  
- Lighting for Audio-visual Presentations

Television, slides and film are used extensively in classrooms. For effective viewing it is necessary to reduce or to turn off the general overhead lighting. The room should not be completely darkened. Multi-level switching shall be used.

### **Spaces for Visual Display Terminals:**

Visual display terminals (VDTs) used in classrooms have special lighting needs. The lighting design shall meet the requirements of RP-1, published by the Illuminating Engineering Society. The lighting design in spaces with VDT shall be able to control direct and reflected glare and limit luminance in both the immediate task surround and within the dynamic field of view. The lighting design process for areas containing VDT screens shall begin with an analysis of all visual tasks to be performed. It is important to determine how the VDT screen is used, what type of visual image it displays, and the angular relationship between the user, the VDT screen and the paper task. In order to achieve a comfortable balance of luminance within the VDT environment and limit the effects of transient adaptation and disability glare, recommended luminaire ratios should not be exceeded.

### **Spaces with limited VDT use:**

In spaces where the use of VDT is limited, more attention shall be paid to the paper task. The recommended luminance ratio between the paper task and adjacent VDT screens is 3:1.

### **Spaces with constant VDT use:**

VDT visual tasks differ from conventional paper tasks. Whereas paper tasks are typically performed looking downward at a horizontal task, a typical VDT visual task is performed in a "head-up" position. Because of this, a large area of the ceiling may be in the field of view. For this reason, it is important to limit luminance on the ceiling plane in order to prevent discomfort glare or adaptation problems.

Colour contrasts can also often add to visual clarity, depth perception, and orientation without major luminance variations. The reflectance values of all fabrics and finishes will affect luminance values and may impact perceived brightness as much as illuminance. Therefore, their selection and placement are critical to the lighting design.

The recommended luminance ratio for immediate background surround is 3:1 for dark (low reflectance) backgrounds and 1:3 for light (high reflectance) backgrounds. For remote background, the recommended luminance ratio is 10:1 for dark backgrounds, and 1:10 for lighting backgrounds.

The light remote backgrounds would include light sources such as the luminaires and windows visible from the workstation.

**Classrooms:**

A classroom should have a general lighting system, which is flexible enough to provide at least three illuminances, the higher level for note taking and a subdued one for demonstrations and an intermediate level. A direct/indirect lighting system to be used.

If a demonstration table is to be used, directional down lights should be located at a 40-60° angle above the horizontal in relation to the location of the lecturer.

This minimizes glare and provides good lighting for the speaker's face. Such lighting can be arranged to allow use of an audio-visual screen at the same time that the lecturer is speaking. Whiteboard lighting shall be provided to evenly illuminate the whiteboard and shall be controlled by an individual switch.

Lighting in office space application is to be generally fluorescent, deep cell parabolic units where T-bar, drywall or other suspended ceiling systems are installed.

Luminaires are to be provided electronic ballast rated for the utilized supply voltage. HID or fluorescent systems are to be 347V.

**DATA / TELEPHONE**

Classroom Standard: minimum one (1) network connection per classroom.

Provide a telephone and data system consisting of:

- Incoming service and equipment room for cable and racking installations.
- Telephone and data system closets distributed throughout the building as required to serve the outlet requirements.
- Combined zone conduit and cable tray system connecting the equipment room to the distributed closets and from each system outlet to the closets.
- Complete wiring between the main campus data/telecom Room C302 to the new facility's main equipment room.
- Complete wiring between the facility's main equipment room to each system closets distributed throughout the building.

*REVIEW ITS STANDARD DOCUMENT PART 4.*

## SAFETY & SECURITY

Classroom Standard: A voice link to Security must be available in each classroom.

Closed Circuit Television System:

- A complete CCTV system will be provided and installed by the Owner. The Design shall include all the necessary raceway system as well as power to the equipment to suit the requirements of the program.
- System to consist of cameras, switches, video monitors, recorders and controls to enable security personnel to determine movement and identifiability.
- Video equipment, recorders and controls to be rack mounted in cabinet and installed in a designated security control area. Provide power to suit all equipment.
- System wiring to be installed in conduit and cable tray system.

### Door Access Control:

A state-of-the-art electronic door access security system [ *(Northern Computer Inc.)*] consisting of magnetic door holders, electric strikes, proximity card readers, door monitoring contacts, emergency release devices, CPU based controlled and NO access cards will be provided and installed by the Owner. The [ *Design Builder*] shall install all the necessary raceway system as well as power to the equipment to suit the requirements of the program:

- System wiring to be installed in conduit and cable tray system.
- Security systems will be designed by the College, and security components will be supplied and installed by the College.
- Emergency power required

## EQUIPMENT

### Classroom Standard:

All electronics and AV equipment must be physically secured within each classroom.

### Overhead transparency projector:

On a mobile cart system, power cable and room furniture must allow image to be projected to full size of screen.

Must have unimpeded access to all equipment.

### Blackboards/Whiteboards:

Classroom Standard: Allowed only if no computers in room.

General standard: 8 ft width minimum, (32 sq ft min), 16 ft preferred, fixed to wall.

Visibility to Boards: using writing no larger than 3 inches, must be readable from any student desk position.

### Projection Screen:

Classroom Standard: Using projected lettering no larger than 3 inches, must be readable from any student position. Screen must not block boards at any time.

**PART 2          DESIGN**

Part 2 describes design procedures, and standards of design and construction, including architectural finishes and components, ventilation, heating and cooling, plumbing, fire protection, electrical power and lighting, and data and telephone services. Any project requirements, which do not meet these basic standards, must be identified, justified and approved by the College.

This Part 2 is organized in accordance with *UniFormat*, a uniform classification of construction systems and assemblies.

No.	Title	Description	Comment
<b>A</b>	<b>SUBSTRUCTURE</b>		
A10	Foundations		
		Geotechnical report	Sub-surface investigation report, is to be used as a guide only. It is left to the design consultant to formulate own conclusions to extent of existing conditions and the adequacy of the report for the proper design and installation of the foundations.

No.	Title	Description	Comment
<b>B</b>	<b>SHELL</b>		
B10	Superstructure	Floor construction	<p>In general, the College requires that its academic buildings be constructed of reinforced concrete.</p> <p>Provide housekeeping pads under floor-mounted equipment. Provide sleeves, raceways and integrate mechanical and electrical requirements. Construction to mitigate vibration caused by mechanical equipment.</p> <p>The ceiling systems shall optimize the space available for future flexibility and efficiency of the building systems. Allow sufficient room for information technology, telecommunications and security systems.</p> <p>Incorporate appropriate sound isolation and control measures between floors, particularly with high noise areas.</p>

No.	Title	Description	Comment
		Roof construction	<p>Other materials, principally structural steel, may be considered for roofs and penthouses of academic buildings, or for industrial or storage buildings. Provide positive slopes to drains. Roof top storm water retention is not a requirement. Refer to campus Storm Water Management Plan in Part 4.</p>
B20	Exterior enclosure	Walls	<p>The building envelope is to perform in accordance with the Model Energy Code of Canada and requirements specified under the Canadian Buildings Incentive Program (CBIP). <i>CHECK DETAILS</i></p> <p>Water Tightness: design exterior facade and wall panels to the rain screen principles as published by the National Research Council. Prevent water infiltration into the interior systems. Walls should be attractive and durable. Wall systems may include masonry with inner wythes of masonry or light-gauge steel construction finished with brick or manufactured stone, glazed curtainwall or prefinished metal cladding systems.</p> <p>A continuous air barrier is essential. Special care must be given to the wall design to avoid trapping moisture within the wall.</p> <p>The College will retain and pay for the services of a specialist building envelope consultant to review proposed details and construction of the building envelope.</p> <p>Proprietary enclosure and finish systems, such as EIFS, may be considered, but if proposed, must be fully supported by appropriate technical and economic data.</p>
		Windows	<p>Due to the concern for energy efficiency and building operations, operable windows are to be avoided.</p>

No.	Title	Description	Comment
			<p>Thermally broken aluminum-framed windows are preferred. Sealed double-glazing units should be argon-filled, with low-E coating. Highly tinted or reflective glazing should be avoided.</p>
		<p>Entrances</p>	<p>Main Entrances: Double-glazed, tempered, thermally broken aluminum-framed.</p> <p>Secondary entrances and exits: thermally broken steel frames, insulated steel doors.</p> <p>Provide barrier-free entrances to all buildings, with automatic operators.</p> <p>All door leaf sizes to be a minimum 900 wide x 2150 mm high unless otherwise noted for accessibility.</p> <p>Doors must be operable by a single-handed operation (lever handles where possible) and must operate with a minimum pressure of 22N for interior doors and 38N for exterior doors.</p>
		<p>Overhead doors</p>	<p>Insulated, with glazing panels and motorized operators. Provide protective bollards at inside and outside locations.</p>
		<p>Special doors</p>	<p>Access doors to spaces with large equipment, such as shops, janitor equipment rooms or gymnasias, should be a minimum of 1200 mm wide, or a pair of doors with one narrow leaf secured by flush bolts. Avoid mullions.</p>
<p>B30</p>	<p>Roofing</p>	<p>Roofs</p>	<p>Roofs, and designers should work toward a product that yields a 25 year warranty, and preference is for an R40 insulation value.</p> <p>The roofing system shall be provided with a 20 year warranty, minimum insulation value R20 (RSI 3.5), with appropriate ballast and roof-edge protection. Walkways should be provided as necessary to access roof-</p>

No.	Title	Description	Comment
			<p>top equipment.</p> <p>Acceptable roofing systems include protected membrane “inverted” systems and 2 ply modified bitumen systems. Refer to Part 3.</p> <p>The College will retain and pay for the services of a specialist roofing consultant to review proposed details and construction of the roofing system.</p> <p>Built-in fall arrest systems are required for window washing or other roof-top access requirements.</p> <p>Provide and incorporate snow/ice guards and/or other suitable protection for pedestrian and vehicular traffic.</p>
		Roof openings	Provide internal access to all roof surfaces, by lockable prefabricated roof scuttles.
		Roof Curbs	Provide preformed metal curb: minimum 400 mm high (or as required) insulated sandwich construction RSI 3.5 min. with deck flange attachment for all roof openings including openings for roof top equipment.

No.	Title	Description	Comment
<b>C</b>	<b>INTERIORS</b>		
C10	Interior Construction	Acoustics	<p>Performance verification: Have field sound performance (FSTC) of typical partitions over FSTC 45 certified by an independent acoustical consultant in accordance with ASTM E-336. Provide test verification results for NC levels in typical classrooms and where all NC levels are NC 30 or below. Provide laboratory ratings of STC for all partition types including folding partitions. Verify all STC, FSTC and NC ratings for all partitions and folding partitions have been provided.</p>



No.	Title	Description	Comment
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Acoustical control is extremely important to the Campus. Incorporate the provision of additional sound absorbing materials and products, which reflects the degree of finish, desired for the room and the type of activity contained.

The following chart outlines the sound control and isolation criteria for academic buildings:

*[Table 1 references the required degree of sound isolation for partition walls and floors between the room in question and any other occupied space, including circulation spaces. Table 2 provides the requirements for the Sound Transmission Loss, laboratory tested, at the frequencies noted, for wall construction on all walls forming the boundary of the project (including exterior walls)].*

[SpecNote: the following chart must be edited to suit the particular conditions and requirements of the project]

Room	FSTC Required	NC Required
Classroom	47	30
Break-out Rooms between breakout rooms: between breakout rooms and classrooms:	35 47	30 30
Computer Lab	47	35-40
Fitness lab	55	35
AV storage	40	40
Resource/prep Area	47	35
Monitor Room	47	30
Testing Interview Rooms	50	30
Test administrators	40	35
Showers/Lockers	50	40
Storage Fitness	40	40
Storage	40	40
Interview room	47	25
Administration Areas	40	35
Photocopy Room	47	40
Classroom between classrooms between moveable wall	47 40	35 - 40
Classroom	47	30
Workshop	55	40
Library/Internet Room	47	35
Staff Washroom	50	40
Boardroom	47	30
Maintenance Room	n/a	n/a
Compressor Room	50	0

No.	Title	Description	Comment		
		Accessories	Meeting Room	47	35
			<p>In general, provide the following quantities:</p> <p>Recessed waste receptacle: one (1) per washroom.</p> <p>Grab bars two (2) per handicapped toilet compartment.</p> <p>Door pull one (1) per handicapped toilet compartment</p> <p>Air freshener one (1) per washroom</p> <p>Electric hand dryers (infrared): one (1) per lavatory.</p> <p>Shower rod and curtains: one (1) per female shower compartment.</p> <p>Vanity mirrors: full length of vanities typical.</p> <p>One (1) above each urinal</p> <p>Robe hook: one (1) in each toilet &amp; shower compartment.</p> <p>one(1) for rear of each enclosed office door</p> <p>Shelving: full length of locker room vanities typical.</p> <p>Janitor's shelving: one (1) per janitorial closet.</p> <p>Soap holder: one (1) per showerhead.</p> <p>Change table one (1) per washroom</p> <p>Owner to supply the following accessories, for installation by the Contractor: (Design drawings to show accessories; Contractor to provide all necessary backing, recesses and supports)</p> <p>Toilet paper dispenser: one (1) per toilet stall.</p> <p>Soap dispenser: one (1) per lavatory.</p> <p>Feminine napkin dispenser: one (1) per female toilet compartment.</p> <p>The list is to be reviewed with Physical Resources Caretaking Team Leader prior to finalizing design.</p>		
C20	Stairs		Stairwells are to be designed with no open areas		

No.	Title	Description	Comment
			<p>below stairs and landings, which present a personal security problem.</p> <p>Provide minimum one (1) stairwell, which accesses the roof level. This could also be provided through a mechanical penthouse area.</p> <p>Stairs: stair finish materials to be maintenance free and easily maintainable. Nosing is to be durable without any exposed fasteners. The preferred method is visible in "P" building. The finish is battleship linoleum, a material that is never waxed or stripped. It has no raised ridges on the treads and has an integral nosing that is formed over the front of the stair. The whole assembly is glued in place. Note that the example in "T" building is not preferred since it is maintenance intensive even though the construction is almost exactly the same.</p> <p>Accent colours in stairwells on risers or any surfaces close to the floor are not to be black. A grey or off white is preferred because of "spotting" from regular cleaning.</p>
C30	Interior Finishes	Floors	<p>Floors should have positive slopes to drain where required in labs or service rooms. Floor finishes should be selected for cleanability and durability, and for appearance. Any moulding used on carpets, tile or as door thresholds is to be stainless steel,</p> <p>Carpet tile or low pile rolled carpet for glue-down applications to offices, low traffic corridors, conference &amp; meeting rooms. Refer to Part 3.</p> <p>vinyl composition tile or sheet vinyl, rubber or linoleum to classrooms and labs, corridors, copy &amp; coffee rooms</p> <p>ceramic tile to washrooms, entrance vestibules</p> <p>sheet vinyl or linoleum to high traffic corridors</p> <p>preformed rubber/vinyl to stairs</p> <p>concrete elsewhere</p>

No.	Title	Description	Comment
			<p>Provide waterproof membrane behind floor tiles subject to water exposure (i.e. showers).</p> <p>Generally, provide hard surface flooring on all ground floor level public areas including corridors, entrances, lobbies, washroom/shower/locker room areas, reception areas and related spaces.</p> <p>Provide anti-slip flooring surface treatments to all areas with sloping or inclined surfaces.</p> <p>Final Floor Finish: At substantial completion the final finish of the flooring is to be applied with the products approved by the College and the application witnessed by caretaking staff to ensure compatibility of products, proper application and proper number of finish coats.</p>
		<p>Interior Walls and Partitions</p>	<p>Permanent walls may be of masonry or gypsum board; preferred partition construction is of 12 mm gypsum board on 89mm studs, with additional measures as required to achieve acoustic ratings.</p> <p>More durable products such as cement board should be considered for specific applications where warranted.</p> <p>Consideration should be given to demountable prefinished vinyl board systems, particularly for office areas.</p> <p>Partitions should not penetrate the ceiling system except where required for special acoustic or fire ratings.</p> <p>Chair rails should be provided in meeting rooms.</p> <p>All banks of lockers, bench seating areas, drinking fountains, vending machine nodes and other building elements are to be recessed in corridor areas wherever possible. Avoid doors swinging outward into corridor width by recessing door entrances.</p> <p>Provide hard, durable, and washable partition systems in public corridors, stairwells, entrances and lobbies. Use abuse/vandal-resistant</p>

No.	Title	Description	Comment
			<p>gypsumboard, cement board and/or concrete block partition systems, particularly at levels from finished floor to 2200mm above finished floor.</p> <p>Provide plastic laminate, hardwood or other durable materials in horizontal surfaces subject to use and damage (i.e. window sills or areas used for seating)</p> <p>Provide forced entry resistant partitions in high security areas and valuable asset storage. Consider composite interior partition assemblies with multiple layers of gypsumboard, 16mm plywood and expanded metal lath.</p> <p>The use of full-height glazed partitions is encouraged to provide visibility to instructional areas, where appropriate. Provide hollow metal glazed screens and tempered glazing as per space data sheets. Incorporate detailing to maintain STC/FSTC ratings, provide non-reflective glazing (where applicable) and other design considerations.</p> <p>If folding partitions are to be considered, they must be designed for safety and easy of operation by untrained personnel.</p> <p>Wet areas such as washrooms, change rooms and locker rooms require water-resistant gypsumboard or concrete block with ceramic tile finish up to 2200mm minimum above finished floor. Provide waterproof membrane backing in showers.</p>
		Ceilings	<p>Provide water-resistant gypsumboard to all ceiling areas susceptible to moisture or water such as washrooms and locker rooms.</p> <p>Where exposed structure is to be the finished ceiling, provide complete paint finish throughout. All structural, mechanical, electrical and other building systems shall be clean, neatly arranged and suitable for exposed condition.</p> <p>Suspended acoustic tile ceilings are preferred in</p>

No.	Title	Description	Comment
		Paint Finishes	<p>offices, labs, meeting and copy/coffee rooms; 25mm exposed Tee system, 610 x 1220 x 19mm non-directional or micro perforated design.</p> <p>Ceilings should be designed and installed to allow for a high degree of flexibility in office configuration.</p> <p>Food preparation areas subject to frequent cleaning shall have finishes that are smooth, sanitary, washable, and capable of withstanding treatment with harsh chemicals.</p> <p>Ceilings finishes in areas such as clean corridors, central sterile supply spaces, specialized radiographic rooms, and minor surgical procedure rooms must be smooth, scrubbable, non-absorptive, non-perforated, capable of withstanding cleaning with harsh chemicals, and without crevices that can harbour mould and bacterial growth</p> <p>Only products specified in the CPCA manual or specifically approved by the CPCA shall be used. Any material for which products or brand names are not specifically listed shall be of the highest quality.</p> <p>Paint material shall be products of a single manufacturer. Use only paints of the highest quality and low VOC selected from the CPCA Painting and Finishing schedule.</p> <p>Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinetwork. Colour and texture to match adjacent surfaces, except as noted otherwise.</p> <p>Paint piping, conduits, ductwork and other unfinished equipment in boiler room, mechanical rooms, and electrical rooms. In other unfinished areas leave equipment, piping, conduits, hangers etc, in original finish and touch up scratches and marks. <i>REVIEW</i></p>

No.	Title	Description	Comment
			<p>Paint inside of ductwork where visible with primer and one coat of matt black paint.</p> <p>Paint both sides and edges of plywood backboards for equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.</p> <p>Paint all exposed steel supports, framing and connections of millwork.</p>
		Doors and Hardware	<p>Doors with sidelight units are preferred throughout, where appropriate. Typical sidelight units to be 400mm width, full height of door. All glazing to be tempered safety glass or ULC rated Georgian wired glass where applicable.</p> <p>Glazing for hollow metal frames shall be the same as doors within the screen. Stairwells are to be provided with glazed frames or doors to provide visibility and security to stairwells.</p> <p>All hollow metal frames in masonry or concrete walls shall be filled with grout.</p> <p>Where design permits, all major interior corridor doors are to utilize electronic hold open devices, which are tied into the fire alarm system.</p> <p>Where possible, doors should not open onto halls and corridors, such that they impede traffic All classrooms, labs and offices should be fitted with hardware, which cannot be locked from the inside.</p> <p>The hardware schedule must be prepared in cooperation with the College Security staff.</p> <p>In general, the door material standards are as follows:</p>

No.	Title	Description	Comment
			<p><b>Room Type</b></p> <p><b>Door Type</b></p> <p><b>Frame Type Duty</b></p> <p>Stairwells/Public corridors HMD</p> <p>HMF H</p> <p>Classrooms SWC</p> <p>HMF M</p> <p>Computer Labs</p> <p>SWC HMF M</p> <p>Offices SWC</p> <p>HMF M</p> <p>Storage/Janitorial SWC</p> <p>HMF M</p> <p>Service Rooms</p> <p>HMD HMF M</p> <p>Public Washrooms SWC</p> <p>HMF H</p> <p>Showers/locker rooms</p> <p>HMD HMF M</p> <p>Mechanical Rooms IMD</p> <p>HMF M</p> <p>Abbreviations:</p> <p><b>SWC</b> Solid Wood Core Door</p> <p><b>HMF</b> Hollow Metal Frame</p> <p><b>HMD</b> Hollow Metal Door</p> <p><b>AMF</b> Acoustic Metal Frame</p> <p><b>IMD</b> Insulated Metal Door</p> <p><b>ACD</b> Acoustic Rated Door</p> <p><b>H</b> Heavy Duty</p> <p><b>M</b> Medium Duty</p> <p><b>L</b> Light Duty</p> <p>Interior doors should be hollow metal (typical) or solid core wood (offices, classrooms, labs, meeting rooms, copy/coffee rooms), in pressed steel frames. Fire ratings shall be clearly identified.</p> <p>Hardware selection is restricted to the products described in Part 3 of this document.</p>
<b>D</b>	<b>SERVICES</b>		
D10	Conveying Systems	Elevators	Hydraulic elevators are preferred.
			Elevators must be designed for multi-purpose



No.	Title	Description	Comment
			<p>use, including both passengers and the transportation of furniture and equipment. Coordinate requirements with Owner on specific projects.</p> <p>Elevators are intended to be connected to the emergency power supply. Coordinate requirements with the College.</p> <p>Automatically return car to bottom landing and open power operated doors if car should stall as result of relay failure, valve failure or low oil in system while ascending.</p>
			<p>Provide cathodic protection for hydraulic elevators.</p> <p>Communications: A dedicated line and lift and talk phone to be installed in each cab.</p> <p><b>DECIDE ON PREFERRED FLOOR FINISH</b></p>
D20	Plumbing	Plumbing	<p>Note special requirements, including floor drains, may apply for emergency showers and/or eye wash fountains.</p> <p>Sand trap types should be specified, and a minimum size of 2x2x2 should be used in all floor drains that may service floor machines.</p> <p>Any janitor's sink should have separate taps for the hot and cold lines, not single faucets that control one spigot so that cross connections between hot and cold cannot happen if the taps are both left open.</p> <p>All gas supplies to labs are to be controllable from a secure location at the teacher's desk. Valve to be lockable, access door lockable. <i>CHECK CODE REQUIREMENT</i></p>
D30	HVAC	Ventilation	<p>Maintenance Cost. The HVAC installation will be designed for lowest life cycle maintenance cost and longest useful life. The Design Consultant will be responsible for verifying and confirming to the satisfaction of the College that this condition is met.</p> <p>Ventilation systems and heating / cooling</p>

No.	Title	Description	Comment
			<p>installations will be housed in equipment rooms with adequate space for servicing and hardware replacement. Commercial factory packaged rooftop equipment with exterior access for maintenance will not be acceptable. Factory packaged rooftop penthouse installations with interior service area are acceptable.</p> <p>The College considers energy conservation a priority, and will require that the most stringent requirements of ASHRAE 90.1 are met.</p> <p>System Layout. HVAC distribution systems shall be designed for horizontal vs. vertical service. Separate systems shall be used for different use areas such as classrooms, office space, training space, uniquely ventilated space, etc.</p> <p>Where possible, install ceiling mounted terminal units over corridors for ease of servicing. The heating, ventilation and air conditioning system design must incorporate a high degree of flexibility to allow for future changes in use of space, relocation of walls and partitions and changes in occupancy.</p> <p>Independent cooling is required for special situations including IT closets, foodservice areas and vending machine locations. Air Conditioning: IT closets and food preparation or service areas to be independent of base building systems so that they can be scheduled and run to suit schedules that are different from the main facility. A redundant capacity of 25% must be allowed in the design for cooling and airflow.</p> <p>Redundancy must be considered in all instances, with the final decision reviewed and accepted by the College.</p> <p>Energy Consumption</p> <p>Please refer to Section D3060 for requirements to monitor energy consumption for the building overall. <b>CHECK THIS REFERENCE</b></p> <p>Air Quality</p> <p>All designated lunch/coffee rooms are to be fully exhausted in occupied mode by designated exhaust systems.</p>

No.	Title	Description	Comment
			<p>The mechanical systems shall be fitted with economizer operation and allow for the flushing out of the building with 100% outside air at ambient temperatures above 0°C.</p> <p>Heating: Heating requirements for entrances, large public areas with greater heat loss rate than stipulated above in design criteria, and generally unoccupied spaces not subject to need for ventilation will be met utilizing fan coil units. Maximum size of control zone: 50 m<sup>2</sup>.</p> <p>Cooling: For spaces and installations requiring cooling for 24 hour, 12 month operation, provide a roof mounted dry cooler and associated closed loop heat rejection system.</p> <p>Insulation: H.V.A.C. piping, ductwork and equipment is to be insulated. Insulate all domestic cold water, domestic hot water, and domestic hot water recirculation systems. Provide vapour barriers where condensation may occur. Provide canvas jackets on all insulation exposed to view. Insulate all storm piping for 2 m from roof drains</p> <p>Environment: It is a requirement that the College obtain an Environmental Air Quality Certificate of Authorization based on compliance with acceptable air quality and noise emissions. Provide all necessary design documentation and testing of completed systems to verify compliance.</p> <p>Building Automation Systems All new developments shall be connected to the existing building automation system as determined by the College. Meters are required for water and electrical power.</p> <p>Heat recovery should be considered as part of the design, wherever practicable.</p> <p>Photocopier Area: Ensure mechanical ventilation. Venting and supply to be independent of space systems, if or when separate rooms are used, make-up air is required.</p> <p>Shops: General ventilation guidelines: Exhaust Air: Slot hood design, length to suit application</p>

No.	Title	Description	Comment
			<p>Exhaust air at 350 cfm per foot of hood length.                      •Air velocity at slot suitable to capture contaminants at 30 inches. Explosion proof fan and motor. Fan stop to be timer controlled.</p> <p>Make-up Air:                      Supply air to workspace between worker and exhaust Supply 10 percent less than exhausted Tempered air to be adjustable to 21 degrees C, at design conditions. •make-up supply interlocked to exhaust.</p> <p>Gas metering: each building to have a separate meter.</p>
		<p>Terminal &amp; Packaged Units</p>	<p>Electric space heating is not acceptable. Oil fired infrared radiant heating is generally not accepted.                      Provide and indicate access for maintenance.                      Steel supports and ladders used outdoors: galvanized and painted.                      Unit Heaters (Gas Fired) may be used only if hydronic unit heaters are not practical                      Make Up Air Units</p> <p>If unit is indirect fired, heat exchangers are to be fabricated from stainless steel.                      Infrared Radiant Heating                      Provide heaters in locations where there is high degree of air infiltration (eg: loading areas, garage areas).</p> <p>Units must be able to operate or withstand splashing caused by the operation of sprinkler system (if applicable).</p>
		<p>Controls &amp; Instrumentation</p>	<p>Provide a stand alone, direct digital system for control, management, and monitoring. System to function as an Energy Monitoring and Control System (EMCS). Connect to existing EMCS system.                      Controls: The building control system to be SIEMENS, DDC throughout, tied back to the main control room at the central plant. Refer to part 4.</p>
D40	Fire Protection	Fire	Sprinkler systems should be dry and in

No.	Title	Description	Comment
		Suppression	accordance with the OBC. The College, as listed in Part 3, will require specific alarm panels and devices. No substitutions will be permitted.
D50	Electrical	Electrical Power	<p><b>Building Distribution</b>                      The distribution system within the building shall be subdivided into the following categories:                      347/600 V, 3 phases, 4 wire for fluorescent and H.I.D. interior/exterior lighting, electric heating (if applicable) and mechanical equipment for motors rated 1 HP and over.                      120/208 V, 3 phases, 4 wire for incandescent lighting, miscellaneous power and mechanical equipment rated up to 1 HP.                      Dedicated 120/208 V, 3 phases, 4 wires for electronic equipment and non-linear loads.                      Applicable voltage rating to any specialized equipment or areas other than the ones mentioned above.</p> <p>These systems are to be completely isolated from each other downstream of the main distribution switchboard. The power distribution system shall be designed to be safe and reliable and shall be heavy-duty commercial grade.</p> <p>Provide breakers rather than splitters.                      Emergency shut-offs for shop areas will not be shunt trip type. All emergency shut-offs to be magnetic contactors. Single phase protection to be installed for all equipment or at service entrance. The shutdown to clear automatically on phase recovery.</p> <p>Two duplex plug-in outlets at each workstation, in each meeting room, in each private office, and at 3 m on centres along perimeter walls.</p> <p>Additional outlets where appropriate and as required.</p> <p>Distribution panels 1/3 empty for future expansion</p> <p>Each new building to be independently isolated.</p>
		Emergency Power	<p><b>Emergency Power System</b>                      Provide complete diesel generator set with all fuel systems, ventilation systems, and exhaust</p>

No.	Title	Description	Comment
			<p>systems for extended operation in utility power outage situations. Provide fuel storage capacity for minimum 24 hours operation at full load. Generator to be rated for standby duty with fully automatic starting, 600/347 volt, 3 phase, 4 wire, rated for 100% of the loads connected plus 25% for future.</p> <p>Emergency power system to support the loads described in the Emergency Power Study report. Refer to Part 4.</p> <p>Any new emergency power requirements are to be evaluated to determine if they can be supported by existing installations and in conjunction with the Temporary Study (see Part 4).</p>
		Lighting	<p>All ballasts to be accessible from a ladder so they can be changed</p> <p>Lamps to be one colour. Refer to Part 4. Lighting: lamp colour to be verified prior to acceptance. In general, cool white and not warm white for interior fixtures . Exterior lights to be metal halide, white light and not HPS yellow.</p> <p>Corridors and common areas to be on/off time controllable. A task lighting level will be provided for custodial cleaning.</p> <p>Standardize on tube sizes, do not use "u" tubes.</p> <p>Light switches in public areas to be key operated. Keyed outlets to be located in corridors.</p> <p>Use individual room lighting controls. Allow for partial lighting of each area, task lighting and total lighting.</p> <p><b>Low Voltage Lighting Controls</b>                      All lighting systems, except those required for emergency or exit lighting, shall be provided with manual, and automatic controls. Each space enclosed by walls or ceiling-high partitions, shall be required to have one control point and, in addition, one control point for each task location or one control point for each group of task locations within an area of 450 square feet or less.                      Lighting control requirements for spaces which must be used as a whole may be controlled by a</p>

No.	Title	Description	Comment																		
			<p>lesser number of controls but not less than one control point per each 1500 W of connected lighting power or a total of three control points, whichever is greater. Classrooms shall be provided with occupancy sensor as a control point, manual toggle switches for multi-level lighting as well as sensor for daylight harvesting. All lighting controls shall be located so as to be readily accessible to personnel occupying the space.</p> <p>For other areas such as corridors or areas with dedicated mechanical systems, the lighting shall be monitored and controlled by the BAS system. The low voltage lighting control system shall be a standalone system and interfaced with the BAS system. The system shall include transformer, relays and controller located on the wall of the area being controlled. Devices such as switches, motion sensors, daylight harvesting sensors shall be connected directly to the relay/controller in the ceiling space.</p> <p>Lighting design levels and layouts are to be determined using recognized methods room cavity, point to point or specialty software. All calculations or print outs are to be submitted for record.</p> <p>Power Loading - Lighting                      Power loading shall be measured as watts per square metre (<math>W/m^2</math>) of usable space. Power shall be calculated as total wattage for lamps, ballasts and control circuitry at a specified voltage.</p> <p>Typical target power budget values are shown below:</p> <p><b>Table 1 - Unit Power-Density for Typical Common Areas - Lighting</b></p> <table border="1"> <thead> <tr> <th data-bbox="824 1598 1398 1665">Description</th> <th data-bbox="824 1629 1398 1665"><math>W/m^2</math></th> </tr> </thead> <tbody> <tr> <td data-bbox="824 1698 1398 1732">Lecture hall/classrooms</td> <td data-bbox="824 1698 1398 1732"></td> </tr> <tr> <td data-bbox="824 1732 1398 1766">Library:</td> <td data-bbox="824 1732 1398 1766"></td> </tr> <tr> <td data-bbox="824 1766 1398 1799">audio-visual</td> <td data-bbox="824 1766 1398 1799"></td> </tr> <tr> <td data-bbox="824 1799 1398 1833">stack area (stack lighting)</td> <td data-bbox="824 1799 1398 1833"></td> </tr> <tr> <td data-bbox="824 1833 1398 1866">reading area</td> <td data-bbox="824 1833 1398 1866"></td> </tr> <tr> <td data-bbox="824 1866 1398 1900">    General office area:</td> <td data-bbox="824 1866 1398 1900"></td> </tr> <tr> <td data-bbox="824 1900 1398 1934">no partitions</td> <td data-bbox="824 1900 1398 1934"></td> </tr> <tr> <td data-bbox="824 1934 1398 1967">with partitions &lt;1.4 m</td> <td data-bbox="824 1934 1398 1967"></td> </tr> </tbody> </table>	Description	$W/m^2$	Lecture hall/classrooms		Library:		audio-visual		stack area (stack lighting)		reading area		General office area:		no partitions		with partitions <1.4 m	
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No.	Title	Description	Comment
			<p>with partitions &lt;1.8 m</p> <p>Computer/Word Processing</p> <p>Laboratories</p> <p>Lobby</p> <p>Atria</p> <p>Reception Area</p> <p>Auditorium</p> <p>Elevator Lobby</p> <p>Conference meeting rooms</p> <p>Electrical/Mechanical rooms</p> <p>Washrooms</p> <p>Locker Room/Showers</p> <p>Stairs/corridors</p> <p>These power loadings shall not be exceeded unless the task or College requirements create a need for additional power which can be justified on the basis of work and space requirements and the health and/or safety of the building users.</p> <p>Illumination Levels</p> <p>The following are illumination levels for various interior spaces expressed as minimum acceptable values of average maintained horizontal lux level over the working plane of each workstation, at floor level for support spaces.</p> <p><u>Description of Task</u></p> <p>Classrooms</p> <p>Shops</p> <p>Lecture Rooms</p> <p>High Contrast Visual Task</p> <p>Low Contrast Visual Task</p> <p>Compartmentalized Workstations</p> <p>VDT use</p> <p>Filing Work</p> <p>Reception areas, interview rooms</p> <p>Circulation areas immediate to task areas</p> <p>Public spaces, lounges</p> <p>Conference, training rooms</p> <p>Laboratories</p> <p>Service Rooms</p> <p>Corridors</p> <p>Washrooms</p> <p>Stairways</p> <p>Emergency Power for Lighting</p> <p>An emergency power supply shall be provided to maintain the emergency lighting from a power source such as batteries or generators that will continue to supply power in the event that the</p>



No.	Title	Description	Comment
			<p>regular power supply to the <i>building</i> is interrupted and be so designed and installed that upon failure of the regular power it will assume the electrical load automatically for a period of 60minutes.</p> <p>Design for lower portion of illumination range suggested by IES, e.g. 15 fc for main corridors, 10fc for secondary corridors, and 50 fc for general offices, classrooms and labs.</p> <p>Security lighting, exterior lighting, and minimal off-hours lighting.</p> <p>Emergency lighting to means of egress and exits, washrooms.</p>
		Data/Telephone	Complete wiring between each system closets to all data and telephone outlets located throughout the facility.
		Fire Alarm System	<p>Each system must be designed for its specific application. At a minimum, provide addressable, microprocessor based, zoned, non-coded, electrically supervised, single stage, general evacuation type of fire alarm system with DCLA style data communication link. Provide complete with: active remote enunciators at main entrance.</p> <p>Design and install system in accordance with the requirements of all applicable CAN/ULC standards and meeting all requirements of the Ontario Building Code</p> <p>Sprinkler system: fully supervised by the fire alarm system and indicate the following conditions: sprinkler flow, tamper, and pressure loss.</p> <p>Fire hose cabinets: electrically monitored to signal trouble or tamper conditions. Provide alarm indication by sounding horns and operating strobe lights for visual indication in buildings designed for barrier free access. Strobe lights to also be provided between interconnecting buildings, walkways and tunnels.</p>

No.	Title	Description	Comment
		<p>Electrical Controls &amp; Instrumentation</p>	<p>Wire all circuits for alarm trouble, and signals for DCLA operation from addressable components.</p> <p>System to be modular in design to allow for minimum of 25% future expansion. Each circuit shall not be loaded to more than 80% capacity.</p> <p>Operation of fire alarm system shall not require personnel with special computer training.</p> <p>All devices are to be addressable with the information available at the main panel of the new building. The new building fire alarm must be tied back to the main campus panel located in the main plant, next to the control room. All information available at the main building (device and zone information) panel must also be available at the main campus panel. This will force standardization.</p> <p>Motor Control</p> <p>Each unit to have HAND-OFF-AUTO control with remote capability for system, control by building management system.</p> <p>. Power Quality</p> <p>Provide a complete system of power quality control to suit project requirements. Systems to consist of line voltage and communication surge suppression and line voltage power factor connection. Provide coordinated power surge suppression system on the incoming electrical service. Particular attention to be directed at computer, non-linear loads. Provide an automatic power factor correction system to maintain power quality to 95%. The system shall be integrated with the building control system or stand alone to suit individual application.</p> <p>Metering:</p> <p>Building usage to monitored and tracked through CARMA. All usage data must be sent to the front end CPU located in the main electrical room at the main plant.</p>

No.	Title	Description	Comment
<b>E</b>	<b>EQUIPMENT &amp; FURNISHINGS</b>		
E10			
E20	Furnishings	Furniture <i>This section to be revised entirely.</i>	Classroom Standard: Coordinated colours, all furniture matching <b>NEW STANDARD REQUIRED IN PART 4</b>
		Window treatment	In general, windows will have curtains and/or blinds depending on exposure and room function.
<b>F</b>	<b>SPECIAL CONSTRUCTION &amp; DEMOLITION</b>		
F10	Special Construction		
F20	Selective Demolition		In general, record documents must be obtained and examined, and College staff consulted, to determine the scope of the work for both new construction and renovation projects. The capacity and condition of existing equipment and systems must be assessed to determine the extent of replacement and/or improvements required. Once selective demolition has been completed, verify assumptions and confirm final scope with College before proceeding.
<b>G</b>	<b>SITWORK</b>		
G10	Site Preparation		
G20	Site Improvements		
G30	Civil/Mechanical Utilities		
G40	Electrical Utilities		
G50	Other Sitework	Roads:	asphaltic concrete pavement to roads, crowned and sloped to drain; concrete catch basins complete with filter in granular areas, formed curbs.
		Walks:	Feature areas: Interlocking concrete pavers on concrete substrate; Typical: concrete, broom finish; Option, where approved: asphalt 2.4 m wide for major walks, 1.8 m wide for secondary walks, 1.5 m wide elsewhere; crown and positive slope to drain. Provide new pedestrian paving at the perimeter of new buildings as follows: <ul style="list-style-type: none"> <li>o To all building entrances and service entrances.</li> </ul>

No.	Title	Description	Comment
		<p>Curbs and Edge Restraints:</p> <p>Parking:</p>	<ul style="list-style-type: none"> <li>o Exterior public walkways and plazas.</li> <li>o To connect all building entrances to adjacent buildings</li> </ul> <p>Provide exterior railings and guards at steps of 3 or more risers and to areas where a drop of 600mm occurs at all building major entrances.</p> <p>Provide pavement material as follows:                      Interlock unit paving to pedestrian areas located at the perimeter of the building and featured landscape areas.                      Rigid pavement (cast-in-place concrete, precast concrete or stone units) at all main entrances leading to parking lots or roadways.                      Flexible pavement to minor pedestrian paths or landscape areas.</p> <p>Provide external ramps and adjacent stairs, complete with railings and guards, where slopes are steeper than 1:20 (5%). Ramp and stair surfaces must be slip-resistant.</p> <p>Pedestrian paths:</p> <p>Design pedestrian paths in excess of 5% slope as ramps in accordance with Barrier Free requirements of the OBC and Algonquin College accessibility guidelines.</p> <p>Design pedestrian paving subject to vehicular traffic to support 23000 kg vehicles.</p> <p>Provide suitable edge restraint system selected from systems identified in materials section of this specification for all unit paving.</p> <p>Provide depressed curbs at all walkways for wheelchair accessibility.</p> <p>Coordinate grading and drainage design with the Stormwater Management Plan prepared for the project site. Refer to Part 4.</p> <p>Provide designated area for deposition</p>

No.	Title	Description	Comment
			of cleared snow.
		Garbage areas	Provide garbage compactor areas, with suitable access for servicing, as required in consultation with College.
		Landscaping:	Generally grass (sod preferred) with planted areas as directed; gravel splash strips or special drains at eaves and to suit local conditions. <i>REFER TO PART 4 FOR PLANTING AND LANDSCAPING REQUIREMENTS</i>
		Site Lighting	Refer to Part 4 for the College standard for Site Lighting.  Power circuits to be provided for exterior lighting and signage must be controlled by the BAS system.  Services to the lighting system are to be installed in rigid ducts.  The following are illumination levels for exterior building spaces, expressed as minimum acceptable values of average maintained horizontal lux levels over usable area and at pavement level. <u>Description of Task</u> <u>Illumination Level (lx)</u> <u>Uniformity Ratio</u> Open Parking: Vehicular traffic                                  10 Vehicular intersections                              30 Pedestrian walkways                                10 Pedestrian walkways and Vehicular intersection                              30 Other areas    10

No.	Title	Description	Comment
<b>Z</b>	<b>GENERAL</b>		
Z10	General Requirements		
Z20	Bidding		
Z30	Cost Estimates		

**PART 3 PRODUCTS AND BUILDING MATERIALS**

Part 3 is intended to record the preferences of Algonquin College for products and systems to be specified for new construction and renovations. The list has been developed over time, and is based on the College’s experience with a wide variety of products and systems.

The selection of products should be based upon the value to the College in both the short and the long term. Capital cost is always a concern, and competition in purchasing can yield value; however this must be balanced by other factors such as reliability and service support. Limiting the selection means that fewer parts must be stocked for maintenance. Certain systems such as fire alarms and building automation must integrate with existing systems.

The list of products and systems includes 3 categories:

1. Exclusive:  
Because of the importance of continuity of established systems, the selection of certain products will be limited to the manufacturers so identified in the list. Example: building automation systems.
  
2. Preferred:  
This category includes those products that are considered by the College to be equivalent in performance. In this case, the selection should be made from one of the named manufacturers and/or products.  
Alternatives may be considered by the College, if properly submitted and supported by the designer/builder.
  
3. Optional:  
In other cases, the selection is at the option of the designer/builder, and to the acceptance by the College, provided that the design criteria described in Part 2 are met.

Part 3 is organized in accordance with *MasterFormat* 1995, a master list of titles and numbers for the construction industry.

**MATERIALS**

In general, all construction materials must be non-combustible. Finish materials must comply with the relevant requirements of the OBC for smoke generation and flame spread.

Section Name	Description	Specific Manufacturer/Product
0	CONTRACT REQUIREMENTS	
1	GENERAL REQUIREMENTS	

Section Name	Description	Specific Manufacturer/Product
<b>2</b>	<b>SITE WORK</b>	
02900	landscaping Topsoil Trees & shrubs	See Part 3, Item #X
<b>3</b>	<b>CONCRETE</b>	
03300	cast-in-place concrete Design & construct foundations, slabs on grade, superstructure of concrete (see 05100)	
<b>4</b>	<b>MASONRY</b>	
04200	Masonry units burned clay brick	FBX, Grade SW: Shaw Smooth Red Range 100M; IXL 103 Maroon Smooth
	manufactured stone	Arriscraft Renaissance
	concrete masonry units	Belstone; Trendstone
<b>5</b>	<b>METALS</b>	
05100	structural metal framing acceptable for roof structures, industrial buildings	
<b>6</b>	<b>WOOD &amp; PLASTICS</b>	
06400	Cabinet hardware pulls	Richelieu 3184
	drawer slides	KV 31429
	shelf rests	KV346
	sliding glass door track & lock	Roll-It
	finger pull	KV 836
<b>7</b>	<b>THERMAL &amp; MOISTURE PROTECTION</b>	
07200	Thermal protection exterior sheathing	Georgia Pacific Dens-Glass Gold
	fibreglass-faced gypsum board	Georgia Pacific Corp. Dens-Deck
	rigid insulation	Dow Roofmate
07400	Roofing & siding panels	Vicwest Stelcolour 5000 Series, standard
07500	Membrane roofing SBS Modified Bitumen	Bakor Inc.; Soprema Waterproofing Inc.
	PVC Single ply	Sarnafil Canada Ltd.

Section Name	Description	Specific Manufacturer/Product
	rubberized asphalt	Hydrotech 6125; Bakelite/Bakor 790-11
	reinforcing fabric	DuPont Reemay Style 2016; Bakor Polyfab
	self-adhering waterproof membrane	Grace Bituthene 3000; Soprema Sopraline Flam 180; Bakor 770-06
	built-up bituminous roofing	All roofing installation flashing to be designed as per C.B.E. / Fishburn standard roofing specifications to provide maximum thermal and water/moisture insulation.
07700 Roof specialties & accessories	drains	Vandal proof THALER
	pipng supports	Gas piping on roof to have brackets, C/W rollers and patio stones as per Fishburn specifications.
	safety tie-back anchors	Pro-Bel; Safety Roof Anchor Company
07700 Roof specialties & accessories	roof hatches	Bilco Type NB
<b>8</b>	<b>DOORS &amp; WINDOWS</b>	
08100 Metal doors & frames	pressed steel frames	16 gauge
	hollow metal doors	18 gauge
08300 Special doors	counter doors	Dynamic Closures Slim-line V, heavy duty
08500 windows	fixed window units	Kawneer Custom 518; Commercial Aluminum Custom 435; Alumicor Limited Custom 970; Lessard Beaucage Lemieux Custom 4600; Lorlea Custom 594; Fulton Custom 5100.
08700 Hardware	hinges	Hagar heavy duty ball bearing
	continuous hinges	Roton, McKinney
	mortise locksets & cylinders	Best Lock
	panic sets	Von Duprin
	removable mullions	Von Duprin
	door pulls, flush bolts	Standard Metal



Section Name	Description	Specific Manufacturer/Product
		Hardware
	flush bolts (ULC)	Ives
	door closers	LCN
	push & kick plates	Standard Metal Hardware
	floor/wall stops	Standard Metal Hardware
	overhead stops, surface bolts	Glynn Johnson
	thresholds, weatherstripping	K.N.Crowder
	thresholds NGP	National Guard Products
	light seal	Zero
	electric strikes	Von Duprin; Folger Adams
08900 Glazed Curtainwall	fixed curtainwall units	Kawneer Custom 1600; Commercial Aluminum Custom 435; Alumicor Limited Custom 970; Lessard Beaucage Lemieux Custom 4600; Lorlea Custom 594; Fulton Custom 5100.
<b>9</b>	<b>FINISHES</b>	
09200 Gypsum board	trim	Pittcon
09300 Tile	ceramic wall tile	Olympia concordia Secura; Ramca RM100 Series; Centura miki CM Series
	ceramic floor tile	olympia spectraStone; Ramca Grespor Series; Centura Cerdisastone Grantiti
09500 Ceilings	acoustic panels	Decoustics Ltd Hiri Panels; Sound Solutions Canada HFP Panels
	acoustic tile	Armstrong Second Look; Celotex CDS; CGC Auratone Illusion
	ceiling tile	food preparation areas: plastic coated: Stelvetite

Section Name	Description	Specific Manufacturer/Product
		insulated: Burgess; Acoustimetal; TAP
09600 Resilient Flooring	vinyl composition tile	Tarkett Expressions; Domcor-Azrock; Armstrong Excelon; Amtico Fortress
	rubber	Flexico Assurance; Nora Noramount
	vinyl composition tile	Tarkett Expressions; Domcor-Azrock; Armstrong Excelon; Amtico Fortress
	rubber sheet flooring	RCA Rubber Flooring; Flexi-Flor
09650 Carpet	sports areas	Dinoflex Sportmat
	administration & offices	100% nylon: Peerless International Freedom; Harding triathalon; Crossley 495 madura; Kraus Dominator
	classrooms	100% nylon: Crossley Benchmark
	carpet	Minimum acceptable quality is Kraus Carpet Mills - Type I "Ultra- Tone VI" or Type II "Dominator".
09700 Wall finishes	fabric	Victor E84; Guilford 701
09900 Paints and Coatings	epoxy flooring	Stonhard
	safety flooring	Altro Floors: Prismatic or Marine 20
09900 Paints and Coatings	paint	Benjamin Moore; Pratt & Lambert; Sherwin Williams; ICC Glidden Paints; International Paints
<b>10</b>	<b>SPECIALTIES</b>	
10100 Visual display boards	fabric	Sound Solution Avanti Tackable Wall Panel- TKP
10200 Louvres and vents	louvres, grilles & screens	Construction Specialties Ltd. Model 4130 - Storm Proof Blade

Section Name	Description	Specific Manufacturer/Product
10200		Use best quality tight sealing as supplied by TA Morrison. All operatable lovers to be continuously adjustable at all setpoints, controllable from a BAS system.
10400	Identification devices	information signs safety & security signs
		ASI Sign Systems Comsafe; Arkon Safety Equipment
10600	Partitions	folding partitions
		Modernfold Acousti-Seal 900 Series; Moderco Classic 7500
10800	Washroom accessories	towel dispenser/waste receptacle
		grab bars
		dispensers
		tampon disposal
		Twincee Model 2010 Twincee 6000 Series by College Whyte model #630 ss stainless steel.
		stainless steel shelf unit
		Bobrick Model 5066
<b>11</b>	<b>EQUIPMENT</b>	
11130	Audio-visual equipment	projection screens
		Draper V Screen
<b>12</b>	<b>FURNISHINGS</b>	
12050	fabrics	lightproof shades
		Solarfective Products Teleshade system
		vertical louvre blinds
		Shade-O-Matic
12670		floor grilles
		Bolar Canada Model BA-1
<b>14</b>	<b>CONVEYING SYSTEMS</b>	
14200	Elevators	passenger elevators
		Dover; Montgomery Kone; Otis; Schindler
<b>15</b>	<b>MECHANICAL</b>	
15050	Basic Materials & Methods	piping markers
		W.H.Brady; Seton; Setmark
15400	Plumbing fixtures & equipment	plumbing fixtures
		American Standard; Crane; Eljer; Kohler
15400	Plumbing fixtures & equipment	plumbing brass
		Delta; Crane; Emco; American Standard; Waltec; Sloan; Chicago Faucet
		water closet seats
		Moldex; Beneke; Olsonite; Centeco
		drains & specialties
		Enpoco; Wade; Zurn; Toto-Tech Smith
		shower valves
		Symons; Leonard;

Section Name	Description	Specific Manufacturer/Product
		Danfoss; Cambridge brass; Emco; Moen; Powers
	wash fountains	Acorn
	classroom bubblers	Crane Puroflo C6007.
15500 Heat generation equipment	non-condensing boilers	Bryan; H.B.Smith; Weil McLain; Cleaver Brooks; Ajax; Viessman; RBI
	condensing boilers	Viessman; RBI
	hot water pumping systems	S.A.Armstrong; PACO; Grundfos; Taco; Bell & Gossett
	variable frequency drives	Graham; Toshiba; Siemens
15700 HVAC Equipment	packaged exhausters	Temspec; Vanee
	air conditioners	NO water-cooled
15800 Air distribution	packaged air handling units	Trane; Carrier; McQuay; York; Sheldons; Dunham Bush; Engineered Air; Temprite
	rigid ductliner board	Fibreglas Canada
	ductwork	Acoustically treated: rigid ducts lined; flex ducts exterior coated.
15900 energy monitoring & control system		Johnson Controls; Siemens; VCI Controls; Barber Coleman; Trane
	building automation system controls	Siemens (EXCLUSIVE) DDC (NO pneumatic)
<b>16</b>	<b>ELECTRICAL</b>	
16460 Low voltage distribution	transformers	Zig-zag type
16500 Lighting	ballasts	Osram Sylvania; Phillips
	fluorescent lamps	Osram Sylvania; Phillips; G.E.
	HID lamps	Osram Sylvania; Phillips
16700 Communications	clocks	GPS controlled
	fire alarm system	Edwards; Simplex
	electric heaters	not allowed

**PART 4 EXISTING STANDARDS**

The intent of Part 4 of this document is to list the standards that have been prepared by and for the College, that are relevant to the planning, design, construction and maintenance of the physical plant on the Woodroffe Campus. Contact the Physical Resources Department to obtain further information.

<b>Document Title</b>	<b>Author</b>	<b>Date of Last Issue</b>
<i>Generic Technical Performance Specifications</i>	Civitas Architecture Inc.	February 2001
<b>Occupational Health and Safety (OHS) System</b>	Environment, Health and Safety	<b>February 2000</b>
<i>Algonquin College Building Standard for Telecommunications</i>	Information Technology Services	March 2001
<i>Personal Safety Guidelines for Campus Planning, Design and Renovation</i>	Personal Security Committee	2003
<i>Classroom Design Standards</i>		
<i>Topsoil Specifications and Tree Planting Recommendations</i>	Beverly Haslegrave	June 2002
<i>Learning Environment Quality Standards</i>		
<i>Emergency Power Study</i>		
<i>Centre for Students with Disabilities Design Guidelines</i>		
<i>Storm Water Management Plan</i>		
<i>Furniture Standards</i>		
<i>Site Lighting Standards</i>		