SCHEDULE 1

STATEMENT OF REQUIREMENTS

Table of Contents

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Statement of Requirements

PART 1 INTERPRETATION

1.1 Definitions

In this Schedule, in addition to the definitions set out in Schedule 1 of this Agreement:

"Acoustic and Vibration Consultant" means a specialized consultant with qualifications and experience in the design of acoustical measures and vibration control in the built environment.

"Acoustical Privacy" means a reasonable safeguard to ensure speech privacy (the inability of an outside listener to understand a conversation between two or more individuals) both in-person and telephone conversations with patients and between employees.

"Ambulatory/Outpatient Care" means walk-in care not requiring an overnight stay in hospital and may include diagnostic services, rehabilitation services, or day care procedures.

"Authority Network" refers to the Authority owned, managed and secured IT network for sending and receiving digitized information (voice, data and video) between networked end-use devices and networked equipment.

"Bariatric Patients/ Bariatric Resident" refers to the branch of medicine that deals with the causes, prevention, and treatment of obesity. For the purposes of this project, Bariatric Patients or Bariatric Residents will be defined as individuals that weigh 135-326 kg (297-720 lbs).

"Borrowed Natural Light" means light that is transmitted to an interior space through an interior window and that comes from an adjacent space having an exterior window.

"Building Management System (BMS)" means the computer networking of electronic devices designed to monitor and control the mechanical, security, fire, lighting, energy usage, HVAC, and humidity control and ventilation systems in a building.

"**BC Building Code (BCBC)"** means the British Columbia Building Code.

"**Building Envelope Specialist (BES)"** means the individual who is a Professional Engineer or Architect with a concentrated practice in the area of building science and who is qualified to engage in such practice. The Building Envelope Specialist has a minimum of 10 years' experience with a minimum of five years of recent experience working in a cold weather environment, and is responsible for design and construction reviews of building elements providing environmental separation to meet their intended functions including but not limited to condensation control, water penetration control, heat, air, and moisture transfer, and other performance criteria as outlined, in meeting the Owner's requirements in consideration of the environmental loads, building location, and occupancy.

"CGF (Component Gross Factor)" – is a numerical factor by which the NSM for a department or area is multiplied to calculate CGSM.

"CGSM (Component Gross Square Meters)" Is the area of a component that includes all net area, all dedicated internal circulation space accessing only net areas within a component and all internal demising walls between net areas and dedicated circulation space. Exterior walls, demising walls between components and vertical circulation shafts and shaft walls are excluded from CGSM calculations.

"CGSM-required" Is the minimum component area of a subset of Building components that must be provided in the Building.
"Chemotherapy" refers to the treatment of disease by chemical agents taken orally or intravenously.

"Clean Utility / Supply Room" refers to a room for the storage of items such as clean linens and sterile supplies. At minimum, it contains an HHS, counter work area, and storage cabinets.

"Clinical Space/Area/Room" refers to any room, area, or space that could, at any time, accommodate patients or residents, while they are or could be receiving direct care, treatment, therapy, counselling, training, instruction, and/or interaction with staff while occupying the room or space. This also includes any area that clinical staff may access on a frequent basis for supplies, materials, and equipment during the course of interaction with patients or residents during treatment or care of the patients or residents.

"**Clinical Specifications**" describes and outlines the key needs and building design attributes required to successfully implement clinical operations and achieve the desired model of care. The document describes both general planning concepts and detailed specific clinical needs. Refer to Appendix 1A – Clinical Specifications.

"Commissioning" (Cx) is the process comprising of the integrated application of a set of engineering techniques and procedures to check, inspect, and test every operational component of the project, from individual functions up to complex amalgamations.

"Communications Systems" refers to all systems, equipment and devices provided by either the Authority or the Design- Builder included in 7.7 Communications (Division 27) and 7.8 Electronic Safety and Security (Division 28) of this Schedule.

"Component" or "Functional Component" is a cohesive grouping of activities or spaces related by service or physical arrangement. A component or functional component may or may not be a department since the term "department" refers to an administrative organization rather than a functional organization of space and activities.

"Convenient Access" means physical access between rooms or components which is suitable or agreeable to the needs or purpose of the delivery of care and/or support services through the use of easily accessible, well-suited with respect to facility and ease of use, horizontal and/or vertical general circulation.

"Construction Documents" means the progressive submittals made by the Design-Builder to the Authority in accordance with Schedule 2 [Review Procedure].

"Courtyard" means an outdoor space accessible from the Building interior, that is enclosed at minimum of ½ of its total perimeter by building walls. Courtyard perimeter not comprised of a building wall will be secured by 2.0-meter fence with a Secure gate.

"Crime Prevention Through Environmental Design (CPTED)" means a multi-disciplinary approach to deterring undesirable and criminal activity and behaviour through environmental design.

"Critical Care Area" The specialized care of patients whose conditions are life-threatening and who require comprehensive care and constant monitoring.

"**dBA**" is a weighted sound pressure level within a space adjusted based on human hearing systems (e.g. less sensitive to low frequencies).

"Deck" means an outdoor deck/balcony space above finished grade.

"Disaster Situation" refers to any event that creates a significant, short-term spike in the demand for emergency care services that requires extraordinary measures to address adequately.

"Direct / Integrated" means access for Patients and/or Staff between rooms or components.

"District" refers to the District of Fort St. James.

"Documents" refers to submittals, technical manuals, supporting materials, warranties, or Design-Builder produced technical drawings, details, and illustrations which are to be provided by the Design-Builder to the Authority pursuant to this Schedule 1 [Statement of Requirements].

"Drawings" refers to the graphic and pictorial portion of the Design-Builder's documents showing the design location and dimensions of the services, generally including plans, elevations, sections, details, schedules, and diagrams.

"ED Entrance" means the entrance to the Building and related vestibule for patients and visitors located at the Emergency Department (ED).

"Electronic Medical Records (EMR)" means the digital medical records of the residents. The EMR software programs the Authority uses are *MOIS* for primary and community care and *Cerner* for acute care.

"Emergency" as defined by the BC Ministry of Health is "a condition of such severity that death, severe pain, chronic illness, or permanent disability may result if immediate hospital treatment is not given." In some instances (e.g. terminal cancer cases), death will be inevitable though not necessarily immediate, yet instant hospital admission will be required for the relief of suffering.

"Environment of Care" – means the healthcare environment that is defined through six components that consist concurrently in all healthcare settings: the service delivery model, the facility and service users, the systems design, the layout and operational planning, the design and implementation process, and the physical environment.

"Evidence Based Design (EBD)" means that decisions about the design of the facility will be informed by available credible research, information derived from comparable projects, and information about Authority operations, in order to achieve the best possible outcomes. The goal of Evidence Based Design is to deliver measurable improvements (for example in the Authority's patient and workflow outcomes, productivity, economic performance, and patient satisfaction).

"FM Management System" means a system that will consist of an Integrated Building Management Platform (IBMP) software, which is composed of a Folio Database and Analytics Platform.

"Garden" means vegetated space located on Ground Level.

"General Circulation" is the system of connecting links (corridors, elevators, stairs) providing access for people and materials to or between functional components.

"Glazing" exterior or interior glass.

"Healing Environment" means a physical environment comprised of elements that have, in combination, been proven to create therapeutic, low stress and comfortable environments for patients, residents, their families, and staff.

"Human Scale" means spaces and compositions of material elements which in combination are comfortable for people in their use.

"**IMIT**" refers to information management and information technology. It can be used to refer to all work and equipment required by Division 27.

"IMIT Systems" refers to all systems, equipment and devices provided by either the Authority or the Design-Builder included in 7.7 Communications (Division 27).

"Inpatient" A patient who is admitted to a hospital for overnight care and to whom an inpatient bed has been assigned.

"Inpatient Care" Care requiring admission to a hospital or other health care facility for a stay of at least twenty-four hours.

"Inpatient Units" means components that typically care for more than 24 hours and/or overnight.

"Internal Circulation" means the system of connecting links (corridors, elevators, stairs) within functional components, connecting rooms of a component or directly connecting contiguous components.

"**LEAN**" means to a structured way of continuously providing solutions to eliminate waste in systems that deliver value to customers and as defined by the Lean Enterprise Institute.

"Length of Stay (LOS)" The amount of time, usually measured in days, spent by a patient in a hospital.

"Long Term Care" is care for individuals with complex health needs who require moderate to extensive assistance with activities of daily living, 24-hour monitoring, and/or professional care. This individualized quality care will be provided in a home-like environment that encourages and supports independence and a high quality of life.

"Long Term Care facility" is a long term care setting for individuals with complex health needs requiring moderate to extensive assistance with activities of daily living, 24-hour monitoring, and/or professional care. This program area provides individualized quality care in a home-like environment that encourages and supports independence and a high quality of life.

"Main Entrance" means the primary public entrance to the Building.

"**Master Site Plan**" has the meaning set out in Section 4.1 of this Schedule.

"Net Area or Net Square Metres (NSM)" the horizontal area of space assignable to a specific function. The Net Area is the area of the space, as measured from the inside face-of-wall to inside face-of-wall, including area occupied with permanent millwork or equipment and excluding "box-outs" (e.g. furred column and service risers). The Net Area requirements outlined within this Schedule are to be considered the minimum requirement for each space.

"Noise Criteria (NC)" is a single number rating that is sensitive to the relative loudness within a given space at different frequencies.

"Non-Clinical Space/Area/Room" A room, area or space that does not meet the requirements of Clinical Space/Area/Room. Examples of Non-Clinical Rooms include: Staff Lounge, Lockers, Staff Washroom, Housekeeping Room, Offices.

"Noise Reduction Coefficient (**NRC)"** is a single number rating of the sound absorbing properties of a material – derived by arithmetically averaging the Sabine absorption coefficients at 250 Hz, 1000 Hz, 2000 Hz and 4000 Hz. An NRC of 0.00 indicates zero absorption while; an NRC of 1.00 indicates 100% absorption.

"Obstetrics" The branch of medicine concerned with pregnancy and prenatal care, childbirth, and postnatal care.

"Oncology" Specializing in the study and treatment of cancer.

"Patient" means a recipient of any direct care or treatment provided at the facility.

"Patio" means an accessible paved outdoor space level with the adjacent interior floor level.

"Persons with Disabilities" means a person who has a loss, or a reduction, of functional ability and activity and includes a person in a wheelchair and a person with a sensory disability.

"Porch" means an above grade outdoor space with a guard/ fence and a roof projecting a minimum 0.6M beyond the guard.

"Premium Efficient Motors" motors as defined by the National Electrical Manufacturers Association to carry the NEMA Premium™ label. These consume less electricity, are designed for optimum efficiency, and are quality-built motors.

"Privacy Index (PI)" measures how intelligible speech is across a given space as defined in ASTM 1130.

"Public Spaces" refers to all areas accessible to the public during business hours that allow visitors freedom of movement. Some areas may require access permissions.

"Regularly Occupied Space" means a room or space within the facility that is likely to be occupied continuously for 30 minutes or more by a facility user. Regularly Occupied Spaces include, but are not limited to, patient and resident rooms, staff work areas and care stations. Regularly Occupied Spaces do not include 'transient' type spaces such as corridors and washrooms.

"Rehabilitation" multidisciplinary services that provide access to, and delivery of physical, communication, mental, social, vocational, preventative, recreational, avocational, psychosocial, and independent living services.

"Resident" refers to a person receiving care and residing in the long-term care portion of the facility for more than 24 consecutive hours.

"Staff" means a person employed by the Authority who is allowed to provide care.

"Staff Patio" means an outdoor space associated with a Staff Lounge or a Staff Cafeteria.

"Staff Entrance" means an entrance dedicated for staff entrance.

"Schedule of Accommodation" means the list of all required rooms and spaces with all their net areas as required by Appendix 1A Clinical Specifications.

"Securable, or Secure, or Secured" ability of the space to be locked or secured.

"Sightlines" the ability to see directly and clearly from one location to another.

"Soiled Utility Room" a room that contains soiled material to minimize the risk of infection transmission in clinical areas. Room will store soiled equipment, soiled linen, and waste. At minimum it contains a work counter with HHS, space for garbage and recycling containers, hospital approved product and equipment for cleaning, closed cupboards for storage of equipment and supplies.

"Sound Transmission Class (STC)" is a single number that is an indication of a partition's ability to block sound (i.e. in the speech frequencies). The higher the STC rating, the higher is the sound transmission loss. For instance: loud speech can be understood fairly well through an STC 30 wall but should not be audible through an STC 60 wall.

"Speech Transmission Index (STI)" is a measure of speech transmission quality.

"TAB" means testing, adjusting, and balancing.

"Telehealth" means the use of electronic information and telecommunications technologies to support long-distance clinical healthcare, resident, and professional health-related education, public health, and health administration.

"Workstation" workspace with voice, data, and power access. Assumes at least one seat, task lighting, and storage.

1.2 Interpretation

1.2.1 This Schedule is written as an output specification and defines what the Design-Builder must achieve in design and construction. Except as expressly stated otherwise, the Design-Builder will carry out the design and construction as required and contemplated by each provision of this Schedule and its Appendices whether or not the provision is written as an obligation of the Design-Builder or is stated in the imperative form.

1.2.2 Where "cost effective", "appropriate", "sufficient", "minimize" and related and similar terms are used, they are to be construed and interpreted in terms of whether they are cost effective, appropriate, sufficient, minimizing from the perspective of a prudent public owner of a major public hospital facility who balances capital costs against maintenance, operations, clinical efficiency and other non-capital costs over the life of the facility.

1.2.3 Unless expressly stated otherwise, each reference to a standard in this document will be deemed to mean the latest version.

1.3 Acronym List

AAMA – American Architectural Manufacturers Association

ACI – American Concrete Institute

ADL - Activities of Daily Living

AHC – Architectural Hardware Consultant

AHJ – authority having jurisdiction

AHU – air handling unit

AIBC – Architectural Institute of British Columbia

AISI – American Iron and Steel Institute

AMCA – Air Movement and Control Association

ANSI – American National Standards Institute

ASHRAE – American Society of Heating, Refrigerating and Air-conditioning Engineers

ASME – American Society of Mechanical Engineers

ASPE – American Society of Plumbing Engineers

ASTM – American Society for Testing and Materials

ATS – Automatic Transfer Switch

AWCC – Association of Wall and Ceiling Contractors

AWMAC – Architectural Woodwork Manufacturers Association of Canada

AWWA – American Water Works Association

BCBC – British Columbia Building Code

BCERMS – British Columbia Emergency Response Management System

BCICA – British Columbia Insulation Contractors Association

BCLNA – British Columbia Landscape & Nursery Association

BCLS – British Columbia Landscape Standard

BCSLA – British Columbia Society of Landscape Architects

BECx – Building Envelope Commissioning

BECxA - Building Enclosure Commissioning Authority

BICSI – Building Industry Consulting Service International

BMS – Building Management System

BOD – Basis Of Design

CATV – Community Access Television

CCTV – Closed Circuit Television

CDP – Central Distribution Panel

CEC – Canadian Electrical Code

CGF – Component Gross Factor

CGSB – Canadian Standards Board

CGSM - Component Gross Square Metres; refer to 1.1 Definitions

CMCA – Canadian Masonry Contractors Association

CPI – Centre for Process Innovation

CPTED – Crime Prevention Through Environmental Design

CRI/IAQ – Canadian Rug Institute/Indoor Air Quality Program

CSA – Canadian Standards Association

CSDFMA – Canadian Steel Door and Frame Manufacturers Association

CSSBI – Canadian Sheet Steel Building Institute

CT – Computerized Tomography

CTI – Cooling Technology Institute

CVA – Cerebrovascular Accident

CWB – Canadian Welding Bureau

dB – decibels

dBA – A-Weighted sound pressure level

DCOF – dynamic coefficient of friction

DDC – Direct Digital Controls

DHI – Door and Hardware Institute

EBD – Evidence-Based Design

ECG – Electrocardiogram

ANSI/TIA – American National Standards Institute/Telecommunications Industry Association

EHR – Electronic Health Record

EMI – Electromagnetic interference

EMT – Electric Metallic Tubing

EMR – Electronic Medical Record

EMC – Emergency Medical Services

ENS – Environmental Notation System

EOC – Emergency Operations Centre

EPA – Environmental Protection Agency

ES – Emergency Services

FACP – Fire Alarm Control Panel

FOIPPA - BC Freedom of Information and Protection of Privacy Act

FM – Facilities Management

FM – Factory Mutual

FMO – Facilities Management Office

FTE – Full-Time Equivalent

GCA – Glazing Contractors Association of British Columbia

HAZMAT – Hazardous Materials

HEPA – High Efficiency Particulate Air

HHS - Hand Hygiene Sink

HOA – Hand/Off/Auto

HP – Horsepower

HAS – Health Services Administrator

Ht/ hts - height / heights

HVAC – Heating, Ventilating and Air-Conditioning

IBMP – Integrated Building Management Platform

ICU – Intensive Care Unit

IEEE – Institute of Electrical and Electronic Engineers

IP – Internet Protocol

IPC – Infection Prevention and Control

IMIT – Information Management Information Technology

IPU – Inpatient Unit

IV – Intravenous

kW – Kilowatt

kWH – Kilowatt hours

kV – Kilovolt

kVA – Kilovolt Ampere

LAN – Local Area Network

LCD – Liquid Crystal Display

LDRP – Labour Delivery Recovery and Post-Partum

LED – Light Emitting Diode

LEED – Leadership in Energy and Environmental Design

LTC – Long-Term Care

Mb – Megabit

MDC – Medical Day Care

MDR – Medical Device Reprocessing

MDRD - Medical Device Reprocessing Department

MCP – Motor Circuit Protector

MHAS – Mental Health & Addiction Services

MI – Medical Imaging

MM – Material Management

MMCD – Master Municipal Construction Documents

MPI – Master Painters Institute

MRI – Magnetic Resonance Imaging

MRP – Most Responsible Physician

NAPRA - National Association of Pharmacy Regulatory Authorities

NC – Noise Criteria

NCRP – National Council on Radiation Protection and Measurement

NEMA – National Electrical Standards Association

NFCA – National Floor Covering Association

NFPA – National Fire Protection Association

NH – Northern Health Authority

NIC – Noise Isolation Class

NRC – Noise Reduction Coefficient

nsm – Net Square Metres

OPR – Owner Project Requirements

OR – Operating Room

OS&Y – Open Stem and Yoke

OT – Occupational Therapy

PACS – Picture Archiving and Communication System

PC – Personal Computer

PCA - Patient-Controlled Analgesia

PCC - Patient Care Coordinator

PHSA – Provincial Health Services Authority

PoC – Point of Care

PoE – Power Over Ethernet

PPE - Personal Protective Equipment

PTZ – Pan Tilt Zoom

PVC – Polyvinyl Chloride

RCABC – Roofing Contractors Association of British Columbia

RCMP - Royal Canadian Mounted Police

RFID – Radio Frequency Identification

RCDD – Registered Communications Distribution Designer

RT60 – Reverberation Time

RTLS – Real Time Location System

SIP – Session Initiated Protocol

SMACNA – Sheet Metal and Air Conditioning Contractors National Association

SNR – Signal to Noise Ratio

STC – Sound Transmission Class

TTMAC – Terrazzo and Tile Manufacturers Association of Canada

TVOC – Total Volatile Organic Compounds

TVSS – Transient Voltage Surge Suppressor

ULC – Underwriters' Laboratories of Canada

UPS – Uninterruptible Power Supply

US – United States (of America)

V - Volt

VFD – Variable Frequency Drive

VLAN – Virtual Local Area Network

VOC – Volatile Organic Compounds

VoIP – Voice Over Internet Protocol

WC – Water Closet (Washroom)

PART 2 General

2.1 Applicability of Specifications to the Facilities

2.1.1 This Schedule 1 and the Appendices attached to this Schedule 1 set out specifications for the Design and Construction of the new Facility: Stuart Lake Redevelopment Project.

2.2 Project Overview

2.2.1 A brief overview of the Project is set out below:

2.2.1.1 The Facility as defined in the Design-Build Agreement.

2.2.1.2 Demolition and removal will include:

2.2.1.2(1) Existing Stuart Lake Hospital;

2.2.1.2(2) existing parking;

2.2.1.2(3) existing on site services; and

2.2.1.2(4) off-site services.

2.3 Clinical Specifications

2.3.1 Clinical Specifications for the Building are set out in Appendix 1A – Clinical Specifications.

2.3.2 The Design-Builder will design and construct the Facility:

2.3.2.1 so that it accommodates all the spaces, activities, functions, design features and adjacencies described in the applicable Appendix 1A –Clinical Specifications; and

2.3.2.2 in accordance with the requirements of the applicable Appendix 1A –Clinical Specifications, subject to any adjustments or refinements made in accordance with the Schedule 2 – Review Procedure.

2.4 The Building

2.4.1 The Building will include the functional components identified in Appendix 1A – Clinical Specifications.

2.5 Additional Rooms and Spaces

2.5.1 Notwithstanding anything in Appendix 1A – Clinical Specifications, the Design-Builder will design and construct the Building to include all rooms and spaces as required to comply with the terms of this Agreement, including sufficient rooms and spaces as necessary for the Authority to operate and maintain the Building in accordance with healthcare best practices and standards.

2.6 Standards

2.6.1 The Design-Builder will undertake the Design and Construction:

2.6.1.1 in accordance with the standards set out in this Schedule;

2.6.1.2 in accordance with the BCBC and all applicable Laws;

2.6.1.3 having regard for the respect, concerns, needs and interests of:

2.6.1.3(1) all persons who will be Facility Users;

2.6.1.3(2) authority having jurisdiction; and

2.6.1.3(3) the community.

2.6.1.4 to the same standard that an experienced, prudent, and knowledgeable long-term owner of a high-quality health care facility in Canada operated publicly would employ.

2.6.2 If more than one of the above standards is applicable, then the highest such standard will apply.

2.6.3 Without limiting Section 2.9 of this Schedule, the Design-Builder will undertake the Design and Construction in compliance with all applicable standards and guidelines (current version), including the following:

2.6.3.1 AAMI TIR 34; Water for Reprocessing of Medical Devices;

2.6.3.2 AISI:

2.6.3.2(1) AISI S100 – North American Specification for Design of cold formed Steel Structural Members (including commentary);

2.6.3.2(2) AISI 200 – North American Standard for Cold Formed Steel Framing (general provisions); and

2.6.3.2(3) AISI 201 – North American Standard for Cold Formed Steel Framing (Product Data).

2.6.3.3 ANSI / AHRI:

2.6.3.3(1) Standard 550/590-15: Performance Rating of Water-Chilling and Heat Pump Water-Heating Packages Using the Vapor Compression Cycle.

2.6.3.4 ANSI / AIHI

2.6.3.4(1) Z9.5-2012 Laboratory Ventilation.

2.6.3.5 ANSI / ASME (American National Standards Institute / American Society of Mechanical Engineers)

2.6.3.5(1) AWS D11.3 – Structural Welding Code – Sheet Steel;

2.6.3.5(2) ACI 315 – Details and Detailing of Concrete Reinforcement;

2.6.3.5(3) ACI 315R – Manual of Engineering and Placing Drawings for Reinforced Concrete Structures;

2.6.3.5(4) ASPE Plumbing Engineers Handbook, Vol. 1-4;

2.6.3.5(5) A13.1 Visibility Standard (Pipe Labelling);

2.6.3.5(6) B16 Piping Component Standards;

2.6.3.5(7) B31 Pressure Piping Code;

2.6.3.5(8) B36 Piping Standards;

2.6.3.5(9) X 358.1: Emergency Eyewash and Shower Equipment;

2.6.3.5(10) Section VIII: Pressure Vessels;

2.6.3.5(11) Section IX: Welding Qualifications; and

2.6.3.5(12) Unfired Pressure Vessels.

2.6.3.6 ANSI / TIA

2.6.3.6(1) TIA-1179-A Healthcare Facility Telecommunications Infrastructure Standard;

2.6.3.6(2) ANSI/TIA-568.1-D Commercial Building Telecommunications Infrastructure Standard;

2.6.3.6(3) ANSI/TIA-569-E Telecommunications Pathways and Spaces;

2.6.3.6(4) ANSI/TIA-607-D Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises;

2.6.3.6(5) ANSI/TIA-758-B Customer-Owned Outside Plant Telecommunications Infrastructure Standard;

2.6.3.6(6) ANSI/TIA-606-C Administration Standard for Telecommunications Infrastructure; and

2.6.3.6(7) ANSI/TIA/TSB-162 Telecommunications Cabling Guidelines for Wireless Access Points.

2.6.3.7 ANSI / ESNA American National Standard Practice for Lighting.

2.6.3.7(1) IESNA RP 29-16;

2.6.3.7(2) IESNA RP 8-18; and

2.6.3.7(3) IESNA RP 20-16.

2.6.3.8 Ambulance Station Design Standards, British Columbia Ambulance Service, BC Emergency and Health Services;

2.6.3.9 American Conference of Governmental Hygienists, Industrial Ventilation: A Manual of Recommended Practice.

2.6.3.10 ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers)

2.6.3.10(1) Handbooks: 2017 Fundamentals, 2018 Refrigeration, 2019 HVAC Applications, 2016 HVAC Systems and Equipment;

2.6.3.10(2) Design of Smoke Control Systems;

2.6.3.10(3) ASHRAE Guideline 1 – The HVAC Commissioning Process;

2.6.3.10(4) ASHRAE Guideline 12 – Minimizing the Risk of Legionellosis Associated with Building Water Systems;

2.6.3.10(5) Standard 52.2: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size;

2.6.3.10(6) Standard 55: Thermal Environmental Conditions for Human Occupancy;

2.6.3.10(7) Standard 62.1: Ventilation for Acceptable Air Quality;

2.6.3.10(8) Standard 90.1;

2.6.3.10(9) Standard 111: Practices for Measurement, Testing, Adjusting and Balancing of Building HVAC systems;

2.6.3.10(10) Standard 129: Measuring Air Change Effectiveness;

2.6.3.10(11) Standard 514: Building Water Management Standard; and

2.6.3.10(12) 135016: Data Communication Protocol for Building Automation and Control Network.

2.6.3.11 ASPE (American Society of Plumbing Engineers)

2.6.3.11(1) Plumbing Engineering Design Handbook, Volumes 1 – 4.

2.6.3.12 ASTM (American Society for Testing and Materials)

2.6.3.12(1) ASTM A27 – Specification for Structural;

2.6.3.12(2) ASTM A36 A36M – Standard Specification for Carbon Structural Steel;

2.6.3.12(3) ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement;

2.6.3.12(4) ASTM A185- Standard Specification for Steel Welded Wire Fabric;

2.6.3.12(5) ASTM A193 / A193M – Standard Specification for Alloy –Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications;

2.6.3.12(6) ASTM A307 – Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength;

2.6.3.12(7) ASTM A325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength;

2.6.3.12(8) ASTM A326M – Standard Specification for Structural Bolts, Steel, Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength (Metric);

2.6.3.12(9) ASTM A490 – Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Steel Strength;

2.6.3.12(10) ASTM A490M- Standard Specification for High Strength Structural Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel joints (Metric);

2.6.3.12(11) ASTM A653 – Specification for Steel Sheet Zinc coated (galvanized) or Zinc-Iron Alloy Coated (galvannealed) by hot dip process;

2.6.3.12(12) ASTM A775 – Specifications for Epoxy Coated Reinforcing Steel;

2.6.3.12(13) ASTM A792 – Specification for Sheet Steel 55% Aluminum – Zinc Alloy coated by hot dip process;

2.6.3.12(14) ASTM A955 – Standard specification for Load Bearing (transverse and axial) Steel Studs, Runners (tracks) and bracing or Bridging for screw application of Gypsum Panel products;

2.6.3.12(15) ASTM B88: Copper Piping;

2.6.3.12(16) ASTM B221M - Standard Specification for Aluminum and Aluminum- Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric);

2.6.3.12(17) ASTM C260 / C260M – Standard Specification for Air-Entraining Admixtures for Concrete;

2.6.3.12(18) ASTM C309 – Specification for Liquid Membrane Forming Compounds for Curing Concrete;

2.6.3.12(19) ASTM C494 / C494M – Standard Specification for Chemical Admixtures for Concrete;

2.6.3.12(20) ASTM C503- Standard Specification for Marble Dimension Stone;

2.6.3.12(21) ASTM C568 - Standard Specification for Limestone Dimension Stone;

2.6.3.12(22) ASTM C615 - Standard Specification for Granite Dimension Stone;

2.6.3.12(23) ASTM C616 - Standard Specification for Quartz-Based Dimension Stone;

2.6.3.12(24) ASTM C645 – Standard Specification for Nonstructural Steel Framing Members; and

2.6.3.12(25) ASTM E1155 - Standard Test Method for Determination of FF Floor Flatness and FL Floor Levelness Numbers;

2.6.3.12(26) ASTM E336, Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings.

2.6.3.12(27) ASTM E917.24401 Life Cycle Cost Assessment Methodology;

2.6.3.12(28) ASTM F710 – Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring;

2.6.3.12(29) ASTM F1233 Test Method for Security Glazing Materials and Systems;

2.6.3.12(30) ASTM F1450 Test Methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities;

2.6.3.12(31) ASTM F1577 Test Methods for Detention Locks for Swinging Doors;

2.6.3.12(32) ASTM F1592 Test Methods for Detention Hollow Metal Vision Systems;

2.6.3.12(33) ASTM F1643 Test Methods for Detention Sliding Door Locking Device Assembly;

2.6.3.12(34) ASTM F1758 Test Methods for Detention Hinges Used on Detention- Grade Swinging Doors;

2.6.3.12(35) ASTM F1869- Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; and

2.6.3.12(36) ASTM F1915 Standard Test Methods for Glazing for Detention Facilities.

2.6.3.13 BC Freedom of Information and Protection of Privacy Act

2.6.3.14 BC Guidelines for Decontamination of Patients in Health Facilities.

2.6.3.15 BC Supplement to TAC Geometric Design Guide.

2.6.3.16 BC Supplement to TAC Geometric Design Guide.

2.6.3.17 BCICA Quality Standards Manual for Mechanical Insulation;

2.6.3.18 BCLNA - British Columbia Landscape & Nursery Association;

2.6.3.18(1) BC Landscape Standard;

2.6.3.18(2) Plant Materials;

2.6.3.18(3) Growing Medium;

2.6.3.18(4) Landscape Maintenance;

2.6.3.18(5) Tree Protection and Preservation; and

2.6.3.18(6) Irrigation Design.

2.6.3.19 BICSI Telecommunications Distribution Methods Manual (TDMM).

2.6.3.20 British Columbia Ministry of Health and Ministry of Seniors Standards and Hospital Based Psychiatric Emergency Services.

2.6.3.21 CSA Group

2.6.3.21(1) A23.1 - 09/A23.2 - Concrete Materials and Methods of Concrete Construction / Methods of Test and Standard Practices for Concrete;

2.6.3.21(2) A23.4 - Precast Concrete - Materials and Construction;

2.6.3.21(3) A370 - 04 (R2009) - Connectors for Masonry;

2.6.3.21(4) CAN/CSA - A371, Masonry Construction for Buildings.

2.6.3.21(5) CSA A440S1 - Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS - North American Fenestration Standard/Specification for windows, doors, and skylights

2.6.3.21(6) B44 – Safety Code for Elevators and Escalators;

2.6.3.21(7) B45 Series: Plumbing Fixtures;

2.6.3.21(8) B64 Series: Backflow Preventers and Vacuum Breakers;

2.6.3.21(9) B52HB: Mechanical Refrigeration Code;

2.6.3.21(10) B125: Plumbing Fittings;

2.6.3.21(11) B139: Installation Code for Oil - Burning Equipment;

2.6.3.21(12) B149.1: Natural Gas and Propane Installation Code;

2.6.3.21(13) B651: Barrier Free Design;

2.6.3.21(14) C9 - 02 Dry Type Transformers;

2.6.3.21(15) C22.1 Canadian Electrical Code part 1.

2.6.3.21(16) C282 - 15 Emergency Electrical Power Supply for Buildings;

2.6.3.21(17) CAN/CSA - A165 Series, CSA Standards on Concrete Masonry Units consists: A165.1, A165.2, A165.3.

2.6.3.21(18) CAN/CSA - B72 Installation Code for Lightning Protection Systems;

2.6.3.21(19) CAN/CSA - C2, Single - Phase and Three - Phase Distribution Transformers, Types ONAN and LNAN;

2.6.3.21(20) CAN/CSA C22.1 & C22.2 Canadian Electrical Code as adopted in British Columbia;

2.6.3.21(21) CSA - C22.3 No. 1, Overhead Systems;

2.6.3.21(22) CSA C9, Dry Type Transformers;

2.6.3.21(23) CSA B44 Safety Code for Elevators and Escalators.

2.6.3.21(24) CSA B44 Safety Code for Elevators and Escalators, Appendix E.

2.6.3.21(25) CSA/CAN3 - C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 V;

2.6.3.21(26) CSA S304.1, Design of Masonry Structures.

2.6.3.21(27) CSA S832 Guidelines for Seismic Risk Reduction of Operational and Functional Components of Buildings;

2.6.3.21(28) CSA Standard Z432 Safeguarding and Machinery.

2.6.3.21(29) CSA Z314.8 Decontamination of Reusable Medical Devices;

2.6.3.21(30) CSA Z314.23 Chemical Sterilization of Reusable Medical Devices;

2.6.3.21(31) CSA Z314.3 Effective Sterilization in Health Care Settings by the Steam Process;

2.6.3.21(32) CSA Z317: Infection Control during Construction, Renovation or Maintenance of Health Care Facilities;

2.6.3.21(32)a. CSA Z317 complements the standards and codes specified in Schedule 1 by providing overarching design principles and referencing specific standards and codes that are appropriate for healthcare facility design.

2.6.3.21(32)a.1 The Design-Builder will refer to CSA Z317 for guidance to resolve issues not otherwise addressed in Schedule 1;

2.6.3.21(32)a.2 The Design-Builder will comply with any minimum standards and codes referenced in CSA Z317;

2.6.3.21(32)a.3 The Design-Builder will comply with all infection control provisions set out in CSA Z317;

2.6.3.21(32)a.4 The Design-Builder will comply with CSAZ32 Electrical Safety and Essential Electrical System in Health Care Facilities;

2.6.3.21(32)a.5 The Design-Builder will comply with CSA Z317.5-Illumination Systems in Health Care Facilities;

2.6.3.21(32)a.6 The Design-Builder will comply with Z318.5 Commissioning of Electrical Equipment and Systems in Health Care Facilities;

2.6.3.21(32)a.7 The Design-Builder will comply with CSA Z318.0: Commissioning of Health Care Facilities; and

2.6.3.21(32)a.8 The Design-Builder will comply with CSA Z462 – Workplace Electrical Safety.

2.6.3.21(33) CSA Z386 – Safe Use of Lasers in Health Care;

2.6.3.21(34) CSA Z8000: Canadian Health Care Facilities

2.6.3.21(34)a. CSA Z8000 complements the standards and codes specified in Schedule 1 by providing overarching design principles and referencing specific standards and codes that are appropriate for healthcare facility design.

2.6.3.21(34)b. The Design-Builder will:

2.6.3.21(34)b.1 refer to CSA Z8000 for design guidance to resolve issues not otherwise addressed in Schedule 1; and

2.6.3.21(34)b.2 comply with all infection control provisions set out in CSA Z8000.

2.6.3.21(35) Z32 - 15 Electrical Safety and Essential Electrical System in Health Care Facilities;

2.6.3.21(36) Z314.7 Steam sterilizers for Health Care Facilities;

2.6.3.21(37) Z317.1: Special Requirements for Plumbing Installations in Health Care Facilities;

2.6.3.21(38) Z317.2: Special Requirements for Heating, Ventilation, and Air - Conditioning (HVAC) Systems in Health Care Facilities;

2.6.3.21(39) Z317.5 Illumination Systems in Health Care Facilities;

2.6.3.21(40) Z317 - 10.09 Handling of waste materials in Health Care Facilities and Veterinary Health Care Facilities

2.6.3.21(41) Z317.11 Area requirements for Health Care Facilities;

2.6.3.21(42) Z318.0: Commissioning of Health Care Facilities;

2.6.3.21(43) Z318.1: Commissioning of HVAC Systems in Health Care Facilities;

2.6.3.21(44) Z318.5 Commissioning of Electrical Equipment and Systems in Health Care Facilities;

2.6.3.21(45) Z462 – Workplace Electrical Safety;

2.6.3.21(46) Z7396.1: Medical Gas Pipeline Systems – Part 1

2.6.3.21(47) Z9170 - 1: Terminal Units for Medical Gas Pipeline Systems – Part 1.

2.6.3.22 Code Plus: Physical Design Components for an Elder Friendly Hospital.

2.6.3.23 FGI Guidelines for Design and Construction of Health Care Facilities (Electrical, Security, Lighting, Communication reference section).

2.6.3.24 CTI (Cooling Tower Institute) Standard STD-201.

2.6.3.25 ECABC Seismic Restraint Standards Manual.

2.6.3.26 Fire Underwriter Survey – Water Supply for Public Fire Protection.

2.6.3.27 Government of Canada's publication, Canadian Biosafety Standard.

2.6.3.28 Guidelines for Design and Construction of Health Care Facilities.

2.6.3.29 ICAO / Annex 14, Volume II.

2.6.3.30 IEEE

2.6.3.30(1) 802.1 series for Interworking, Security, Audio/Video Bridging and Data Centre Bridging;

2.6.3.30(2) 802.3 series of Ethernet Standards;

2.6.3.30(3) 802.11 series of Wireless Standards;

2.6.3.30(4) IEEE 519 - 1992 Harmonic Limits; and

2.6.3.30(5) IEEE C2 National Electrical Safety Code.

2.6.3.30(6) IEEE C57.19.91, IEEE Standard test code for dry - type distribution and power transformers.

2.6.3.31 Illuminating Engineering Society of North America Lighting Handbook - Reference & Application.

2.6.3.31(1) A23.3 (R2010) – Design of Concrete Structures;

2.6.3.32 Master Floor Covering Standards Institute.

2.6.3.33 Master Painters Institute Architectural Specification Standards Manual.

2.6.3.34 Master Municipal Construction Document (MMCD) and MMCD supplemental specifications, as authored or adopted by the applicable municipal authorities having jurisdiction.

2.6.3.35 Ministry of Health — Province of British Columbia Provincial Quality, Health & Safety Standards and Guidelines for Secure Rooms in Designated Mental Health Facilities under the B.C. Mental Health Act.

2.6.3.36 Ministry of Transportation and Infrastructure (MoTI) Standard Specifications for Highway Construction (latest edition).

2.6.3.37 NAPRA - National Association of Pharmacy Regulatory Authorities (NAPRA) Model and Guidance Standards for Non-Sterile Preparations, Non-Hazardous Sterile Preparations and Hazardous Sterile Preparations.

2.6.3.38 NEMA WC7 ICEA S 66 524, Cross Linked Polyethylene Wire and Cable for Transmission and Distribution.

2.6.3.39 NEMA VE 1, Metal Cable Tray Systems.

2.6.3.40 NEMA PB2.2, Application Guide for Ground Fault Protection Devices for Equipment.

2.6.3.41 NETA

2.6.3.41(1) ATS International Electrical Testing Association (Acceptance Testing Specifications);

2.6.3.41(2) MTS Standards for Maintenance Testing; and

2.6.3.41(3) UL 1069 Hospital Signalling and Nurse Call Equipment.

2.6.3.42 NFPA (National Fire Protection Association)

2.6.3.42(1) 10: Standard for Portable Fire Extinguishers;

2.6.3.42(2) 13: Standard for Installation of Sprinkler Systems;

2.6.3.42(3) 14: Standard for Installation of Standpipe and Hose Systems;

2.6.3.42(4) 17: Standard for Dry-Chemical Extinguishing Systems;

2.6.3.42(5) 20: Standard for the Installation of Stationary Pumps for Fire Protection;

2.6.3.42(6) 25: Standard for the Inspection, Testing and Maintenance of Water Based Fire Protection;

2.6.3.42(7) 30: Flammable and Combustible Liquids Code;

2.6.3.42(8) 55: Compressed Gases and Cryogenic Fluids Code;

2.6.3.42(9) 56F: Non-flammable Medical Gas System;

2.6.3.42(10) 70: National Electrical Code;

2.6.3.42(11) 70B: Recommended Practice for Electrical Equipment Maintenance;

2.6.3.42(12) 90A: Standard for Installation of Air Conditioning and Ventilation Systems;

2.6.3.42(13) 92A: Standard for Smoke Control Systems Utilizing Barriers and Pressure Differences;

2.6.3.42(14) 96: Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations;

2.6.3.42(15) 99: Heath Care Facilities Code;

2.6.3.42(16) 101: Life Safety Code;

2.6.3.42(17) 214: Standard on Water-Cooling Towers;

2.6.3.42(18) 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; and

2.6.3.42(19) NFPA 20, Stationary Fire Pumps for Fire Protection.

2.6.3.43 Provincial Hand Hygiene Group – Best Practices for Hand Hygiene Facilities & Infrastructure in Healthcare Settings; http://www.health.gov.bc.ca/library/publications/year/2012/best-practice-guidelines-handhygiene.pdf

2.6.3.44 SCAQMD Rule 1168, Adhesive and Sealant Applications.

2.6.3.45 Sheet Metal and Air Conditioning Contractors National Association Inc. (SMACNA) Manuals.

2.6.3.46 South Coast Air Quality Management District (SCAQMD).

2.6.3.47 Sustainability

2.6.3.47(1) Advanced Energy Guide for Hospitals and Healthcare Facilities.

2.6.3.47(2) ASHRAE Guideline 0 - 2019 – The Commissioning Process;

2.6.3.47(3) ASHRAE Guideline 1.1 - 2007 – HVAC & R Technical Requirements for the Commissioning process;

2.6.3.47(4) ASHRAE 110 - 2016: Method of Testing Performance of laboratory Fume Hoods;

2.6.3.47(5) ASHRAE 170 - 2017 Ventilation of Health Care Facilities;

2.6.3.47(6) ASHRAE Green Healthcare Construction Guidance Statement;

2.6.3.47(7) ASHRAE Standard 189.1 - Standard for the Design of High - Performance Green Buildings;

2.6.3.47(8) ASHRAE Standard 189.3– Design, Construction, and Operation of Sustainable High - Performance Health Care Facilities

2.6.3.47(9) ASHRAE System Design Manual for Hospitals and Clinics; and

2.6.3.47(10) BC Hydro High Performance Building Program;

2.6.3.47(11) Building Materials for the Environmentally Hypersensitive, CMHC;

2.6.3.47(12) BOMA (Building Owner Authority and Managers Association) Go Green Program;

2.6.3.47(13) Canadian Building Green Hospitals Checklist - Canadian Coalition for Green Health Care;

2.6.3.47(14) Canada Green Building Council (CaGBC)

2.6.3.47(14)a. LEED Reference Guide for green Building design and Construction – Healthcare Supplement 2009 Edition

2.6.3.47(15) Green Globes – Environment Assessment for New Buildings;

2.6.3.47(16) Healthy Built Environment (HBE) Linkages Toolkit Version 2.0; and

2.6.3.47(17) Natural Resources Canada Energy Innovators Initiative;

2.6.3.47(18) S16 - Design of Steel Structures;

2.6.3.47(19) S136 - Design of Cold Formed Steel Members;

2.6.3.47(20) S157 (R2010) – Strength Design in Aluminum;

2.6.3.47(21) S304.1 (R2010) - Masonry Design for Buildings;

2.6.3.47(22) S478 (R2019) Guideline on Durability of Buildings;

2.6.3.47(23) S524 Standards for the Installation of Fire Alarm Systems; and

2.6.3.47(24) S537 Standards for Verification of Fire Alarm Systems.

2.6.3.47(25) S832 (R2011) – Seismic Risk Reduction of Operational and Functional Components (OFCS of buildings);

2.6.3.47(26) Sustainable and Climate - Resilient Health Care Facilities Toolkit.

2.6.3.47(27) Sustainable Health Care Architecture –by Robin Guenther and Gail Vittori;

2.6.3.47(28) The Green Guide for Health Care;

2.6.3.47(29) United States Green Building Council – LEED V4 BD+C: HC;

2.6.3.47(30) W186 - M1990 (R2002) - Welding of Reinforcing Bars in Reinforced Concrete Construction;

2.6.3.48 Terrazzo Tile and Marble Association of Canada.

2.6.3.49 Underwriters Laboratories of Canada (ULC).

2.6.3.49(1) CAN/ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction and Materials.

2.6.3.50 WorkSafe BC Regulations and Guidelines, including the following:

2.6.3.50(1) Illumination

2.6.3.50(1)a. Part 4, General Conditions, Section 4.64 –4.69.

2.6.3.50(2) HVAC

2.6.3.50(2)a. Part 4, General Conditions, Indoor Air Quality, Sections 4.70 – 4.80;
2.6.3.50(2)b. Part 4, General Conditions, Environmental Tobacco Smoke, Sections 4.81 – 4.82;
2.6.3.50(2)c. Part 5, Flammable and Combustible Substances, Section 5.35;
2.6.3.50(2)d. Part 5, Controlling Exposure, Section 5.56;
2.6.3.50(2)e. Part 5, Ventilation, Sections 5.60-5.71; and
2.6.3.50(2)f. Part 30, General Requirements, Sections 30.4, 30.5, 30.7, 30.8-30.12

2.6.3.50(3) Ergonomics

2.6.3.50(3)a. Part 4, General Conditions, Ergonomics (MSI) Requirements, Sections 4.46 – 4.53; and
2.6.3.50(3)b. Guidelines Part 4 – Ergonomics (MSI) Requirements Update 2006, G4.46 – 4.53(2).

2.6.3.50(4) Emergency Eyewash / Showers

2.6.3.50(4)a. Part 5, Chemical Agents and Biological Agents, Definitions, Section 5.1;
2.6.3.50(4)b. Part 5, Chemical Agents and Biological Agents, Emergency Washing Facilities, Sections 5.85 – 5.96;
2.6.3.50(4)c. Guidelines Part 5, Emergency Washing Facilities, Issued 1999; and
2.6.3.50(4)d. Guidelines Part 30, General Requirements, Plumbing, G30.4, Issued 1999.

2.6.3.50(5) Fall Protection

2.6.3.50(5)a. Part 4, General Conditions, Work Areas Guards and handrails, Sections 4.54 – 4.63;
2.6.3.50(5)b. Part 11, Fall Protection, Section G11.1 – G11.10(0.1).

2.6.3.50(6) Emergency Response

2.6.3.50(6)a. Part 4, General Conditions, Emergency Preparedness and Response, 4.13 – 4.18.

2.6.3.50(7) Eating Areas / Washrooms / Change Areas / Unsafe Water

2.6.3.50(7)a. Part 4, General Conditions, Occupational Environment Requirements, Section 4.84 – 4.87.

2.6.3.50(8) Electrical Safety

2.6.3.50(8)a. Part 4, General Conditions, Buildings, Structures, Equipment and Site Conditions, Conformity to Standards, Section 4.4; and

2.6.3.50(8)b. Part 19, Electrical Safety, Sections 19.1 – 19.9.

2.6.3.50(9) Radiation Safety

2.6.3.50(9)a. Division 3 Radiation Exposure (included ionizing and non- ionizing radiation) Section 7.18 – 7.24 Guidelines Part 7 – Division 3 Radiation Exposure G7.18 – G7.19 (4)-2;

2.6.3.50(9)b. BCICA Quality Standards Manual for Mechanical Insulation;

2.6.3.50(9)c. TIAC (Thermal Insulation Association of Canada) standards;

2.6.3.50(9)d. Canadian Council on Health Services Accreditation Program, Latest Edition;

2.6.3.50(9)e. Ministry of Health — Province of British Columbia Provincial Quality, Health & Safety Standards and Guidelines for Secure Rooms in Designated Mental Health Facilities under the B.C. Mental Health Act; and

2.6.3.50(9)f. Health Canada Safety Code 35: Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities.

2.6.3.51 Northern Health IMIT Communications Infrastructure Standard 1.5.

2.7 Coordination and Project Control

2.7.1 The Design-Builder will coordinate the progress of the Work, Progress Schedules, Submittals, the use of the Site, access to the Site, temporary utilities, construction facilities and controls, and the Work of all sections of this Schedule to ensure the efficient and orderly installation of interdependent construction elements.

2.7.2 Coordinate the Work of the various sections having independent responsibilities for installing, connecting to, and placing in service utilities and equipment.

2.7.3 Coordinate space requirements, supports, and the installation of mechanical, electrical, IMIT, and security work including all systems and services required for the installation of new services in the Facility. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs.

2.7.4 In finished areas, conceal pipes, ducts and wiring in floors, except as indicated in Section 5.1.1.6, walls, and ceilings. Coordinate locations of fixtures and outlets with finished elements and the Authority's requirements.

2.7.5 Coordinate the commissioning of the Work of separate sections in preparation for Substantial Completion.

2.7.6 Coordinate the completion and clean-up of the Work of separate sections in preparation for Final Completion.

2.7.7 Coordinate the move with the Authority.

2.7.8 Coordinate the demolition of the Existing Stuart Lake Hospital with the Authority to minimize impact on clinical operations, and access/egress to/from the Building.

2.8 Construction Documents

2.8.1 Progressive Submittals

2.8.1.1 The Design-Builder is to make submissions to the Authority in accordance with Schedule 2 Review Procedure (Construction Documents).

2.8.1.2 The Design-Builder will provide an online document management system accessible to the Authority for the design stage and through the end of the construction and warranty period. The online document management system will include functionality to allow the Authority's on-going access to records after the warranty period.

2.8.1.3 Refer to the corresponding sections and tables within this Section for minimum list of documents to be submitted at each stage.

2.8.1.3(1) Shop Drawings will be reviewed by the Design Builder's consultants and then copies of the reviewed Shop Drawings will be submitted to the Authority.

2.8.1.3(2) Submit Shop Drawings per the following list:

01 35 33	Infection Control Procedures
01 50 00	Temp Facilities & Controls
03 10 00	Concrete Forming and Accessories
03 20 00	Concrete Reinforcing
03 30 00	Cast-in-Place Concrete
03 53 00	Concrete Topping
04 21 00	Clay Unit Masonry Assemblies
04 22 00	Concrete Unit Masonry
05 10 00	Structural Steel
05 31 00	Steel Decking
05 45 00	Load Bearing Steel Studs (Metal Support Assemblies)
05 50 00	Metal Fabrications
06 10 00	Rough Carpentry
06 20 00	Finish Carpentry
06 40 00	Architectural Woodwork
07 13 00	Below Grade Sheet Waterproofing
07 14 16	Cold Fluid Applied Waterproofing
07 16 16	Crystalline Waterproofing
07 18 13	Pedestrian Traffic Coatings
07 18 16	Vehicular Traffic Coatings
07 21 00	Building Insulation
07 21 19	Foamed in Place Polyurethane Insulation
07 21 29	Spray Applied Mineral Fibre Insulation
07 25 00	Weather Barriers
07 42 13	Metal Wall Panels
07 42 63	Zinc Wall Panel Assemblies
07 43 00	Composite Wall Panels
07 43 23	Ext Grade Wood Composite Panels
07 44 19	Terra Cotta Clay Wall Panel Assemblies
07 46 43	Mineral Fibre Reinforced Composite Panels
07 52 16	SBS Membrane Roofing
07 62 00	Sheet Metal Flashing & Trim
07 81 00	Applied Fireproofing
07 81 23	Intumescent Fireproofing
07 84 00	Firestopping & Smoke Seals
07 92 00	Joint Sealants

08 11 00	Metal Doors & Frames
08 21 00	Wood Doors
08 31 00	Access Doors & Panels
08 33 00	Coiling Doors and Grilles
08 34 73	Sound Control Door Assemblies
08 35 13	Folding Security Grilles
08 41 13	Aluminum Framed Entrances and Storefronts
08 42 29	Automatic Entrances
08 44 13	Glazed Aluminum Curtain Walls
08 71 00	Door Hardware
08 74 00	Access Control Hardware
08 81 00	Glass & Glazing
08 90 00	Louvres and Vents
09 21 16	Gypsum Board Assemblies
09 30 00	Ceramic Tiling
09 51 00	Acoustical Ceilings
09 65 00	Resilient Flooring
09 67 00	Fluid Applied Flooring
09 68 13	Tile Carpeting
09 84 00	Acoustic Room Components
09 90 00	Painting & Coating
10 11 00	Visual Display Surfaces
10 14 00	Signage
10 21 14	Toilet Compartments
10 21 23	Cubicle Curtain and Track
10 26 00	Wall and Door Protection
10 28 13	Toilet and Bath Accessories
10 44 00	Fire Protection Specialties
10 51 00	Metal Lockers
10 71 13	Exterior Sun Control Devices
11 24 23	Fall Arrest Equipment
11 40 00	Food Services Equipment
12 24 00	Window Coverings
12 36 00	Countertops
12 48 16	Entrance Floor Grilles
12 50 00	Furniture
12 93 00	Site Furnishings
12 93 33	Manufactured Planters
14 21 13	Electric Traction Elevators.
20 05 13	Motors Starters and Wiring
20 05 14	Adjustable Frequency Drives
20 05 16	Flex Connections, Expansion Joints, Anchors and Guides
20 05 18	Flow and Energy Meters
20 05 19	Indicating Gauges
20 05 23	Valves
20 05 29	Hangers and Supports
20 05 48	Vibration and Seismic Controls

20 05 49	Seismic Restraint Systems
20 05 53	Identification Equipment Insulation
20 07 19	Piping Insulation
20 08 01	Start-Up and Performance Testing Reporting
21 13 13	Wet Pipe Sprinkler System
21 13 16	Dry Pipe Sprinkler System
21 13 19	Preaction Sprinkler System
22 10 10	Plumbing Pumps
22 11 16	Domestic Water Piping
22 33 13	Domestic Water Heaters
22 42 01	Plumbing Specialties
22 42 03	Plumbing Fixtures and Trim
22 63 13	Medical Gas Systems
23 11 13	Facility Fuel Oil Piping
23 11 33	Natural Gas Systems
23 13 13	Oil Storage Tanks
23 13 15	Fuel Oil Pumps
23 13 19	Fuel Filtration Systems
23 15 13	Fuel Management System
23 21 11	Water Specialties-Heating and Cooling
23 21 13	Steel Pipe and Fittings – Heating and Cooling
23 21 23	Pumps – Heating and Cooling
23 22 11	Steam Specialties
23 22 13	Steel Pipe and Fittings – Steam and Condensate
23 22 23	Central Plant Condensate Receiver
23 25 13	HVAC Water Treatment Systems
23 34 05	Fans
23 36 13	Terminal Boxes
23 37 13	Grilles, Registers and Diffusers
23 51 16	Fabricated Breeching and Accessories
23 51 19	Fabricated Stacks
23 51 33	Insulated Sectional Chimneys
23 52 16	Packaged Hot Water Boiler - Condensing
23 52 39	Packaged Boiler – Fire Tube
23 53 16	Deaerator
23 57 13	Heat Exchangers
23 61 09	Refrigerant Detection System
23 62 23	Process Cooling Package Chiller - Scroll
23 64 16	Packaged Chiller - Centrifugal
23 65 13	Cooling Towers
23 65 15	Indirect Air-Side Economizer Recirculation Cooling Unit
23 73 10	Air Handling Units
23 74 33	Makeup Air Unit
23 81 26	Ducted Split Air Conditioners
23 82 19	Electric Reheat Coils
23 82 39	Unit Heaters
23 84 13	Humidifiers

25 05 01	EMC General Requirements
31 00 00	Earthwork
31 23 01	Excavating Trenching & Backfilling
32 01 90.33	Tree Protection
32 11 16.1	Granular Subbase
32 11 23	Granular Base
32 12 13.2	Asphalt Prime
32 12 16	Asphalt Paving
32 13 13	Portland Cement Concrete Pavement
32 14 13	Precast Concrete Unit Paving
32 17 23	Painted Pavement Markings
32 18 16	Synthetic Resilient Surfacing
32 80 00	Irrigation
32 91 13	Growing Medium Preparation
32 92 93	Sodding
32 93 00	Planting
33 11 01	Waterworks
33 30 01	Sanitary Sewers
33 40 01	Storm Sewers
33 44 01	Manholes and Catch basins

2.8.1.4 Samples

2.8.1.4(1) Each sample that has reached “reviewed” status will be retained on the job site until final completion of the project.

2.8.1.4(2) Provide a sample board indicating exterior material finishes submittal by the Authority.

2.8.1.4(3) provide a master colour sample palette and sample board of interior finishes for approval by the Authority

2.8.1.5 All equipment plans will show installation, removal, and maintenance clearances.

2.8.1.6 Demolition Plan: Provide drawings, specifications, diagrams and any other documents required for the demolition of the Existing Hospital and related site work.

2.8.2 Architectural Construction Documents

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawings
Drawing Content					
Site plans, context site plans, sections, and details – includes coordination with civil works, hard landscape features and site servicing	✔	✔	✔	✔	✔
Title sheet, legends, drawing list, key plans, and assembly listings	✔	✔	✔	✔	✔
Assembly Schedule	✔	✔	✔	✔	✔
Floor plans, penthouse, and roof plans	✔	✔	✔	✔	✔
Reflected ceiling plans	✔	✔	✔	✔	✔

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawings
Exterior elevations	✔	✔	✔	✔	✔
Interior elevations	-	✔	✔	✔	✔
Building sections, transverse, longitudinal	✔	✔	✔	✔	✔
Wall sections		✔	✔	✔	✔
Large scale plans, lobbies, special purpose spaces, conference rooms, kitchens	✔	✔	✔	✔	✔
Large scale plans Patient Bedrooms and washrooms	✔	✔	✔	✔	✔
Large scale plans Resident Bedrooms and washrooms	✔	✔	✔	✔	✔
Plan and section details	-	✔	✔	✔	✔
Vertical movement – plans, sections, and details	✔	✔	✔	✔	✔
Special elements, furnishings, signage	-	✔	✔	✔	✔
Schedules, doors, windows, hardware, finishes.	-	✔	✔	✔	✔
Millwork – plans, sections, and details	-	✔	✔	✔	✔
Code Compliance - Fire Separations (vertical and horizontal), Exiting Travel Distance Plans, Occupant loads, and exit width capacities	✔	✔	✔	✔	✔
Code Compliance Report	✔	✔	✔	✔	✔
Specifications					
Table of Contents	-	✔	✔	✔	-
General Requirements	-	✔	✔	✔	-
Existing Conditions – if any	-	✔	✔	✔	-
Concrete	-	✔	✔	✔	-
Masonry	-	✔	✔	✔	-
Metals	-	✔	✔	✔	-
Wood, Plastics and Composites	-	✔	✔	✔	-
Thermal and Moisture Protection	-	✔	✔	✔	-
Openings	-	✔	✔	✔	-
Door Hardware; Door program and functioning started in coordination with requirements for Electronic Safety and Security	-	✔	✔	✔	-
Finishes	-	✔	✔	✔	-
Specialties	-	✔	✔	✔	-
Equipment	-	✔	✔	✔	-
Furnishings	-	✔	✔	✔	-
Special Construction – if any	-	✔	✔	✔	-
Conveying Equipment – Elevators	-	✔	✔	✔	-
Other					
Colour Boards Master Colour Palette	-	✔	✔	✔	-
Sample boards	-	✔	✔	✔	-
Presentation to Patient	-	✔	✔	✔	-
3-Dimensional renderings	✔	✔	✔	✔	-
Submittals					
Vibration Monitoring Details	-	-	-	✔	-
Noise Control Plan	-	-	-	✔	-

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawings
Wayfinding	-	-	-	✔	-

2.8.2.1 The Design-Builder will provide Construction Documents that include the following items as required to achieve the percentage of completion for the submissions.

2.8.2.2 The Construction Documents will clearly indicate:

2.8.2.2(1) Floor elevations (geodetic, on floor plans, sections, and elevations) complete with floor level changes, stairs, and ramps; and

2.8.2.2(2) Floor finishing tolerances, slopes for drainage, drain openings will be identified.

2.8.2.3 Code Construction Documents

2.8.2.3(1) Code Compliance Report will contain:

2.8.2.3(1)a. BCBC Data Matrix including design considerations; and

2.8.2.3(1)b. Fire and Life Safety Data Summary (may be illustrated graphically).

2.8.2.3(2) When applicable, Alternative Solutions will contain:

2.8.2.3(2)a. Any operational impacts of the Alternate Solution; and

2.8.2.3(2)b. Any maintenance impacts of the Alternate Solution.

2.8.2.4 Assembly Schedules will contain:

2.8.2.4(1) Assemblies and their make-up including a graphical section and a list of each material layer for each distinct opaque wall, roof, soffit, balcony, deck, patio, floor, ceiling, and transparent glazing assembly.

2.8.2.4(2) Effective clear field R-values and U-value for each exterior opaque wall, roof, soffit, deck, floor, ceiling and transparent glazing assembly.

2.8.2.4(3) All required fire resistance ratings and acoustical ratings.

2.8.2.5 Plans, Sections and Elevations will contain:

2.8.2.5(1) The outlines of the exterior walls and partitions in relation to the structural framework complete with graphical representation of materials cross- references to partition types and dimensions;

2.8.2.5(2) Clearly indicated functions of each building material component and rain screen construction component, e.g. air barrier, vapour barrier, moisture barrier, acoustical barrier, security barrier, fire resistance, thermal resistance;

2.8.2.5(3) The location of doors and windows, and other openings complete with cross-references to door, window, and hardware schedules;

2.8.2.5(4) The location of fixtures and equipment for washrooms, kitchens, conference rooms, equipment/mechanical/electrical/communications rooms complete with cross-references to equipment schedules, notes, and dimensions;

2.8.2.5(5) Clearly indicated barrier-free access, path of travel, clearances complete with notes and dimensions;

2.8.2.5(6) Designate room name and number of interior space. Maintain Authority room reference number as stated in the Schedule of Accommodation. Propose a strategy for final room numbering for review and coordination with the Authority per section 2.12 soon after the 60% submittal. Final numbering will be resolved, coordinated and shown on the 95% submittal;

2.8.2.5(7) Graphically represent construction and finish materials for walls and floors;

2.8.2.5(8) Illustrate built-in furniture, millwork, and equipment;

2.8.2.5(9) Graphically illustrate fire separation(s), acoustic separation(s), security separation(s); and

2.8.2.5(10) Gridlines and Gridlines dimensions.

2.8.2.6 Reflected Ceiling Plans will contain:

2.8.2.6(1) Graphical representation of ceiling finishes, equipment (such as ceiling mounted Patient lifts), luminaires complete with cross-reference to lighting, security, sprinkler, HVAC, fire alarm, and ceiling heights;

2.8.2.6(2) Clearly indicated bulkheads complete with graphical representation of construction and materials, notes, ceiling heights and dimensions; and

2.8.2.6(3) Clearly indicated graphical representation of systems and equipment interference for structural, mechanical, electrical, telecommunications, security complete with cross-reference notes and dimensions.

2.8.2.7 Penthouse and Roof Plans will contain:

2.8.2.7(1) The location of fixtures and equipment for mechanical, electrical, maintenance complete with notes and dimensions;

2.8.2.7(2) Clearly indicated roof penetrations for equipment, hatches, access paver paths, fall arrest anchors, antennae supports/ties; and

2.8.2.7(3) Graphically represent construction and finish materials for roof.

2.8.2.7(4) Drainage strategy including location of drains and overflows, as well as direction of roof slopes to prevent ponding

2.8.2.8 Exterior Elevations will contain:

2.8.2.8(1) The location of doors and windows, borrowed lights, and other openings;

2.8.2.8(2) Graphical representation of construction and finish materials, including a legend and notations;

2.8.2.8(3) Scuppers, downs spouts or drainage systems, hose bibs and electrical outlet and exterior light locations; and

2.8.2.8(4) Landscape treatment proposed in relation to exterior and windows.

2.8.2.9 Interior Elevations will contain:

2.8.2.9(1) The location of doors, windows, and other openings; all wall mounted equipment, mechanical, electrical, IMIT devices, security devices, dimensions of vertical changes in material, room numbers;

2.8.2.9(2) Graphical representation of construction and finish materials including a legend and notations is to be provided: and

2.8.2.9(3) Clearly indicate wall finishes, colour choices and details.

2.8.2.10 Building Sections will contain:

2.8.2.10(1) Clearly indicated floor construction/assemblies, floor elevations, dimensions, and ceiling lines; and

2.8.2.10(2) Clearly indicated graphical representation of systems and equipment interference for structural, mechanical, electrical, telecommunications, security complete with cross-reference notes and dimensions.

2.8.2.11 Wall Sections (scale 1:20) will contain:

2.8.2.11(1) Clearly indicated detail location tags and references; wall type notations; and critical dimensions; and

2.8.2.11(2) Clearly indicated graphical representation of systems and equipment interference for structural, mechanical, electrical, telecommunications, security complete with cross- reference notes and dimensions.

2.8.2.12 Provide large Scale Plans and interior elevations to 1:50 or larger scale for the following spaces:

2.8.2.12(1) The following spaces, including all rooms related to them as shown in the Space Tables in Appendix 1A – Clinical Specifications:

2.8.2.12(1)a. Clinical Workstations (Nursing Station);
2.8.2.12(1)b. Medication Room;
2.8.2.12(1)c. Soiled Utility Room;
2.8.2.12(1)d. Clean Utility/Supply Room;
2.8.2.12(1)e. Medical Office Assistant Room;
2.8.2.12(1)f. Exam / Treatment Room;
2.8.2.12(1)g. Medical Inpatient Unit: – LDRP;
2.8.2.12(1)h. Medical Inpatient Unit: – Medical Inpatient Bedroom;
2.8.2.12(1)i. Medical Inpatient Unit: – Medical Inpatient Bedroom-Bariatric;
2.8.2.12(1)j. Long Term Care: – Single resident room;
2.8.2.12(1)k. Long Term Care: – Single resident room-Bariatric;
2.8.2.12(1)l. Medical Inpatient Unit: Patient activation area;
2.8.2.12(1)m. Emergency Department – Resuscitation/Trauma Bay;
2.8.2.12(1)n. Emergency Department – Exam/Treatment Room;
2.8.2.12(1)o. Housekeeping Closet; and
2.8.2.12(1)p. Ambulatory Services – Exam/Treatment Room.

2.8.2.12(2) Non-programmed spaces not shown in Appendix 1A [Clinical Specifications]

2.8.2.12(2)a. Mechanical Rooms;
2.8.2.12(2)b. Electrical Rooms; and
2.8.2.12(2)c. IMIT Rooms.

2.8.2.13 Vertical movement plans, sections and details will contain clearly indicated rise and run, headroom clearances, landing elevations, vertical and horizontal dimensions, railing, and guards complete with barrier-free clearances, and notes.

2.8.2.14 Millwork plans, sections and details will clearly indicate millwork layout, section elevations, and details complete with material choices, notes, anddimensions.

2.8.2.15 Special elements, furnishings, systems furniture, signage will contain:

2.8.2.15(1) Detailed graphical representations of furniture, systems furniture, signage in relation to exterior and interior walls, structural framework, material connections and interrelationships complete with cross- reference to schedules, notes, materials, and dimensions;

2.8.2.15(2) Detailed location of fixtures and equipment for telecommunications, IMIT, security complete with cross-reference to equipment schedules, notes, and dimensions; and

2.8.2.15(3) Base-building elements will be graphically distinct from special elements.

2.8.2.16 Schedules (Doors, Hardware, Windows, Room Finishes, Furniture) will contain:

2.8.2.16(1) Clearly indicated material, size, fire / thermal / acoustic /security resistance rating, colour, texture, pattern; and

2.8.2.16(2) Schedules may be graphical and/or tabular in drawing or specification format.

2.8.2.17 Room Data Sheets

2.8.2.18 Handrail and wall protection plans. Prepare and propose to the Authority locations and types of all handrails, bumper guards, wall protection, and consult with the Authority to determine locations and types .

2.8.2.19 Accommodations for future expansion will be clearly indicated on site plans and floor plans including the gross area of the expansion zone.

2.8.2.20 Building envelope maintenance and renewals plan to cover a 50-year service life.

2.8.3 Civil Construction Documents Percentage of drawings completed

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Drawing Content					
Title sheet, typical sections, and details Existing Conditions	✔	✔	✔	✔	✔
Erosion and Sediment Control Temporary Service during Construction	✔	✔	✔	✔	✔
Site Coordination Layout, turning templates for emergency and service vehicles	✔	✔	✔	✔	✔
Storm Water Drainage Plan	✔	✔	✔	✔	✔
Grading, site servicing, roads, parking lot(s), hardscape, and streetlights	✔	✔	✔	✔	✔
Deep and Shallow Utilities Plan and profile, on and off site	✔	✔	✔	✔	✔
Retaining Walls Plan and Profile (< 1.0 m high)	✔	✔	✔	✔	✔
Sections and details	✔	✔	✔	✔	✔
Pavement Marking and Signage Plans	✔	✔	✔	✔	✔
Constructing phasing	✔	✔	✔	✔	✔
Offsite Drawings	✔	✔	✔	✔	✔

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Specifications					
Clearing, Grubbing & Stripping	✔	✔	✔	✔	-
Earthworks	✔	✔	✔	✔	-
Site Servicing	✔	✔	✔	✔	-
Water, Sanitary Sewer and Storm Sewer	✔	✔	✔	✔	-
Manholes and Catchbasins	✔	✔	✔	✔	-
Watermain Flushing, Pressure Testing & Disinfection Plan	✔	✔	✔	✔	-
Base and Sub Base Coarse Aggregates	✔	✔	✔	✔	-
Asphalt Paving	✔	✔	✔	✔	-
Exterior Improvements	✔	✔	✔	✔	-
Cast-in-Place Concrete	✔	✔	✔	✔	-
Pavement Markings	✔	✔	✔	✔	-
Submittals					
Monthly Site Maintenance Inspection per Section 8.4.8.5				✔	

2.8.3.1 The Design-Builder will provide diagrams with Construction Documents describing:

2.8.3.1(1) How general traffic works during Construction; and

2.8.3.1(2) How parking stall allocation works during Construction in accordance to requirements in section 4.3.4.5.

2.8.3.2 Existing Conditions Drawing will contain all pertinent topographic information, contours at appropriate interval with spot elevations in clear legible format, all underground utilities including inverts and depths, size and type, borehole and test pit locations and elevations, existing and new survey monuments.

2.8.3.3 Erosion and Sediment Control Drawings will contain existing topographic information, contours at appropriate intervals with spot elevations, calculations for sizing of erosion and sediment control facilities, Design and layout of the Facility, stormwater discharge connection and location, quality measurement point and details of erosion and sediment control facilities.

2.8.3.4 Site Coordination and Layout Drawing will contain:

2.8.3.4(1) Horizontal and vertical control, the principal site elements to be constructed, survey monuments and/or nearby buildings or structures which may be used to show the relative location of the proposed structure of work, sufficient dimensions or coordinates that the exact location of proposed work is clearly identified, construction lay down area, relative locations of all below and above ground utilities (i.e. electrical, watermain, sanitary sewer, storm sewer.), site removals;

2.8.3.4(2) Demonstrated vehicle and pedestrian movements for all types of expected traffic to and from the Facility;

2.8.3.4(3) Grading Plan will contain the Building footprint and finished floor elevation, proposed grades with existing contours/grades provided in background in light font, drainage structures numbered, typical sections, dimensions, and proposed site development features, including pavement/curb, sidewalk type, and streetlight locations;

2.8.3.4(4) Deep and Shallow Utilities plan and profile will contain horizontal location and vertical depths of new, existing, and temporary services; utilities; manholes; drainage structures; valves; roof leader tie in points; location of foundation drainage (if required); structure data table; pipe load and capacities per BCBC;

2.8.3.4(5) Site Servicing Plan will include phasing plan for watermain flushing, pressure testing and disinfecting the services to the new Facility. Plan to be submitted and reviewed by the authority having jurisdiction for approval, either as part of the permit submittal or a separate meeting;

2.8.3.4(6) Storm Water Management Plan will contain catchment areas, existing storm sewer system, flow direction, calculations for pre-development and post-development flows, detention calculations, and best management practices; and

2.8.3.4(7) Offsite drawings will include all drawings and details required by the District to secure a Works and Services Agreement for the offsite works.

2.8.4 Structural Construction Documents

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Drawing Content					
Title Sheet, General Notes	✔	✔	✔	✔	✔
Typical Details	✔	✔	✔	✔	✔
Slab, Column, and Beam Schedules	✔	✔	✔	✔	✔
Foundation Plans	✔	✔	✔	✔	✔
Floor and Roof Framing Plans	✔	✔	✔	✔	✔
Sections and Details	✔	✔	✔	✔	✔
Wall and Bracing Elevations	✔	✔	✔	✔	✔
Wall Sections	✔	✔	✔	✔	✔
Specifications					
Concrete (Division 03)	✔	✔	✔	✔	-
Masonry (Division 04)	✔	✔	✔	✔	-
Metals (Division 05)	✔	✔	✔	✔	-
Wood (Division 06)	✔	✔	✔	✔	-
Piling (Division 31)	✔	✔	✔	✔	-
Submittals					
Bi-weekly Structural and Geo Technical Field Reports	-	-	-	✔	-
Shoring & Re-shoring	-	-	-	✔	-
Rebar Matting/Coring Layouts (to be determined with Authority on Site)	-	-	✔	✔	-

2.8.4.1 Title Sheet, General Notes, will contain:

2.8.4.1(1) General description of the structure, its main components, gravity load resisting and lateral load resisting systems;

2.8.4.1(2) Codes and standards, with dates of issue, to which the Design conforms;

2.8.4.1(3) Description of the lateral load resisting system will indicate values of Rd (ductility factor) and Ro (overstrength factor) used in the Design;

2.8.4.1(4) Importance factors used in the Design;

2.8.4.1(5) Design criteria indicating vertical design loads including dead and superimposed dead loads; occupancy live loads; snow loads (including drift); wind uplift loads; mechanical equipment loads; construction loads; Patient lift loads; special loading considerations;

2.8.4.1(6) Horizontal design loads indicated including seismic loads, wind loads, lateral earth pressures and hydrostatic pressures;

2.8.4.1(7) Loading plans showing area loads not covered by design criteria information such as planter and soil loads with an indication of maximum soil depth;

2.8.4.1(8) Geotechnical information used in the Design including reference to geotechnical report, footing or pile bearing capacities, site classification and site coefficients;

2.8.4.1(9) Concrete mix requirements indicating application, exposure classification, minimum 28-day compressive strength, and maximum aggregate size; and

2.8.4.1(10) Concrete cover requirements, based on weather and soil exposure, fire resistance rating, or chloride penetration.

2.8.4.2 Schedules as required for items such as columns, beams, slabs, walls, foundations, baseplates, and embed plates.

2.8.4.3 Foundation plans, fully coordinated with other consultant's drawings, will contain:

2.8.4.3(1) Gridlines and gridline dimensions;

2.8.4.3(2) Foundation types, sizes, and reinforcement, including strip footings, pad footings, rafts, piles and pile caps, soil anchors and grade beams. Foundations should be located relative to the supported structure. Indicatively show and detail steps in footings; indicate pile base and cut- off elevations. Indicate frost protection and adfreeze mitigation measures;

2.8.4.3(3) Interior slabs-on-grade including thickness, reinforcement, contraction joint requirements, and subgrade requirements including moisture barrier if required. Indicate step heights or top of slab elevations and ensure step conditions are sufficiently detailed. Show pits for elevators and mechanical openings;

2.8.4.3(4) Concrete walls including thickness and reinforcement. Clearly indicate shear walls and, if detailed elsewhere, ensure adequate referencing. Ensure wall corners, openings, intersections control joints, and construction joints are sufficiently detailed. Provide full height wall sections as required;

2.8.4.3(5) Concrete columns, pedestals and pilasters including dimensions and reinforcement, including tie arrangement details;

2.8.4.3(6) Steel columns including size and base plate details; and

2.8.4.3(7) Load bearing masonry and or wood / engineered stud walls if applicable, including stud sizes and spacing, plywood sheathing thickness and nailing requirements, masonry unit dimensions, reinforcement, and grouting. Provide sufficient details as required.

2.8.4.4 Floor and Roof Framing Plans, fully coordinated with other consultant's drawings, will contain:

2.8.4.4(1) Gridlines and gridline dimensions;

2.8.4.4(2) Concrete slabs including thickness, cambers, and reinforcement. Show all openings coordinated with other consultants. Indicate step heights or relative elevations. Ensure step conditions, slab edge conditions, construction joints, delay strips, and such are sufficiently detailed;

2.8.4.4(3) Concrete and masonry walls including thickness and reinforcement and wood frame walls including member sizes and spacing with plywood sheathing thickness and nailing noted. Clearly indicate shear walls and, if detailed elsewhere, ensure adequate referencing. Ensure wall corners, intersections, control, and construction joints are sufficiently detailed. Provide full height wall sections as required;

2.8.4.4(4) Concrete columns, pedestals and pilasters including size and reinforcement, including tie and column rebar arrangement details. Ensure that columns starting, stopping, and continuing are sufficiently detailed; ensure that offset column transitions are sufficiently detailed; Structural steel and timber columns will be likewise detailed;

2.8.4.4(5) Concrete beams including reinforcement and dimensions for beams of concrete, timber, and structural steel. Elevate concrete beams with complex reinforcement. Ensure beams are sufficiently detailed c/w connections as appropriate;

2.8.4.4(6) Detail concrete stairs, including throat thickness, reinforcement, and sufficient details for cast in place stairs. For precast concrete stairs provide sufficient seating details;

2.8.4.4(7) Steel deck with or without concrete topping including thicknesses, deck type, connection to supporting structure, and shear transfer elements. Ensure sufficient deck edges, mechanical openings, ledger angles, framing around openings, and structural requirements for support of mechanical equipment are adequately detailed;

2.8.4.4(8) Steel beams, open web steel joists and steel trusses, including member sizes or depths, spacing, embed plates where connected to concrete and cambers. Ensure all design forces and moments are provided for use by connection designer, open web steel joist designer and truss designer. Ensure steel girts and ledgers between levels are clearly called up. Provide elevations for members between levels if required for clarity;

2.8.4.4(9) Steel columns including size, base plate, embed plate and cap plate details;

2.8.4.4(10) Detail steel stairs, including stringer sizes and connection details; and

2.8.4.4(11) Wood frame, engineered lumber, heavy timber and pre-engineered; trusses for floor and roof construction if applicable including all member sizes and connections. This to also include all plywood sheathing and connections including those for diaphragm loading. Provide all design forces for beam and joist connections as well design forces for pre- engineered trusses to ensure that all elements, connections, and diaphragm forces are adequately detailed.

2.8.4.5 Elevations, fully coordinated with other consultants' drawings, for the following items:

2.8.4.5(1) Concrete masonry and wood frame wall or shear wall elevations as required to convey information not detailed on plan including complex areas of reinforcement, openings, shear wall zones, headers, and such;

2.8.4.5(2) Concrete beam elevations for beams with complex reinforcement;

2.8.4.5(3) Steel bracing elevations including member sizes, forces, and sufficient information for connection designer; and

2.8.4.5(4) Any other elevations deemed necessary to convey sufficient structural information.

2.8.4.6 Sections and details will contain information for all structural conditions not dealt with completely on plans, elevations, or schedules. Additional information includes, but is not limited to clarification of structural geometry, reinforcement, connection configurations, fasteners, and welding.

2.8.5 Mechanical Construction Documents

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Drawing Content					
Legends, regulatory data, drawing list, key plans	✔	✔	✔	✔	✔
Fire suppression – plans, sections, details	✔	✔	✔	✔	✔
Plumbing – plans, sections, details	✔	✔	✔	✔	✔
Heating and Cooling (Hydraulic) – plans, sections, details	✔	✔	✔	✔	✔
HVAC – plans, sections, details	✔	✔	✔	✔	✔
Integrated Automation – plans, sections, details Schematics and schedules, air and water flow diagrams, equipment schedules, control schematics, sequence of operations.	✔	✔	✔	✔	✔
Specifications					
General Requirements	✔	✔	✔	✔	-
Fire Suppression	✔	✔	✔	✔	-
Plumbing	✔	✔	✔	✔	-
Heating, Ventilating and Air Conditioning	✔	✔	✔	✔	-
HVAC Integrated Automation	✔	✔	✔	✔	-
Other					
Plumbing fixture matrix	✔	✔	✔	✔	-
Med gas outlet matrix	✔	✔	✔	✔	-
Measurement and verification matrix	✔	✔	✔	✔	-
Submittals					
Energy Model submittals in accordance with Schedule 9	✔	✔	✔	✔	✔
Flexibility of Expansion	-	-	-	✔	-
Expansion of Space	-	-	-	✔	-
Max Flow for Domestic Hot Water Supply	-	-	-	✔	-
Medical Gas Matrix	-	-	-	✔	-
Medical Gas Testing Reports	-	-	-	✔	-
Flue Study	-	-	-	✔	-
Ventilation Calculations	-	-	-	✔	-
Air Exchange Reports	-	-	-	✔	-
Indoor Air Quality Management Plan	-	-	-	✔	-
Metering Matrices submitted	✔	✔	✔	✔	-
Dispersion Study (Exhaust)	-	-	-	✔	-

2.8.5.1 Regulatory sheet – will contain (may be included on titlesheet):

2.8.5.1(1) Design load assumptions and calculations.

2.8.5.2 Fire Suppression, plans, sections, details will contain:

2.8.5.2(1) Design calculations for water flow with water supply flow data, fire pump (if required), and smoke control;

2.8.5.2(2) Sprinkler zoning including indication of dry pipe and pre-action systems;

2.8.5.2(3) Provisions to accommodate security hazard classifications;

2.8.5.2(4) Clearly indicated ceiling and slab elevations (geodetic) complete with level changes, bulkheads, beams;

2.8.5.2(5) The location of doors and windows, and other openings;

2.8.5.2(6) The location of "special fire hazard / load" conditions such as compact storage shelving, vaults, electronic data processing rooms;

2.8.5.2(7) The location of fixtures and equipment for washrooms, kitchens, conference rooms, equipment/mechanical/electrical/telecommunications rooms;

2.8.5.2(8) The designation (usually by room name and number) of interior spaces including sprinkler head type;

2.8.5.2(9) Graphic indication of fire separation(s), acoustic separation(s), security separation(s); and

2.8.5.2(10) Any specialist fire suppression elements required as part of an Alternative Solution

2.8.5.3 Plumbing, plans, sections, details will contain:

2.8.5.3(1) Design calculations for water supply including pressure, hot water heating, sanitary waste sizing and roof drainage;

2.8.5.3(2) Riser diagrams with flows indicated for domestic hot and cold water lines, waste, and vent lines; and

2.8.5.3(3) Heating and Cooling (Hydronic), plans, sections, details will contain:

2.8.5.3(3)a. Design calculations for water supply including pressure, hot water heating, glycol solution and chilled water;

2.8.5.3(3)b. Riser diagrams with flows indicated for hot, steam and chilled water lines; and

2.8.5.3(3)c. Equipment schedule.

2.8.5.4 Heating, cooling, and ventilation (HVAC) plans, sections, details will contain:

2.8.5.4(1) Design calculations for block loads for heating and refrigeration, system load and supply air calculations including minimum outside air to be admitted, system pressure static analysis at peak and minimum block loads, acoustical calculations, building heating, cooling and ventilation loads, flow and head calculations for pumping systems, sizing of fuel storage, distribution and vibration isolation;

2.8.5.4(2) HVAC piping layouts including valves complete with locations where temperature, pressure, flow, contaminant/combustion gases, vibration gauges and remote sensing is required;

2.8.5.4(3) HVAC duct layouts and true sizes (double line) including fire dampers and volume control dampers;

2.8.5.4(4) Layout of equipment rooms showing mechanical equipment including space for maintenance (filter replacement, valve adjustments) and removal / replacement of mechanical equipment (coils, heat exchangers, pumps, boilers, chiller tube bundles);

2.8.5.4(5) Roof plan with roof-mounted equipment and penthouses complete with indication of servicing and maintenance access;

2.8.5.4(6) HVAC outside air intake and exhaust air discharge including louvre sizes and locations relative to each other, ensuring security and acoustic concerns have been taken into consideration;

2.8.5.4(7) HVAC riser diagram(s), schematic flow and riser diagrams including airflow and water flow quantities and balancing for heating and cooling equipment, flow energy measuring devices for water and air systems. Clear indication of penetrations through rated wall, floor and roof assemblies complete with details;

2.8.5.4(8) Automatic temperature control diagram(s) including control flow diagrams showing sensors, valves and controllers, sequence of operation of systems, diagram showing control signal interface with sequence of operation, locations, and connections of energy metering devices for major equipment;

2.8.5.4(9) Equipment schedule including but not limited to chillers, boilers, pumps, air handling units, fans, terminal units, diffusers, and grilles;

2.8.5.4(10) Clear indication of seismic restraints for HVAC systems and equipment;

2.8.5.4(11) Integrated automation plans, sections, details will contain:

2.8.5.4(11)a. Design calculations.

2.8.5.4(11)b. Integrated automation layout.

2.8.5.4(12) Schematic and schedules will contain:

2.8.5.4(12)a. Clearly indicated type, flow, head, speed, class, BHP, electrical,

2.8.5.4(12)b. Schedules maybe graphical and/or tabular in drawing and/or specification format.

2.8.5.5 Energy Modelling:

2.8.5.5(1) Refer to Schedule 9: Energy Guarantee;

2.8.5.5(2) Using ASHRAE 140 compliant software, as detailed in the BC Hydro New Construction Energy Modelling Guideline, demonstrate that the proposed Design meets the energy use provisions of this Schedule as detailed in Part 7 and DBA Schedule 9: Energy Guarantee.

2.8.5.5(3) Provide an updated energy model report with each milestone submittal (30%, 60%, 95%, 100% and Record Drawing). Refer to Appendix 1 of Schedule 9 for detailed list of information required in the report.

2.8.6 Electrical Construction Documents

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Drawing Content					
Legends, regulatory data, drawing list, key plans	✔	✔	✔	✔	✔
Site plans	✔	✔	✔	✔	✔
Power Single Line Diagram	✔	✔	✔	✔	✔
Power Riser Diagram	✔	✔	✔	✔	✔
Large Scale - Electrical room equipment layouts	✔	✔	✔	✔	✔
Large Scale - Electrical room 3-D equipment layouts including equipment dimensions and equipment removal / replacement pathways	-	✔	✔	✔	✔
Grounding Riser Diagram	✔	✔	✔	✔	✔
Grounding Details	-	-	✔	✔	✔
Lightning Protection Riser, Plans	✔	✔	✔	✔	✔
Lightning Protection Details	-	-	✔	✔	✔
Lighting Control Riser	✔	✔	✔	✔	✔

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Lighting Control Details	-	-	✔	✔	✔
Clock System Riser	✔	✔	✔	✔	✔
Other Systems Risers	-	✔	✔	✔	✔
Fire Alarm and Voice IMIT System Riser	✔	✔	✔	✔	✔
Lighting and Lighting Control - Plans	✔	✔	✔	✔	✔
Lighting and Lighting Control - Circuiting	-	-	✔	✔	✔
Power - Plans	✔	✔	✔	✔	✔
Power - Circuiting	-	-	✔	✔	✔
Fire Alarm and Voice Communication Systems Plans	✔	✔	✔	✔	✔
Other Systems Plans	✔	✔	✔	✔	✔
Switchgear/switchboard/ elevations and schedules	-	✔	✔	✔	✔
Fire Alarm and Voice Communication Systems schedules	-	✔	✔	✔	✔
Site Service details	-	✔	✔	✔	✔
Miscellaneous details	-	-	✔	✔	✔
All other drawings	-	-	✔	✔	✔
Specifications					
Table of Contents: listing all sections	✔	✔	✔	✔	-
General Requirements	✔	✔	✔	✔	-
Electrical	-	✔	✔	✔	-
Branch Circuit Panelboard Schedules	-	-	✔	✔	✔
Luminaire Schedules	-	✔	✔	✔	-
Lighting Control Schedules	-	-	✔	✔	✔
Communications (clock system and interval timers)	-	✔	✔	✔	-
Electronic Safety and Security	✔	✔	✔	✔	-
Other					
Total load calculations (utility electric service)	✔	✔	✔	✔	-
Total load calculations (generator power)	✔	✔	✔	✔	-
Load calculations (transformer loadings)	-	✔	✔	✔	-
Load calculations (generator loadings)	-	✔	✔	✔	-
Load calculations (UPS power)	-	✔	✔	✔	-
Power system ground grid calculations	-	✔	✔	✔	-
Voltage drop calculations	-	✔	✔	✔	-
Short circuit calculations	-	✔	✔	✔	-
Arc flash calculations	-	-	✔	✔	-
Coordination study	-	-	✔	✔	-
Lighting calculations	-	✔	✔	✔	-
Lightning: grounding resistivity calculations	-	-	✔	✔	-
Cable tray calculations	-	-	✔	✔	-
Ratings of grounding resistors, zig-zag grounding transformers, fuses, bus ducts, feeders, splitters, safety switches, panelboards, power factor correction units	✔	✔	✔	✔	-
Calculated maximum fault levels, symmetrical and asymmetrical, and protective device interrupting	✔	✔	✔	✔	-

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
ratings, symmetrical and asymmetrical, at each protective device location					
Calculated arc Flash hazard level at each protective device and switching device location	-	-	✔	✔	-
Utility metering	-	✔	✔	✔	-
Metering	-	✔	✔	✔	-
Dimensions of equipment shown	-	✔	✔	✔	-
Widths of access aisles dimensioned	-	✔	✔	✔	-
Extent of drawout equipment indicated and dimensioned	-	✔	✔	✔	-
Three dimensional drawing files provided	-	✔	✔	✔	-
Ground bus names, following a consistent naming methodology	-	✔	✔	✔	-
Details of ground bus design and mounting Circuiting of items requiring power	-	✔	✔	✔	-
Widths of access aisles dimensioned	-	✔	✔	✔	-
Submittals					
Detailed Distribution Coordination Study	-	-	-	✔	-
Monthly System Shut Down Schedules	-	-	-	✔	-

2.8.6.1 Regulatory data – will contain design load assumptions and calculations to demonstrate code compliance.

2.8.6.2 Site plans will include:

2.8.6.2(1) Property limits;

2.8.6.2(2) Public roadways;

2.8.6.2(3) Driveways;

2.8.6.2(4) Parking lots;

2.8.6.2(5) Electric utility services;

2.8.6.2(6) Electrical site services;

2.8.6.2(7) Site lighting;

2.8.6.2(8) Exterior building lighting,

2.8.6.2(9) Maintenance hole locations with sump pump circuits as applicable;

2.8.6.2(10) Hand holes, pull pits; and

2.8.6.2(11) Lightning protection ground grid.

2.8.6.3 Power Single Line Diagram will include:

2.8.6.3(1) The entire electrical system from the utility service to and including distribution panels, motor control centres, chillers, motors over 50 HP;

2.8.6.3(2) Ratings of transformers, generators, breakers, load break switches, fuses, transfer switches, switchgear, switchboards;

2.8.6.3(3) Transformer and generator winding arrangements;

2.8.6.3(4) Interlock schemes;

2.8.6.3(5) Potential and current transformers; and

2.8.6.3(6) Equipment names, following a consistent equipment naming methodology.

2.8.6.4 Power Riser Diagram will include:

2.8.6.4(1) The entire electrical system from the utility service to and including lighting/receptacle/lab panels, motor control centres, chillers, motors over 50 HP;

2.8.6.4(2) Equipment shown in elevation relative to their actual size,

2.8.6.4(3) Equipment shown on the floor level where they will be installed;

2.8.6.4(4) A two-dimensional relative representation of where the equipment will be located;

2.8.6.4(5) Feeders to equipment;

2.8.6.4(6) A two-dimensional representation of the routing of the feeders; and

2.8.6.4(7) Equipment names, following a consistent equipment naming methodology.

2.8.6.5 Large Scale - Electrical Room Equipment Layouts will include:

2.8.6.5(1) All electrical rooms drawn to a scale of not less than 1:50;

2.8.6.5(2) All equipment in the room shown to scale;

2.8.6.5(3) Major equipment removal/ replacement pathways;

2.8.6.5(4) Equipment door swings indicated;

2.8.6.5(5) Room doors shown; and

2.8.6.5(6) Room names and numbers.

2.8.6.6 Grounding Riser Diagram and Details will include:

2.8.6.6(1) The entire electrical grounding system from the ground grid to each electrical room, generator room, electrical closet, IT room;

2.8.6.6(2) Ground rods, buried cables, ground buses, ground cables;

2.8.6.6(3) Equipment shown in elevation;

2.8.6.6(4) Equipment shown on the floor level where they will be installed;

2.8.6.6(5) A two-dimensional relative representation of where the equipment will be located;

2.8.6.6(6) A two-dimensional representation of the routing of the cables; and

2.8.6.6(7) Equipment sizing.

2.8.6.7 Lightning Protection Riser, Plans and Details will include:

2.8.6.7(1) The entire lightning protection system from the ground grid to the lightning rods and roof top equipment connected to the system;

2.8.6.7(2) Ground rods, buried cables, riser cables, horizontal cables

2.8.6.7(3) Equipment shown in elevation;

2.8.6.7(4) Equipment shown on the floor level where they will be installed;

2.8.6.7(5) A two-dimensional relative representation of where the equipment will be located;

2.8.6.7(6) A two-dimensional representation of the routing of the riser cables;

2.8.6.7(7) Equipment sizing; and

2.8.6.7(8) Details of:

2.8.6.7(8)a. Lightning rod parapet mounting;

2.8.6.7(8)b. Lightning rod roof mounting;

2.8.6.7(8)c. Roof penetrations;

2.8.6.7(8)d. Rod to cable connections;

2.8.6.7(8)e. Cable to cable connections;

2.8.6.7(8)f. Bonding straps for other equipment.

2.8.6.8 Lighting Control Riser and Details will include:

2.8.6.8(1) The entire lighting control system;

2.8.6.8(2) Equipment shown on the floor level where they will be installed;

2.8.6.8(3) A two-dimensional relative representation of where the equipment will be located;

2.8.6.8(4) Wiring runs to equipment;

2.8.6.8(5) A two-dimensional representation of the routing of the wiring runs; and

2.8.6.8(6) Equipment names, following a consistent equipment naming methodology.

2.8.6.9 Clock System Riser will include:

2.8.6.9(1) The entire clock system;

2.8.6.9(2) Equipment shown on the floor level where they will be installed;

2.8.6.9(3) A two-dimensional relative representation of where the equipment will be located;

2.8.6.9(4) Wiring runs to equipment;

2.8.6.9(5) Equipment names, following a consistent equipment naming methodology; and

2.8.6.9(6) Details of integration with other systems.

2.8.6.10 Other Systems Riser will include:

2.8.6.10(1) Riser diagram showing interconnections, or any other systems not shown on listed risers.

2.8.6.10(2) Equipment shown on the floor level where they will be installed;

2.8.6.10(3) A two-dimensional relative representation of where the equipment will be located;

2.8.6.10(4) Wiring runs to equipment;

2.8.6.10(5) A two-dimensional representation of the routing of the wiring runs; and

2.8.6.10(6) Equipment names, following a consistent equipment naming methodology.

2.8.6.11 Fire Alarm and Voice Communications System Riser Diagram will include:

2.8.6.11(1) The entire fire alarm and voice communication system;

2.8.6.11(2) Equipment shown on the floor level where they will be installed;

2.8.6.11(3) A two-dimensional relative representation of where the equipment will be located;

2.8.6.11(4) Communication wiring between the head end and local panels, and between local panels;

2.8.6.11(5) A two-dimensional representation of the routing of the wiring between the head end and the local panels and between the local panels;

2.8.6.11(6) Each detection loop out of a local panel, including every isolation module used in the loop;

2.8.6.11(7) Indication of each detection zone;

2.8.6.11(8) Indication of each monitoring zone;

2.8.6.11(9) Indication of each signal zone;

2.8.6.11(10) A typical representation of the detection, monitoring and control devices installed on each segment of a loop (i.e. between isolation modules);

2.8.6.11(11) Each signal circuit out of a local panel;

2.8.6.11(12) A typical representation of the signal devices installed on each signal circuit;

2.8.6.11(13) Interconnections with other systems; and

2.8.6.11(14) Equipment names, following a consistent equipment naming methodology.

2.8.6.12 Lighting and Lighting Control Plans will include:

2.8.6.12(1) Reflected ceiling plans to scale showing all luminaires, including emergency lighting and exit signs, in their relative locations;

2.8.6.12(2) An indication of the luminaire types, corresponding to the luminaire schedules;

2.8.6.12(3) Circuiting of each luminaire;

2.8.6.12(4) Lighting control devices, in their relative locations;

2.8.6.12(5) Full lighting and switching layout for each room and floor plates;

2.8.6.12(6) Control panels, in their relative locations;

2.8.6.12(7) Lighting control zoning;

2.8.6.12(8) Lighting panelboards, in their relative locations; and

2.8.6.12(9) Room names and numbers, doors and windows, corridor names.

2.8.6.13 Power Plans will include:

2.8.6.13(1) Floor plans to scale showing all;

2.8.6.13(1)a. receptacles;

2.8.6.13(1)b. outlets;

2.8.6.13(1)c. safety switches;

2.8.6.13(1)d. transfer switches;

2.8.6.13(1)e. dry type transformers;

2.8.6.13(1)f. feeders;
2.8.6.13(1)g. splitters;
2.8.6.13(1)h. distribution panels;
2.8.6.13(1)i. lighting/receptacle/lab panels;
2.8.6.13(1)j. switches controlling receptacles or outlets;
2.8.6.13(1)k. timers;
2.8.6.13(1)l. clocks;
2.8.6.13(1)m. contactors;
2.8.6.13(1)n. switchgear;
2.8.6.13(1)o. switchboards;
2.8.6.13(1)p. power factor correction units;
2.8.6.13(1)q. transformers;
2.8.6.13(1)r. generators;
2.8.6.13(1)s. UPS equipment;
2.8.6.13(1)t. motor control centres;
2.8.6.13(1)u. motor starters and VFSs
2.8.6.13(1)v. chillers;
2.8.6.13(1)w. motors over 50 HP;
2.8.6.13(1)x. automatic door controls;
2.8.6.13(1)y. equipment (other than lighting control), shown in their relative locations;
2.8.6.13(1)z. An indication of the equipment types, corresponding to the Legend;
2.8.6.13(1)aa. Circuiting of each item of equipment; and
2.8.6.13(1)bb. Room names and numbers, doors and windows, corridor names.

2.8.6.14 Fire Alarm and Voice Communications System Plans will include:

2.8.6.14(1) Reflected ceiling plans to scale showing all detection devices, signal devices, control devices, monitoring devices, isolation modules, in their relative locations;

2.8.6.14(2) An indication of the equipment types, corresponding to the Legend;

2.8.6.14(3) Annunciators, head end equipment, local panels, battery cabinets, paging stations, control centres, in their relative locations;

2.8.6.14(4) Identification of each zone boundary;

2.8.6.14(5) Room names and numbers, doors and windows, corridor names;

2.8.6.14(6) Zone numbers, and

2.8.6.14(7) Fire walls, fire separations.

2.8.6.15 Other Systems Plans will include:

2.8.6.15(1) Floor plans or reflected ceiling plans as required to show any equipment not shown on other plans.

2.8.6.16 Fire Alarm and Voice Communications Systems Schedules will include:

2.8.6.16(1) All detection, monitoring and control zone designations;

2.8.6.16(2) All signal zone designations;

2.8.6.16(3) A description of the area or equipment involved;

2.8.6.16(4) An indication of the system operation related to that zone;

2.8.6.16(5) All paging zone designations; and

2.8.6.16(6) A description of the area involved for each paging zone.

2.8.6.17 Site Service Details will include:

2.8.6.17(1) Pad Mounted Transformer;

2.8.6.17(2) Maintenance holes and hand holes;

2.8.6.17(3) Cable racking inside maintenance holes;

2.8.6.17(4) Cable pulling provisions inside maintenance holes;

2.8.6.17(5) Built in ladders inside maintenance holes;

2.8.6.17(6) Means of draining maintenance holes including gravity drainage and sump pump systems;

2.8.6.17(7) Lighting and power provisions inside maintenance holes;

2.8.6.17(8) Cross sections of each duct bank;

2.8.6.17(9) Cross sections of any direct buried cables;

2.8.6.17(10) Bases for lighting standards;

2.8.6.17(11) Bases for bollards; and

2.8.6.17(12) Bases for other equipment.

2.8.6.18 Miscellaneous Details will include:

2.8.6.18(1) All details required for the full description of the project not included on other drawings.

2.8.6.19 All other drawings will include:

2.8.6.19(1) Drawings as required for the full description of the project not included on other drawings.

2.8.6.20 Record Drawings will include:

2.8.6.20(1) Drawings included in the 100% submission plus any changes made and any drawings added up to the completion of Construction;

2.8.6.20(2) Updating of each drawing to the final “as built” condition;

2.8.6.20(3) Final locations of duct banks, maintenance holes, hand holes, conduit, outlets, panels, branch wiring, system wiring, pull boxes, bus ducts, and equipment;

2.8.6.20(4) Dimensions from column lines or edge of roadways to the location of buried services; and

2.8.6.20(5) Project surveyor’s information on the site services as-built drawings.

2.8.6.21 Electrical Specifications will include:

2.8.6.21(1) Sections in sufficient detail to unequivocally describe each material and each item of equipment to be used on the electrical scope of work for the project;

2.8.6.21(2) The method of installation, testing, commissioning, and documenting for each material, item of equipment, and system that is part of the electrical scope of work for the project; and

2.8.6.21(3) Identification of the codes and standards that the materials, equipment, and systems will be provided in accordance with.

2.8.6.22 Branch Circuit Panelboard Schedules will include:

2.8.6.22(1) A separate schedule for each panelboard;

2.8.6.22(2) Panelboard ratings, voltage, and ampacity;

2.8.6.22(3) Main breaker ratings (where applicable);

2.8.6.22(4) Maximum number of branch breaker poles that the panelboard can accommodate;

2.8.6.22(5) The rating and number of poles for each branch breaker;

2.8.6.22(6) The phase that each breaker pole is connected to;

2.8.6.22(7) The name of the load supplied by each branch breaker;

2.8.6.22(8) The anticipated circuit loading in Amperes;

2.8.6.22(9) Spare breakers;

2.8.6.22(10) Breaker spaces;

2.8.6.22(11) The interrupting rating of the circuit breakers; and

2.8.6.22(12) Circuits equipped with breaker “lock-on” devices.

2.8.6.23 Lighting Control Schedules will include:

2.8.6.23(1) A separate schedule for each control panel;

2.8.6.23(2) Lighting control zone designations;

2.8.6.23(3) Circuits and sub-circuits controlled;

2.8.6.23(4) Designation of each control relay;

2.8.6.23(5) Rating of each control relay;

2.8.6.23(6) A description of the type of control;

2.8.6.23(7) A listing of “scenes” allocated to the zone; and

2.8.6.23(8) Interfaces with other panels, head end equipment, other systems.

2.8.6.24 Communications Specifications Sections will include:

2.8.6.24(1) Sections in sufficient detail to unequivocally describe each material and each item of equipment to be used on the clock system and interval timers under the electrical scope of work for the project;

2.8.6.24(2) The method of installation, testing, commissioning, and documenting for each material, item of equipment, and system that is part of the electrical scope of work for the project; and

2.8.6.24(3) Identification of the codes and standards that the materials, equipment, and systems will be provided in accordance with.

2.8.6.25 Electronic Safety and Security Specifications Sections will include:

2.8.6.25(1) Sections in sufficient detail to unequivocally describe each material and each item of equipment to be used on the fire alarm and voice communication system, fuel leakage detection systems and water detection systems, under the electrical scope of work for the project;

2.8.6.25(2) The method of installation, testing, commissioning, and documenting for each material, item of equipment, and system that is part of the electrical scope of work for the project; and

2.8.6.25(3) Identification of the codes and standards that the materials, equipment, and systems will be provided in accordance with.

2.8.6.26 Calculations will be:

2.8.6.26(1) Published, hand written calculations will not be submitted;

2.8.6.26(2) Fully detailed to allow review of each step of the calculations;

2.8.6.26(3) With power demand and diversity factors identified; and

2.8.6.26(4) With all assumptions clearly stated.

2.8.6.27 Total Load Calculations (utility electric service) will include:

2.8.6.27(1) Calculation of the annual peak demand load, in kW and kVA, expected for the Facility;

2.8.6.27(2) Calculation of the annual peak demand load, in kW and kVA, on the utility service in kW under typical operating conditions, also indicating the spare capacity is available;

2.8.6.27(3) not used; and

2.8.6.27(4) Electrical load redundancy and spare capacity calculations for all normal power identifying loads of different types, such as individual mechanical equipment, lighting, general receptacles, hospital equipment, communications and security equipment and elevators.

2.8.6.28 Total Load Calculations (generator power) will include:

2.8.6.28(1) Calculation of the annual peak demand load on the generating system, in kW and kVA, expected for the Facility to be used to size the mobile Load Bank;

2.8.6.28(2) Calculation of the annual peak demand load, in kW and kVA, on each generator under typical operating conditions, indicating the spare capacity on each generator;

2.8.6.28(3) Calculation of the annual peak demand load, in kW and kVA, on each generator with one generator out of service;

2.8.6.28(4) Calculation of the annual peak demand load, in kW and kVA, on each generator with one generator bus (i.e. two generators) out of service; and

2.8.6.28(5) Electrical load redundancy and spare capacity calculations for all branches of power identifying loads of different types, such as individual mechanical equipment, lighting, general receptacles, hospital equipment, communications and security equipment and elevators.

2.8.6.29 Load Calculations (transformer loadings) will include:

2.8.6.29(1) Calculation of the annual peak demand load, in kW and kVA, on each transformer under typical operating conditions;

2.8.6.30 Load Calculations (generator loadings) will include:

2.8.6.30(1) Calculation of the annual peak demand load, in kW and kVA, on each generator under typical operating conditions;

2.8.6.30(2) Calculation of the annual peak demand load, in kW and kVA, on each generator with one generator out of service, the generator out of service to be one that causes load to be transferred to the generator for which the load calculation is being performed (i.e. its twin);

2.8.6.30(3) Calculation of the anticipated future load growth on each generator;

2.8.6.30(4) Calculation of the spare capacity provided for in each generator;

2.8.6.30(5) Electrical load redundancy and spare capacity calculations for all branches of power identifying loads of different types, such as individual mechanical equipment, lighting, general receptacles, hospital equipment, communications and security equipment and elevators; and

2.8.6.30(6) Calculation of the annual peak demand load on the generating system, in kW and kVA, expected for the Facility to be used to size the permanent Load Bank.

2.8.6.31 Load Calculations (UPS power) will include:

2.8.6.31(1) Calculation of the annual peak demand load, in kW and kVA, on the UPS system under typical operating conditions;

2.8.6.31(2) Calculation of the anticipated future load growth on the UPS system;

2.8.6.31(3) Calculation of the spare capacity provided for in the UPS system; and

2.8.6.31(4) Calculation of the battery support time of the UPS system, based on:

2.8.6.31(4)a. full load operation;

2.8.6.31(4)b. not used;

2.8.6.31(4)c. with the battery capacity derated to the actual ambient room temperature; and

2.8.6.31(4)d. not used."

2.8.6.32 Not used.

2.8.6.33 Voltage Drop calculations will include:

2.8.6.33(1) Calculations of the steady state voltage drop from the utility service though to every power utilizing device;

2.8.6.33(2) Provided that a maximum of 2% voltage drop is allowed for to each branch circuit panelboard, CDP or MCC, then the voltage drop calculations can end at the final branch circuit panelboard, CDP or MCC;

2.8.6.33(3) Calculations based on a load equal to 80% of the breaker or fuse rating protecting the circuit, unless the load is fixed and known (e.g.: a single motor) in which case the fixed known load can be used; and

2.8.6.33(4) Calculations based on a power factor of 90% unless a different power factor is known to apply in which case the known power factor is to be used.

2.8.6.34 Short Circuit calculations will include:

2.8.6.34(1) Calculations of symmetrical and asymmetrical values of fault currents, based on the calculated X/R ratio of the system;

2.8.6.34(2) Calculations of the maximum three phase fault current, the maximum line to line fault current, the maximum line to ground fault current and the minimum line to ground fault current at every protective device and switching device in the electrical system, excluding local switches on branch circuits;

2.8.6.34(3) The maximum fault currents based on the utility supply in parallel with the generator supply, where closed transition transfer switches are used;

2.8.6.34(4) The utility ultimate design fault levels;

2.8.6.34(5) Motor contribution; and

2.8.6.34(6) Actual transformer impedances, but until actual impedances are available, worst case (low) impedances.

2.8.6.35 Arc Flash calculations will include:

2.8.6.35(1) Calculations of the arc flash level at every protective device and every switching device in the system, excluding local switches on branch circuits.

2.8.6.36 Coordination Study will include:

2.8.6.36(1) Graphs of each portion of the electrical system on log-log paper showing:

- 2.8.6.36(1)a. The operating characteristics of each protective device;
- 2.8.6.36(1)b. Full load ratings of transformers;
- 2.8.6.36(1)c. Full load ratings of individual generators and generators in parallel;
- 2.8.6.36(1)d. The maximum and minimum fault level at each protective device and each switching device;
- 2.8.6.36(1)e. Transformer inrush current;
- 2.8.6.36(1)f. Motor starting current;
- 2.8.6.36(1)g. Cable damage curves;
- 2.8.6.36(1)h. Transformer damage curves;
- 2.8.6.36(1)i. Full load ratings of generators;
- 2.8.6.36(1)j. Generator damage curves;
- 2.8.6.36(1)k. Generator decrement curves for individual generators and paralleled generators;
- 2.8.6.36(1)l. Full load ratings of UPS systems;
- 2.8.6.36(1)m. UPS system fault levels;
- 2.8.6.36(1)n. UPS system maintenance bypass fault levels; and
- 2.8.6.36(1)o. A single line diagram of the portion of the system involved including the equipment names, ratings, and settings.

2.8.6.36(2) No more than five (5) time current curves of protective devices on each graph;

2.8.6.36(3) Graphs showing operation on utility power;

2.8.6.36(4) Graphs showing operation on generator power;

2.8.6.36(5) Graphs showing operation on UPS power;

2.8.6.36(6) A sufficient number of graphs to depict the entire electrical system including the utilities protective devices and the generators down to feeders to lighting/receptacle/lab panels, splitters, motor control centres, chillers, motors of 50 HP and larger;

2.8.6.36(7) Separate graphs for phase currents;

2.8.6.36(8) Separate graphs for ground currents;

2.8.6.36(9) Schedules showing each protective device that is equipped with an adjustable trip unit, showing the device frame size, CT ratios and the detailed settings of its trip unit,

2.8.6.36(10) Identification of areas where equipment protection is not adequate; and

2.8.6.36(11) Identification of areas where full co-ordination is not achieved.

2.8.6.37 Lighting calculations will include:

2.8.6.37(1) Calculation of the average illumination in each area and room;

2.8.6.37(2) Calculation of the max to min ratio in each area and room;

2.8.6.37(3) Identification of the light loss factors and dirt depreciation factors used in the calculations, and the supporting justification for them;

2.8.6.37(4) Identification of the floor, wall and ceiling reflectance values used and the source of these values; and

2.8.6.37(5) Dimensions of each space and the source of these values.

2.8.6.38 Lightning System Ground Grid calculations will include:

2.8.6.38(1) Identification of soil resistivity based on site testing; and

2.8.6.38(2) Calculation of the grounding resistivity of the lightning protection system.

2.8.7 Electrical Shop Drawings

2.8.7.1 Submit shop drawings for the following:

2.8.7.1(1) Co-ordination drawings;

2.8.7.1(2) Detailed installation drawings;

2.8.7.1(3) Documents supporting LEED application;

2.8.7.1(4) Single line diagrams;

2.8.7.1(5) Fire alarm riser diagram;

2.8.7.1(6) Fire alarm zoning plans;

2.8.7.1(7) Nameplate wording;

2.8.7.1(8) Warning signs;

2.8.7.1(9) Labels;

2.8.7.1(10) Access doors;

2.8.7.1(11) Fire stopping:

2.8.7.1(11)a. Technical data;

2.8.7.1(11)b. ULC or CUL listing;

2.8.7.1(11)c. Supports and bases; and

2.8.7.1(11)d. Insert drawings.

2.8.7.1(12) Paint: technical data;

2.8.7.1(13) Plywood backboards: technical data;

2.8.7.1(14) Bus ducts;

2.8.7.1(15) Plug-in busways;

2.8.7.1(16) Low voltage cables;

2.8.7.1(17) Grounding:

2.8.7.1(17)a. System design; and

2.8.7.1(17)b. Materials.

2.8.7.1(18) Splitters and cabinets;

2.8.7.1(19) Junction boxes with L, W or H larger than 600;

2.8.7.1(20) Cable tray;

2.8.7.1(21) Wireways;

2.8.7.1(22) Duct banks:

2.8.7.1(22)a. Design;

2.8.7.1(22)b. Materials; and

2.8.7.1(22)c. Spacers.

2.8.7.1(23) Vibration isolation and seismic restraint:

2.8.7.1(23)a. Design;

2.8.7.1(23)b. Materials;

2.8.7.1(24) Maintenance holes;

2.8.7.1(25) Hand holes;

2.8.7.1(26) Pull pits;

2.8.7.1(27) Pad mounted transformer bases;

2.8.7.1(28) Lighting control systems:

2.8.7.1(28)a. System description;

2.8.7.1(28)b. Schematic diagrams;

2.8.7.1(28)c. Wiring diagrams;

2.8.7.1(28)d. Components;

2.8.7.1(28)e. Ratings; and

2.8.7.1(28)f. Operating schedules.

2.8.7.1(29) Dry type transformers:

2.8.7.1(29)a. Design;

2.8.7.1(29)b. Ratings;

2.8.7.1(29)c. Schematics;

2.8.7.1(29)d. CSA nameplates;

2.8.7.1(29)e. Accessories;

2.8.7.1(29)f. Enclosures; and

2.8.7.1(29)g. High resistance grounding systems.

2.8.7.1(30) Low voltage switchboards:

2.8.7.1(30)a. Design;
2.8.7.1(30)b. Ratings;
2.8.7.1(30)c. Schematics;
2.8.7.1(30)d. Three wire diagrams;
2.8.7.1(30)e. Subassemblies (e.g. circuit breakers, trip units, metering units, grounding systems);
2.8.7.1(30)f. Controls; and
2.8.7.1(30)g. Enclosures.

2.8.7.1(31) Panelboards:

2.8.7.1(31)a. Design;
2.8.7.1(31)b. Ratings;
2.8.7.1(31)c. Breaker complement;
2.8.7.1(31)d. Breaker ratings;
2.8.7.1(31)e. Spares and spaces;
2.8.7.1(31)f. Accessories; and
2.8.7.1(31)g. Enclosures.

2.8.7.1(32) Wiring devices;

2.8.7.1(33) Disconnect switches;

2.8.7.1(34) Patient service units:

2.8.7.1(34)a. Design;
2.8.7.1(34)b. Materials,
2.8.7.1(34)c. Device complement;
2.8.7.1(34)d. Devices;
2.8.7.1(34)e. Spaces for future devices;
2.8.7.1(34)f. Accessories,
2.8.7.1(34)g. Enclosures; and
2.8.7.1(34)h. Wiring and piping.

2.8.7.1(35) Contactors;

2.8.7.1(36) Starters;

2.8.7.1(37) Motor control centres:

2.8.7.1(37)a. Design;
2.8.7.1(37)b. Ratings;
2.8.7.1(37)c. Schematics;
2.8.7.1(37)d. Subassemblies (e.g. starters, metering units, transformers, panelboards);
2.8.7.1(37)e. Controls; and
2.8.7.1(37)f. Enclosures,

2.8.7.1(38) Harmonic filters:

2.8.7.1(38)a. Design;
2.8.7.1(38)b. Ratings;
2.8.7.1(38)c. Schematics;

2.8.7.1(38)d. Harmonic current mitigation performance; and

2.8.7.1(38)e. Enclosures.

2.8.7.1(39) Electric pipe heating:

2.8.7.1(39)a. Components; and

2.8.7.1(39)b. Controller.

2.8.7.1(40) Electric space heating,

2.8.7.1(41) Diesel generators:

2.8.7.1(41)a. Design;

2.8.7.1(41)b. Ratings;

2.8.7.1(41)c. Schematics;

2.8.7.1(41)d. Three wire diagrams;

2.8.7.1(41)e. Subassemblies (e.g. engine, radiator, alternator, voltage regulators, governor, base, heaters, fuel pumps, fuel filters, fuel coolers, vibration isolators, controls, metering units, circuit breakers, silencers, starting battery, battery charger);

2.8.7.1(41)f. Paralleling controls;

2.8.7.1(41)g. Load Management System; and

2.8.7.1(41)h. Overall assembly.

2.8.7.1(42) UPS systems:

2.8.7.1(42)a. Design;

2.8.7.1(42)b. Ratings;

2.8.7.1(42)c. Schematics;

2.8.7.1(42)d. Single line diagrams;

2.8.7.1(42)e. Equipment;

2.8.7.1(42)f. Modules;

2.8.7.1(42)g. Static bypass;

2.8.7.1(42)h. Maintenance bypass;

2.8.7.1(42)i. Metering;

2.8.7.1(42)j. Batteries;

2.8.7.1(42)k. Battery racks;

2.8.7.1(42)l. Input and output transformers;

2.8.7.1(42)m. Controls;

2.8.7.1(42)n. Interlocks;

2.8.7.1(42)o. Communications systems;

2.8.7.1(42)p. Drip hoods; and

2.8.7.1(42)q. Enclosures.

2.8.7.1(43) Harmonic cancellation transformers:

2.8.7.1(43)a. Design;

2.8.7.1(43)b. Ratings;

2.8.7.1(43)c. Schematics;

2.8.7.1(43)d. Harmonic current mitigation performance;

2.8.7.1(43)e. CSA nameplates;

2.8.7.1(43)f. Accessories; and

2.8.7.1(43)g. Enclosures.

2.8.7.1(44) Power factor correction units:

2.8.7.1(44)a. Design;

2.8.7.1(44)b. Ratings;

2.8.7.1(44)c. Schematics;

2.8.7.1(44)d. Harmonic current mitigation performance;

2.8.7.1(44)e. Subassemblies (e.g. tanks, harmonic filters, automatic controller, metering);

2.8.7.1(44)f. Accessories; and

2.8.7.1(44)g. Enclosures.

2.8.7.1(45) Transfer switches:

2.8.7.1(45)a. Design;

2.8.7.1(45)b. Ratings;

2.8.7.1(45)c. Schematics;

2.8.7.1(45)d. Three wire diagrams;

2.8.7.1(45)e. Subassemblies (e.g.: circuit breakers, relays, metering units);

2.8.7.1(45)f. Controls;

2.8.7.1(45)g. Interlocks; and

2.8.7.1(45)h. Enclosures.

2.8.7.1(46) Lightning arrestors;

2.8.7.1(47) Lightning protection:

2.8.7.1(47)a. System design;

2.8.7.1(47)b. Materials; and

2.8.7.1(47)c. Components.

2.8.7.1(48) Surge protective devices:

2.8.7.1(48)a. Design;

2.8.7.1(48)b. Ratings;

2.8.7.1(48)c. Schematics;

2.8.7.1(48)d. Alarm contacts, meters, and indicators; and

2.8.7.1(48)e. Enclosures.

2.8.7.1(49) Lighting:

2.8.7.1(49)a. each type of luminaire; and

2.8.7.1(49)b. each type of illuminated sign.

2.8.7.1(50) Battery lighting equipment:

2.8.7.1(50)a. Design;

2.8.7.1(50)b. Illumination levels;

2.8.7.1(50)c. Batteries;

2.8.7.1(50)d. Battery capacity;

2.8.7.1(50)e. Alarm contacts, and indicators;

2.8.7.1(50)f. Lighting heads and remote heads;

2.8.7.1(50)g. Enclosures;

2.8.7.1(51) Clock System:

2.8.7.1(51)a. System design;

2.8.7.1(51)b. Components; and

2.8.7.1(51)c. Accessories.

2.8.7.1(52) Interval timers; and

2.8.7.1(53) Fire alarm system:

2.8.7.1(53)a. System design;

2.8.7.1(53)b. Riser diagram;

2.8.7.1(53)c. Schematics; and

2.8.7.1(53)d. Components.

2.8.7.1(53)e. Batteries;

2.8.7.1(53)f. Battery calculations (support time);

2.8.7.1(53)g. Power supply calculations;

2.8.7.1(53)h. Amplifier calculations;

2.8.7.1(53)i. Wiring;

2.8.7.1(53)j. Zoning;

2.8.7.1(53)k. Zone isolation;

2.8.7.1(53)l. Enclosures; and

2.8.7.1(53)m. Accessories;

2.8.7.1(54) Fuel leakage detection; and

2.8.7.1(55) Water leakage detection.

2.8.8 Electrical Samples and Mock-ups

2.8.8.1 Submit samples of the following:

2.8.8.1(1) Each luminaire type; and

2.8.8.1(2) Each type of illuminated sign.

2.8.8.2 Prepare mock-ups of the following:

2.8.8.2(1) Each type of Patient service unit.

2.8.9 Electrical Studies

2.8.9.1 Submit documentation of the following studies:

2.8.9.1(1) RF study of the property;

2.8.9.1(2) Short circuit studies;

2.8.9.1(3) Protective device coordination studies; and

2.8.9.1(4) Arc flash studies.

2.8.10 Electrical Reports

2.8.10.1 Submit reports for the following:

2.8.10.1(1) Operating and Maintenance Manuals;

2.8.10.1(2) Training session records;

2.8.10.1(3) Panelboard loading test results;

2.8.10.1(4) Transformer loading test results;

2.8.10.1(5) Motor control centre loading test results;

2.8.10.1(6) Motor control centre performance testing;

2.8.10.1(7) Seismic restraints;

2.8.10.1(8) Testing of Patient care areas to CSA standard Z32;

2.8.10.1(9) Illumination level measurements;

2.8.10.1(10) Factory witness testing;

2.8.10.1(11) Site acceptance (pre-service) testing;

2.8.10.1(12) Ground resistance measurements;

2.8.10.1(13) Lightning protection grounding resistance;

2.8.10.1(14) UPS battery testing;

2.8.10.1(15) UPS performance testing;

2.8.10.1(16) Generator testing;

2.8.10.1(17) Transfer switch testing;

2.8.10.1(18) Transformer testing;

2.8.10.1(19) Switchgear/switchboard testing;

2.8.10.1(20) Distribution system dynamic performance verification;

2.8.10.1(21) Clock system signal coverage.

2.8.11 Electrical Certificates and Verifications

2.8.11.1 Submit the following certificates and verifications:

2.8.11.1(1) Manufacturers' letters verifying that the equipment has been installed in accordance with their instructions for the following:

2.8.11.1(1)a. Fire stopping;

2.8.11.1(1)b. Fire rated wiring;

2.8.11.1(1)c. Lighting control systems;

2.8.11.1(1)d. Clock system;

2.8.11.1(1)e. Automatic transfer switches;

2.8.11.1(1)f. Diesel generators;

2.8.11.1(1)g. UPS systems;

2.8.11.1(1)h. UPS batteries;

2.8.11.1(1)i. Power factor correction units; and

2.8.11.1(1)j. Pipe heating systems.

2.8.11.1(2) Wiring in Patient care areas (Z32);

2.8.11.1(3) Seismic certifications:

2.8.11.1(3)a. Transformers;

2.8.11.1(3)b. Diesel generators;

2.8.11.1(3)c. Transfer switches; and

2.8.11.1(3)d. Switchgear/switchboards.

2.8.11.1(4) Seismic restraints;

2.8.11.1(5) Fire alarm system verification;

2.8.11.1(6) Radio licence for clock system;

2.8.11.1(7) Request for final review; and

2.8.11.1(8) Equipment warranties.

2.8.12 Telecommunications Construction Documents

2.8.12.1 Within section 2.8.12, the term “system(s)” or “System(s)” will refer to all systems provided by Communications (Division 27).

2.8.12.2 Telecommunications drawings will be identified as “T” series (Telecommunications) drawings in the approved construction drawings, separated from “E” (Electrical) drawings. The T-series drawings at will include those referenced in 2.8.12.3 below :

2.8.12.3 Telecommunication Documents

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Drawing Content					
Legends, drawing list, key plans	✔	✔	✔	✔	✔
Telecom Site Plan	✔	✔	✔	✔	✔
Communications Floor Plans	✔	✔	✔	✔	✔
Systems Floor Plans	✔	✔	✔	✔	✔
Communications Room Layouts and Elevations	-	✔	✔	✔	✔
Equipment Rack Layouts	-	✔	✔	✔	✔
Systems Integration Schematics	-	✔	✔	✔	✔
Telecommunications Bonding and Grounding System	-	✔	✔	✔	✔
Backbone Riser Diagrams	✔	✔	✔	✔	✔
A/V and Teleconference Room Layouts, Elevations and Reflected Ceiling Plans	-	✔	✔	✔	✔
IMIT Systems Integration Diagram	-	✔	✔	✔	✔
Riser Diagrams (All Div.27 Systems)	✔	✔	✔	✔	✔
Specifications					
Communications (Division (27)	✔	✔	✔	✔	-
Other					
Submittals					

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Communications (Division 27)	-	-	✔	✔	-
Public address sound coverage and clarity (dBA and STI)	-	✔	✔	✔	✔
Wireless network heat maps in 2.4GHz and 5GHz	-	✔	✔	✔	✔

2.8.12.4 Construction Drawings

2.8.12.4(1) All drawings, specifications, submittals, and construction documents will be produced and reviewed and stamped by the Registered Communications Distribution Designer (RCDD) employed by the Design-Builder;

2.8.12.4(2) Telecom Site Plan will include:

2.8.12.4(2)a. Telecom duct bank routing plan from service provider pole to the Facility;

2.8.12.4(2)b. Section views of the duct including dimensions and clearances from other utilities.

2.8.12.4(3) Communications Floor Plans will indicate:

2.8.12.4(3)a. The locations of all Communications Rooms and their associated serving zone boundaries;

2.8.12.4(3)b. All telecommunications outlets (ceiling, floor, wall or other) identifying types of cables, label details and number of cable drops per outlet;

2.8.12.4(3)c. Locations, quantity and sizes of all low voltage conduits, raceways, cable tray, sleeves, junction boxes and pull boxes;

2.8.12.4(3)d. Cable tray fill calculations; and

2.8.12.4(3)e. Backbone cabling routes including the routes of the telecommunications grounding backbone.

2.8.12.4(4) Systems Floor Plans will include:

2.8.12.4(4)a. Reflected ceiling plans showing locations of all ceiling mounted devices;

2.8.12.4(4)b. Zoning areas including, but not limited to, nurse call and PA systems;

2.8.12.4(4)c. Floorplans identifying all wall and floor mounted devices of each system;

2.8.12.4(4)d. Locations of head-end equipment.

2.8.12.4(5) Communications Room Layouts and Elevations will:

2.8.12.4(5)a. be provided in 2D and 3D;

2.8.12.4(5)b. be to scale providing detail plan views, reflected ceiling plans and elevations of all communications and low voltage components and equipment, racks and enclosures;

2.8.12.4(5)c. show maintenance and operational clearances.

2.8.12.4(5)d. show non-telecom related materials, equipment, devices, and structures (all dimensions are to be included). This includes, but is not limited to, electrical distribution (panels and receptacles) and lighting fixtures, locations and sizes of all pathways (sleeves, conduits, entrance ducts, cable tray), grounding busbar, backboards, mechanical ducting and equipment, fire detection and suppression systems and security, nurse call, BMS, public address and audio visual/video conferencing equipment.

2.8.12.4(5)e. show elevation drawings of all walls of each telecommunications equipment room, clearly showing the layout of all termination hardware, grounding & bonding components, horizontal pathway penetrations, and wall mounted equipment cabinets.

2.8.12.4(5)f. show high voltage gear situated adjacent to Communications Rooms with clearance elements of telecom items from all such objects.

2.8.12.4(6) Rack Layouts will include:

2.8.12.4(6)a. detailed elevation drawings of equipment layout in each floor or wall mounted equipment rack and cabinet in Communications Rooms; Elevation drawings will include vertical and horizontal wire managers, fibre and copper patch panels, hardware such as shelves and all active equipment regardless of the supplier;

2.8.12.4(7) Intrabuilding-Backbone Pathways will include:

2.8.12.4(7)a. Telecommunications Bonding and Grounding System;

2.8.12.4(7)b. Backbone pathway systems including service entrances, identifying quantity and sizes of conduits, trays, and sleeves.

2.8.12.4(8) Intrabuilding-Backbone Cabling will include:

2.8.12.4(8)a. All backbone cabling, cross connect locations and type, size, sheath, gauge, length, and strands of each copper and fibre cable installed.

2.8.12.4(9) Systems Integration Schematics will include:

2.8.12.4(9)a. Integration diagrams showing the medium type (i.e. fibre, cat6, etc.…) and protocol used for integration between all systems, Division 28, the Authority Network, and other networks.

2.8.12.4(10) Audio Visual and Teleconferencing

2.8.12.4(10)a. Floor layouts of each multimedia and/or teleconference room identifying quantities and types of cables, endpoint locations, pathways, floor box locations.

2.8.12.4(10)b. Elevation layouts of each multimedia and/or teleconference room identifying locations of all power/data outlets, wall backing for equipment mounts, locations for display screens, control panels and switches, source connection patch panels, cameras, speakers, and other AV components.

2.8.12.4(10)c. Reflected ceiling plans of each multimedia and/or teleconference room identifying location of ceiling mounted A/V equipment including projectors, motorized screens, speakers, microphones, and other ceiling devices including sprinkler heads, lighting fixtures, sensors, vents, grilles.

2.8.12.5 Submittals

2.8.12.5(1) The purpose of shop drawing submittals is to demonstrate the Design- Builder's understanding of the design intent. This understanding is demonstrated by articulating which equipment and material is required, and by what methods of fabrication and installation will be utilized;

2.8.12.5(2) Before installation of any cable, structured cabling component, pathway, firestop assembly or related material, equipment or hardware, the Design-builder will provide submittal of shop drawings and product data sheets for each component supplied to the Authority;

2.8.12.5(3) Shop drawings and product data sheets will indicate operating characteristics for each required item and design conditions;

2.8.12.5(4) Shop drawing and product data will include, but is not limited to the following:

2.8.12.5(4)a. Copper Cabling;

2.8.12.5(4)b. Fibre Cabling;

2.8.12.5(4)c. Coaxial Cabling;
2.8.12.5(4)d. Fibre Connector Housings;
2.8.12.5(4)e. Faceplates;
2.8.12.5(4)f. Floorboxes;
2.8.12.5(4)g. Patch Panels;
2.8.12.5(4)h. (AV) Source Connection Panels;
2.8.12.5(4)i. 110 Punch Block System (GigaBIX);
2.8.12.5(4)j. Jacks/Inserts;
2.8.12.5(4)k. Fibre Connectors;
2.8.12.5(4)l. Equipment Racks, Cabinets and Enclosures;
2.8.12.5(4)m. Vertical and Horizontal Cable Management;
2.8.12.5(4)n. Cable Tray;
2.8.12.5(4)o. Firestop Details (Product and System Number);
2.8.12.5(4)p. Telecommunications Bonding and Grounding System Materials;
2.8.12.5(4)q. UPS and ePDUs;
2.8.12.5(4)r. CATV/Broadband Distribution System Cable, Components and Connectors;
2.8.12.5(4)s. Overhead Paging System Cable, Equipment (paging amplifiers, speakers, power supplies and other support equipment) and Connectors;
2.8.12.5(4)t. All system equipment and components;
2.8.12.5(4)u. Intercommunication Systems Cable, Components and Connectors; and
2.8.12.5(4)v. Nurse Call System Devices, Components and Equipment.

2.8.12.5(5) The submittals will be reviewed for general compliance and not for dimensions and quantities. The submittal review will not relieve the Design-Builder of responsibility for errors or omissions and deviations from the requirements outlined in this Design-Build Agreement. If the submittal shows variations from the requirements of the this Design-Build Agreement for any reason, the Design-Builder will provide written detail of each variation in the letter of transmittal; and

2.8.12.5(6) Shop Drawings will be submitted in an electronic format. The file format will be Adobe portable data file (.pdf) or provide software to enable viewing of files of the other formats at no additional cost to the Authority.

2.8.12.6 As-Built Documentation

2.8.12.6(1) The Design-Builder will provide Maintenance Manual at a minimum contain the following:

2.8.12.6(1)a. Set of final reviewed Shop Drawings;
2.8.12.6(1)b. A copy of all as-built drawings;
2.8.12.6(1)c. Digital photos of all Communications Rooms showing each wall and rack elevations.
2.8.12.6(1)d. Circuit Spreadsheets for horizontal cabling and fibre backbone;
2.8.12.6(1)e. Manufacturer Warranty documents for equipment and workmanship;
2.8.12.6(1)f. Copper Warranty Certification test result printout;
2.8.12.6(1)g. Optical fibre power metre/light source test result printouts;
2.8.12.6(1)h. Fire-stop design and records documentation;
2.8.12.6(1)i. WiFi heat mapping reports;
2.8.12.6(1)j. Public Address sound quality and coverage report; and

2.8.12.6(1)k. Names, addresses, phone numbers and facsimile numbers of the Design-Builder, Design-Builder's RCDD, sub-contractors and suppliers used on the Work together with a specification reference of the portion of the Work they undertook.

2.8.13 Electronic Security Systems Construction Documents

2.8.13.1 CCTV camera coverage including graphical representation of the horizontal pixels per meter of and view range of all cameras. The simulation should not allow camera views to "bleed" through solid objects. The simulation will incorporate camera height and tilt angles.

2.8.13.2 Electronic Security System drawings will be included and identified as "T" series (Telecommunications) drawings in the approved construction drawings, separated from "E" (Electrical) drawings. The Electronic Security System will at minimum the following "T" series drawings:

Percentage Complete at Submission Stages	30%	60%	95%	100%	As-Built
Drawing Content					
Legends, drawing list, key plans	✔	✔	✔	✔	✔
Electronic Security Floor Plans	✔	✔	✔	✔	✔
Electronic Security Riser Diagrams	✔	✔	✔	✔	✔
Equipment Rack Layouts & Elevations	-	✔	✔	✔	✔
Specifications					
Electronic Security (Division 28)	-	-	✔	✔	-
2.8.13.3 Provide separate reports using computer simulation software to verify system design..	-	✔	✔	✔	✔

2.8.13.4 Construction Drawings

2.8.13.4(1) The drawings will use industry standard symbols and legends;

2.8.13.4(2) Security Floor Plans will include:

2.8.13.4(2)a. Locations, quantity and types of all devices, components and equipment required for the Electronic Security Systems (Division 28);

2.8.13.4(2)b. Security zoning (interior and exterior);

2.8.13.4(2)c. Locations, quantity and sizes of all low voltage conduits, raceways, cable tray, sleeves, junction boxes and pull boxes;

2.8.13.4(2)d. Location of head-end equipment and storage; and

2.8.13.4(2)e. CCTV camera view range and associated horizontal pixels per meter.

2.8.13.4(3) Electronic Security Riser Diagrams will include:

2.8.13.4(3)a. Riser diagrams for each system part of Electronic Security System (Division 28) , including cabling and device quantities and labels.

2.8.13.4(4) Equipment Rack Layouts & Elevations will include:

2.8.13.4(4)a. Detailed elevation drawings of Electronic Security System (Division 28) equipment installed in racks and cabinets. Elevation drawings will include vertical and horizontal wire managers, fibre and copper patch panels, hardware such as shelves and all active equipment regardless of the supplier;

2.8.13.4(5) Security Integration and Wiring Schematics will include:

2.8.13.4(5)a. Control layout, including interconnections between Electronic Security Systems, Division 27, Division 8, and Authority's Network.

2.8.13.4(6) Overall system riser wiring diagram identifying control units, circuits, terminations, terminal numbers, conductors, and raceways;

2.8.13.4(7) Access Control Door Details will include:

2.8.13.4(7)a. Detailed elevation diagrams of each side of each different access controlled door in the Facility which includes:

2.8.13.4(7)a.1 All access control equipment;

2.8.13.4(7)a.2 Locations and references to all Division 26 supplied power, equipment, and integration;

2.8.13.4(7)a.3 Locations and references to all Division 27 supplied equipment and integration;

2.8.13.4(7)a.4 Locations and references to all Division 8 supplied hardware, equipment, and integration;

2.8.13.4(7)a.5 Conduit, junction boxes, and cabling

2.8.13.5 Submittals

2.8.13.5(1) The purpose of shop drawing submittals is to demonstrate the Design- Builder's understanding of the design intent. This understanding is demonstrated by articulating which equipment and material is required, and by what methods of fabrication and installation will be utilized;

2.8.13.5(2) Before installation of any device, cable, component, pathway, or related material, equipment or hardware, the Design-builder will provide shop drawings and product data sheets submittal for each component supplied to the Authority.

2.8.13.5(3) Shop drawings and product data sheets will indicate operating characteristics for each required item and design conditions;

2.8.13.5(4) Shop drawing and product data will include, but is not limited to the following:

2.8.13.5(4)a. Access Control:

2.8.13.5(4)a.1 All devices and components;

2.8.13.5(4)a.2 Door controllers;

2.8.13.5(4)a.3 Field panels;

2.8.13.5(4)a.4 Interfaces to other systems; and

2.8.13.5(4)a.5 Power Supplies.

2.8.13.5(4)b. Video Surveillance:

2.8.13.5(4)b.1 All devices and components;

2.8.13.5(4)b.2 Cameras;

2.8.13.5(4)b.3 Power Supplies;

2.8.13.5(4)b.4 Monitors, keyboards, and controllers;

2.8.13.5(4)b.5 Interfaces to other system; and

2.8.13.5(4)b.6 Storage.

2.8.13.5(4)c. Intrusion Detection:

2.8.13.5(4)c.1 All devices and components;

2.8.13.5(4)c.2 Panels;

2.8.13.5(4)c.3 Keypads; and

2.8.13.5(4)c.4 Interfaces to other systems.

2.8.13.5(4)d. Panic/Duress System

2.8.13.5(4)d.1 All devices and components;

2.8.13.5(4)d.2 Pendants;

2.8.13.5(4)d.3 Transmitters/receivers/transceivers;

2.8.13.5(4)d.4 Fixed buttons & station;

2.8.13.5(4)d.5 Panels; and

2.8.13.5(4)d.6 Interfaces to other systems.

2.8.13.5(4)e. All other Electronic Security System

2.8.13.5(4)e.1 All devices and components;

2.8.13.5(4)e.2 Panels; and

2.8.13.5(4)e.3 Interfaces to other systems.

2.8.13.5(5) The submittals will be reviewed for general compliance and not for dimensions, quantities. The submittals that are returned will be used for procurement. The responsibility of correct procurement remains solely with the Design-Builder. The submittal review will not relieve the Design-Builder of responsibility for errors or omissions and deviations from this Design-Build Agreement;

2.8.13.5(6) Equipment and material substitutions are prohibited, unless approved by the Authority. If the submittal shows variations from the requirements of this Design-Build Agreement for any reason, the Design-Builder will provide written detail of each variation in the letter of transmittal; and

2.8.13.5(7) Shop Drawings will be submitted in an electronic format on USB Memory Key. The file format will be Adobe portable data file (.pdf) or provide software to enable viewing of files of the other formats at no additional cost to the Authority.

2.8.13.6 As-Built Documentation

2.8.13.6(1) At a minimum, the as-built drawing package supplied by the Design-Builder will include all information per the IFC and any additions made during construction;

2.8.13.6(2) The Design-Builder will provide Maintenance Manual at a minimum contain the following:

2.8.13.6(2)a. Set of final reviewed Shop Drawings;

2.8.13.6(2)b. A copy of all as-built drawings;

2.8.13.6(2)c. Digital photos of all Electronic Security System equipment installed in racks or cabinets;

2.8.13.6(2)d. Manufacturer Warranty documents for equipment and workmanship;

2.8.13.6(2)e. Testing and commissioning results;

2.8.13.6(2)f. Fire-stop design and records documentation;

2.8.13.6(2)g. Computer simulated CCTV coverage report; and

2.8.13.6(2)h. Names, addresses, phone numbers and facsimile numbers of the Design-Builder, sub-contractors and suppliers used on the Work together with a specification reference of the portion of the Work they undertook.

2.8.14 Landscape Construction Documents

Percentage Complete at Submission Stages	30%	60%	95%	100%	Record Drawing
Drawing Content					
Layout and Site Grading Plan	✔	✔	✔	✔	✔
Secured Outdoor Space Plan	✔	✔	✔	✔	✔
Irrigation Plan	-	✔	✔	✔	✔
Planting Plan	-	✔	✔	✔	✔
Landscape Details and Specifications	-	✔	✔	✔	✔
Sun/Shade Gardens	✔	✔	✔	✔	✔
Garden Enlargement Plans	-	✔	✔	✔	✔
Specifications					
General Requirements	✔	✔	✔	✔	-
Equipment	-	✔	✔	✔	-
Furnishings	-	✔	✔	✔	-
Planting*	-	✔	✔	✔	-
Landscape Establishment Maintenance	-	✔	✔	✔	-
Sample Board/Presentation					
Colour Boards Illustrating Planting Mate	-	✔	✔	✔	-
Sample Boards	-	✔	✔	✔	-
Presentation to Patient	-	✔	✔	✔	-
Submittals					
Arborist Report	-	-	-	✔	-

2.8.14.1 Planting specifications to include planting of trees, shrubs and groundcover, topsoil and finish grading, mulch, seeding, sodding.

2.8.14.1(1) The 30% submission will include scalable, digitally produced, colour rendered, form and character drawings which illustrate the following:

2.8.14.1(2) Outline of existing and proposed building(s) with existing trees or treed areas;

2.8.14.1(3) Parking layout and surface treatment;

2.8.14.1(4) Soft landscape treatment (trees, hedges, planting beds, vines, lawn), including vegetation within public road right-of-way;

2.8.14.1(5) Tree retention, removal, and replacement Plan, showing preliminary civil site grading design;

2.8.14.1(6) Landscape structures (such as fences, trellises, arbours, retaining walls, lighting);

2.8.14.1(7) Location and size of amenity areas (if applicable);

2.8.14.1(8) Location and size of outdoor spaces;

2.8.14.1(9) Location of garbage enclosure;

2.8.14.1(10) A preliminary grading information sufficient to determine special treatment or provisions to retaining elements;

2.8.14.1(11) Location and size of Courtyard areas;

2.8.14.1(12) A sun/shade study for the Secure Outdoor Spaces;

2.8.14.1(13) Garden and deck enlargement plans; and

2.8.14.1(14) BCSLA landscape schedules of assurance will be supplied by a Landscape Architect registered in British Columbia.

2.8.14.1(15) The 60% drawing submittal will have resolved the layout and grading of the site, with:

2.8.14.1(16) 60% of the irrigation and planting Design complete. Standard details will be incorporated, with site specific details underway;

2.8.14.1(17) Water conservation and irrigation plan prepared by a qualified professional inclusive of a hydro zone plan, landscape water conservation irrigation report (landscape water budget) and an irrigation Design;

2.8.14.1(18) A preliminary plant list of trees, shrubs, perennials, and ground covers including quantities, botanical and common names, planting sizes, and on centre spacing;

2.8.14.1(19) Location and species of boulevard trees; and preliminary construction drawings; and

2.8.14.1(20) Location, material, and height of garbage enclosure (detailed elevation drawings required).

2.8.14.1(21) The 95% drawing submittal will include completed layout and grading, irrigation, and planting Design. All details will be completed. Submittal will incorporate Authority input received at previous submissions.

2.8.14.1(22) The 100% drawings submittal will incorporate Authority input received at all previous submissions. Drawings will be updated and marked “Issued for Construction.” No landscape installation will proceed until the Issued for Construction set has been submitted.

2.8.15 LEED Documentation

2.8.15.1 The 30% submission will include the LEED Letter Template, with The Team, Responsibility and Project Info tabs filled out. A separate project checklist scorecard will be submitted indicating all of the credits targeted to be achieved. This project checklist is to be updated and re-submitted at each following review stage.

2.8.15.2 The 100% submission will include a complete documentation package with the updated LEED Letter Template and required documentation for all pre-design or detailed design credits being pursued.

2.8.16 Fire Safety Plans

2.8.16.1 The Design-Builder will retain a professional fire safety consultant to provide Fire Safety Plans and all related documentation as required by the authority having jurisdiction and coordinate in further consultation with the Authority to ensure such documentation meets all applicable Authority standards for Fire Safety Plans and related documentation.

2.8.17 Elevator Submittals

2.8.17.1 Elevator Report

2.8.17.1(1) Provide an elevator report written by a qualified elevator consultant if elevator(s) are provided as part of the Building design. The report will confirm the number, type and configuration of elevators required, as well as performance analysis including wait times and security.

2.8.17.2 Drawings and Submittals

2.8.17.2(1) Provide to the Authority submittals in accordance with Schedule 2.

2.8.17.2(2) Submittal, as a minimum, the following drawings and submittals:

2.8.17.2(2)a. General elevator arrangements;

2.8.17.2(2)b. Details of areas where the work joins the work of other trades;

2.8.17.2(2)c. Machine room layouts showing the location of the equipment;

2.8.17.2(2)d. Hoist way layouts drawings including the overhead, pit, car, frame and entrances details;

2.8.17.2(2)e. Cab details including the cab shell, platform, interior panels, ceiling, entrance, lighting and finishes, lanterns and position indicators;

2.8.17.2(2)f. Details of control panels such as hall stations, car stations, central control consoles or fire control panels showing the layout and detailing the design of switches and indicator lights;

2.8.17.2(2)g. Details of any display devices complete with examples of proposed displays, symbols and layout;

2.8.17.2(2)h. Show on the general arrangement or separately, details of frames, doors, sills and supports, lanterns and gongs, including views showing the relationship of hall stations, lanterns and entrances; and

2.8.17.2(2)i. Provide as built information at job completion prior to Substantial Performance.

2.8.17.2(3) Submit documentation to verify compliance with Project's LEED objectives and requirements.

2.8.17.3 Wiring Diagrams

2.8.17.3(1) Supply to the Authority wiring diagrams and data as required for the execution of the Work including schematics for speed control, dispatching system, interfaces, printed circuit boards.

2.8.17.3(2) Incorporate, as part of the schematic diagrams, a reference index ('road map') giving the location of electrical components and wiring interconnections for relay coils, relay contacts, field equipment, integrated circuits and other such devices, so that the position on the schematics of any of these items can be readily determined.

2.8.17.3(3) Supply, prior to the Substantial Performance inspection, three prints and one reproducible copy of the wiring and schematic diagrams revised to show changes that have been made.

2.8.17.3(4) Supply, prior to the Substantial Completion inspection, a PDF copy of the wiring and schematic diagrams revised to show changes that have been made.

2.8.17.3(5) If changes are subsequently made to the wiring or control, supply an additional two sets of marked-up prints and an additional PDF copy of marked-up prints of the schematics and field wiring diagrams showing the changes.

2.8.17.4 Operation and Maintenance Manuals

2.8.17.4(1) Supply to the Authority prior to Substantial Completion operation and maintenance manuals. Coordinate with DBA Section 45 Project Binder and Record Drawings

2.8.17.4(2) The operation and maintenance manual will incorporate, at a minimum:

2.8.17.4(2)a. A cover page including project title, address;

2.8.17.4(2)b. An index;

2.8.17.4(2)c. Contact details for the installer and manufacturer(s);

2.8.17.4(2)d. A warranty letter signed by a representative of Design-Builder having authority to bind the company;

2.8.17.4(3) Controller and drive manuals, including:

2.8.17.4(3)a. A description of the controller user interface;

2.8.17.4(3)b. The installation and user's manuals;

2.8.17.4(3)c. A list of fault and error codes;

2.8.17.4(3)d. Troubleshooting and diagnostic procedures, methods of use and the adjustment of programmable parameters together with their settings at the time of final adjustment;

2.8.17.4(3)e. As-built wiring diagrams;

2.8.17.4(4) The operation of the equipment including special features, dispatching sequences, and such items as intercom systems and security systems;

2.8.17.4(5) Step-by-step instructions for the operation for special features such as Hospital Service, Firefighters' Emergency Operation, Independent service and Emergency Power service;

2.8.17.4(6) As-built diagrams and drawings of operating panels (e.g. car panels, central control consoles) with descriptions of the function of switches and indicators;

2.8.17.4(7) A copy of the final submission to the authority having jurisdiction;

2.8.17.4(8) A copy of the final inspection report from the authority having jurisdiction;

2.8.17.4(9) Operation and maintenance manuals for other major components, including:

2.8.17.4(9)a. Door operator;

2.8.17.4(9)b. Emergency brake;

2.8.17.4(9)c. Communication system;

2.8.17.4(9)d. Safeties & governor;

2.8.17.4(9)e. Hoist machine & motor.

2.8.17.4(10) Supplier and part name for other parts (ex: travelling cable, restrictors, retainers, interlocks, car top inspection station, guide means), excluding minor or generic items such as screws, bolts, hinges;

2.8.17.4(11) Full instructions for any special maintenance procedure, repair protocol, adjustment or test not addressed in CSA B44 Safety Code for Elevators and Escalators, the ASME A17.2 Guide for Inspection or the Elevator Industry Field Employee's Safety Handbook;

2.8.17.4(12) Manufacturers' recommended maintenance intervals for each major component;

2.8.17.4(13) A copy of the Maintenance Control Program.

2.8.18 BECx submittals to be provided to the Authority

2.8.18.1 Building Enclosure Commissioning Agent (BECxA)

2.8.18.1(1) Name of firm and personnel acting as BECxA, including qualifications and BECx experience

2.8.18.2 Independent BECxA Design Reviews

2.8.18.2(1) Provide review reports by BECxA and tracking sheets showing incorporations of comments into the Construction Documents at the following stages during design:

2.8.18.2(1)a. 30%

2.8.18.2(1)b. 60%

2.8.18.2(1)c. 95%

2.8.18.2(1)d. 100%

2.8.18.3 BECx Specification section

2.8.18.3(1) Front end (Division 1) specification section outlining BECx requirements.

2.8.18.3(2) Outline required field testing including:

2.8.18.3(2)a. Roles and responsibilities of all parties related to the test preparation, protocols, methodology, results, and reporting;

2.8.18.3(2)b. Required attendees at field testing for conducting and witnessing the tests;

2.8.18.3(2)c. Ramifications and remedial steps for failed testing, including diagnostic testing;

2.8.18.3(3) Provisions for a full-time Site Building Enclosure Supervisor with duties including but not limited to:

2.8.18.3(3)a. Monitoring and quality control of installation of critical barriers of the building enclosure, including but not limited to insulation, air barrier, waterproofing, weather sealing, water shedding and water deflection elements, and vapour barrier.

2.8.18.3(3)b. Communication and education of the building performance requirements to the sub-contractor.

2.8.18.3(3)c. Coordination with Project Architect, Building Enclosure Professional, BECxA, building enclosure trades, third-party testing agencies, trades, and the Authority and Authority representatives.

2.8.18.3(3)d. Verification of installed elements' performance requirements in compliance with the Reviewed Construction Documents. Include quality control checklists for the installation of air barrier, and air barrier airtightness testing preparation.

2.8.18.3(3)e. Monthly reporting of building enclosure installation progress, deficiencies and their resolution, changes that may affect building performance and associated updates to the building Energy Model, and accompanying photographs showing progress and conformance to the Construction Documents.

2.8.18.4 BECx Plan

2.8.18.4(1) As a minimum, the BECx Plan should include the following sections:

2.8.18.4(1)a. Overview of pre-construction BECx activities, including OPR & BOD

2.8.18.4(1)b. Methodologies for installation and performance verification, identifying the number of occurrences and timing of lab testing, field mock-ups, field testing, and field reviews

2.8.18.4(1)c. Commissioning Management, including roles, responsibilities, communication plans, procedures for design changes or substitutions during construction, procedures for remedial measures and re-testing in case of failed commissioning tests, as well as BECx timelines and milestones in relation to the project schedule

2.8.18.4(1)d. Construction close-out activities, including requirements related to developing the building enclosure maintenance and renewals plan, record drawings, training, and the BECx Report

2.8.18.4(1)e. Warranty period activities, including procedure for deficiencies, reporting, and maintenance

2.8.18.4(2) The BECx Plan is a living document and will be developed starting at schematic design and updated throughout the design process. The BECx Plan will address any early works such as foundations and sub-grade work in sufficient detail prior to starting construction of those components.

2.8.18.4(3) Submit the BECx Plan at 60%, 95%, 100%.

2.8.18.5 BECxA Construction Field Review Reports

2.8.18.5(1) Provide quality assurance field review reports and checklists completed by BECxA and monthly quality control reports and checklists submitted by The Site Building Enclosure Supervisor.

2.8.18.6 BECx Test reports

2.8.18.6(1) Provide test reports conducted by the BECxA or third party testing agencies and reviewed by the BECxA for each test listed under section 5.5.1.2.

2.8.19 Noise and Vibration During Construction

2.8.19.1 Refer to Appendix 1C(l) Control of Noise and Vibration During Construction for required submittals including but not limited to the Vibration Monitoring Program and Noise Control Plan.

2.9 Mock Up Rooms and Prototypes

2.9.1 The Design-Builder will, at its cost and as part of the design review process described in Schedule 2 Review Procedure, provide and make available to the Authority the “mock-ups” and “prototype” rooms submittal described in this Section.

2.9.2 The Design-Builder will include dates on the Submittal Schedule for construction of and for Authority review of mock-ups. The Design-Builder will modify the mock-ups and prototypes as may be required as the Design develops based on feedback from the User Consultation Group and the Authority.

2.9.3 Mock-up #1: The Design-Builder will provide 3D Virtual Mock-up and/ or 3D drawings to help the Authority visualize features of the Design and make Design decisions. Mock-up #1 will, at a minimum, provide the required rooms listed below prior to 30% Submittal such that Authority comments and decisions arising from the review of Mock – up #1 will be reflected in the 30% submittal. The Design-Builder may choose to provide additional 3D virtual mock-ups or 3D drawings for other elements of the Facility at other times during design or construction to assist with communication and expedite decisions. Mock – up #1 will include the following required rooms:

2.9.3.1 LDRP;

2.9.3.2 Nursing Station;

2.9.3.3 Medications Preparation Room;

2.9.3.4 Soiled Utility Room;

2.9.3.5 Emergency Services – Resuscitation/Trauma Room;

2.9.3.6 Emergency Services – Exam/Treatment Room; and

2.9.3.7 Primary care - Exam room (smaller size).

2.9.4 Mock-up #2: The Design-Builder will provide fully constructed mock-ups, including all millwork, services, equipment, IMIT devices locations, power receptacle locations, and furniture included in the design of the room so that the Authority can experience all features of the Design and make Design decisions. Major elements such as millwork/cabinetry, services (plumbing fixtures), and furniture may be represented with 3-dimensional objects of the correct size and shape if the actual fixtures/bed/chair/sink/wardrobe/cabinet/equipment etc are not available. Windows, IMIT equipment locations, power receptacle locations, light switches and similar elements are acceptable as location markers. Mock-up #2 will be scheduled prior to 60% Submittal such that Authority comments and decisions arising from the review of Mock – up #2 will be reflected in the 60% submittal. Mock – up #2 will include the following rooms:

2.9.4.1 LDRP;

2.9.4.2 Nursing Station;

2.9.4.3 Medications Preparation Room;

2.9.4.4 Soiled Utility Room;

2.9.4.5 Emergency Services – Resuscitation/Trauma Room;

2.9.4.6 Emergency Services – Exam/Treatment Room; and

2.9.4.7 Primary care – Exam room (smaller size).

2.9.5 Mock-up #3: The Design-Builder will provide fully constructed mock-ups, including all actual materials, finishes, millwork, services, equipment, IMIT devices locations, power receptacle locations, and furniture included in the design of the room so that the Authority can experience all features of the Design and make Design decisions. Major elements such as millwork/cabinetry, services (plumbing fixtures), and furniture may be represented with 3-dimensional objects of the correct size and shape if the actual fixtures / bed / chair / sink / wardrobe / cabinet / equipment etc are not available. Windows, IMIT equipment locations, power receptacle locations, light switches and similar elements are acceptable as location markers. Mock-up #3 will be scheduled prior to 95% Submittal such that Authority comments and decisions arising from the review of Mock – up #3 will be reflected in the 95% submittal. Mock – up #3 will include the following rooms:

2.9.5.1 Primary Care Reception and HIMS Registration;

2.9.5.2 Long Term Care Medication Room and Clinical Workstations (Nurses' Station);

2.9.5.3 Medical Inpatient bedroom and Medical Inpatient washroom; and

2.9.5.4 Long-Term Care single resident room and Resident washroom, including bariatric rooms.

2.9.6 Mock-up #4: During construction, the Design-Builder will construct an in-situ 'prototype' of the following rooms, and make the prototype available to the Authority at appropriate stages of construction so that the Authority can review the prototype room (including all materials, services, millwork, finishes, equipment and furniture) in its actual location within the Facility at various stages of construction, and consider whether any design adjustments are necessary:

2.9.6.1 Long-Term Care single resident room and Resident washroom, including bariatric rooms.

2.9.7 Equipment and furniture may be actual pieces or replicas but must accurately represent the actual physical dimensions.

2.9.8 The Design-Builder will modify the mock-ups as may be required in Schedule 2 [Review Procedure].

2.9.9 The purpose of the mock-ups is to illustrate the Design. The Design-Builder will update all Design documentation to reflect the mock-ups and prototypes, and any input from the Authority and will submit all such updated Design documentation to the Authority submittal under Schedule 2 - Review Procedure.

2.9.10 The Design-Builder will provide a location acceptable to the Authority for the mock-ups.

2.9.11 Demonstrate the detachment force of tamper proof fire alarm device protective cages to the Authority in mock up #2 or #3.

2.10 Requirements During Construction

2.10.1 Good Neighbour Policy

2.10.1.1 The Design-Builder will cooperate with the District and work with them to minimize disruption and impacts during construction of the Facility.

2.10.1.2 The Design-Builder will work with the Authority and the District to establish hours of work on the Site, especially during the daylight hours of summer months.

2.10.1.3 The Design-Builder will comply, in addition to the applicable requirements in this Schedule, with the District's Good Neighbour by-law.

2.10.2 Site Access During Construction

2.10.2.1 The Design-Builder will prepare a Project Management Plan clearly showing the concept of accessing all entries on the Site during Construction. The Project Management Plan will include, but is not limited to:

2.10.2.1(1) all Site preparation;

2.10.2.1(2) construction of the Facility, including the requirements and timing for construction and commissioning (including all systems and equipment);

2.10.2.1(3) demolition of Existing Hospital;

2.10.2.1(4) site landscaping;

2.10.2.1(5) parking, access and traffic flows, including maintaining adequate vehicle, delivery and pedestrian access; and

2.10.2.1(6) compliance with all requirements of the Agreement.

2.10.2.2 The Design-Builder will provide security and facilities as required to protect the Work from unauthorized entry, vandalism, or theft.

2.10.3 Protection of Property

2.10.3.1 The Design-Builder will:

2.10.3.1(1) protect the Authority's property (and any third party's property) from damage caused by the Construction of Facility

2.10.3.1(2) nd Demolition of the Existing Hospital, including buildings, roadways, drainage systems, landscaping, surfaces, services and infrastructure; and

2.10.3.2 The Design-Builder will promptly repair any damage to property caused by the Design-Builder in undertaking the Construction, including any damage caused by site settlement or ground vibration.

2.10.3.3 The Design-Builder acknowledges that Construction-caused settlement of existing buildings and structures on the Existing Hospital and Construction-caused ground vibration may disrupt the operation of medical equipment (including laboratory and diagnostic imaging equipment in the adjacent buildings), requiring the equipment to be shut-down and re-calibrated, and may disrupt utility services to the Existing Hospital.

2.10.3.4 The Design-Builder will cooperate with the Authority and take all reasonable steps to prevent disrupting such equipment and services, including meeting with the Authority's staff and equipment suppliers in advance of construction to develop a work plan describing measures that the Design-Builder will take to minimize any potential disruption or interference, and implementing the work plan, all in accordance with this Schedule.

2.10.3.5 The Design-Builder will monitor site settlement and ground vibration during construction and take additional steps as may be required to prevent equipment or service disruptions as the Construction progresses.

2.10.3.5(1) In addition to its obligations to promptly repair any damage to property as required by this Design-Build Agreement, if any vibration exceeds the tolerances established and if medical equipment is disrupted as a result of Construction-caused settlement or ground vibration outside the established tolerances, the Design-Builder will, at its cost, arrange for the Authority's equipment suppliers to re-calibrate the equipment and return it to service as quickly as possible. The Design-Builder will not be responsible for recalibration as part of regular maintenance of equipment.

2.10.4 Survey and Monitoring

2.10.4.1 The Design-Builder will undertake the Pre-Construction Survey as required in Section 13 of the Design-Build Agreement.

2.10.5 Control of Vibration During Construction:

2.10.5.1 Refer to Appendix 1C(l) Control of Vibration and Noise During Construction

2.10.6 Control of Noise During Construction

2.10.6.1 Refer to Appendix 1C(l) Control of Vibration and Noise During Construction

2.10.7 Infection Control and Control of Dust and Noxious Odours

2.10.7.1 The Design-Builder will:

2.10.7.1(1) take all reasonable steps (including any specific steps reasonably required by the Authority) to minimize dust and noxious odours (including diesel exhaust) from the Construction (including demolition and preparation of the Site) and to mitigate any adverse effects on the Existing Hospital;

2.10.7.1(2) clean all adjacent buildings, roadways, pathways, and other areas directly affected by the Construction at regular intervals to the satisfaction of the Authority as required to prevent build-up of dirt and dust caused by the Construction and maintain them in the same condition as found and determined by the pre-condition surveys; and

2.10.7.1(3) without limiting the Design-Builder's obligation under the Section above:

2.10.7.1(3)a. The Design‐Builder will retain a CSA qualified independent third‐party Infection Control professional to complete Infection Prevention & Control monitoring and compliance by the Design‐Builder with CSA Z317 (Infection Control During Construction, Renovation or Maintenance of Health Care Facilities);

2.10.7.1(3)b. comply with CSA Z317 (Infection Control During Construction, Renovation or Maintenance of Health Care Facilities) and the Authority's Infection Prevention & Control requirements;

2.10.7.1(3)c. comply with the Authority's IPC requirements and obtain a permit issued by the Authority per Appendix 1G(I), 1G(II), and 1G(III).

2.10.7.1(3)d. monitor compliance with CSA Z317 and the Authority's Infection Prevention & Control requirements on a daily basis during the Construction (including demolition and preparation of the Site) and deliver to the Authority no later than the 5th day of each month, a performance report for the previous month that:

2.10.7.1(3)d.1 describes the steps taken by the Design-Builder to comply with CSA Z317 and the Authority's Infection Prevention & Control requirements; and

2.10.7.1(3)d.2 confirms that the Design-Builder complied with CSA Z317 and the Authority's Infection Prevention & Control requirements or identifies any failure by the Design-Builder to comply.

2.10.8 Waste Management-Hazardous and Non-Hazardous:

2.10.8.1 The Design-Builder will comply with territorial and municipal Standards with respect to waste management programs on construction sites.

2.10.8.2 The Design-Builder will manage waste generated from the Site in accordance with District standards.

2.10.8.3 Take an active role in implementing environmentally sound business practices and producing goods and services that lessen the burden on the environment in production, use and final disposition. Implement reduction, reuse and recycling strategies and the use of environmentally sound products.

2.10.8.4 Special waste and hazardous waste to be removed by trained personnel and disposed of by the Design-Builder.

2.10.8.5 Designate an area or areas for location of bins and source separation of materials. Keep the area(s) clean and organized. If comingled bins are to be used, ensure that off-site sorting company will remain committed to a required waste diversion rate.

2.10.8.6 Store and dispose of hazardous waste materials in a manner which is in full accordance with all applicable federal and District Standards.

2.10.9 Adjacent Facilities Interference

2.10.9.1 Construction work and related equipment or machinery will not interfere with normal operations of the operational facilities on site and adjacent existing facilities.

2.10.10 Systems Shut Downs and Interruptions

2.10.10.1 The Design-Builder will provide to the Authority, a submittal schedule of all the required systems shut downs and interruptions; and

2.10.10.2 During the Construction the Design-Builder will also notify the Authority of all required systems shut downs and interruptions as follows:

2.10.10.2(1) Major impacts of system shut downs and interruptions will be requested 60 calendar days in advance;

2.10.10.2(2) Medium impacts of systems shut downs and interruptions will be requested 30 calendar days in advance; and

2.10.10.2(3) Minor impacts of systems shut downs and interruptions will be requested 14 calendar days in advance.

2.11 Move In

2.11.1 As Construction nears completion, the Design-Builder will coordinate with the Authority the date for the move of staff personnel, Patients, Residents to the Building. The exact timing and sequencing of this move-in will involve coordination with the Authority.

2.11.2 The Design-Builder is required to schedule the move in date and agree to this with the Authority at least six months in advance of any move.

2.11.3 As applicable, the Design-Builder will also assist with the planning and coordination of the move of all other equipment, furniture, fixtures and fittings with the Authority's moving company, participating in move planning meetings, keeping the Authority appraised of construction progress and setting firm dates for when the move can occur, relative to the completion of the Facility and Work;

2.11.4 The Building will have reached Substantial Completion prior to the move. Once the completion dates have been agreed and put in place, the Authority will rely on this information in order to plan and execute the move; and

2.11.5 The Design-Builder is responsible for all damages to furniture, equipment and building finishes incurred during the move of any items moved by the Design-Builder.

2.12 Interior Wayfinding and Signage Requirements

2.12.1 Overriding Principles

2.12.1.1 The Design-Builder will:

2.12.1.1(1) Design a site-specific wayfinding system and signage to be fully integrated with the design of the Facility;

2.12.1.1(2) locate major destinations, such as department entrances, directly adjacent to entry spaces and/or along primary circulation paths for easy access, make waiting areas as open as possible to circulation routes without requiring wayfinders to pass through waiting areas;

2.12.1.1(3) provide significant recognizable, easily named and identified elements in key and easily found locations that will become 'meeting points' for Patients, Residents, volunteers, and visitors;

2.12.1.1(4) provide simple circulation systems and functions so that wayfinding is inherently easy;

2.12.1.1(5) major destinations, such as department entrances, along primary circulation paths for easy access;

2.12.1.1(6) make waiting areas as open as possible to build confidence in wayfinding;

2.12.1.1(7) design waiting areas to be distinct from circulation routes;

2.12.1.1(8) design public elevator and stair lobbies and public circulation routes to be distinct from service and from other non-public routes;

2.12.1.1(9) provide all signage required for Facility operations and as required by the BCBC;

2.12.1.1(10) design signage such that the materials, colours, letter fonts, sizes and other aesthetic and functional considerations, such as braille, conform to a conceptually coherent overall wayfinding design system and respect the wall finish modules;

2.12.1.1(11) provide signage that is resistant to graffiti and physical damage complete with concealed fasteners;

2.12.1.1(12) provide signage that is easy to replace when necessary;

2.12.1.1(13) use international symbols where required;

2.12.1.1(14) Use universal symbols in healthcare;

2.12.1.1(15) orient all facility plan directories to reflect the direction from which they are viewed;

2.12.1.1(16) provide signage that directs visitors to departments and rooms within;

2.12.1.1(17) provide signage that is clearly visible day or night;

2.12.1.1(18) avoid multi-layered naming hierarchies and complex numbering systems;

2.12.1.1(19) use a professional signage/wayfinding designer to prepare a unified signage/wayfinding concept submittal as part of the Design review; and

2.12.1.1(20) incorporate signage into the overall exterior and interior facility design.

2.12.2 Design Requirements

2.12.2.1 The Design-Builder will

2.12.2.1(1) Design the internal directional signs to include a main directory, installed at the main public entrances to the Facility, that indicates the location of every area and department within the Facility that is accessible to the public;

2.12.2.1(2) Design elevator floor directories at all elevator lobbies. They will include floor level listing of departments; a continuous “trail” of signage from the entrances to each of the reception/information points listed on the directories; installation of signage at each point at which a directional decision is required; consistent terminology;

2.12.2.1(3) Design overhead directional signage, which must either be suspended from a ceiling or bulkhead or be mounted directly over doors. Directional signage will not be incorporated into flooring.

2.12.2.2 Door signage

2.12.2.2(1) door signage will indicate restrictions on entry and warn of hazards;

2.12.2.2(2) door signage will not be obscured by emergency systems or other functional elements of the Facility;

2.12.2.2(3) door signage will identify every space (e.g. rooms, alcoves, corridors and stairwells) in the Facility;

2.12.2.2(4) door signage will be located in a consistent location for every room in the Facility;

2.12.2.2(5) door signage will be consistent with the following room numbering protocol:

2.12.2.2(5)a. each room has a unique identifier number;

2.12.2.2(5)b. rooms are numbered in a manner that reflects normal movement through the Facility;

2.12.2.2(5)c. labelling anticipates a person attempting to follow numbering along corridors in sequence;

2.12.2.2(5)d. blocks of numbers are periodically skipped to allow for future flexibility of the numbering system if rooms are added through renovations;

2.12.2.2(6) corridors numbered with unique, two-digit numbers;

2.12.2.2(7) stairwells numbered with unique, single-digit numbers; and

2.12.2.2(8) design external directional signage to:

2.12.2.2(8)a. clearly indicate access for the public;

2.12.2.2(8)b. clearly indicate restrictions to 'after-hours' access and closest accessible entrance;

2.12.2.2(8)c. be well illuminated, backlit, reflective or high contrast and easily visible at night; and

2.12.2.2(8)d. ensure that illuminated external Facility signage:

2.12.2.2(8)d.1 clearly identifies the Facility;

2.12.2.2(8)d.2 minimizes light spillage; and

2.12.2.2(8)d.3 indicates the accesses, parking and restrictions for various vehicle types, as required.

2.12.3 Each room requires a number for service reasons and since many rooms will not have formal wall numbering panels, each door frame will be equipped with a lamacoid, or approved equivalent, number plate approximately 25 mm high by 50 mm long, attached to the head of the door frame on the hinge side; and as this numbering system is used for deliveries, repairs, fire alarm notifications, it is important that room numbers be determined early in design. Follow the same numbering system on design and construction documentation for all disciplines.

PART 3 Design Principles and Guidelines

3.1 Project Design Principles and Objectives

3.1.1 The Design-Builder will apply the design principles described in this Part 3 of this Schedule (collectively, the "Project Design Principles") in undertaking the Design.

3.1.2 In addition to the descriptions of these principles in this Part 3, specific requirements related to these principles are included in Parts 4 – 6 of this Schedule.

3.1.3 The Project Design Principles are integrated principles and the Design-Builder will apply them on an integrated basis throughout the Design and Construction.

3.1.4 The Project's Design will follow CPTED principles.

3.2 Master Planning

3.2.1 The Design-Builder will design the Facility to:

3.2.1.1 have a strong presence on the site and a distinctive architectural character, reflecting the Authority's values and role as the major centre for health in the community;

3.2.1.2 support community access and include a visible main entry and lobby for the Facility and a direct access route to the Emergency Department ambulance entry;

3.2.1.3 reflect logical planning and clarity of circulation;

3.2.1.4 allow for adaptability and flexibility for future expansion;

3.2.1.5 maintain access to the Existing Hospital for ambulances, patients, visitors, staff and service vehicles during Construction;

3.2.1.6 Provide access to all entrances to the Building during demolition of the Existing Hospital and completion of siteworks; and

3.2.1.7 maintain functionality of the existing helicopter landing area throughout Construction, with controlled access through the helicopter landing area for construction vehicles only if required and confirmed by the Authority.

3.2.2 The Design-Builder will base all design decisions within the context of enhancing the Facility.

3.3 Evidence Based Design

3.3.1 The Design-Builder will apply principal findings of Evidence Based Design in undertaking the Design.

3.4 LEAN Design

3.4.1 The Design-Builder will design the Facility:

3.4.1.1 to facilitate the delivery of efficient and effective workflow and processes;

3.4.1.2 to eliminate waste, within both clinical and non-clinical service delivery processes;

3.4.1.3 to recognize the value to the Authority of LEAN healthcare (or equivalent methodologies) in supporting the delivery of Authority activities, and accordingly allow the findings from such methodologies to play a key role in influencing design decisions;

3.4.1.4 to include ergonomic design features throughout all spaces that specifically facilitate the physical activities of staff and Patients, and Residents, including, for example, appropriate millwork, lighting, and patient assist or equipment manoeuvring space; and

3.4.1.5 to support innovative and collaborative methods of working, to help incorporate the Authority's new and emerging technologies, to respond to diverse work styles (such as hoteling and job-sharing), and to optimize flexibility and space utilization. A key element to the development of an integrated workplace is the provision of physical environments that support varied workplace strategies. Accordingly, the Design-Builder will design workplaces to:

3.4.1.5(1) include standardized spaces, systems furniture and casework where appropriate;

3.4.1.5(2) provide floor lay-outs that accommodate teams as well as individuals, and that support mobile employees who require flexibility and use portable technology; and

3.4.1.5(3) consider co-location options, space saving strategies, and lay-outs and furniture that facilitate change.

3.5 Healing Environment

3.5.1 The Design-Builder will design the Facility:

3.5.1.1 to promote a healing and wellness environment for patients and their families. The environment will be welcoming to the community of users and provide Non-Clinical Spaces to relax and de-stress;

3.5.1.2 to promote and enhance Patient Centred Care;

3.5.1.3 to provide an environment that supports excellence and innovation in the delivery of safe, high quality healthcare and where employees, physicians and others can work together collaboratively in promoting health and wellness;

3.5.1.4 to include elements that have been proven to create a therapeutic and low stress environment;

3.5.1.5 to create a comfortable, functional environment for employees, physicians, staff, volunteers, Patients, Patients' families, Residents, Residents' families, and others, by including:

3.5.1.5(1) design elements that minimize noise, provide controlled natural light, and use natural materials;

3.5.1.5(2) design elements that provide connections to the outdoors, including views of the exterior environment in all inpatient and Resident rooms, waiting areas, staff lounges and similar locations;

3.5.1.5(3) design elements that support interaction within and between Patient families;

3.5.1.5(4) design elements such as sound, colour, pattern, air quality, nature; and

3.5.1.5(5) design features and structural systems that accommodate art and other aesthetic forms.

3.6 Elderly Friendly

3.6.1 The Design-Builder will design the Facility to create an elderly friendly environment. The Design- Builder will comply with "Code Plus: Physical Design Components for an Elder Friendly Hospital", which identifies components that are known to contribute adverse effects on functional ability and safety in older adults, and additional physical design elements that go beyond industrial building codes and standards together with corresponding recommendations for elderly friendliness.

3.6.2 The Design-Builder will design the Long-Term Care unit so that they are appropriate for Residents with dementia.

3.7 Standardization

3.8 Sustainability

3.9 Technology

3.9.1 Given the crucial role that technology plays in the modern healthcare facility the Design-Builder will provide technology so that it will:

3.9.1.1 Assist staff in providing a high degree of care for the patients by optimizing and streamlining work flows, while avoiding unnecessary alarms that cause alarm fatigue;

3.9.1.2 Utilize technology to ensure the safety and security of staff, Patients, Residents, and visitors in all areas of the Facility with extra safeguards in place at high-risk areas; and

3.9.1.3 Provide a patient centric technology implementation to ensure each technology provided is centred around providing comfort and lowered anxiety for each patient from admission to discharge.

3.10 Adaptability, Flexibility, and Expansion

3.10.1 The Facility should support development and implementation of new clinical and non-clinical work processes and technology change however possible;

3.10.2 The Facility will accommodate program, service, work and equipment change with minimized utility infrastructure and Facility impact, including down time however possible;

3.10.3 Design 3 Long Term Care rooms to be acuity adaptable for Inpatient Care. Provide the same compliment of medical gases, electrical and data outlets as required for inpatient rooms. Conceal medical gases and additional data and electrical outlets when not in use;

3.10.4 With an infrastructure that incorporates excess systems capacity and includes systems and components that support future expansion with minimized disruption and allows for upgrades in Authority technology or technological progression as noted elsewhere in the SOR; and

3.10.5 Utilizing modular furnishing and millwork responsive to rapid change.

3.11 Accessible Equitable Design

3.11.1 The Design-Builder will incorporate Centre for Excellence in Universal Design philosophies in the Design to address barriers to equitable access to healthcare such as cultural diversity, physical capability, and gender:

3.11.1.1 The Design will be easy to use by people with diverse abilities;

3.11.1.2 The Design will accommodate a wide range of individual preferences and abilities;

3.11.1.3 The Design will be easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level;

3.11.1.4 The Design will communicate necessary information effectively to the user, including those with reduced sensory abilities;

3.11.1.5 The Design will minimize hazards and the adverse consequences of accidental or unintended actions;

3.11.1.6 The Design is capable of being used efficiently and comfortably and with a minimum of fatigue; and

3.11.1.7 The Design will provide appropriate size and space for approach, reach, manipulation, and use.

3.11.2 Respect for Indigenous Cultural Values

3.11.2.1 The Design will demonstrate respect for Indigenous cultural values represented by Indigenous groups of northern British Columbia and the Omineca Region throughout the Facility.

3.11.2.2 The Design-Builder will incorporate for the visible representation of Indigenous culture into the Facility and Site.

3.11.2.3 Site landscaping will incorporate cultural elements such as indigenous plants used for traditional healing.

3.11.2.4 Interior programmatic spaces including the Non-Denominational Spiritual Room will be placed appropriately to accommodate and support cultural ceremonies, extended family and multi-generational involvement in care, and the preparation of food with the Gathering Space adjacent to the Food and Nutrition Area and with direct access to outdoor space.

3.11.2.5 The Design will include features reflecting and representing the Indigenous groups of the surrounding Omineca Region in the following functional component areas:

3.11.2.5(1) Lobby;

3.11.2.5(2) Inpatient Unit;

3.11.2.5(3) Long Term Care;

3.11.2.5(4) Emergency Services;

3.11.2.5(5) Ambulatory Services; and

3.11.2.5(6) Registration.

3.11.2.6 Confirm specific design requirement with the Authority.

3.12 Infection Prevention and Control

3.12.1 The Design-Builder will consult with the Authority's Infection Prevention and Control practitioner(s) during design of the Facility and comply with direction provided by the IPC practitioner(s).

3.13 Interior Design

3.13.1 Interior Walls and Partitions

3.13.1.1 Use interior walls and partition systems that provide acoustic separations as required for the specific functions to be carried out in the spaces affected, and in accordance with the requirements of Appendix 1C Acoustics and Noise Control Measures.

3.13.1.2 Design and select interior walls and partitions, partition systems and interior finishes to comply with the following criteria as may be relevant for the particular or specific functions enclosed:

3.13.1.2(1) cleaning, maintenance and infection prevention and control;

3.13.1.2(2) permanence and durability including impact resistance; and

3.13.1.2(3) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality.

3.13.1.3 All interior partition walls to provide required acoustic and BCBC separation.

3.13.1.4 Interior partition in airborne isolations rooms, ante rooms and pressurized rooms must be designed and constructed to meet the specific pressure requirements for such rooms.

3.13.1.5 Provide wall finishes that are smooth, washable, waterproof, and durable, and provide protection from cart damage.

3.13.1.6 Provide fittings, attachments, and internal bracing/backup as required to accommodate and support wall mounted equipment.

3.13.2 Ceilings

3.13.2.1 Ceiling systems will comprise a major component of the acoustic or sound attenuation function as required in the spaces in which they are installed and will comply with the requirements in Appendix 1C Acoustics and Noise Control Measures and all other applicable provisions in this Schedule.

3.13.2.2 Ceiling Height will not be less than 2700 mm in all areas of the Building except for the following:

3.13.2.2(1) The Quiet Room and the Resuscitation/Trauma Room in Emergency Services will have a minimum Ceiling Height of 3000 mm;

3.13.2.2(2) Design ceiling Heights to accommodate equipment requirements which may need to exceed 2700 mm;

3.13.2.2(3) Ceilings in mechanical, electrical, plumbing, and telecommunication rooms and in Material Management will be open, unless required otherwise by code to meet fire ratings;

3.13.2.2(4) the public lobby will have a minimum Ceiling Height of 3600 mm;

3.13.2.2(5) the Gathering Space will have a minimum Ceiling Height of 3600 mm;

3.13.2.2(6) the Ambulance Garage will have a minimum clear height of 3700mm to the underside of structure, ceiling and/or ceiling mounted equipment within the space;

3.13.2.2(7) the Radiology Imaging Room, and rooms with overhead patient gantry lifts (except inpatient rooms and Long-Term Care Resident Rooms) to have a minimum ceiling height of 3000 mm;

3.13.2.2(8) provide open ceilings in materiel management and facilities management with open work benches, machine shops, high utility shelving storage areas, and overhead hoists. Maintain 3600 mm clear height below structure, ducts and fixtures;

3.13.2.3 Suspended structure located for overhead equipment will be located above finished ceiling.

3.13.2.4 Ceilings will allow access to equipment where necessary, except at those spaces as indicated elsewhere in this Schedule 1 [Statement of Requirements].

3.13.2.5 Exposed building services are not permitted in public and patient care areas.

3.13.2.6 Ceilings in public areas and Patient/ Resident common areas will be designed to avoid plain and featureless ceilings. Ceilings in these spaces will provide visual interest; and

3.13.2.7 Provide washable ceilings in the Central Kitchen Facilities and Warewashing areas of Food Services.

3.13.3 Floor Finishes

3.13.3.1 The Design-Builder will provide flooring that is complementary and integral to the functional and aesthetic requirements of the interior space.

3.13.3.2 The Design-Builder will select floor finishes to suit types and concentration of pedestrian and/or vehicular/wheel traffic.

3.13.3.3 Continuous cove base is required with all sheet flooring. Base height is minimum 150 mm.

3.13.3.4 The Design-Builder will design and select floor finishes to comply with the following criteria:

3.13.3.4(1) ergonomic comfort, cleaning, maintenance and infection prevention and control including the frequency and quality of joints and also including ease of replacement if and when required;

3.13.3.4(2) imperviousness to concentrations of moisture anticipated to be existing on the floors and for the duration of that moisture;

3.13.3.4(3) permanence, durability and resistance to concentrated service traffic both pedestrian and vehicular;

3.13.3.4(4) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality; and

3.13.3.4(5) compatibility of patterns and textures with the requirements for pedestrian safety and elderly friendly design.

3.13.3.5 Non-slip flooring will be used in all wet areas including, but not limited to, central cleaning and sterilizing, wash and change rooms, bathing areas, patient washrooms, laundry, soiled utility and housekeeping rooms.

3.13.3.6 Heavy-duty non-slip flooring, impervious to food acids and oils, suitable for rolling equipment will be used in all food service areas.

3.13.3.7 Provide electrostatic-free, slip resistant flooring material throughout Laboratory services.

3.13.3.8 Patient shower floors and floors in Tub rooms will slope to drain and be flush-walk-in without ridges for water retention. Minimum slope will be as indicated in Section 5.3.5.3(5) and to a maximum slope that allows for comfortable movement of wheeled equipment.

3.13.3.9 All rooms where there is risk of flooding or liquids accumulation on the floors will be provided with floor drainage system and a minimum of 2% slope to drain.

3.13.3.10 Install flooring over materials that contain no more than the maximum percentage of moisture as recommended by the flooring manufacturer.

3.13.4 Corridors

3.13.4.1 Corridor widths will be as listed in Appendix 1A0.2.2(8):

3.13.4.1(1) in areas of potential congestion provide a greater width as required to ease congestion.

3.13.4.2 Provide access to the ceiling plenum for regular building systems maintenance only from corridors. Access will be secure but convenient. If ceiling tiles are used in emergency, inpatient and long term care areas , provide the ceiling tile layout such that daytime maintenance will maintain patient and staff movement along the corridor and access to the plenum requiring a hoarded area in the corridor below will not reduce the clear corridor to less than half its original width.

3.13.4.3 Corridors in Patient and Resident care areas will be free of cart alcoves with carts and equipment rooms and alcoves in staff only areas except where specifically noted by Northern Health.

3.13.4.4 In the Inpatient Unit and the Long Term Care Unit, locate lighting fixtures that remain on during the night so that they cannot be seen from bed positions from within the Patient or Resident Bedrooms.

3.13.4.5 Avoid locating access panels in patient accessible corridors and rooms

3.13.5 Exit Stairs

3.13.5.1 Locate exit stairs where required to be conveniently accessible from circulation routes.

3.13.5.2 Avoid stair locations that negatively impact future planning flexibility or constrain desirable views from Patient / Resident care and staff work areas.

3.13.6 Convenience Stairs

3.13.6.1 Include convenience stairs where appropriate, located strategically to reduce dependence on elevator use. The maximum allowable distance between the convenience stair and the closest elevator is 10 metres.

PART 4 Site Development Requirements

4.1 Master Site Plan

The Design‐Builder will develop and submit to the Authority a master site plan ("Master Site Plan") for the Facility.

4.1.1 Site access to be a milestone on the Schedule and to be reviewed by the Authority and to receive "Reviewed" status if acceptable.

4.1.2 Provide detailed routing for all vehicles respective pedestrians, encroachments, features, entrances, and exits, clearly indicating connections to existing (Stuart Drive East, and Junkers Street alignment nearest) for primary and emergency secondary Facility access.

4.1.3 The primary entrance road to the Site for all vehicles and pedestrians will remain from Stuart Drive East. The emergency secondary Site entrance road will be from the Junkers Street alignment. Site accesses indicated on the Master Site Plan needs to be submitted to the Authority under the Review Procedure.

4.1.4 The Master Site Plan will:

4.1.4.1 describe the Site as currently in use;

4.1.4.2 describe all phased development at the Site, including the demolition of the Existing Hospital, and any other buildings or structures on site;

4.1.4.3 allow each component of the Facility to be an integrated part of the whole, facilitating the delivery of clinical services and non-clinical support and enhancing the ability of these to function in a cohesive manner;

4.1.4.4 describe Site servicing, parking, vehicle circulation and Site wayfinding signage;

4.1.4.5 describe direct and logical pedestrian connections between pedestrian entries to the site, parking areas and Building main and staff entries;

4.1.4.6 separate pedestrian pathways and emergency access routes;

4.1.4.7 identify entry level expansion zones in two locations allowing convenient connections to the Building that total 750 square meters in area with a minimum expansion zone area of 300 square meters. Expansion zones will not conflict with any Building Entrance or paths to entrances from parking areas. The layout of the Facility will preserve reasonable access and staging for construction within both expansion zones.

4.1.4.8 describe access needed to replace major components of the Facility as may be required; and

4.1.4.9 describe access to oil storage tanks, propane storage tanks, and emergency generators to accommodate safe and efficient delivery of all fuels.

4.1.4.10 meet and match the grades along the edge of construction and property lines.

4.2 Urban Design and Site Development

4.2.1 General

4.2.1.1 Undertake an environmental wind and snow study per section 8.2.7 and confirm mitigation of issues identified in the study.

4.2.1.2 Provide clear visibility, pedestrian, and vehicular access to the Main Entrance and ED Entrance from the Stuart Road entrance to the site. Create a legible site layout and circulation pattern to foster a strong sense of place and identity and to safely accommodate vehicular and pedestrian circulation on the Site.

4.2.1.3 Provide clear pedestrian and vehicular access to the Main Entrance and ED Entrance from the Site Entrance off Stuart Drive. Provide a minimum 1.8 meter wide sidewalk from the existing Stuart Road sidewalk at the entry to the Site to the Main Entrance.

4.2.1.4 Provide the required number of handicapped parking spaces and three (3) short term patient parking spaces adjacent to the Main Entrance. Each handicapped space to be a minimum of 2.7 meters wide plus a 1.5 meter wide and clearly marked passenger unloading zone on the passenger side. Provide a separate and distinct passenger-side drop-off area with uninterrupted pedestrian access to the Main Entrance.

4.2.1.5 Provide a minimum 40 square meter canopy extending a minimum of 2.7 meters beyond the entry vestibule doors at the Main Entrance.

4.2.1.6 Provide a minimum of 2 seating areas, each accommodating 4 people and two wheelchairs located to provide a view toward the lake uninterrupted by parked vehicles.

4.2.1.7 Design landscape and circulation routes to have clear unobstructed views of surrounding areas for safety surveillance.

4.2.1.8 Provide visibility to all of the visitor parking area from the Main Entrance area and from staff interior work areas.

4.2.1.9 Locate all refuse/recycling areas, shipping, loading or utility areas, satellite dishes, outdoor vents, mechanical equipment, transformers, and other similar structures from view from the Site entry, Main Entrance and visitor parking area.

4.2.1.10 In cases where items in above clause cannot be located out of view, they must be screened out of view from streets and adjacent properties.

4.2.1.11 Provide visual and acoustic screening between inpatient, Resident rooms and outdoor gathering areas and all components that generate outdoor noise including transformers, mechanical equipment, and shipping / loading areas.

4.2.1.12 Provide easy access to garbage and recycling bins. Screen Garbage and recycling bins from public view.

4.2.1.13 The design of the site at the ED Entrance will provide the following spaces for personal vehicles of standard width unless noted otherwise and do not exceed 6.3m in length:

4.2.1.13(1) One (1) “stretcher” drop-off space oriented parallel to the curb and sidewalk. This drop-off space will be located as close as possible to the ED Entrance;

4.2.1.13(2) Two (2) visitor short-term parking spaces located as close as possible to the ED Entrance after the parallel stretcher drop-off space. One of the short-term visitor parking spaces will be a handicapped accessible space (minimum 2.7 metres wide with a clearly marked 1.5 metre wide passenger unloading zone); and

4.2.1.13(3) Three (3) parking spaces designated for staff located as close as possible to the ED Entrance after the stretcher drop-off and short-term visitor spaces. The three staff spaces will be re-allocated from the existing number of staff parking spaces and will not be additional.

4.2.1.14 Provide a vehicular turn-around at the ED Entrance to enable the public vehicles to reverse direction and travel northbound if all drop-off and short-term visitor parking spaces at the ED Entrance are already in use. Provide appropriate signage at this location to inform public vehicles that they are not allowed to proceed past this point. The intent is to prevent public vehicles from continuing southbound to avoid the public from compromising the ambulance driveway zone or accessing the service areas to the south.

4.2.1.15 The primary planning principle for the design of the vehicular movements at the ED Entrance, vehicle turn-around and Ambulance Bay will be to optimize the ambulance approach to the Ambulance Bay without sharp turns for alignment and to configure the ED drop-off and parking spaces such that ambulance access to the Ambulance Bay is not compromised.

4.2.2 Pedestrian and Vehicular

4.2.2.1 Separate traffic routes for emergency vehicles, staff and service vehicles from traffic routes for visitors' vehicles at or close to the entry to the Site from Stuart Road, and to minimize service vehicle traffic interference with ambulance and other emergency vehicle access to the Site.

4.2.2.2 Design parking areas to safely accommodate drivers and passengers walking between their vehicle and the Facility main entrance through parking lot drive aisles. Design parking lot drive aisles to avoid rain water and snow melt puddling while avoiding slopes-to-drain that exacerbate the danger of slipping on ice.

4.2.2.3 Provide curb-free and ramp-free access from all visitor parking areas to the Main Entrance. At the ED Entrance provide curb-free and ramp-free access for accessibility from drop-off and short-term parking spaces. Where drop-off spaces or short-term parking spaces are oriented 90° to the drive aisle, provide bollards or other measures acceptable to the Authority to prevent vehicles from proceeding onto the adjacent sidewalk.

4.2.2.4 Protect the building from circulating and parking vehicles using bollards and/or canopy supports.

4.2.2.5 Provide bollards to protect loading dock area from vehicular damage.

4.2.2.6 Provide pedestrian routes that are fully accessible by the disabled community, and are elderly friendly.

4.2.2.7 Do not provide curbs between visitor parking areas and the Main Entrance.

4.2.2.8 The sidewalk from the Site Entry to the Building Main Entry will incorporate landscape treatments with trees and benches, lighting, and distinct paving where appropriate. Provide a curb between the sidewalk and a roadway parallel to the sidewalk that extends toward the Main Entrance. End the curb where it first meets a line of pedestrian travel to the Main Entrance from a Visitor parking area. Provide a tactile strip for the visually impaired parallel to the curb, where the curb ends and wherever the Authority requests.

4.2.2.9 All sidewalks and other paved areas must have positive drainage to shed rainwater quickly to a storm drainage facility and be designed to avoid surface ponding.

4.2.2.10 Design pedestrian sidewalks with longitudinal gradient no greater than 5% and with a cross-fall between 1% and 2%.

4.2.2.11 All sidewalks will be at least 1.8 m wide.

4.2.2.12 Provide lighting on all sidewalks, and parking areas. Light poles, fixtures and electrical service will be provided by the Design- Builder.

4.2.2.13 Provide driveway access to the entrance and exit of the Ambulance Bay to accommodate emergency vehicles. The driveway to the Ambulance Bay will be located to reduce vehicle traffic interference with emergency vehicles.

4.2.3 Main Building Entry

4.2.3.1 Entrance Plaza will be adjacent to the Main Entrance for patients and visitors and general access to the Building.

4.2.3.2 The Main Entrance will have three comfortable and elder-friendly benches, each accommodating 3 people nearby, with space adjacent to both sides of each bench accommodating a wheelchair. Each seating position will have hand-rests for the convenience of the senior population.

4.2.3.3 Provide low-maintenance planting in the Main Entrance area.

4.2.3.4 Entrance Plaza will have consistent hard surface.

4.2.4 Public Realm and Open Space

4.2.4.1 Design and construct the Facility with consideration for the legibility, quality and consistency of the overall treatment of the public realm.

4.2.4.2 Provide a hierarchy of open spaces as follows:

4.2.4.2(1) spaces that preserve the natural environment;

4.2.4.2(2) spaces for Patients, Residents, and visitors;

4.2.4.2(3) Secure open spaces for long term Care residents; and

4.2.4.2(4) private spaces for staff respite;

4.2.4.3 Configure the Building to maximize the availability of sunlight to open spaces and areas of high pedestrian use.

4.2.4.4 Situate building to preserve existing natural features and consider the integration of these elements into the overall Design.

4.2.5 Community Noise Protection

4.2.5.1 Design and construct the Facility so that noise levels from mechanical and electrical equipment at the nearest residential property lines does not exceed:

4.2.5.1(1) 40 dBA at night; and

4.2.5.1(2) 50 dBA during the day.

4.2.5.2 Ensure that electrical and mechanical noise levels in outdoor patient lounge areas and public sidewalks does not exceed 55 dBA and in the case of the operation of emergency power generator systems will not exceed 60 dBA.

4.2.5.3 Emergency generators are to be tested during the daytime only and must comply with the 50 dBA daytime requirement for all conditions. Nighttime operation will only occur under emergency conditions and is therefore exempt from the nighttime requirement, but must meet the daytime requirement

4.2.6 Site Wayfinding and Exterior Signage

4.2.6.1 Provide Site wayfinding and exterior signage in accordance with this Schedule.

4.2.6.2 Provide a signage master-plan for the Site.

4.2.6.3 Design the Facility for ease of wayfinding day and night to the Main Entrance without use of wayfinding signs.

4.2.6.4 Provide external directional signage that:

4.2.6.4(1) From the Site entry, clearly identifies Main Entrance and Emergency Patient-only parking access, public parking area access, Ambulance-only and Service Vehicle-only access;

4.2.6.4(2) all exterior directional signage will be illuminated, backlit, reflective or high contrast and easily visible day and night; and

4.2.6.4(3) minimizes light spillage.

4.2.6.5 Exterior Wayfinding signage will minimize interference with snow clearing. Integrate Exterior signage with exterior lighting standards to reduce interference with snow clearing.

4.2.6.6 Exterior Wayfinding signage to incorporate Local Indigenous Language in addition to English on select exterior wayfinding signage, as directed by the Authority.

4.2.7 Site Lighting

4.2.7.1 Provide lighting for public outdoor spaces and the adjacent private property to create an unobtrusive, human scale lighting concept, with a hierarchy of fixture types and designed according to functional and security needs (including CPTED) and reflecting the hierarchy of pedestrian corridors.

4.2.7.2 Light fixtures within the reach of pedestrians will be vandal-proof.

4.2.7.3 All exterior luminaires in areas with uncontrolled public access will be vandal-resistant or protected by location and LED fixtures.

4.2.7.4 Lighting on pedestrian paths will illuminate not just the path but also the surrounding area adjacent to the path particularly en-route to transit connections. Exterior walking loops not physically part of or accessed through the Long term care department or medical inpatient units garden, courtyard or enclosed patio are intended for daytime use only and are not to be provided with pathway lighting or lighting to the surrounding area adjacent to the pathway.

4.2.7.5 Site lighting will enhance security camera coverage and will not create glare or detrimental to coverage.

4.2.7.6 Provide lighting to facilitate ease and safety of pedestrian access to public transit.

4.2.7.7 Not used.

4.2.7.8 Provide lighting for on and off-site roadways, walkways, drop-off and parking areas within the Site to ensure safe vehicle and pedestrian traffic with respect to collisions, personal safety, and building access and egress. Lighting design should address existing neighbours' privacy from all storeys.

4.2.7.8(1) Prevent light trespass into patient rooms and neighbouring yards and windows.

4.2.7.8(2) Prevent lighting glare, shadow, or high contrast with surrounding areas.

4.2.7.8(3) Screen views into patient rooms and neighbouring yard from upper floor windows.

4.2.7.8(4) The exterior walking loop located to the NW of the facility is designated for daylight hours only by facility users and does not require lighting of walkway or pathway. Two additional luminaires will be added to the proposed new lamp standards at the adjacent parking area to illuminate the NW walking loop after hours for security reasons.

4.2.7.9 Site lighting will c comply with CSA and IES RP-20 Standards complete with sharp cut-off (dark sky compliant).

4.2.8 Receptacles for Car Engine Heaters

4.2.8.1 Provide a duplex receptacle for six (6) vehicles in the staff parking area.

4.2.9 Landscape

4.2.9.1 Provide and preserve landscape for the complete Site that contributes to a liveable, healthy, and resilient community.

4.2.9.2 Minimize grade changes for drop curbs. Drop curbs aligned to pedestrian crossings.

4.2.9.2(1) Parking areas and driveways to be as clear of obstructions as possible.

4.2.9.3 Use landscape elements to enhance views toward the lake and surrounding landscape from the Facility.

4.2.9.4 Provide landscape site plans for the complete Lands. Landscape plans to be prepared by a BCSLA (British Columbia Society of Landscape Architects) registered Landscape Architect with stamp.

4.2.9.5 Installation of the landscape to be supervised and approved by a BCSLA registered Landscape Architect.

4.2.9.6 Hose bibs to be spaced around the exterior of the Facility at entrance locations and 45m (150') on centre.

4.2.9.7 Minimize the amount of impervious surfaces to increase the natural absorption rate of storm water on the Site.

4.2.9.8 Preserve existing natural landscape areas. Selected restoration area species are to match existing native species for the sub-region. Native seed is to be obtained from certified seed suppliers and plants are to be obtained from local growers.

4.2.9.9 Refer to Section 8 for detailed descriptions of planting and street furniture requirements.

4.2.10 Site Safety Through Design

4.2.10.1 apply CPTED principles including but not limited to:

4.2.10.1(1) Publicly accessible spaces will be distinguishable from Secure private spaces;

4.2.10.1(2) Design the Site so people can see what is happening around them;

4.2.10.1(3) Eliminate entrapment spots;

4.2.10.1(4) Promote ‘eyes on the street’ from the Building interior, and outdoor pedestrian pathways and seating. Windows will not be hidden by vegetation or other items; and

4.2.10.1(5) Reduce opportunities for hiding spaces.

4.2.11 Fire Smart

4.2.11.1 The design of the Facility will include a fire protection zone that:

4.2.11.1(1) provides a 30m fire protection zone from the Building;

4.2.11.1(2) provides a 3m fire protection zone from either side of any road;

4.2.11.1(3) not used;

4.2.11.1(4) has planting primarily of native species such as aspen and willow, avoiding species with fire-adapted life cycles; and

4.2.11.1(5) has all branches lower than 2m removed.

4.2.12 Snow Storage

4.2.12.1 Provide snow storage areas to accommodate onsite storage of snow that has been removed from hardscaped areas.

4.2.12.2 Snow storage areas must be designed to allow the on-site roadways and parking to remain functional.

4.2.12.3 Snow storage shall be positioned in areas that would not block or impede motorist and pedestrian site distances.

4.2.12.4 Snow storage areas shall have a minimum dimension of 2.6m by 1.5m to accommodate snow piling from a typical plough.

4.2.13 ED Entrance

4.2.13.1 The design of the ED Entrance will provide a prominent and easily identifiable element in the Building façade to assist with public wayfinding.

4.2.13.2 The ED Entrance will be designed for visibility and transparency.

4.2.13.3 Provide a canopy for weather protection at the ED Entrance sidewalk extending from the ED Entrance vestibule to and include the parallel drop-off space. The portion of the canopy at the parallel drop-off space(s) will extend a minimum of 1.2 metres beyond the curb to cover the passenger unloading side of the vehicle(s). Design the canopy support structure to provide clear unrestricted access below the canopy and to prevent damage from vehicles.

4.3 Parking

4.3.1 General

4.3.1.1 The Design-Builder will provide parking for the Facility in accordance with the requirements of this Schedule and all applicable standards.

4.3.2 Parking Design Principles

4.3.2.1 The design and operation of surface parking facilities should create convenient and safe usage. Refer to Section 7.9.6.

4.3.2.2 Design and construct a surface parking in accordance with the following:

4.3.2.2(1) provide adequate provision for ingress and egress to all parking spaces to ensure ease of mobility, ample manoeuvring clearances, and safety of vehicles and pedestrians;

4.3.2.2(2) ensure that the parking area is clear from obstruction from curbs, curb stops and/or raised landscaping islands. Curbing is only permitted around the perimeter of the parking area or where necessary to create a drop-off zone;

4.3.2.2(3) ensure the parking is well-lit while minimizing light spillage into adjacent properties;

4.3.2.2(4) clearly mark all parking spaces as directed by the Authority;

4.3.2.2(5) use wayfinding strategies, including signage, to allow each parking zone to be identifiable and to assist in orientation and ease of finding/identifying parking stalls;

4.3.2.2(6) set parking lot layouts in an orderly and logical design to minimize confusion and excessive internal circulation;

4.3.2.2(7) employee parking must not be located or within service or loading areas;

4.3.2.3 Provide all parking lots with the following landscape requirements:

4.3.2.3(1) incorporate safety and security measures into the landscape design;

4.3.2.3(2) surface parking must contribute to the continuity of the street landscaping edge without compromising the safety and security of the public inside the lot and on the public street;

4.3.2.3(3) see Schedule 1 Statement of Requirements Section 8 for detailed description of landscape requirements for parking lots.

4.3.3 Bicycle Parking

4.3.3.1 Provide bicycle parking facilities that are at-grade, have uniform lighting and are safe and secure. Lighting design for the bicycle storage area will take into account the Facility Risk Assessment and the lighting design will be in accordance with CEPTED guidelines but will be no less than 100 lumens throughout.

4.3.3.2 Provide unsecured, short-term bicycle parking in the form of bicycle racks located within 15 m of a principal building entry. Such bicycle parking must be situated in well-lit locations, clearly visible from principal building entries and/or public roads.

4.3.3.3 Bicycle rack must be made of sturdy, theft-resistant material and should be secured to the floor or ground. Bicycle racks should be designed to secure the bicycle frame, not the wheels, and allow both the frame and front wheel to be locked to the rack with a U-style lock.

4.3.4 Facility Specific Requirements

4.3.4.1 Provide 36 stalls for physicians and staff;

4.3.4.1(1) A minimum of two (2) marked physician stalls within 40 meters of the Main Entrance.

4.3.4.1(2) 24 of the 36 stalls for physicians and staff may be located within 50 meters of the Secondary Staff Entrance to the Building.

4.3.4.2 Provide 42 stalls for visitors and three (3) accessible parking stalls within 75 m of the Main Entrance of the Building;

4.3.4.3 In addition to the 81 parking stalls required above, provide:

4.3.4.3(1) one (1) dedicated parking stall for the Northern Health Connections bus;

4.3.4.3(2) Refer to 4.2.1.13 for additional parking spaces required at the ED Entrance;

4.3.4.3(3) a minimum of three (3) motorcycle parking stalls;

4.3.4.3(4) not used;

4.3.4.3(5) unsecured, short-term bicycle parking for ten (10) bicycles as described in Section 4.3.3.

4.3.4.4 Designate three (3) staff parking stalls for electrical vehicle charging with the appropriate paving markings and/ or signage.

4.3.4.5 A minimum of 40 stalls should be provided on the Site during the construction of the New Facility and demolition of the Existing Hospital.

4.3.5 Parking Stall Sizes

4.3.5.1 Parking stalls will comply with the following:

4.3.5.1(1) Minimum parking stall dimensions will be 6.0 m x 3.0 m, provided that:

4.3.5.1(1)a. pick up and drop off areas, minimum stall dimensions will be 6.0 m x 2.7 m with a 1.5m marked clear zone on both sides of the stall; and

4.3.5.1(1)b. minimum dimensions for accessible stalls as per the District's Zoning Bylaw.

4.3.5.1(2) Minimum drive aisle widths will be as per the District's Zoning Bylaw.

4.4 Utility Infrastructure

4.4.1 The Design-Builder will provide, as necessary, adequate, and reliable infrastructure and necessary municipal services to the Facility. All municipal services and off-Site works will conform to the District's engineering regulations and requirements.

4.4.2 Ensure that the Existing Hospital remains accessible, functional, and uninterrupted until the proposed services are connected and upon completion of the Facility. Existing services are then to be capped, abandoned and/or removed as it may be required.

4.4.3 Municipal Off-Site Services Infrastructure

4.4.3.1 General

4.4.3.1(1) Design-Builder will confirm and comply with any required off-site services as directed by the District.

4.4.3.1(2) Design and construct all municipal off-Site services, connections or upgrading of municipal systems as needed or as required by the District such that the off-Site municipal infrastructure is adequate to support the Facility, to the satisfaction of the District and other Governmental Authorities. Refer to the applicable District documents for land development and municipal servicing engineering standards.

4.4.3.1(3) All works required for excavation, exposing, backfill and surface restoration of all proposed water, sanitary sewer, and storm service connections, as well as the connection of each service to the municipal system, will be the responsibility of the Design-Builder.

4.4.3.2 Municipal Water Supply

4.4.3.2(1) The existing municipal water service in Fort Saint James consists of a single water source. This system generally consists of a pump station and a water storage tank located adjacent and above the hospital. This system has water mains located directly to the North and the Southwest of the hospital site, as well as an old watermain crossing around the north west perimeter of the site. It is unclear whether the existing watermain crossing the site is currently in service or not. There is also a 200 mm municipal water reservoir drain crossing the site.

A new municipal water supply main will be provided which provides for a redundant municipal watermain across the site from Stuart Drive East to the existing municipal water supply main at Junkers Street. This water main will be sized and designed to meet MMCD specifications and shall be provided in a location that provides reasonable allowances for future maintenance including sufficient space to permit an open excavation with side slopes in accordance with WCB regulations without impacting adjacent structures.

4.4.3.2(2) The existing municipal reservoir drain line crossing the site will be abandoned. Refer to DBA section 46.10 Water Reservoir Drain Cash Allowance.

4.4.3.2(3) The Design - Builder will ensure that District access to municipal and private on-site fire hydrants is not encumbered at any time. All existing hydrants must remain active during the Construction.

4.4.3.3 Sanitary Sewer – Off-Site

4.4.3.3(1) The connection point for the sanitary sewer will be to the existing municipal sanitary sewer at the intersection of Junkers Street and 5th Avenue East through the established Right of Way.

4.4.3.4 Storm Drainage – Off-Site

4.4.3.4(1) The Design-Builder must employ on-Site storm water management strategies which result in no net increase in peak storm water discharge rates up to the 10-year recurrence interval event. Subject to final confirmation from the District, flows in excess of the 10-year storm event may need to be directed via overland flows to the municipal road network. In no circumstances are flows to be directed to adjacent private parcels.

4.4.3.4(2) Subject to final confirmation by the District, the connection points for the storm sewer may be:

4.4.3.4(2)a. to the existing municipal storm sewer on Stuart Drive East. The off-Site sewer will be adjusted in elevation and/or size as required to receive storm water runoff from the site.

4.4.3.4(2)b. to the existing municipal storm ditch at the intersection of Junkers Street and 5 Avenue East. The off-Site ditch and corresponding sewer will be adjusted in elevation and/or size as required to receive storm water runoff from the site.

4.4.4 On-Site Services Infrastructure

4.4.4.1 General

4.4.4.1(1) Design and construct all on-Site servicing to meet the design and quality requirements for the corresponding municipal off-Site services, and to meet the needs of the Facility.

4.4.4.2 Sanitary Sewers – On-Site

4.4.4.2(1) Provide sanitary sewers of a diameter, grade, and depth to safely convey all effluent from the Facility. The sanitary sewer system will include the pipes, manholes and all other required appurtenances to comply with applicable municipal and provincial standards.

4.4.4.3 Storm Sewers and Drainage – On-Site

4.4.4.3(1) Provide storm sewers, storm sewer management strategies and drainage network:

4.4.4.3(1)a. of a size, grade, and depth to safely manage and convey all storm water on-Site to the receiving system;

4.4.4.3(1)b. designed as a gravity system with no requirement of a lift station or pumping;

4.4.4.3(1)b.1 which, at minimum, maintains the pre-Construction discharge rates after Substantial Completion of the Project;

4.4.4.3(1)b.2 which includes storm water/oil and grit separation devices or other water quality treatment devices as required, capturing, and treating runoff from all road and parking area surfaces; and

4.4.4.3(1)b.3 where roof water run-off will receive grit separation treatment before entering the piped on-Site conveyance network. Oil/water separation is not required for roof water.

4.4.4.3(2) Provide an on-site storm water management system designed to meet the District's goals for storm water attenuation and runoff / recharge water quality.

4.4.4.3(3) Storm water quality: Comply with the federal/provincial land- development guidelines, the requirements of the District and Stormwater Planning: A Guidebook for British Columbia (2011).

4.4.4.3(4) The Design-Builder will ensure that neighbouring properties are protected from flooding and nuisance runoff issues and existing municipal system capacities are not exceeded.

4.4.4.3(5) Provide adequately sized water quality/sediment control components for the surface parking, before discharging to the on-Site retention systems, groundwater recharge facilities or the off-Site drainage system.

4.4.4.4 Water Main and Appurtenances – On-Site

4.4.4.4(1) Provide a water main service (water main and ancillary components) from the municipal system to provide all required institutional demands and firefighting capacity and redundancy for the Facility. The extent to which provision for on-site pumping may be required (to suit either domestic demand or fire-fighting demand, or both) will be determined, in part, by the available system pressures, the final building floor area and building height.

4.4.4.4(2) Provide a watermain system of diameter, grade and depth, material, and restraint mechanisms to safely meet the demand and fire flow requirements for the Facility.

4.4.4.4(3) Provide a water system that includes pipes, valves, hydrants, fittings, and all other required appurtenances.

4.4.4.4(4) Firefighting volumetric demands are to be calculated using the Fire Underwriters Survey (FUS) method, unless alternates are otherwise approved by the municipal authorities.

4.4.4.4(5) If required to meet the Fire Underwriters Survey fire flow demands, Design-Builder will provide back-up, permanent fire-fighting equipment.

4.4.4.4(6) The water main systems will include approved backflow preventers necessary to protect the municipal system and on-Site facilities from contaminants based on the hazard level of the Facility.

4.5 Site Infrastructure

4.5.1.1 Road Works – Off-Site

4.5.1.1(1) The Design-Builder will coordinate and is responsible for all off-site roadworks as identified by the District.

4.5.1.1(2) The Design-Builder will incorporate/ allow for, a Secondary Site Access, with detailed routing indicated on Master Site Plan.

4.5.1.1(2)a. Design and construct a 4.6 metre wide Secondary Site Access road to Junkers Street. Secondary Site Access road to meet the requirements of the District and the standards and guidelines of the Geometric Design Guide for Canadian Roads, as published by TAC.

4.5.1.1(2)b. The Design-Builder's design process for the Secondary Site Access will include consultation with the District and Pacific Northern Gas.

4.5.1.2 Street lighting – Off-Site

4.5.1.2(1) Off- Site street lighting illumination levels and other related operations characteristics will conform to the respective municipal standards. In order to achieve this, relocation of existing lighting and additional off- Site lighting are both expected to be required.

4.5.1.3 Road Works – On-Site

4.5.1.3(1) Design and construct on-Site roadways, including the pavement, curbs and gutters, sidewalks, walkways, signage, pavement markings, and traffic calming devices, that are handicapped accessible and wheel-chair friendly, and provide safe passage between parking areas, loading areas, emergency vehicle areas and drop off areas without requiring the driver to enter the municipal roadway.

4.5.1.3(2) All roadways will accommodate fire truck access in accordance with the requirements of the respective municipality's fire department or by municipal bylaw requirements.

4.5.1.3(3) Provide asphalt sidewalk from Stuart Drive East to the entrance of the Facility.

4.5.1.3(4) Design access roadways with longitudinal gradients that allows for fire truck to manoeuvre without overhanging and/or bottoming out.

4.5.1.3(5) All parking areas and drive aisles within the parking lots and loading bay have minimum and maximum cross-falls and grades of 1% and 5% respectively.

4.5.1.3(6) On-Site road works meet the requirements of the standards and guidelines of the Geometric Design Guide for Canadian Roads, as published by TAC. A maximum grade of 8% is allowable for onsite roads and a maximum grade of 12% is allowable for offsite roads.

4.5.1.3(7) Avoid surface water ponding. All roadways and paved areas to have positive drainage to shed rainwater quickly to a storm drainage facility.

4.5.1.3(8) Design vehicle for loading access to be WB-20 as per TAC Standards. Design vehicle for access to the Northern Health Connections drop-off and dedicated parking spot to be I-Bus as per TAC Standards. All other internal roadways must safely accommodate the typical fire truck in use by the respective municipal authorities.

4.5.1.3(9) Internal site truck movements will be designed such that loading bays are easily accessible, limiting the requirement for truck manoeuvring into and out of loading bay areas.

4.5.1.3(10) Provide required painted pavement markings and symbols including: parking stall lines, stop lines, lane lines, pickup and drop off area demarcation, loading area demarcation, universal handicap parking space symbols, cross walk markings, directional arrows and any other delineations required for control and safety of vehicle and pedestrian movements.

4.5.1.3(11) Temporary and permanent painted pavement markings in accordance with the latest edition of TAC "Manual of Uniform Traffic Control Devices for Canada" and applicable sections of the MMCD, latest edition.

4.5.1.3(12) Use site surfacing materials which will meet intended use and minimize the 'heat island' effect, where possible.

4.5.1.3(13) Provide for On-Site roadways to account for snow removal machinery and methods in winter snowfall months.

4.5.1.4 Street Lighting – On-Site

4.5.1.4(1) Provide lighting for on-Site roadways, walkways, and parking areas to ensure safe vehicle and pedestrian traffic with respect to collisions, personal safety, and Building access/egress. Lighting will be sympathetic to any existing or future buildings at each Site, as well as all neighbouring properties. Wherever possible, all Site lighting to be 'dark skies' compliant, per municipal definitions.

4.5.1.4(2) Detailed on-Site lighting specifications are carried elsewhere, under electrical specifications section.

4.5.1.5 Electrical, Telecommunications, Gas Services

4.5.1.5(1) Provide adequate electrical, telecommunication and natural gas services to the Facility.

4.5.1.5(2) Coordinate as required with third party utility providers for design requirements and constructability including metering.

4.5.1.6 The Design-Builder will, after Move In to the Building, demolish and remove from the Site all buildings and structures of the Existing Hospital Site in accordance with the Demolition Plan. After the demolition work is complete, The Design-Builder will construct surface parking and related landscaping of the Site in accordance with the requirements set out in this Design-Build Agreement.

PART 5 Building Design Requirements

5.1 Adaptability and Flexibility

5.1.1 The Design-Builder will:

5.1.1.1 locate permanent Building elements, such as stairs, elevators, and duct shafts, to minimize constraints on changes to the Building;

5.1.1.2 minimize interior columns for ease of planning and re-planning of care areas;

5.1.1.3 avoid interior shear walls if possible;

5.1.1.4 accommodate the vertical and horizontal distribution of electrical and mechanical services to allow maintenance and changes to occur with the least disruption to clinical service delivery;

5.1.1.5 provide access points to Building service systems in critical locations so that service disruption is minimized; and

5.1.1.6 No cabling in the concrete slab except that heat tracking is acceptable within exterior slab-on-grade only.

5.2 Expandability

5.2.1 The Design-Builder will:

5.2.1.1 locate primary circulation corridors to allow expansion without increasing the complexity of the circulation system as a whole; and

5.2.1.2 provide floor zoning that allows for expansion of programs or services, for example by locating administrative and other non-clinical 'soft' functions adjacent to clinical areas that are likely to need to expand.

5.3 Disaster Planning Requirements

5.3.1 In undertaking the Design, the Design-Builder will consider the need to protect the life and safety of all Facility occupants and the need for continuing services following an earthquake or other disaster, including epidemic, chemical spill, extended power interruption, wildfire, and contamination of water supply. Particular attention should be paid to the Buildings, generators, transformers, and service connections.

5.3.2 Design and construct the Buildings', generators', transformers' and service connections' structures, structural components, non-structural components, anchorages, and equipment to post disaster standards unless otherwise noted.

5.3.3 Design and construct essential services servicing the Facility including the electrical system, steam, domestic water and medical gases to post disaster standards as defined in the BCBC. Locate these services in utilities enclosures that meet post disaster standards as defined in the BCBC.

5.3.4 Design and construct the Facility so that it is capable of meeting its functional requirements, (lights, power, water and sewer) for a minimum period of 72 hours following a natural disaster or other incident (except that additional storage tanks are not required for potable water – assume water will be pumped in).

5.4 Building Form and Character

5.4.1.1 General

5.4.1.1(1) The Building will be configured to provide functional internal layouts of components and to accommodate daylighting yet have minimal local articulation to support detailing that ensures the Building envelope is robust.

5.4.1.1(2) Utilize Glazing to optimize views and daylight penetration, and to reduce energy consumption.

5.4.1.1(3) Roof top mechanical / electrical equipment to be either enclosed within a mechanical penthouse, or screened and incorporated in architectural elements, and consistent in form, material, and detail with the rest of the Building. Roof top mechanical / electrical equipment will be provided with noise attenuation.

5.4.1.1(4) As contemplated by the Wood First Act (British Columbia), the Design- Builder will incorporate wood products into the Design as required by Appendix 1E Wood First Matrix.

5.4.1.1(5) Integrate service entrance(s) into the Site and Building design to limit the impact of these elements on the Building's appearance.

5.4.1.2 Exterior Building Materials and Colour

5.4.1.2(1) Exterior materials will include high quality finish materials and robust detailing. Cladding materials to be durable and applied in a rain-screen fashion. Cladding materials may be architectural concrete, brick or stone masonry, glass, phenolic panels, and metal cladding

5.4.1.2(2) Use of Stucco and/or corrugated metal is prohibited except that corrugated metal may be used around the loading dock area/staff entrance area at Level 0 of the Building where it is not visible to the public.

5.4.1.2(3) The Design-Builder will minimize the number of exterior cladding materials to reduce the number of envelope joints.

5.4.1.2(4) Use of wood on exterior cladding, soffits and other exposed surfaces is prohibited.

5.4.1.3 Roofs

5.4.1.3(1) Roof areas will be designed to be functional and safe with elements located in an orderly manner for ease of maintenance and tidy appearance. Roofing cap sheets will be light coloured where possible.

5.4.1.3(2) Stair access to all roof areas larger than 100 m^2 is preferred. Ladder access is acceptable to smaller roof areas. Ladder access to larger roof areas as approved by the Authority.

5.4.1.3(3) Roof hatch access, when provided, will be centrally located for efficiency of access.

5.4.1.3(4) Provide elevator access to the mechanical penthouse.

5.4.1.3(5) Provide guardrails where required and fall protection for maintenance access.

5.4.2 Building Configuration and Internal Circulation

5.4.2.1 Building Entrances

5.4.2.1(1) All direct entries into the Building from the exterior will be protected from snow and rain by canopies or building overhangs. Weather protection must be implemented where Building entrances front a sidewalk or open space. Weather protection must not extend into public street rights-of-way.

5.4.2.1(2) Ensure that areas protected from weather still receive daylight using appropriate measures such as height to depth proportions.

5.4.2.1(3) Entrance vestibules will provide transparency from the exterior, from the interior immediately in front of the vestibule.

5.4.2.1(4) Entrance vestibules will be configured and sized in order to preserve the airlock effect for climate control. Ensure a minimum 5 metre distance between the sets of doors to allow stretchers and wheelchairs to fit lengthwise into the vestibules at the Main Entrance and Emergency ambulance entrance vestibules. Other secondary entrance vestibules including the ED Entrance are permitted to have a minimum 2.4 metre distance between the sets of doors. Provide a heated air curtain system over the exterior doors to control the temperature loss during winter months.

5.4.2.1(5) Use swinging doors at all public entrances except for the ED Entrance vestibule. The ED Entrance vestibule is allowed to use power operated slider for the exterior door. Use doors that can be activated by handicapped accessible push-button controls located on the inside and outside of both sets of doors or revolving doors with a swing door. Doors will be configured for push-pull manual operation in addition to automatic operation.

5.4.2.1(6) Entrance doors to the emergency department and doors to patient care areas will be sufficiently wide to allow access for stretchers surrounded by medical staff.

5.4.2.1(7) Pedestrian interest and comfort at entries will be provided through specifically designed seating, signage, lighting, and features that signal the Facility's use.

5.4.2.1(8) Provide wheelchair alcoves visible and accessible to the main entry vestibules. Provide easy access to wheelchairs/stretchers close to the entrance of the Building.

5.4.2.1(9) If the Building has a large open entrance area, the space must be acoustically treated to control excessive noise or sound reverberation that can prevent effective space communication, facilitate the spread of noise from the open area to adjacent noise sensitive interior spaces and / or make spending time in the open area uncomfortable.

5.4.2.1(10) Entryways and doors must be illuminated using light levels that are comfortable when entering and exiting.

5.4.2.2 Access

5.4.2.2(1) The Design-Builder will design and construct the Facility to ensure that all patient-occupied spaces are designed for disabled access and assistance by nursing staff.

5.5 Building Envelope

5.5.1.1 Utilize a Building Envelope Specialist (BES) (whose credentials as a building envelope professional are recognized by the Architectural Institute of British Columbia or the Association of Professional Engineers and Geoscientists of British Columbia) to advise on building envelope design and construction.

5.5.1.2 Complete the Design and Construction so as to mitigate the accumulation and stagnation of rain, snow, ice and dirt on the horizontal and vertical surfaces of the Building envelope(s) appropriate for the climate the Facility is situated in.

5.5.1.3 Complete the Design and Construction so as to prevent both the ingress of exterior moisture and the trapping of condensation from infiltrating humid air within the envelope.

5.5.1.3(1) Courtyards and lightwells will not be located directly above electrical rooms.

5.5.1.4 Design exterior walls in accordance with the 'rain-screen principle'.

5.5.1.5 Ensure that materials and systems of the wall and roof assemblies contribute to reducing heat gains and losses with minimal decline in performance over their expected lifespan.

5.5.1.6 Ensure continuity of the air barrier, vapour barrier, thermal barrier, and rain barrier across the entire envelope.

5.5.1.7 Exterior wall assemblies will:

5.5.1.7(1) be exterior insulated; and

5.5.1.7(2) have the air barrier system on the exterior of the wall sheathing layer.

5.5.1.8 Design the Building envelope so that the inside of patient rooms exposed to noise from hospital related equipment, delivery / loading bays, emergency intake areas, and busy road traffic areas are exposed to noise levels less than 30 dBA measured inside the room from steady sources of noise such as HVAC equipment and transformers and to less than 45 dB A measured inside the room for noises associated with brief intermittent events (sirens, loading bay noise events).

5.5.1.9 Perform a blower door test during the construction stage to measure building's air tightness. Infiltration rates under pressurized and depressurized conditions must not exceed 2.00 litres/second/metre^2 at 75 Pascals pressure difference between indoor and outdoor spaces.

5.5.1.10 Durability: The building envelope will:

5.5.1.10(1) meet the durability requirements of CSA S478.

5.5.1.10(2) will allow access and minimal maintenance

5.5.1.10(3) have a 50-year service life

5.5.1.10(4) allow for replacement and renewals without disruption to adjacent materials with longer service life.

5.5.1.10(5) have no exposed structural elements without coatings, finishes, or appropriate building envelope elements.]

5.5.1.11 Enhanced Building Enclosure Commissioning (BECx) requirements

5.5.1.11(1) Complete enhanced BECx to validate that the performance of materials, components, assemblies, systems and design to achieve the objectives and requirements of the Authority as outlined in this Statement of Requirements. The Design-Builder may choose to pursue the LEED Enhanced Building Enclosure Commissioning credit at their discretion.

5.5.1.11(2) Building Enclosure Commissioning Authority (BECxA)

5.5.1.11(2)a. Qualifications: Individual or firm that has five years of applicable experience and technical knowledge of the performance of building enclosure systems, and possesses the skills, knowledge, experience, and necessary certifications to conduct the testing outlined herein.

5.5.1.11(2)b. The BECxA must be approved by Authority and retained by Design-Builder during the pre-design stage. The BECxA may be an independent third party who is not on the design team or the Design-Builder's BES.

5.5.1.11(2)c. Role: To provide independent verification of the building enclosure performance in line with the Reviewed Drawings and Specifications and Energy Target requirements. As a minimum, the BECxA is responsible to complete the following:

- 5.5.1.11(2)c.1 Owner Project Requirements (OPR) & Basis of Design (BOD) reviews of the building enclosure elements.
- 5.5.1.11(2)c.2 Minimum four Independent Design Reviews of the construction documents at 30%, 60%, 95% and 100%.
- 5.5.1.11(2)c.3 Development of BECx Plan & Specification section
- 5.5.1.11(2)c.4 Pre-construction BECx meeting
- 5.5.1.11(2)c.5 Technical submittal reviews related to building enclosure elements, including changes, value engineering, and substitutions
- 5.5.1.11(2)c.6 Field reviews to conduct or witness field testing, review mock-ups, and audit contractor QA/QC program for the building enclosure.
- 5.5.1.11(2)c.7 Review building enclosure maintenance and renewals plan.
- 5.5.1.11(2)c.8 BECx Commissioning report
- 5.5.1.11(2)c.9 Post-occupancy BECx meeting.
- 5.5.1.11(2)c.10 Post-construction warranty review prior to lapse in warranty.
- 5.5.1.11(2)c.11 Coordination with the Authority, the Design-Builder, and the Design-Builder's Architect, Building Enclosure Professional (BES), Commissioning Authority (CxA), Building Performance Professional and Site Building Enclosure Supervisor.

5.5.1.11(2)d. Use Standards ASTM E2813 and E2947 as guidance for completing the BECx process.

5.5.1.11(3) OPR & BOD Reviews – The purpose of the OPR & BOD reviews is to confirm general conformance of building enclosure elements with the Authority's requirements and the building's performance relevant to achieving the Energy Guarantee.

5.5.1.11(4) Independent BECxA Design Reviews – The purpose of the Independent Design Reviews is to verify general conformance with Authority's requirements and the building enclosure provisions required to achieve the Energy Guarantee.

5.5.1.11(5) BECx Specifications – The purpose of the BECx specifications is to outline the roles and responsibilities of Design-Builder and other parties with regards to BECx.

5.5.1.11(6) BECx Plan – The purpose of the BECx plan is to outline the Design-Builder's implementation of the Authority's requirements and the building enclosure provisions required to achieve the Energy Guarantee. The plan should be reviewed by BECxA and the Design-Builder and their sub-contractors in a pre-construction meeting prior to its implementation.

5.5.1.11(7) BECx Submittal Reviews – The purpose of review of technical submittals related to building enclosure elements is to confirm general conformance to the Construction Documents and, and identify any risks associated with not meeting the Authority's requirements and Energy Target in the case of changes, value engineering, and substitutions, if any are proposed.

5.5.1.11(8) BECx Field reviews – The purpose of field reviews is to conduct or witness field testing, review mock-ups, and audit the contractor's QA/QC program for meeting the building enclosure performance, installation, and verification requirements.

5.5.1.11(9) Post-construction BECx Activities – Post-construction BECx activities entail completing a BECx report that verifies and records the commissioning activities completed during design and construction, training Users on the use of the Building Enclosure Maintenance And Renewals Plan, and a warranty period condition assessment review outlining deficiencies included and excluded within the warranty.

5.5.1.12 BECx testing

5.5.1.12(1) As a minimum, allow for the following field testing to verify the quality and integrity of the building enclosure installation.

5.5.1.12(1)a. ASTM E779 - Test Method for Determining Air Leakage Rate by Fan Pressurization;

5.5.1.12(1)a.1 At the completion of the construction of the building envelope, including installation of windows, glazed assemblies, roofs, wall assemblies, and all other exterior building enclosure elements.

5.5.1.12(1)b. ASTM E1105 - Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference;

5.5.1.12(1)b.1 Cyclic air pressure method to be used; and

5.5.1.12(1)b.2 Allow for a minimum of two tests per building elevation, and a minimum of one test per each unique glazing product or configuration.

5.5.1.12(1)c. ASTM D8231 – Standard Practice for the Use of a Low Voltage Electronic Scanning System for Detecting and Locating Breaches in Roofing Waterproofing Membranes OR ASTM D7877 – Standard Guide for Electronic Methods for Detecting and Locating Leaks in Waterproof Membranes;

5.5.1.12(1)c.1 At 50% of each contained section of horizontal roof or deck assembly above occupied or interior spaces prior to installation of over-burden.

5.5.1.12(2) Conduct the following additional diagnostic field testing as required at the Architect, BES, BECxA and Design-Builder's discretion.

5.5.1.12(2)a. ASTM E1186 - Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems

5.5.1.12(2)b. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems

5.5.1.12(3) Conduct additional field or lab testing as required at the Architect, BES, BECxA and Design-Builder's discretion to verify performance of materials, components, assemblies, systems and design to achieve the objectives and requirements of the Authority .

5.6 Interior Environment

5.6.1 Ergonomic Design

5.6.1.1 The Design-Builder will provide:

5.6.1.1(1) detailed design features, which expressly facilitate the physical activities of the staff and patients to increase their safety, efficiency and general well-being, and assist in eliminating ergonomic risk factors;

5.6.1.1(2) for all inpatient care rooms (including washrooms) to accommodate lifting and transfer devices;

5.6.1.1(3) ergonomic design of all workspaces including millwork, furniture, lighting, and finishes to eliminate strain and injury to health care workers; and

5.6.1.1(4) Work surfaces and shelves to allow for flexibility of use in Nursing Stations.

5.6.2 Colour

5.6.2.1 The Design-Builder will:

5.6.2.1(1) provide departmental colour palettes appropriate for the emotional and psychological needs of patients;

5.6.2.1(2) provide colour palettes that contribute to the creation of a healing environment;

5.6.2.1(3) provide distribution of ambient full-spectral colour within typical staff and patient environments; and

5.6.2.1(4) avoid glare-creating finishes.

5.6.2.1(5) Handrails, doors, and frames will have a contrasting colour from walls in consideration of the visually impaired.

5.6.3 Art Works

5.6.3.1 The Authority intends to procure various art works for display within the Building. The Design should allow for the display of artwork as follows:

5.6.3.1(1) in the interior allow for wall surfaces to display art;

5.6.3.1(2) in the exterior allow for sculpture to be placed at grade;

5.6.3.1(3) provide specific corridors and display locations for art for approval by the Authority.

5.6.3.2 The Design-Builder will:

5.6.3.2(1) Design the Facility to support the Authority's art program by providing and identifying for the Authority effective and appropriate locations for major and minor art works throughout the Facility;

5.6.3.2(2) coordinate the procurement and delivery (including timing of delivery), of art works with the Authority and install all art works procured by the Authority;

5.6.3.2(3) not used; and

5.6.3.2(4) provide all necessary structural support, seismic restraint, vandal- proof mounting and other protective measures required for particular artworks.

5.6.4 Interior Signage and Wayfinding

5.6.4.1 The Design-Builder will:

5.6.4.1(1) provide a simple configuration of the Facility circulation systems and functions so that wayfinding is inherently easy;

5.6.4.1(2) locate major destinations, such as department entrances, directly off entry spaces and/or along primary circulation paths for easy access, make waiting areas as open as possible to circulation routes without requiring wayfinders to pass through waiting areas;

5.6.4.1(3) provide significant recognizable, easily named and identified elements in key and easily found locations that can become 'meeting points' for patients and visitors;

5.6.4.1(4) design public elevator and stair lobbies and public circulation routes to be distinct from service routes and other non-public routes; and

5.6.4.1(5) orient all building plan directories to reflect the direction from which they are viewed.

5.6.4.2 The Design-Builder will provide all signage required for the Facility in accordance with the following:

5.6.4.2(1) design signage in consultation with the Authority such that the materials, colours, letter fonts, sizes, and other aesthetic and functional considerations, such as Braille, conform to the overall wayfinding design system and are coordinated and consistent with those used by the Authority in other facilities. Materials for signs include aluminum, acrylic, vinyl, and stainless steel materials;

5.6.4.2(2) signage will be highly visible (day and night), clear, concise, and well- differentiated from surrounding information, notices, advertising.

5.6.4.2(3) signage will be resistant to graffiti and physical damage;

5.6.4.2(4) use international symbols where and as applicable;

5.6.4.2(5) provide signage that directs visitors to all patient destinations and all other departments and rooms within. Prioritize patient destinations over non-patient destinations;

5.6.4.2(6) orient all important signs, including all patient destination signs, to be perpendicular to the line of patient travel on approach; and

5.6.4.2(7) avoid multi-layered naming hierarchies and complex numbering systems.

5.6.4.3 The Design-Builder will provide the following interior signage at the Facility:

5.6.4.3(1) building directories at all entrances, major corridor junctions and at elevator lobbies. They should include a Site plan highlighting the Buildings as well as floor level listings of departments;

5.6.4.3(2) provide a duplex 120V, 15A receptacle and telecommunications outlet (c/w two (2) Category 6a data drops) to support future wayfinding interactive display in the Facility lobby. Exact location to coordinated with the Authority;

5.6.4.3(3) elevator floor directories at all elevator lobbies. They should include floor level listing of departments;

5.6.4.3(4) room signage for all rooms. Room signage is to be of several types distinguishing room functions. Administrative space signage requires a pocket to insert specific information such as name of occupant. Room signage for utility rooms should be designed to be less evident than general room signage. Blade signs may be used to identify vending areas and waiting areas;

5.6.4.3(5) small door tags for all door frames;

5.6.4.3(6) patient room signage and patient care department directories. Signs should incorporate art imagery, such as local scenery, to designate different departments and patient rooms;

5.6.4.3(7) overhead directional signage, which must either be suspended from a ceiling or bulkhead or be mounted directly over doors. No directional signage will be incorporated into flooring; and

5.6.4.3(8) feature signs and information panels at various locations throughout the hospital (for example signs to locate information desk).

5.6.4.4 Design internal directional signs to include:

5.6.4.4(1) a main directory, installed at or near the main public entrance to the Building that indicates the Building in relation to the overall Site and the location of every area and department within the Building that is accessible to the public;

5.6.4.4(2) a continuous 'trail' of signage from the entrances to each of the reception/information points listed on the directories;

5.6.4.4(3) installation of signage at each point at which a directional decision is required;

5.6.4.4(4) consistent terminology;

5.6.4.4(5) door signage to identify every space (e.g. rooms, alcoves, corridors and stairwells) in the Facility. Door signage will:

5.6.4.4(5)a. be developed in consultation with the Authority;

5.6.4.4(5)b. be in a consistent location for every space in the Facility;

5.6.4.4(5)c. indicate restrictions on entry and warn of hazards, including "Laser in use" and "Radiology in use" signage; and

5.6.4.4(5)d. not be obscured by the emergency systems and code blue system call.

5.6.4.5 Provide a room numbering system that is consistent with the following protocol:

5.6.4.5(1) each room and any space with walls and a door require a unique identifier number. In addition, any space such as a patient cubicle, alcove or recess of significant size must be numbered as a room. This identifies spaces for labelling of fire alarm, electrical and data outlets and for ongoing maintenance purposes;

5.6.4.5(2) rooms are numbered in a manner that reflects normal movement through the Building;

5.6.4.5(3) labelling anticipates a person attempting to follow numbering along corridors in sequence;

5.6.4.5(4) blocks of numbers are periodically skipped to allow for future expansion of the numbering system if rooms are added through renovations;

5.6.4.5(5) each room and space requires a unique number for service reasons. It is important that room numbers be determined early in design and maintained following occupancy. Follow the same numbering system on design and construction documentation for all disciplines (architectural, mechanical, electrical);

5.6.4.5(6) Building identification letters are first. Use "STH" for Stuart Lake Hospital;

5.6.4.5(7) the Building identification letters are followed by three or four digits, beginning with the first digit: 0 for basement rooms, 1 for ground floor, 2 for second floor on up the Building floors. Four digits may be required in a large Building due to the number of rooms on the floor, and if this is the case, the four digits should extend to all floors;

5.6.4.5(8) the second digit identifies the department. The third and / or fourth digit identifies the room;

5.6.4.5(9) if a room is only accessed from within another room, for example a large closet, the closet room number should be the room number in which it is located followed by a small letter a, b, c depending on the number of additional rooms that exist within the room;

5.6.4.5(10) stair numbering should follow the sequence: Building name first, then acronym "ST" then 1, 2, 3, 4 depending on the number of stairs (for example STH-ST1, STH-ST2, STH-ST3);

5.6.4.5(11) corridor numbering should follow the sequence: Building name first, then acronym "C" followed by the floor level identifier, then the corridor number. For example, STH-C085 or STH-C142;

5.6.4.5(12) elevators should follow the sequence: Building name, followed by acronym “ELEV” followed by elevator number. For example, STH-ELEV1, STH-ELEV2; and

5.6.4.5(13) see Section 4.2.5 for exterior signage and wayfinding.

5.6.4.6 Interior Wayfinding signage to incorporate Local Indigenous Language in addition to English on select interior wayfinding signage, as directed by the Authority.

5.7 Secured Outdoor Areas

5.7.1 Refer to Appendix 1A Clinical Specifications, section 1A.0.2.3(1) - Required Exterior Spaces

5.7.2 Courtyard Design Principles

5.7.2.1 Courtyards will have a height-to-width ratio (h:w) not less than 1:1 unless otherwise agreed by the Authority.

5.7.2.2 Courtyards will be designed to be functional.

5.7.2.3 Building height should maximize solar access to the Courtyards.

5.7.2.4 Building materials around Courtyards should reflect light into the courtyard without causing glare.

5.7.2.5 Courtyards area and accessibility requirements will be as identified in Section 1A.0 of the Clinical Specification

5.7.2.6 Courtyard drainage will avoid ponding and flooding by rain and snow melt.

5.7.2.7 Courtyards will be wheelchair accessible and will have prescribed minimum areas of pathways and/or patio.

5.8 Structural Design

5.8.1 Structural Design Principles

5.8.1.1 The structure design of the Facility will be to Post Disaster standards except the Primary Care Clinic that can be to High importance standard if structurally isolated from the Acute Care and Long-Term Care. Related Importance Factors will be applied.

5.8.1.2 The Design-Builder structural engineer of record will be a Professional Engineer and a Designated Structural Engineer (Struct. Eng.) with Engineers and Geoscientists BC licensed to practice in the Province of British Columbia with demonstrated experience in undertaking the structural design of buildings similar in size, type and complexity to the building.

5.8.1.3 Prior to starting Construction, the Design-Builder’s structural engineer of record will have a qualified second Professional Engineer licensed in the Province of British Columbia, not involved in the preparation of the structural design, perform an independent review of the structural design in accordance with the Quality Management Guidelines: Documented Independent Review of Structural Designs by Engineers and Geoscientists BC.

5.8.1.4 Refer to Appendix 1C(l) - Control of Vibration and Noise During Construction for requirements regarding vibration from Construction activities.

5.8.1.5 Design-Builder's structural engineer of record and geotechnical engineer will perform field reviews of the construction at sufficient frequency and review the reports of the applicable inspection and testing agencies to verify that the building structure has been built in substantial conformance to the approved issued for construction structural drawings and any authorized amendments thereto in accordance with Quality Management Guidelines: Documented Field Review During Implementation or Construction by Engineers and Geoscientists BC.

5.8.2 Site Preparation and Substructures

5.8.2.1 Carry out the Construction so that Construction-caused settlement of the Existing Hospital and other structures if relevant does not exceed 6 mm at any location.

5.8.2.2 The slab-on-grade and foundation system will be designed so that the long-term displacement under serviceability loading conditions will not exceed 25 mm. Similarly, differential displacements will not exceed 19 mm over a span of 9 m including seasonal effects.

5.8.2.3 Building foundation systems will provide adequate support to the superstructure while limiting overall and differential displacement to acceptable amounts for the building structure and serviceability over the service life of the structure.

5.8.2.4 All below grade components will be designed with the proper heated and unheated frost protection to recommendations by the Design-Builder's geotechnical engineer.

5.8.2.5 Any possible differential displacements on floor slabs will not adversely affect the effectiveness of floor drains.

5.8.3 Structural Systems

5.8.3.1 The structural system(s) for the Facility will be selected to provide performance for flexibility or change, durability, vibration resistance, fire rating, acoustic separation, ceiling space available for services, and overall building height appropriate to the functional space. The Acute Care and Long-Term Care will be of concrete and/or steel constructions.

5.8.3.2 For the Acute Care and Long-Term Care, the vertical lateral-force-resisting elements will be strategically placed at locations that encompass stair wells and elevator shafts as well as on exterior walls, however these elements must not interfere with any designated future expansion areas, program space or use, or fenestration. Vertical lateral-force-resisting elements within interior spaces will not be permitted in order to leave flexibility for future changes. For the Primary Care Clinic, vertical lateral-force-resisting elements will be located to provide maximum flexibility for future changes.

5.8.3.3 For the Acute Care and Long-Term Care, roofs may be structural steel or concrete slab construction. Structural steel roofs can be part of the Building design and massing strategy to reduce settlements of adjacent buildings. Open-web steel joists will be permitted for roof framing only.

5.8.3.4 Post-tensioned or precast concrete structural systems will not be accepted.

5.8.3.5 The design and construction of the structure and its structural members will have sufficient structural capacity, integrity and serviceability to safely resist all loads and effects of loads (including thermal) that may reasonably be expected over the service life of the structure including any possible foundation movements.

5.8.4 Design Loads

5.8.4.1 Performance criteria

5.8.4.1(1) Use the following minimum floor design specified live loads except where the specific use and occupancy of a space requires a higher live load:

5.8.4.1(1)a. Basement and main (ground) floor: 4.8 kPa (100 psf);

5.8.4.1(1)b. Upper floors: 3.6 kPa (75 psf);

5.8.4.1(1)c. Mechanical/electrical service rooms: 6.0 kPa (125 psf);

5.8.4.1(1)d. Loading bay and ambulance bay: 12 kPa (250 psf);

5.8.4.1(1)e. Medical records storage or compact mobile shelving: 12 kPa (250psf).

5.8.4.1(2) Design all suspended floors to accommodate concentrated loads from equipment, fixtures, and machinery, whether floor, wall, or ceiling-mounted, including medical equipment and patient lifting devices.

5.8.4.1(3) Design floors for a minimum superimposed specified dead load allowance of 1.0 kPa to allow for partitions, and 0.5 kPa to allow for ceiling and mechanical equipment (other than medical equipment).

5.8.4.1(4) Design roofs for a minimum net uplift wind loads and for the minimum snow and rain loads, including snow drift loads, required by the BCBC and referenced standards. Notwithstanding other requirements, roofs will be designed to accommodate concentrated loads from equipment, machinery and features, whether roof or ceiling-mounted, including medical equipment and patient lifting devices.

5.8.4.1(5) Design roofs for the superimposed specified dead load of roofing materials, ceilings, mechanical equipment, but not less than 1.5 kPa (30 psf) to allow for future re- roofing alternatives.

5.8.4.1(6) Design floors and roofs above mechanical and electrical service rooms for a superimposed suspended equipment specified dead load of 2.0 kPa (40 psf) in addition to the minimum dead load allowances specified above.

5.8.4.1(7) The Design-Builder will perform surveys at the following times, and provide all survey results to the Authority as work progresses:

5.8.4.1(7)a. Top of formwork prior to pour;

5.8.4.1(7)b. Top of slab immediately following finishing of the slab;

5.8.4.1(7)c. Immediately following the initial release of the shoring under the slab prior to re-shore; and

5.8.4.1(7)d. Further survey using the same survey points 3 months following the removal of shoring for the slab.

5.8.4.1(8) No in-floor conduits or ducts are permitted in suspended concrete floor systems.

5.8.4.1(9) Structure will accommodate bariatric patient lift design load at any designated patient lift location in addition to all other indicated design loads without upgrades, regardless of whether bariatric or standard patient lifts are installed.

5.8.5 Flexibility for Future Change

5.8.5.1 Design the floor structure to be able to accommodate one 130 mm diameter cored hole per structural bay at almost any location in the floor plate and the design for the concrete floors will assume at least one reinforcing bar in each direction at each core location is cut.

5.8.5.2 Design the floor structure with a minimum of one 150 mm diameter knock-out opening on two sides of each column for future use and the knock-out openings will be in addition to any openings required for current services; additionally the floor structure will be capable of having a minimum of six additional core holes (100 mm diameter) per bay without additional reinforcing.

5.8.5.3 Design the structure so that it will support future ceiling mounted Patient lift installations (system) in Long Term Care rooms, adjacent, and supporting areas without additional structural upgrades.

5.8.5.4 See Section 3.11.2 for additional flexibility requirements.

5.8.6 Coordination

5.8.6.1 Coordinate all structural members with architectural finishes to have adequate thickness, cover and reinforcing to satisfy fire protection and durability requirements.

5.8.6.2 Coordinate all structural member with other disciplines to avoid utility interferences and to ensure adequate headroom and clearances requirements.

5.8.6.3 Coordinate structure with equipment requirements for slab depressions and cast-in hardware. Provide adequate depth of slab depressions to avoid the need for ramps.

5.8.7 Deflection Limitations

5.8.7.1 Design the structure to meet the deflection limits of the BCBC, and in accordance with the applicable materials design standards listed in Section 2.7.1 as a minimum and as appropriate for the non-structural components of the Facility. Notwithstanding the above, the deflection limit will not exceed the levels specified in this Section.

5.8.7.1(1) For concrete floor or roof construction, the maximum deflection occurring after the installation of non-structural elements, including long-term creep deflection and live or snow load deflection, will not exceed span/480 and total short and long-term deflection will not exceed span/360;

5.8.7.1(2) For steel and wood floor construction, the maximum live load deflection will not exceed span/480 with the total load deflection not exceeding span/360. The total load deflection is to include effects of shrinkage of concrete topping slabs; and

5.8.7.1(3) For steel and wood roof construction, the maximum live or snow load deflection will not exceed span/360 and the total load deflection will not exceed span/240.

5.8.7.1(4) Wind storey drift will not exceed height/500.

5.8.7.1(5) Seismic storey drift will not exceed height/100 for Post-Disaster and height/50 for High Importance.

5.8.7.2 In addition to the above design deflections limits, the structure will conform to specific deflection requirements for specialty equipment as recommended by the manufacturer of that equipment.

5.8.7.3 In addition to the above design deflections limits, the deformations of the structure under service loads will provide long-term compatibility with the architectural finishes and cladding system.

5.8.8 Vibration Limitations

5.8.8.1 Design the structural system to minimize the effects of floor vibration due to use, occupancy, and equipment. Vibration is to be limited to acceptable levels for the use and occupancy of the floors. Refer to Appendix 1C - Acoustics and Noise Control Measures.

5.8.8.2 Performance Criteria

5.8.8.2(1) Select and design floor structural systems to have a vibration acceleration maximum limit of 0.5%g with a damping ratio of 0.02 when an excitation force of 0.29 kN is applied.

5.8.8.2(2) Machinery that could be a source of vibration is to be mounted using vibration isolation techniques.

5.8.8.2(3) In areas supporting sensitive equipment and occupancies, design the structure for the vibration limitations specified by the manufacturer of the specified equipment or required by the planned use and occupancy of the floor space and in-situ measurement verification of floor vibration characteristics is to be carried out where specified by the equipment manufacturer.

5.8.8.2(4) Consult with users about the locations of sensitive equipment and design the structure to support the equipment per the equipment specifications.

5.8.8.2(5) To verify compliance with the vibration requirements, an independent testing firm may be retained by the Authority for the purposes of ensuring that the Quality Management plan is robust and being followed. The testing firm will measure the vibration using instrumentation which may include transducers, accelerometers, signal- conditioning equipment, data recorders, and analysis systems. Measured vibration performance characteristics for the structure must meet the requirements set out in these specifications. The following table indicates acceptable vibration levels for various typical medical and non-medical Facility spaces.

Occupancy or Equipment Requirements	Vibrational Velocity (1) µm/s
Mechanical rooms on an unoccupied floor above or below an occupied floor	1,000
Office areas, waiting rooms and corridors	200
Mechanical Rooms on the same floor as an occupied area	300
Computer areas; patient care areas (daytime) – threshold of human perception	200
Patient rooms and other sleep areas	140
Operating rooms and critical work areas; bench microscopes up to 100 x magnification	100
Bench microscopes up to 400 x magnification; optical and other precision balances; optical comparators	50
Microsurgery, eye surgery; Bench microscopes at magnification greater than 400x; optical equipment on isolation tables	25
Magnetic resonance imagers	12

Occupancy or Equipment Requirements	Vibrational Velocity (1) µm/s
Mass spectrometers	6
(1) Value of constant velocity regions measured in one-third octave bands of frequency range 8 to 100 Hz. Based on ASHRAE, AISC and ISO Criteria. Vibration velocity at 4 Hz is to be limited to 2 times the allowable vibration at 8 Hz. Vibration level depends on walker weight and gait. Appropriate footfall conditions must be applied for the space type under consideration.	

5.8.9 Durability

5.8.9.1 Design the structure and structural components of the Facility, including the secondary structure supporting cladding systems, for a minimum 50-year life span in accordance with CSA S478 Guideline on Durability in Buildings.

5.8.9.2 Design the structure and structural components of the Facility to minimize the effects of corrosion and deterioration due to the environment and use in accordance with the following:

5.8.9.2(1) adequate concrete crack control joints and expansion / contraction joints. Caulk exposed joints;

5.8.9.2(2) reinforce concrete for crack control and repair exposed cracks.

5.8.9.2(3) concrete mixes proportioned to CSA A23.1/A23.2 durability requirements for the appropriate exposure class;

5.8.9.2(4) concrete mixes and covers to CSA-S413 for floors subjected to vehicle traffic;

5.8.9.2(5) hot-dip galvanize or powder-coat exterior exposed steel, including masonry shelf angles and exterior lintels; and

5.8.9.2(6) hot-dip galvanize embedded steel protection angles and skid plates for loading docks and garbage compactors.

5.8.10 Medical equipment supports

5.8.10.1 Design and provide for support/anchorage of all supplied equipment. Medical equipment will be supported, anchored, and braced to resist gravity, operational, and seismic loads in a manner appropriate for the functional and service requirements for the specific equipment.

5.8.10.2 The design for medical equipment supports, anchorage, and bracing will be carried out by a qualified professional engineer registered in the Province of British Columbia. Installations will be field reviewed by the design engineer.

5.8.10.3 Performance criteria

5.8.10.3(1) Design floor and roof assemblies to support the gravity and seismic loads for floor, wall, or ceiling-mounted medical equipment. Ensure that steel content of structural members is compatible with equipment which is sensitive to steel content of the surrounding structure.

5.8.10.3(2) Design the structure for the vibration limitations specified by the manufacturer of the specified equipment or required by the planned use and occupancy of the floor space and carry out in-situ vibration testing when specified by the equipment manufacturer.

5.8.10.3(3) Design the supports for ceiling-mounted equipment, such as radiology gantries, to be universal so that the supports may be used for various types of equipment.

5.8.10.3(4) Drilled insert-type anchors for medical equipment supports and anchorage are to be rated by the insert manufacturer for seismic and cyclic loading applications.

5.9 Commercial Opportunity

Section not used.

5.10 Mechanical Requirements

5.10.1 The Design-Builder will provide Heating Ventilation, Air Conditioning (HVAC), Plumbing, Fire Protection, Specialty and Medical Gas Systems that:

5.10.1.1 Are designed to provide reliability of uninterrupted continual operation. The Facility will be a Class A-1 Health Care Facility (HCF) A-1 as defined by CSA Z317.2. Redundancy will be provided in accordance with CSA Z317.2.

5.10.1.2 Are designed to provide a healing, comfortable and productive environment for the users of the Facility.

5.10.1.3 Are designed to meet the required environmental conditions for all equipment and meet the requirements set out in the Agreement.

5.10.1.4 Are located and designed to meet the requirements set out in this Schedule (Schedule 1) related to Acoustics and Noise Control Measures from outdoor spaces/places of respite intended for occupant use; and from adjacent properties surrounding the Site; In addition systems will comply with acoustical requirements of referenced guidelines, Codes or Standards and all acoustical requirements.

5.10.1.5 Are located and designed to be sound attenuated from outdoor spaces/places of respite for patient/staff use and from adjacent residential properties surrounding the Site;

5.10.1.6 Are designed so that the systems will be vibration isolated to minimize noise and vibration through the structure and other components of the Facility;

5.10.1.7 Are developed to provide reliability of continual operation and resiliency including: Adequate standby capacity and redundancy included in system design;

5.10.2 Additional Requirements

5.10.2.1 Systems will be energy efficient in order to minimize impact on the natural and physical environment. The design will consider energy efficiency, optimization of resource use, and simplification of the systems;

5.10.2.2 Incorporate flexibility and adaptability for future changes without major disruption or alteration to the Facility operations or infrastructure.

5.10.2.3 For rooms that will incorporate a differential pressure monitor and/or rooms that require a specific differential pressure as required by this agreement and applicable standards, the Design-Builder will construct the rooms to be airtight. Construction features for Divisions 21, 22, 23 and 25 include gasketed sprinkler escutcheons and gaskets around diffusers, grilles, and radiant panels (where applicable). Provide seals around medical gas outlets, headwalls, valve boxes, extinguisher cabinets, sensor junction boxes, fixture drains and water supplies and other components that are recessed within walls that form part of the air seal. Seal ends of controls conduits that terminate within pressurized rooms. Refer to other Sections for sealing required by other Divisions.

5.10.2.4 All pipes, ducts and fittings will be insulated, where required by the BC Building Code and ASHRAE 90.1, to conserve energy, prevent condensation, attenuate noise, and prevent accidental burns. All insulation will have coverings applied that are appropriate for the location and service involved.

5.10.2.5 Coordinate all mechanical systems with requirements of equipment supplied by the Authority, and provide all necessary connections required from mechanical systems to allow for a fully functioning system that meets the applicable codes, standards and equipment manufacturer's requirements.

5.10.2.6 Make allowances within the mechanical systems' designs so all equipment can be removed or replaced without disrupting the operation of other equipment connected to the mechanical systems. Valved connection points will be provided to connect future equipment to the associated systems.

5.10.2.7 Review Appendix 1 – Equipment lists (Appendix 1B, 1H, etc.) to ensure that all equipment, rough in for equipment and support systems have been accounted for and provided. Design-Builder will include for procurement, design integration, storage, delivery to site, setting in place, making mechanical service connections, providing mechanical service connections for future equipment, installation, commissioning.

5.10.2.8 Refer to Appendix 1 – Equipment lists (Appendix 1B, 1H, etc.) to ensure that all equipment, rough - in of equipment and support systems have been accounted for and provided. All equipment noted as future equipment which require plumbing or mechanical services are to be roughed in by Design-Builder.

5.10.3 Mechanical Clearances

5.10.3.1 Systems will be configured and located to provide sufficient clearance around equipment and components for servicing and replacement.

5.10.3.2 Systems will be configured and located in such a way to minimize disruption to clinical areas for the performance of maintenance and repairs.

5.10.3.3 Systems will be configured and located such that all components which require maintenance are positioned to be accessible from standing or when using a maximum ladder heights as required by Occupational Health and Safety (OHS) Regulation Part 13: Ladders, Scaffolds and Temporary Work Platforms.

5.10.3.4 If routine maintenance work on the mechanical equipment and systems cannot be done from a ladder without hazard to a worker a work platform will be provided as would be required by the OHS Regulation. The Design Build contractor will provide access by means of a fixed access system including, but not limited to, moving gantry or overhead catwalks. For additional information please refer to Work Safe BC website guidelines: https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation.

5.10.3.5 Comply with manufacturers service clearance requirements.

5.10.3.6 Allow adequate floor space clearance, to allow for working without hazard, at all locations where maintenance will be performed;

5.10.3.7 Systems will be configured and located such that all components which require maintenance in locations with fixed ceiling systems and access panels are positioned to be accessible with the use of mobile containment cubes for abatement.

5.10.3.8 Pathways for service personnel and maintenance carts, equipment removal and replacement sized to accommodate the largest piece of equipment designated will be moved along this pathway with a clear space not less than designed corridor width and height;

5.10.4 Air Handling Equipment

5.10.4.1 Air handling units will be placed in plant rooms. The Primary Care handling units can be considered to be placed on the roof with the approval from the Authority.

5.10.4.2 Built-up air handling units will be constructed so that each individual component is removable/replaceable.

5.10.4.3 Air handling equipment will be capable of meeting the anticipated ventilation, heating and cooling requirements plus 15% spare capacity.

5.10.5 System Capacities

5.10.5.1 All systems will be designed and sized to suit the consumption and discharge needs of the Facility at peak operational requirements, including 15% additional capacity with the ability to further increase the flow or capacity. In addition to the 15% sizing requirement:

5.10.5.1(1) All air handling equipment, including supply, exhaust and return fans, will be sized with the capacity to deliver 7.5% additional airflow through installed distribution systems, without changing motors. The system will be capable of delivering 15% additional capacity through existing distribution systems by changing motors; and

5.10.5.1(2) All pumps will be sized for additional capacity to deliver 7.5% additional flow through installed distribution systems without changing motors. Pumps will be sized and with the capability to deliver 15% additional capacity through existing distribution systems by changing motors.

5.10.5.2 Size the following to meet the requirements of current demand, to the greater requirement, plus 15%, of CSA Z317.2 air change rates, the peak heating demand or the peak cooling demand for each space: Branch Piping, Branch Ducting, VAV box reheat coils etc.

5.10.5.3 Design piping, ductwork, heating/cooling/heat recovery coils, control valves, air filters, and louvres to meet the following minimum parameters, while accounting for the spare capacities as noted above:

5.10.5.3(1) Hydronic pressure drop – maximum piping friction loss: 4 m/100m;

5.10.5.3(2) Hydronic velocity – maximum velocity based on pipe manufacturer's recommendations;

5.10.5.3(3) Supply and return ductwork will be sized within the ASHRAE Fundamentals upper and lower limits for duct air velocities and pressure drop. Duct velocity will be limited to achieve an acoustical design criterion of RC(N) 35 or better.

5.10.5.3(4) Heating/ cooling/heat recovery coil face velocity – maximum velocity 2.0 m/s;

5.10.5.3(5) Control valve and hydronic coil pressure drop – maximum 21 kPa each;

5.10.5.3(6) Air filter face velocity – maximum velocity 2.0 m/s; and

5.10.5.3(7) Ventilation system air intake louvre free area face velocity – maximum velocity 2.5 m/s

5.10.5.4 Future Capacity Requirements

5.10.5.4(1) The design build team will evaluate the anticipated future heating, cooling and ventilation requirements for the year 2050, compared to the 15% additional capacity requirements.

5.10.5.4(2) Provide dampered, and capped, duct connections at duct headers and valved, and capped, pipe connections at pipe headers.

5.10.6 Mechanical services within Communication, IT, Electrical and UPS rooms

5.10.6.1 Will be limited to minor intrusions to allow mechanical cooling and ventilation. Refer to Divisions 26 and 27 for further details.

5.10.6.2 All mechanical services installed within Electrical and UPS rooms must maintain a minimum clear height of 3000 mm above finished floor.

5.10.6.3 Equipment requiring a water connection will not be installed in the ceiling of the Communication, Electrical or UPS rooms.

5.10.6.4 Plumbing distribution, drainage piping, storm piping and hydronic distribution piping will not be routed in the ceiling of the above Communication, Electrical or UPS rooms.

5.10.7 Coordinate with the electrical and communications specification for all mechanical systems that must maintain operation during an expected or unexpected shut down of the Facility's main electrical service. UPS power provided to mechanical equipment will not be provided from the UPS dedicated for low voltage and Communications Systems. Where mechanical equipment and devices are required to be served by emergency power, provide UPS, vital, delayed vital, or conditional power.

5.10.8 Specialty Mechanical Systems

5.10.8.1 Specialty areas will be designed in accordance with Industry Accreditation Standards for these specialty areas. The redundancy requirements of these Standards may be greater than the requirements of CSA and those requirements will apply.

5.10.8.2 Provide specialty mechanical systems as required by the Authority to meet the functional requirements described in Appendix 1A – Clinical Specifications.

5.10.9 General Equipment Requirements:

5.10.9.1 Provide Premium Efficiency Motors for all mechanical equipment.

5.10.9.2 Where motors are controlled by VFD, provide motors with shaft grounding rings wired to the VFD. VFD installations for motors 5HP and over will incorporate harmonic filters, line and load reactors. Each VFD will control only a single motor.

5.10.9.3 Equipment, pipes, ducts and fittings will be insulated to conserve energy, prevent condensation, attenuate noise and prevent accidental burns. All services requiring insulation that are exposed exterior of the Facility are to be covered and painted as per exposed services requirements. All services in the central plant will be painted or finished as required for exposed services.

5.10.9.4 Equipment, pipes and ducts will be clearly labelled.

5.10.9.5 Coordinate all mechanical systems with requirements of all equipment, and provide all connections required from mechanical systems. Provide dielectric isolation between pipes of dissimilar metals.

5.10.9.6 Manual valves larger than 150mm [6"] will be gear operated type.

5.10.9.7 Jinan Meide products, including products that may be rebranded under a different supplier name such as MA Stewart (MAS) or Viking, will not be used by the Design Builder without approval from NH.

5.10.10 Central Plant Requirements

5.10.10.1 The hospital will have its own heating / cooling / energy recovery plant

5.10.10.2 The central plant must be sized to serve the Facility with heating hot water, chilled water, and steam for humidification.

5.10.10.3 Hot water heating and chilled water cooling plants will be designed based on meeting the required plant capacity per Section 7.1.1. and equipment redundancy per the referenced standards.

5.10.10.4 The central plant and all systems/equipment installed in the Facility will not require a first, second, third, or fourth class plant operator, as defined in the BC Safety Standards Act: Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation.

5.10.10.5 Each fuel storage system will be complete with a fuel polishing system to ensure the stored fuel remains clean and available for its intended use at anytime.

5.10.10.6 The central plant design will accommodate seasonal part load demands to avoid frequent cycling of equipment or forced shutdown of equipment due to light loads.

5.10.11 Post-Disaster Design

5.10.11.1 The mechanical systems will be designed as a Post Disaster Building.

5.10.11.2 Design all mechanical piping, ductwork, equipment, and system seismic restraints in accordance with the requirements for post disaster buildings, as outlined in Section 5.

5.10.11.3 Equipment will have sufficient redundancy, structural integrity, and seismic restraint to assure the Facility remains operational after a disaster event.

5.10.11.4 The heating plant will have sufficient back-up fuel storage for a minimum period of 72 hours.

5.10.12 Emergency Power

5.10.12.1 The emergency generators will each have sufficient back-up fuel storage for a minimum period of 72 hours.

5.10.12.2 If the heating plant and generators use the same fuel, the supplies will be stored in separate tanks.

5.10.13 Plumbing Systems

5.10.13.1 Size water, sanitary, storm and gas utilities as required to suit the consumption and discharge need of the Facility occupancy, plus an additional 15% spare capacity to allow for future flexibility.

5.10.13.2 Systems will be designed to provide reliability of uninterrupted continual operation. The Facility will be a Class A-1 Health Care Facility (HCF) as defined by CSA Z317.2. Redundancy and temperature require for all fixtures will be provided in accordance with CSA Z317.1.

5.10.13.3 The domestic hot water and hot water recirculation systems will be designed per CSA Z317.1 including requirements and recommendation to prevent the growth of pathogens within the water systems.

5.10.13.4 Unless otherwise stated, all connections will be secure terminations (valved, capped and locked) to protect from tampering and vandalism.

5.10.13.5 All external connections will be located in service areas away from general circulation routes, and where they can be readily accessible by the individual service vehicles.

5.10.13.6 The design for emergency services will take into account the size of the service vehicle and maintaining clear access for all emergency vehicles.

5.10.13.7 Emergency Plumbing Systems

5.10.13.7(1) Domestic Water Service: Provide a minimum 100 mm diameter Camlock connection on the exterior of the Building to allow for a potable water tanker truck to make connection to the Facility domestic water services.

5.10.13.7(2) The connection will be valved and capped and be provided in a locked secure non-corrosive cabinet near to where parking has been designated for the water tanker truck.

5.10.13.7(3) The domestic water inlet connection from the exterior will be connected to the domestic water entry station with valves and safety controls;

5.10.13.7(4) Sewerage: Provide the capability to store (72 hours) and remove sewage from the Building in the event of an emergency (for example: a break in main sewage line). Provide a pump-out connection for a sewage pumper truck.

5.10.13.7(5) The sanitary pump out connection will be located in a free standing heavy duty, non-corrosive kiosk and will have permanent signage affixed to the kiosk to identify the service and function.

5.10.14 Medical Gas Requirements

5.10.14.1 Medical gas air compressor, vacuum pump and AGSS vacuum pump systems will be designed to accommodate the needs of the Facility plus an additional 15% capacity.

5.10.14.2 Control panels for medical gas equipment will be sized to accommodate the present demand plus the additional 15% control and power requirements.

5.10.14.3 Medical gas compressors and vacuum pumps will be located in a designated room. Medical gas cylinders will be stored in designated areas near the loading dock, with a direct connection to the outdoors.

5.10.14.4 The medical gas systems will be capable of maintaining a sufficient supply of all medical gases to provide the requirements of the Building's Post Disaster Operational Areas for a minimum period of 72 hours.

5.10.14.5 Emergency Medical Gas System

5.10.14.5(1) Provide medical gas connections on the exterior of the Facility for supplying oxygen, medical air, and medical vacuum into/out of the Facility from external bulk storage tanks, trucks or equipment.

5.10.14.5(2) The emergency gas connections will be mounted in a tamperproof and weatherproof lockable recessed wall mounted enclosure complete with valves regulator in an area accessible to supply vehicles but not in the vicinity of the exterior bulk medical gas storage.

5.10.14.5(3) The exterior of the enclosure door will be factory labelled to indicate emergency gas connections. The interior of the enclosure will be clearly labelled with instructions for the connection to and operation of the emergency gas connections.

5.10.14.5(4) The connection to the oxygen pipeline system will be downstream of the bulk oxygen supply system shut off valve inside the new Facility.

5.10.15 Decontamination Requirements

5.10.15.1 The Design-Builder will provide facilities to provide decontamination. The design will conform to the British Columbia Guideline for Decontamination of Patients (https://www2.gov.bc.ca/assets/gov/health/keeping-bc-healthy-safe/health-emergency-response/bc-guidelines-for-decontamination-of-patients.pdf – document is also listed in the Data Room). The decontamination room will provide mechanical services to support decontamination based on a "Limited Capacity Health Facility" as outlined in the BC Guideline for Decontamination of Patients.

5.10.15.2 The Design-Builder will provide decontamination facilities that provides the following:

5.10.15.2(1) Space for Facility staff to activate the Decontamination Team and Support, receive, test and triage incoming contaminated patients.

5.10.15.2(2) Space to provide basic life support.

5.10.15.2(3) Adequate space for privacy throughout the decontamination process.

5.10.15.2(4) Adequate space, water, decontamination water storage and equipment for Gross Decontamination.

5.10.15.2(5) Provide a shower assembly containing a trench drain system, handheld shower, and thermostatic mixing valve to suit gross Decontamination. The shower areas will have drainage that is serviceable, easy to clean and ensure that water is contained within the room. All water from will be directed to a decontamination water storage tank.

5.10.15.2(6) Provide a recessed flip down emergency eyewash station complete with emergency fixture thermostatic mixing valves and drainage to the decontamination tank in the Personal Protective Equipment (PPE) area.

5.10.15.2(7) Provide a decontamination waste storage system with sufficient capacity to contain all flow from the decontamination area during a decontamination event based on A Limited Capacity Health Facility as outlined in the BC Guidelines for Decontamination of Patients.

5.10.15.2(8) Design the drain system as a separate sanitary system complete with P traps, trap primers, and plumbing vents so that noxious fumes cannot make their way into the building.

5.10.15.2(9) The decontamination tank will have appropriate ULC listings and be equipped with inlet port(s), vent(s) and suction outlet port(s) to allow for pumper truck suction at a remote suction port external to the building.

5.10.15.2(10) The tank will have drain valves, and liquid level sensors that will initiate alarm conditions to a local alarm panel to the BMS at 50% full condition.

5.11 Electrical Systems Design

5.12 Food Services

5.12.1 Refer to Section 6.11 Equipment (Division 11)

5.13 Laundry Services

5.13.1 Refer to Section 6.11 Equipment (Division 11)

PART 6 Facilities Construction Subgroup Specifications

6.1 Existing Conditions (Division 2)

6.1.1 Refer to DBA for information related to Site Report(s), discovery of archaeological items, existing environmental reports and other existing site conditions.

6.2 Concrete (Division 3)

6.2.1 Overriding Principles

6.2.1.1 Design and construct cast in place concrete of appropriate properties for the intended use in accordance with the requirements of all applicable standards and specifications, including CSA A23.3.

6.2.1.2 Design and construct architectural precast concrete of appropriate properties for the intended use in accordance with the requirements of all applicable standards and specifications, including CSA-A23.4 and the PCI Design Handbook, under direct supervision of a professional engineer registered in the Province of British Columbia. Post-tensioned or pre-cast structural components are not allowed in the Building.

6.2.1.3 Design for the applicable concrete exposure class and sulphate resistant performance.

6.2.1.4 Concrete mixes with supplementary cementitious material will have satisfactory concrete performance and be compatible with the applied finishes.

6.2.2 Quality Requirements

6.2.2.1 Concrete reinforcing work will comply with CSA A23.1 and Reinforcing Steel Institute of Canada (RSIC) – Reinforcing Steel Manual of Standard Practice.

6.2.2.2 Manufacturing of architectural precast concrete products will be from a production facility certified under the Canadian Precast Concrete Quality Assurance Certification Program (CPCQA) for the type of product being supplied in accordance with the requirements of CSA-A23.4, PCI Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products – MNL-116, PCI Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products – MNL-117.

6.2.2.3 Cast in place concrete materials, reinforcing and workmanship to be inspected and reviewed by Design Builder and tested by a CSA certified testing agency in accordance with CSA-A23.1/A23.2.

6.2.2.4 Precast concrete materials and workmanship to be inspected and tested by the precast concrete contractor as part of its quality control program in accordance with CSA-A23.2.

6.2.3 Performance Criteria

6.2.3.1 Design and construct floors and roofs to comply with the deflection and vibration criteria outlined in Section 5.7 (Structural Design).

6.2.3.2 Finish concrete floors with a smooth, dense, steel trowel finish with a Class B floor flatness and levelness in accordance with CAN/CSA-A23.1, except where stricter requirements are needed to suit the proposed occupancy or equipment that will be located in the space. Overlay toppings to level floors will not be used.

6.2.3.3 Repair cracks in concrete floors and walls to suit the floor finish and long-term serviceability requirements of the floor.

6.2.3.4 Water proof all foundation walls for below-grade to prevent groundwater ingress. Construction joints will have purpose-made water stops. A perimeter draining system will be installed around the external sides of the building below the base of grade beam void forms or the base of footings.

6.2.3.5 All concrete exposed in areas used by staff, patients, residents, or public will be architectural concrete. Identify the proposed surface finishes intended for architectural concrete in each relevant Submittal.

6.2.3.6 Architectural concrete will comply with CAN/CSA A23.1/A23.2 to minimize honey combing or patching. Honeycombing and bug holes will be repaired immediately under the direction of the Structural Engineer.

6.2.3.7 Where no applied finish is required, concrete surfaces will be sealed to resist penetration and staining from food products, bodily fluids, cleaning compounds, etc. Apply and maintain sealers in accordance with manufacturer's recommendations.

6.2.3.8 Where floor drains are required, design and construct floors with minimum slope to drain of 2% to prevent ponding of water or other fluids.

6.2.3.9 Provide vapour barrier under slabs-on-grade in the form of continuous cross-linked, minimum 10 mil (0.25mm) polyethylene sheet.

6.2.3.10 See Section 6.4.2.4 for concrete topping on metal deck requirements.

6.3 Masonry (Division 4)

6.3.1 Basic Requirements

6.3.1.1 Masonry construction may be considered for exterior walls and walls systems where permanence of finishes, both visually and functionally, and ease of maintenance are primary considerations in the exterior fabric of the Facility.

6.3.1.2 Masonry construction may be considered for interior walls and wall systems when priorities include permanence and maintenance, sound transmission control, fire resistance and separation requirements and security.

6.3.1.3 Masonry wall assemblies will only be installed by installers who are members in good standing with CMCA. All installation will conform to technical requirement of CMCA, Canada Masonry Design Centre.

6.3.2 Concrete Masonry Units

6.3.2.1 Concrete unit masonry may be considered for both independent exterior walls and in exterior wall systems as a structural backing to other finish materials or systems.

6.3.2.2 Concrete unit masonry for interior applications may be considered as an integrally finished material, as a base for applied finish and as a structural backing to other finish systems.

6.3.2.3 Exposed or unpainted concrete unit masonry will not be used as an exposed finish in offices, clinical, patient, resident, or public areas.

6.3.2.4 Where concrete unit masonry is used as the exposed finish, all exposed corners will have rounded or chamfered corners.

6.3.2.5 Masonry design and construction will comply with Canadian Masonry Contractors Association (CMCA) Masonry Practices Manual and all applicable standards including CSA-S304 and CSA-A371.

6.3.3 Brick Masonry

6.3.3.1 Exterior wall systems comprising brick masonry as a finish veneer to concrete, concrete masonry or metal framing will be a rain-screen or cavity wall system.

6.3.3.2 Brick masonry below grade for exterior applications is not permitted.

6.3.3.3 Brick masonry in interior applications is not permitted

6.3.4 Stone Masonry

6.3.4.1 Stone masonry may be considered as a finish veneer to concrete walls or concrete masonry walls. Exterior wall systems in such applications will be a rain screen or cavity wall system.

6.3.4.2 Stone will be sound, hard and durable, well-seasoned and of uniform strength, colour and texture, and free of quarry sap, flaws, seams, sand holes, iron pyrites or other mineral or organic defects.

6.3.4.3 Manufactured stone products will not be used.

6.4 Metals (Division 5)

6.4.1 Basic Requirements

6.4.1.1 Structural steel, steel deck, and cold-formed steel stud design and construction may be considered for building elements and systems, where appropriate.

6.4.2 Performance Criteria

6.4.2.1 Design structural steel, steel deck, and cold-formed steel stud systems to comply with the deflection and vibration criteria outlined in Section 5.7 (Structural Design).

6.4.2.2 Erection tolerances for steel construction will be in accordance with all applicable CAN/CSA standards.

6.4.2.3 For steel floor and roof construction, the deflection of steel beams, joists, and girders due to the wet weight of concrete topping slabs is to be considered. Topping slab thickness may have to vary to maintain floor levelness tolerances. The additional concrete ponding weight is to be considered in the design of the structure.

6.4.2.4 Concrete topping slabs will be finished with a smooth, dense, steel trowel finish in accordance with Section 6.3.3.1. Design and construct concrete topping slabs on steel deck to control cracking and avoid random surface shrinkage cracking and radial cracking around re-entrant corners. Implement concrete construction and curing procedures to minimize cracking for concrete topping slabs on metal deck. Repair cracks in concrete topping slabs to suit the floor finish and long-term serviceability requirements of the floor.

6.4.2.5 Steel floor/roof decking will be wide rib profile for ease of attachment of current and future services, equipment, and fixtures using drilled insert expansion anchors into the bottom of the deck ribs.

6.4.2.6 Steel floor/roof decking plus the concrete topping slab thickness will satisfy the requirements of a ULC-rated assembly meeting the BC Building Code fire rating requirements. Spray on or applied fireproofing material will not to be used to achieve required floor deck fire rating.

6.4.2.7 Fire proof structural steel floor/roof framing and supporting members to meet the fire rating requirement.

6.4.2.8 Structural Steel and Steel Joists

6.4.2.8(1) Fabricators and erectors will be certified by the Canadian Welding Bureau (CWB) under Division 1 or 2 of CSA-W47.1 Certification of Companies for Fusion Welding of Steel and/or CSA-W55.3 Certification of Companies for Resistance Welding of Steel and Aluminum.

6.4.2.8(2) Quality assurance testing and monitoring of workmanship will be carried out by an approved testing laboratory using testing procedures as specified in the CAN/CSA standards listed to verify soundness of representative shop and field welds.

6.4.2.8(3) All welding will be performed by welders certified by CWB to the requirements of CSA W47.1/W59. Design Builder will provide certifications of all welders upon requested by Authority.

6.4.2.8(4) Material quality including sourcing and welding quality will be monitored by an independent testing agency certified to CSA W178.1 Certification of Welding Inspection Organizations and CSA W178.2 Welding Inspector Certification.

6.4.2.8(5) Design and construction will comply with CSA S16 and Canadian Institute of Steel Construction (CISC) Code of Standard Practice.

6.4.2.8(6) The specification for preparation and painting of Structural Steel components will conform to the Master Painters Institute (MPI) Standards.

6.4.2.8(7) All exterior steel components will be galvanized in accordance with ASTM A123/A123M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Products with minimum zinc coating of 600 g/m^2.

6.4.2.9 Load Bearing Steel Studs

6.4.2.9(1) Design and construction of load bearing steel stud system will comply with CSA-S136.

6.4.2.9(2) The steel stud manufacturer will be certified in accordance with CSSBI Standard 30M-Standard for Steel Building Systems and CSA-A660 – Certification of Manufacturers of Steel Building Systems.

6.4.2.9(3) The steel stud fabricator and erector will be experienced in the type of work undertaken.

6.4.2.9(4) Conform to the Association of Wall and Ceiling Contractor (AWCC)'s Contractors' Specification Standards Manual

6.4.2.9(5) Limit maximum deflection under specified wind loads to L/360 (L/720 for masonry veneers), unless a smaller maximum deflection is specifically required due to wall finishes.

6.4.2.9(6) Design components to accommodate erection tolerances of the structure.

6.4.2.9(7) Design wind bearing stud end connections to accommodate floor/roof deflections and to ensure that studs are not loaded axially.

6.4.2.9(8) Design steel studs to take into account the anchorage of other materials being supported including but not limited to sub-girts supporting metal cladding and composite panels, soffit finishes and the provision of lateral support at window heads.

6.4.2.10 Corner Guards and Bumper Rails

6.4.2.10(1) Provide stainless steel corner guards and bumper rails in infection control sensitive areas, including:

6.4.2.10(1)a. sterile storage areas;
6.4.2.10(1)b. patient care areas
6.4.2.10(1)c. long term care areas
6.4.2.10(1)d. diagnostic imaging
6.4.2.10(1)e. emergency and
6.4.2.10(1)f. other areas with high risk of impact from utility cart traffic.

6.4.2.10(2) Provide heavy duty steel corner guards and bumper rails in utility areas, including:

6.4.2.10(2)a. the Material Management Storage, Loading Dock, and associated areas;
6.4.2.10(2)b. utility corridors with heavy utility cart and pallet jack traffic; and
6.4.2.10(2)c. utility shop areas.

6.4.2.11 Guardrails & Handrails

6.4.2.11(1) Provide guardrails and handrails of minimum diameter 42 mm, required to resist design loads.

6.4.2.11(2) All guardrails to be designed to their usage classification and per applicable codes.

6.4.2.11(3) Provide a durable painted finish for steel guardrails.

6.4.2.11(4) Provide a manufactured pre-finish for stainless steel or aluminum guardrails.

6.4.2.11(5) Provide safety glass if glazed decorative railings are used.

6.4.2.11(6) In exterior applications of guardrails, where a hazard exists, provide guardrails to conform to the requirements of the BC Building Code.

6.5 Wood, Plastics and Composites (including Millwork) (Division 6)

6.5.1 Basic Requirements

6.5.1.1 The use of wood and plastic products is to be within the limitations of combustible content restrictions of the BC Building Code for the specific occupancy classification of each Building.

6.5.1.2 Timber may be considered as acceptable product for the Primary Care structure (e.g. Primary Care Centre).

6.5.1.3 Do not use urea formaldehyde containing materials in the Facility.

6.5.1.4 Provide rough carpentry, wood backing materials, backing boards for mechanical rooms and electrical/communication rooms, roof sheathing, copings, cant strips, finish carpentry and architectural woodwork, including but not limited to cabinets, casework (excluding laboratory casework, which is included in Division 12), frames, panelling, ceiling battens, trim, installation of doors and hardware, washroom accessories, and other wood-related products and applications as required:

6.5.1.4(1) to support functionality as defined in Appendix 1A Clinical Specifications or as required for operation of the Facility;

6.5.1.4(2) as required for wood products exposed to view in finished interior installations; and

6.5.1.4(3) in accordance with Northern Health's Backer Board standards.

6.5.1.5 Wood studs may be used for non-load bearing framing in non-patient care areas as designated in Appendix_1E_Wood_First_Matrix and, subject to approval from the authority having jurisdiction under the BC Building Code. Wood studs will comply with applicable CSA standards for lumber. Wood framing design will be certified by a professional engineer registered in the province of British Columbia.

6.5.1.6 Provide solid polymer fabricated or stainless steel surfacing for:

6.5.1.6(1) all counters that incorporate integral sinks; and

6.5.1.6(2) other areas as required to create surfaces that provide antiseptic or clean characteristics, special or regular maintenance, and resistance to caustic action of chemicals or agents used by the Authority.

6.5.1.7 Provide acrylic plastic products as required for wall cladding, wall protection, casework finishing, trims, ornamental elements, and other applications to achieve a quality of interior finish suitable for use by patients and staff.

6.5.1.8 Prepare handrail and wall protection plan. Refer to section 2.8.

6.5.1.9 Structural wood framing

6.5.1.9(1) Use of wood joists and load bearing studs for framing in Primary Care Centre will be subjected to approval from the AHJ under the BCBC.

6.5.1.9(2) Design wood framing systems to comply with the deflection and vibration criteria in Section 5.7 (Structural Design).

6.5.1.9(3) Design and construction of wood framing will be in accordance with Part 4 of BCBC and CSA-O86.

6.5.1.9(4) Exposed natural timber components will be designed with consideration for its dimensional instability due to variation in temperature and moisture. Apply proven best practices for protection of exposed timber from ultraviolet light and moisture degradation.

6.5.1.10 Handrails

6.5.1.10(1) Provide handrails in patient and public accessible corridors and patient care areas of an appropriate type for patient support.

6.5.1.10(2) Select materials and shapes appropriate for the use, provide continuous uninterrupted supports.

6.5.1.11 Wall protection and corner guards

6.5.1.11(1) Provide protection of walls and exposed wall corners at patient care areas, service areas, and other areas as required, to prevent damage due to impact from traffic such as stretchers, equipment and service vehicles.

6.5.1.11(2) Apply sheet wall protection to wall areas where the impact damage anticipated is of a larger area of wall than would be protected by bumper guards.

6.5.1.11(3) Provide wall splash back protection behind and surrounding hand sinks, scrub sinks and housekeeping sinks.

6.5.1.11(4) Apply sheet wall protection to faces of doors where impact damage is anticipated. Use sheet wall protection that complements the installation of door edge and frame protection.

6.5.1.11(5) Secure wall and corner guards to reinforcing and backing in the walls, such backing sufficient to withstand expected impact loads. Wall protection will be high impact and stain-resistant.

6.5.1.11(6) Use wall protection handrails products that are stain- resistant to pen marks, paint, and graffiti, and able to withstand commercial cleaners without fading or staining. Use products containing anti-microbial additives to retard mildew and bacterial growth.

6.5.1.12 Door Edge and Door Frame Protection

6.5.1.12(1) Protect door edges and door frames in patient care areas from damage such as impact caused by the regular movement of stretchers and other wheeled vehicles.

6.5.1.12(2) Protect door edges and door frames in clinical and service areas from damages.

6.5.1.13 Finish Carpentry, Millwork and Architectural Woodwork

6.5.1.13(1) Conform to Architectural Woodwork Manufacturer's Association of Canada (AWMAC) Quality Standards Manual for minimum "Custom Grade," and Door and Hardware Institute (DHI) standards for the design, fabrication, materials, installation, and workmanship of finish carpentry and architectural woodwork.

6.5.1.13(2) For millwork and cabinets, seal all wood surfaces and edges with plastic laminate for infection control.

6.5.1.13(3) Adhesives will be non-toxic, non-solvent glue to comply with AWMAC Quality Standards Manual, Canadian 'Eco-Logo' program, and CaGBC (Canada Green Building Council).

6.5.1.13(4) Use plywood substrate for countertops. Do not use fibreboard or particleboard.

6.6 Thermal and Moisture Protection (Division 7)

6.6.1 Basic Requirements

6.6.1.1 Design construction assemblies according to sound building envelope principles.

6.6.1.2 Design construction assemblies to prevent the ingress of moisture or water vapour from the exterior through the building envelope and the passage of air through the building envelope from the interior spaces to the exterior and vice versa.

6.6.1.3 Design construction assemblies to prevent the ingress of moisture through foundation walls below grade, both subject and not subject to hydrostatic pressure.

6.6.1.4 Provide protection (such as insulation) to resist the transfer of heat through exterior walls and roofs to create comfortable, liveable interior environments.

6.6.1.5 Provide resistance to the propagation and spread of fire for exterior walls and interior walls designated as fire-resistance rated separations where appropriate.

6.6.2 Performance Criteria

6.6.2.1 Dampproofing

6.6.2.1(1) Dampproofing is not to be used as a means of prevention of moisture ingress.

6.6.2.2 Waterproofing

6.6.2.2(1) Provide waterproofing to prevent moisture ingress to basement and crawlspaces below grade.

6.6.2.2(2) Use membrane waterproofing to prevent water ingress over suspended slabs and decks and associated walls over habitable spaces where water collection is anticipated.

6.6.2.2(3) Use fluid-applied waterproofing for mechanical room floors when the mechanical room is located over occupied space.

6.6.2.2(4) Provide waterproof membranes in exterior walls as part of the building envelope and integral with rain screen or cavity wall assemblies.

6.6.2.2(5) Dam the floor under key mechanical equipment in the mechanical penthouse, mechanical rooms and mechanical shafts with a continuous curb and waterproofing to contain the water. Provide floor drains.

6.6.2.3 Vapour Barriers

6.6.2.3(1) Prevent water vapour transmission and condensation in wall assemblies, roofing assemblies, and under concrete slabs-on- grade within the building perimeter by means of a continuous vapour barrier membrane.

6.6.2.4 Air Barriers

6.6.2.4(1) Prevent air leakage caused by air pressure across the wall and roof assembly by means of a continuous air barrier system.

6.6.2.4(2) Provide air barrier assemblies that:

6.6.2.4(2)a. limit air exfiltration and infiltration through materials of the system, joints in the system, joints in components of the assemblies, and junctions and interfaces with other building elements including other assemblies;

6.6.2.4(2)b. prevent air leakage caused by air pressure across the building envelope, including interruptions to the integrity of the building envelope such as junctions and interfaces with dissimilar constructions; and

6.6.2.4(2)c. are located on the exterior of the building envelope and are readily accessible and inspectable during construction prior to installation of the exterior insulation and cladding / overburden materials.

6.6.2.5 Thermal Protection

6.6.2.5(1) Provide exterior moisture-resistant rigid and semi-rigid thermal insulation as part of the building envelope to prevent the transfer of heat both from the interior to the exterior and vice versa, depending on seasonal conditions, and to resist the absorption of water.

6.6.2.5(2) Use thermal protection materials of a type and quality that will provide consistent environmental quality to enclosed spaces.

6.6.2.5(3) Use foamed plastic insulation that is CFC and HCFC free.

6.6.2.5(4) Minimum clear field thermal resistance values for exterior walls will be R-20 ft2·°F·h/Btu (U-Value 0.05 Btu/h·ft2·F), R-26 ft2·°F·h/Btu (U-Value 0.038 Btu/h·ft2·F) for exposed floors or soffits and R-35 ft2·°F·h/Btu (U-Value 0.028 Btu/h·ft2·F) for roof areas or higher as necessary to achieve targeted energy performance.

6.6.2.6 Roofing

6.6.2.6(1) Comply with the Roofing Contractors Association of British Columbia Guarantee Roof Star latest standards and requirements for a ten (10) year Guarantee, as published in the Roof Star Roofing Practices Manual. Perform roofing quality inspections as required by the RCABC to obtain the RCABC warranty.

6.6.2.6(2) Comply with Roof Star Roofing Practices Manual "Acceptable Materials List," including:

6.6.2.6(3) Use foamed plastic insulation that is CFC- and HCFC-free and complies with the province of British Columbia Ozone Depletion Substances Regulations.

6.6.2.6(4) Provide a complete horizontal barrier to weather and climate using one of the aforementioned roofing systems.

6.6.2.6(5) Roofing systems will include

6.6.2.6(5)a. flashings and sheet metal;

6.6.2.6(5)b. thermal insulation;

6.6.2.6(5)c. roofing specialties and accessories required for completion;

6.6.2.6(5)d. interior access systems to roof areas;

6.6.2.6(5)e. protection from pedestrian traffic and solar radiation;

6.6.2.6(5)f. roof drainage, including overflow scuppers.

6.6.2.6(6) Provide SBS modified bitumen roofing system (multi-ply) for all roofs in accordance with the following standards:

6.6.2.6(6)a. Base sheet: Conforming to CGSB 37-GP-56-M and ASTM D6162, Type II;

6.6.2.6(6)b. Base sheet flashing: Conforming to CGSB 37-GP-56M;

6.6.2.6(6)c. Cap Sheet and Cap Sheet Flashings: Conforming to CGSB 37-GP-56-M and ASTM D6162, Type II;

6.6.2.6(6)d. Traffic Cap Sheet: Conforming to CGSB 37-GP-56-M.

6.6.2.6(7) Provide sheet metal flashings that divert water away from membrane flashing termination and protect the membrane from deterioration due to the exterior elements and mechanical damage. Provide flexible membrane sub flashing continuously under the metal.

6.6.2.6(8) Metal roofing systems are not permitted

6.6.2.6(9) Provide roof systems that will resist subjected wind uplift forces at the project site in accordance with CSA Standard A123.21 Wind Uplift Resistance of Roofing Assemblies.

6.6.2.6(10) In designing the Facility, including any roof systems, ensure that entrances, exits and exterior doors are protected from sliding snow and ice and that there are no accumulations of snow and ice in roof valleys.

6.6.2.7 Fire and Smoke Protection

6.6.2.7(1) Use spray-applied cementitious fireproofing if required to achieve a fire resistance rating.

6.6.2.7(2) Integrate barriers into vertical and horizontal space separations to protect against the spread of fire and smoke. Apply protection to exposed building elements (structural and non-structural) susceptible to fire and subsequent damage.

6.6.2.7(3) Apply protection around penetrations through vertical and horizontal fire-resistance rated separations.

6.6.2.7(4) Use firestopping and smoke seal systems that consist of asbestos- free materials and systems, capable of maintaining an effective barrier against flame, smoke, and gases.

6.6.2.7(5) Use firestopping that:

6.6.2.7(5)a. is compatible with substrates;

6.6.2.7(5)b. allows for movement caused by thermal cycles; and

6.6.2.7(5)c. prevents the transmission of vibrations from pipe, conduit or duct to structure and structure to pipe, conduit, or duct.

6.6.2.7(6) When more than one product is required for an assembly, use products that are compatible with one another and from the same manufacturer.

6.6.2.7(7) Use fire stopping sealants and coatings that are silicone-based and guaranteed not to re-emulsify if subject to wetting or standing water. Do not use acrylic-based coatings and sealants.

6.6.2.8 Sealants

6.6.2.8(1) Minimize use of sealants on the exterior building envelope and use dry gasket seals to improve maintainability.

6.6.2.8(2) All sealants and sealant primers used on the interior of the Facility will comply with the requirements of LEED - low VOC.

6.6.2.8(3) Apply sealant materials to achieve:

6.6.2.8(3)a. Seals to the building envelope systems and around openings in the building envelope systems as required to prevent water ingress;

6.6.2.8(3)b. seals around and over cavities in or behind surface elements to allow effective infection prevention and control (note that sealant around door frames must include joints at bottom of door frames between floor finish and frames);

6.6.2.8(3)c. sealed joints between dissimilar or similar materials to allow a smooth or even transitions; and

6.6.2.8(3)d. sealed expansion or controls joints in the building envelope systems or structural systems to allow movement.

6.6.2.8(4) Do not use unsealed joints in clinical areas.

6.6.2.8(5) For the exterior; use sealants to completely and continuously fill joints between dissimilar and/or similar materials.

6.6.2.8(6) For the interior; use sealants (at frames such as those at doors and windows), to completely fill joints between dissimilar materials using one component, acrylic emulsion, paintable type.

6.6.2.8(7) Use silicone caulking that is mildew-resistant and impervious to water for caulking washroom plumbing fixtures.

6.6.2.8(8) Use sealants with self-levelling properties for expansion and control joints in concrete floors using two-component epoxy urethane sealants.

6.6.2.8(9) Use non-sag sealants for exterior vertical expansion and control joints in masonry or wall cladding.

6.6.2.8(10) Use sealants that allow for minimum 25% movement in joint width.

6.6.2.8(11) In corridors and other traffic areas used by laundry carts, supply carts, material handling equipment use traffic bearing type sealants suitable to support imposed load without deformation or failure.

6.7 Cladding (Division 7)

6.7.1 Acceptable cladding materials include

6.7.1.1 Sections 6.4.2 and 6.4.3 Concrete Masonry Unit, Brick & Stone Masonry

6.7.1.2 Section 6.9.2.11 Glass & Glazing

6.7.1.3 Section 6.7.2 Phenolic Panels

6.7.1.4 Section 6.7.3 Metal or Composite Aluminum Cladding

6.7.1.5 Section 6.8.2.4(7) Aluminum Curtain Wall

6.7.1.6 Section 6.7.4 Cementitious Cladding

6.7.1.7 Section 6.7.5 Corrugated Metal Cladding

6.7.2 Phenolic Panels

6.7.2.1 Panels to be high density phenolic resin with acrylic resin finish.

6.7.2.2 Acceptable Phenolic Panels include Trespa, Prodema, FunderMax, or similar.

6.7.2.3 Phenolic Panels to comply with all applicable CSA standards per BC Building Code.

6.7.3 Not used

6.7.4 Cementitious Cladding

6.7.4.1 Cementitious cladding may be used where a less institutional appearance may be appropriate for the character of the Building.

6.7.4.2 Cementitious cladding products, when used, will be tested and certified appropriate for the local climate and the specific proposed use.

6.7.5 Corrugated Metal Cladding

6.7.5.1 Corrugated metal cladding is allowed on all areas of the Building exterior. The cladding will be protected from impact damage where exposed to vehicle maneuvering areas.

6.7.5.2 Corrugated metal cladding will be used in a rainscreen application in accordance with this SOR.

6.7.5.3 Corrugated metal cladding and the supporting sub-structure will be designed for the specific intended location(s) to ensure durability and avoid oil-canning or undulations in appearance. Corrugated metal cladding will be minimum 22 gauge with concealed fastener system and factory finished in colours selected from the manufacturers standard or custom range for consistent and durable finish. All visible components of the cladding system including flashings and trim pieces will be from the same manufacturer and designed to work together as a system.

6.8 Openings (Division 8)

6.8.1 Basic Requirements

6.8.1.1 Construct interior windows, sidelights and glazing forming part of doors of tempered glass. For exterior glazing at doors and sidelights, use laminated glass. Use rated glass assemblies where required to maintain fire rated separations.

6.8.1.2 Installation methods and locations for doors, frames and hardware to conform with the standards of the Door and Hardware Institute (DHI).

6.8.1.3 Doors

6.8.1.3(1) Doors are to be sized, fabricated and installed to suit the intended function of spaces or rooms requiring acoustic or visual privacy, security, special HVAC requirements, fire-resistance rated separations or other closures.

6.8.1.3(2) Size Requirements for Doors

6.8.1.3(2)a. Provide door openings of adequate width to suit the intended purpose of rooms on either side of the doors and allow the movement of people and equipment associated with those rooms.

6.8.1.3(2)b. No single door will have a width of less than 915 mm.

6.8.1.3(2)c. Provide double doors into rooms where large pieces of equipment will be moved in or out during the lifetime of the Facility and where such equipment cannot pass through a single 1220 mm wide opening.

6.8.1.3(2)d. Size door openings to accommodate movement of equipment

6.8.1.3(2)e. Size door openings to suit bariatric patient requirements for all patient rooms of Medical Inpatient unit, and other rooms identified in Appendix 1A - Clinical Specifications for bariatric use. The minimum door opening size will be 1525 mm.

6.8.1.3(2)f. Provide door widths that are 1525 mm clear for both bariatric and non-bariatric patient rooms. Doors must have a large door leaf and a small door leaf. Where a viewing window in the large door leaf is required for clinical operation, provide, an integral blind in the window unit, operable from both sides

6.8.1.3(2)g. Provide double doors into corridors and major rooms to ease access where patients in beds or stretchers will be attended to or accompanied by a large number of medical staff and medical equipment.

6.8.1.3(2)h. Patient bedroom doors will have a minimum width of 1220 mm.

6.8.1.3(2)i. Resident bedrooms will have a total door opening width of 1070 mm.

6.8.1.3(2)j. Unless required otherwise, provide doors to patient care areas, including doors to water closets and change room cubicles with a minimum width of 915 mm.

6.8.1.3(2)k. Provide a minimum of 2134mm (or 7’-0") high door or door leaf, unless specifically required for access to services or other purposes where height is restricted.

6.8.1.3(2)l. The Ambulance Garage door will have a minimum height of 3200 mm and a minimum width of 3658 mm. Windows in the ambulance garage door, if provided, will be a minimum of 1,830 mm above floor level. The ambulance garage door will be fast-acting electric operated with manual override and the method of operation will be automatic via radio interconnect.

6.8.1.3(3) Acoustic Requirements for Doors: refer to Appendix 1C - Acoustics and Noise Control Measures. STC ratings of doors are to match that of the walls they are located within.

6.8.1.3(4) Provide patient rooms with hardware that allows the doors to stay in an open position and facilitates casual observance of patients by the nursing staff.

6.8.1.3(5) For doors into or between major departments or activity areas through which cart, stretcher, or bed traffic is anticipated on a routine basis, provide automatic activation by an electronic device or manual push button, located to allow emergency access without the necessity to stop movement. For all other doors through which cart, stretcher, bed, or frequent patient or staff traffic is anticipated on a routine basis, provide appropriate hardware or automatic activation that allows the doors to stay in an open position.

6.8.1.3(6) Apply door sizes and designs consistently to rooms of similar use, location, and configuration.

6.8.1.3(7) Avoid doors swinging into corridors in a manner that may obstruct traffic flow or reduce the corridor width, except doors to psychiatric holding rooms or to spaces that are used infrequently and are not subject to occupancy such as small closets.

6.8.1.3(8) Doors may swing into patient bathrooms, provided they allow for ease of patient use, both on their own and assisted by staff. Equip such doors with appropriate hardware to allow the door to be opened out into the room in an emergency situation. Alternatively, surface-mounted “barn type” sliding doors may be used for patient bathrooms.

6.8.1.3(9) Single fixture washrooms for public/patient use will have double-hinged swing doors to allow for emergency access.

6.8.1.3(10) Provide all doors with appropriate hinges, edge protection, and face protection to minimize damage and resultant disruptive maintenance.

6.8.1.3(11) Finish doors and frames with a suitable finish that minimizes dirt and fingerprint accumulation and can be easily cleaned and disinfected.

6.8.1.3(12) Be consistent with the extent of glazing in a door and the size and quantity of sidelights; balance these between the nature of observation required and the privacy requirements of the occupants of the room. Where possible and appropriate, provide glazing in an adjacent sidelight rather than within the door itself.

6.8.1.3(13) Provide glazing in doors and sidelights in such a way that they allow for patient observation and operational safety of the spaces they serve.

6.8.1.3(14) Provide tempered glass in aluminum frame sliding doors. Sliding doors to be used will be without floor tracks and will have emergency swing breakout. Provide blinds or coverings suitable and appropriate for the level of privacy intended and required.

6.8.1.3(15) Provide doors and door frames with the capability to withstand the varying and high levels of humidity and impact that occur typically within a hospital and in specific rooms within a hospital and maintain their inherent aesthetic and functional capacities.

6.8.1.3(16) Frames and anchors for doors, sidelights, interior and exterior windows in areas as requested by the Authority, will be designed to withstand a heavy degree of impact while maintaining their aesthetic and functional capacities. Glazing of such components will be non- breakable and use hospital-type cut-away jambs.

6.8.1.3(17) In areas where security is considered paramount, including Secure entrances, achieve safety and security with the appropriate location, configuration, materials, construction and detailing of doors and hardware

6.8.1.3(18) Provide vision panels in exit stairwell doors.

6.8.1.3(19) Exterior doors will be thermally broken, completed with thermally broken thresholds and hardware.

6.8.1.4 Exterior Windows

6.8.1.4(1) Size, configure, and adequately construct windows to suit rooms that require daylight, views and/or natural ventilation. Refer to Appendix 1A.0 General Building Clinical Requirement; section 1A.0.2.2(4) - Daylighting

6.8.1.4(2) Window framing systems to be thermally-broken, designed based on principles of pressure equalized rain screen.

6.8.1.4(3) Provide operable windows (windows that may be opened and closed) with 100 mm restrictors in all rooms and spaces where acceptable for the functionality of the room or space, as described in Appendix 1A Clinical Specifications.

6.8.1.5 Interior Windows

6.8.1.5(1) Provide 'borrowed light' through interior windows to occupied rooms that do not have exterior windows. The intent is to borrow light from areas that have windows and consequently create a more comfortable and less closed-in atmosphere.

6.8.1.5(2) Provide interior windows (vision panel) in the following rooms if glazing not provided in the door:

6.8.1.5(2)a. Inpatient Rooms, LDRP: provide a viewing window from the corridor or Nursing Station;

6.8.1.5(2)b. isolation patient rooms: provide a viewing window from the corridor or Nursing Station;

6.8.1.5(2)c. provide viewing windows between the Ante Room into the isolation Inpatient Rooms; and

6.8.1.5(2)d. in the Emergency Department from the Ante Room into the Decontamination Room.

6.8.1.5(3) Coordinate glazing heights with adjacent wall protection, handrails, and other accessories to achieve functional and aesthetic cohesiveness.

6.8.2 Performance Criteria

6.8.2.1 Hollow Metal Doors and Frames

6.8.2.1(1) Materials and manufacture of metal doors and will comply with the requirements of the Canadian Steel Door and Frame Manufacturer's Association (CSDFMA).

6.8.2.1(2) Provide interior metal doors with flush face construction.

6.8.2.1(3) Provide exterior metal doors with:

6.8.2.1(3)a. flush face construction;

6.8.2.1(3)b. edge seams to correspond with door function and minimize maintenance needed; and

6.8.2.1(3)c. prepared surfaces to receive finishes that resist corrosion from exposure to weather.

6.8.2.1(4) Provide pressed metal frames with:

6.8.2.1(4)a. fully welded construction. Knock-down-type frames not allowed;

6.8.2.1(4)b. thermally-broken door frames for exterior door; and

6.8.2.1(4)c. anchors to each jamb to suit wall type and receive the frame.

6.8.2.1(5) Door Glazing

6.8.2.1(5)a. For exterior hollow metal door glazing, use sealed units with warm edge, in thermally-broken frames to prevent heat loss.

6.8.2.1(5)b. For interior hollow metal door glazing use tempered glass.

6.8.2.2 Wood Doors

6.8.2.2(1) All wood doors will comply with all applicable standards, including the Quality Standards for Architectural Woodwork published by the Architectural Woodwork Manufacturer's Association of Canada (AWMAC).

6.8.2.2(2) Wood doors will have hardware and finishes that suit the intended function and aesthetics of the Facility.

6.8.2.2(3) Construct, finish, and install wood doors to minimize the requirement for maintenance and resulting disruption to Facility operations.

6.8.2.2(4) Provide wood doors in flush design, Architectural Grade quality (as defined in the AWMAC standards referred to above), and solid particleboard core.

6.8.2.2(5) Provide fire-resistance rated doors with a homogeneous incombustible mineral core and AWMAC Quality Standards Option 5 blocking.

6.8.2.2(6) Install finish hardware securely to resist loosening over time. Fasten to solid wood backing, except where hardware is designed to be through- bolted.

6.8.2.2(7) Glue stiles, rails and faces to the core with Type II water-resistant adhesive to minimize de-lamination or disassembly as a result of moisture ingress.

6.8.2.2(8) Use B-Grade hardwood veneer with AWMAC No. 3 edge, finish to suit the intended use.

6.8.2.2(9) Do not use wood veneer-faced doors in critical care areas for reasons of cleanliness and infection prevention and control, unless suitably finished to mitigate such concerns.

6.8.2.2(10) In locations requiring radiation protection, line doors with lead and label such doors with lead thickness.

6.8.2.2(10)a. Wood doors are not acceptable where exposed to the exterior or weather.

6.8.2.3 Aluminum Entrances and Storefronts

6.8.2.3(1) Aluminum entrances and storefront framing and doors may form part of the exterior envelope of the Building.

6.8.2.3(2) Provide glazed interior partitions as appropriate to comply with the functions of the spaces as defined by Appendix 1A Clinical Specifications.

6.8.2.3(3) Use aluminum doors within aluminum entrances and storefront

6.8.2.3(4) Use frames that are thermally-broken, flush glazed, aluminum sections, to accept insulating glass units.

6.8.2.3(5) Incorporate in the frames drained and vented system (rain screen) with a complete air and vapour seal, allowing any moisture entering the frame to drain to the exterior and allowing air into the pressuring chamber.

6.8.2.3(6) Use aluminum swing entrance doors that are heavy-duty commercial or institutional grade that may be automatically operated, motion-detector controlled.

6.8.2.3(7) Apply aluminum finish for exposed aluminum surfaces. Finish to be permanent and resistant to corrosion caused by weather exposure and climate.

6.8.2.4 Specialty Doors

6.8.2.4(1) Overhead Rolling Service Doors

6.8.2.4(1)a. Restrain lateral movement of door curtain slats. Provide windlocks as required by door size or wind load requirements.

6.8.2.4(1)b. Provide interlocking flat slats, complete with bottom bar and contact type bottom astragal.

6.8.2.4(1)c. For manually operated doors, provide inside lift handle and locking bar or chain hoist. Provide motor operation on doors requiring constant usage. Chain operation will be by means of reduction gears and galvanized hand chain.

6.8.2.4(1)d. For fire doors, provide automatic closing device operated by fire door release device connected to fire alarm system.

6.8.2.4(1)e. Insulate overhead rolling service doors with a minimum insulation value of RSI-1.4 (R-8) and provide weather stripping and seals.

6.8.2.4(2) Overhead Rolling Grilles

6.8.2.4(2)a. Provide grilles that allow visual access to secure areas.

6.8.2.4(2)b. Provide aluminum or steel guides that are: fabricated to withstand vertical and lateral loads; counterbalanced by helical torsion springs; and sound-deadened.

6.8.2.4(2)c. For manually operated closures, provide inside lift handle and locking bar or chain hoist. Provide motor operation on grilles requiring constant usage. Chain operation will be by means of reduction gears and heavy chrome plated hand chain.

6.8.2.4(3) Overhead Rolling Counter Shutters / horizontal sliding grilles

6.8.2.4(3)a. Provide shutter curtains fabricated with extruded aluminum, galvanized steel, or stainless steel interlocking flat slats, complete with guides of similar materials.

6.8.2.4(3)b. Provide closures that are manually operated and with locking capability.

6.8.2.4(4) Interior Aluminum Sliding Doors and Sidelights

6.8.2.4(4)a. Provide interior glass sliding doors and sidelights without floor track, sliding and fixed panel(s) single glazed with 6 mm clear fully tempered float glass.

6.8.2.4(4)b. Interior sliding doors to have break-out capability to facilitate staff access to patient rooms.

6.8.2.4(4)c. Provide visual cues/glazing film in transparent glass panels as appropriate to prevent collisions.

6.8.2.4(4)d. Provide manual break-out capable 3 panel style interior glass sliding doors in the following patient rooms:

6.8.2.4(4)d.1 enclosed emergency department exam rooms.

6.8.2.4(4)e. Provide automatic break-out capable interior glass sliding doors, with card access and locking capability, in the following areas:

6.8.2.4(4)e.1 both ED exam/treatment rooms;

6.8.2.4(4)e.2 Emergency Trauma / Resuscitation rooms; and

6.8.2.4(4)e.3 primary entrance to the Clinical Laboratory.

6.8.2.4(4)f. Not used.

6.8.2.4(5) Automatic Sliding Doors

6.8.2.4(5)a. Door equipment will accommodate medium to heavy pedestrian traffic and up to the following weights for active leaf doors: 100 kg for bi-part doors and 200 kg for single slide doors.

6.8.2.4(5)b. Provide door operators, including the motion and presence detection system, that are: capable of operating within the temperature ranges existing at the Facility; and unaffected by ambient light or ultrasonic interference.

6.8.2.4(5)c. Provide energy-saving devices to reduce conditioned air loss.

6.8.2.4(5)d. Provide integration with access control system.

6.8.2.4(6) Automatic Swing Doors

6.8.2.4(6)a. Use automatic swing doors for interior and exterior locations where appropriate, including the entrance vestibule, cross- corridor double-egress doors, entrances to departments and areas where stretchers and equipment are frequently wheeled, and doors to exterior spaces that are required to be handicapped accessible.

6.8.2.4(6)b. If used, provide directional motion sensor control device that are unaffected by ambient light or ultrasonic frequencies.

6.8.2.4(6)c. Equip all in-swing doors that are required exits with an emergency breakaway switch that internally cuts power to the operator. No external power switch allowed.

6.8.2.4(6)d. Implement longer hold-open times to accommodate the elderly and frail.

6.8.2.4(6)e. Provide integration with access control system.

6.8.2.4(7) Aluminum Curtain Walls

6.8.2.4(7)a. Aluminum curtain walls will comply all applicable standards, including the Aluminum Association Standards (AAS) and the American Architectural Manufacturers Association (AAMA) field testing specifications.

6.8.2.4(7)b. Incorporate in the curtain wall framing a drained and vented system complete with air and vapour seal, allowing any water entering the framing/system and the glazing detail cavities to drain to the exterior and also allow air into the pressuring chamber.

6.8.2.4(7)c. All exterior windows to be sealed double glazed with a maximum overall thermal transmittance U-Value 0.33 Btu/h·ft2·F and SHGC 45%.

6.8.2.4(7)d. Provide curtain wall framing that incorporates a thermal- break.

6.8.2.4(7)e. For exposed aluminum surfaces, provide a finish that is permanent and resistant to corrosion resulting from weather exposure and climate.

6.8.2.4(7)f. Provide assemblies that resist local seismic conditions and 1-in-100 year climatic events (with a safety factor).

6.8.2.4(7)g. Window wall framing relying on primary face seals is not allowed.

6.8.2.5 Aluminum Windows

6.8.2.5(1) Aluminum windows will comply with all applicable standards, including the Aluminum Association Standards (AAS) and the American Architectural Manufacturers Association (AAMA) field testing specifications.

6.8.2.5(2) Incorporate in windows a drained and vented system complete with air and vapour seal, allowing any water entering the framing/system and the glazing detail cavities to drain to the exterior and also allow air into the pressuring chamber.

6.8.2.5(3) All exterior windows to be sealed double-glazed with a maximum overall thermal transmittance U-Value 0.33 Btu/h·ft2·F and SHGC 45%

6.8.2.5(4) Provide windows that incorporate a thermal-break.

6.8.2.5(5) For exposed aluminum surfaces, provide a finish that is permanent and resistant to corrosion resulting from weather exposure and climate.

6.8.2.5(6) Provide assemblies that resist local seismic conditions and 1-in- 100 year climatic events (with a safety factor).

6.8.2.6 Skylights

6.8.2.6(1) Skylights are not allowed.

6.8.2.7 Light Tubes

6.8.2.7(1) If light tubes are required for providing natural light to internal areas, provide a reflective light tube system that that will transmit the full range of natural light, ensuring a bright, clean and white light source.

6.8.2.7(2) Provide a daylight dimmer to control the level of light.

6.8.2.7(3) Coordinate the light tube solution with the other components of the ceiling design, including the artificial lighting, to provide an integrated design solution.

6.8.2.8 Roof Hatches

6.8.2.8(1) Minimize use of roof hatch accesses. If roof hatches are used to provide access to the roof for maintenance:

6.8.2.8(1)a. provide access ladders and ships ladders;

6.8.2.8(1)b. the minimum hatch size will be 762 mm x 762 mm, and

6.8.2.8(2) All roof hatches to be thermally insulated and thermally broken.

6.8.2.9 Entrance Mat Wells

6.8.2.9(1) Provide a recessed, integrated mat well with built in drainage at the following locations:

6.8.2.9(1)a. Main Building entrance

6.8.2.9(1)b. Shipping and receiving entrance

6.8.2.9(1)c. Main staff entrance/exit

6.8.2.10 Glass and Glazing

6.8.2.10(1) Glass and glazing will comply with all applicable standards, including the Insulating Glass Manufacturers Association of Canada (IGMAC) Guidelines and the Glazing Contractors Association of B.C. (GCA) Glazing Systems Specifications Manual.

6.8.2.10(2) Exterior and/or interior glass and glazing may be provided as integral components of the exterior envelope, interior partitions and screens, exterior and interior doors, handrail balustrades, skylights and decorative and ornamental glazing.

6.8.2.10(3) Provide assemblies that resist local seismic conditions as a post- disaster building as defined in the BC Building Code.

6.8.2.10(4) Provide assemblies that resist 1-in-100 year climatic events (with a safety factor).

6.8.2.10(5) Use laminated safety glass in entry doors and sidelights, or as the inboard light of a double-glazed skylight. Single- glazed skylights are not to be used when separating interior and exterior environments.

6.8.2.10(6) Use of wired glass is not permitted anywhere in the Facility. When glass is used in a fire rated partition The Design-Builder will provide non-wired fire rated glass and meet all applicable standards and codes.

6.8.2.10(7) Insulating glazing units (IGUs), should have a hermetic seal certified by IGMAC, complete with PIB primary and silicone secondary seal.

6.8.2.10(8) IGUs should have low-e coatings to minimize internal heat gain during cooling months.

6.8.2.10(9) Mirrors

6.8.2.10(9)a. For full wall unframed mirrors, use 6 mm thick minimum float glass backed with electrolytically-applied copper plating. Grind smooth and polish all edges.

6.8.2.10(9)b. For wall mounted posture mirrors, use framed type; one piece, stainless steel channel frame with a No. 1 quality, 6 mm thick float glass mirror backed with electrolytically applied copper plating. Back with galvanized steel.

6.8.2.11 Finish Hardware

6.8.2.11(1) Door finish hardware to be designed by a certified finish hardware professional – Architectural Hardware Consultant (AHC) with a minimum of five (5) years of experience in design health care facilities including hospitals. Scope of this work will include the preparation of a detailed hardware schedule shop drawing, keying schedule in consultation with the Authority, and carrying on-site inspections.

6.8.2.11(2) Provide security hardware and access control devices for rooms, areas and departments and between departments to preserve access and boundaries as required in Appendix 1A Clinical Specifications. Refer also to Appendix 1J Door Operation Matrix.

6.8.2.11(3) Finish hardware will comply with all applicable standards, including the quality standards of the Door and Hardware Institute (DHI).

6.8.2.11(4) Provide all finish hardware from one supplier that is Cantech compatible and is a member in good standing of the Door and Hardware Institute (DHI) with one or more AHC (Architectural Hardware Consultant) in its employ.

6.8.2.11(5) Hardware will be integrated with the security requirements and coordinated with electrical wiring and power requirements.

6.8.2.11(6) Select finishes to provide maximum longevity and preservation of the finish.

6.8.2.11(7) Provide, where applicable, ULC-listed hardware for the required fire rating.

6.8.2.11(8) Use heavy-duty commercial quality hardware; locksets and latchsets fully mortised type and lever handles of solid material.

6.8.2.11(9) All doors with maglocks must have a key override on both sides of the door.

6.8.2.11(10) For special areas provide hardware to suit the purposes unique to those areas.

6.8.2.11(11) Keying

6.8.2.11(11)a. Supply and install ASSA key cylinders, or pre-approved cylinders of equivalent quality, 6 pin (factory pinned).

6.8.2.11(11)b. Implement a 4-level system.

6.8.2.11(11)c. Keying groups will be assigned by the Authority.

6.8.2.11(11)d. New key bittings will be given to and controlled by the Authority.

6.8.2.11(11)e. Develop a keying schedule in consultation with the Authority

6.8.2.11(11)f. Turn over keys from factory to the Authority.

6.8.2.11(11)g. Supply four (4) keys for each lock cylinder.

6.8.2.11(11)h. Each lockset, exit devices, and any locking hardware shall be provided with a cylinder and 4 sets of keys.

6.8.2.12 Division 28 Coordination

6.8.2.12(1) Coordinate with the Division 28 (Access Control) contractor prior to rough-in for complete and fully functioning access controlled doors in the new hospital. Equipment supplied, installed, integrated, and connected by the Division 8 includes, but is not limited to;

6.8.2.12(1)a. electrified door hinges;

6.8.2.12(1)b. emergency exit panic/push bars;

6.8.2.12(1)c. delayed exit timers;

6.8.2.12(1)d. electrified door hinges;

6.8.2.12(1)e. delayed egress controllers;

6.8.2.12(1)f. electromagnetic locks “maglocks;”

6.8.2.12(1)g. fire alarm relays for release of magnetic locks “maglocks;”

6.8.2.12(1)h. keyswitch overrides for release of magnetic locks “maglocks or other;”

6.8.2.12(1)i. automatic door openers; and

6.8.2.12(1)j. Power supplies and battery back-up units (will be located in TR rooms only) for all access control door devices

6.8.2.12(2) Refer to Appendix 1J Door Operation Matrix for high-level design intent. Final design requirements will be confirmed during user consultation based on the proposed layout of the Building.

6.9 Finishes (Division 9)

6.9.1 Basic Requirements

6.9.1.1 Provide interior finishes that are capable of being maintained to the Westech Health Care Facility Cleaning Audit Reference Guide – V9A.

6.9.1.2 In areas where finishes and systems of installation will occur and water is anticipated to be present as part of cleaning or other procedures, allow water to collect and exit without causing damage to the finishes or substrate.

6.9.1.3 For areas in which wear is a concern, such as areas with anticipated pedestrian or wheeled traffic, use durable finish materials able to withstand damage and easily replaceable in sections if damage does occur. Give priority to infection prevention and control in the selection of finishes for all patient care areas. Acoustic characteristics of finish materials will also be a priority consideration.

6.9.1.4 Select the appearance of finishes and colours to create and promote a natural healing environment, prevent glare, and minimize artificial lighting requirements.

6.9.1.5 Select materials to promote sustainability by, for instance, having low-emissivity or comprising of renewable resources.

6.9.1.6 Select finish materials that do not use known carcinogenic material or chemicals in their manufacture or disposal. Consult the Green Guide for Healthcare.

6.9.2 Performance Criteria

6.9.2.1 Interior Wall Framing

6.9.2.1(1) Interior wall framing will comply with all applicable standards, including the Canadian Sheet Steel Building Institute Standards (CSSB1) and the Association of Wall and Ceiling Contractors of B.C. (AWCC) Wall & Ceiling Specification Standards Manual for materials and workmanship for interior walls, including steel studs and furring and gypsum board ceiling suspension systems.

6.9.2.1(2) System design and components will meet seismic restraint requirements for a post-disaster building where applicable.

6.9.2.1(3) Use prefabricated non-load bearing steel studs for interior partitions and furring with no axial load other than its own weight, the weight of attached finishes, and lateral loads of interior pressure differences and seismic loads. Wood stud framing can be used in Primary Care.

6.9.2.1(4) Construct steel and wood stud framing to accommodate electrical, plumbing and other services in the partition cavity, and to support fixtures, wall cabinets, medical equipment and other such wall-mounted items.

6.9.2.1(5) Provide reinforcement and backing throughout.

6.9.2.1(6) Design systems for the differences in air pressure that may result on opposite sides of the wall or partition due to factors such as wind and other lateral pressures, stack effects, or mechanically-induced air pressurization.

6.9.2.1(7) Coordinate with all supplied equipment to confirm location of wall mounts for equipment and furnishings. Provide backing for handrails, grab-bars, wall protection and other similar items. Identify areas for mounting artwork and other display items that would require backing and confirm with the Authority. Ensure that backing does not compromise the acoustic performance of walls that are required to have an STC rating.

6.9.2.2 Gypsum Board

6.9.2.2(1) Gypsum board will comply with all applicable standards, including the Association of Wall and Ceiling Contractors of B.C. (AWCC) Wall & Ceiling Specification Standards Manual.

6.9.2.2(2) Gypsum board will be no less than 16 mm in thickness.

6.9.2.2(3) Use cementitious backer board (tile backer board) behind ceramic wall tile in showers or other wet areas. Use glass mat water- resistant gypsum backing panels behind sinks.

6.9.2.2(4) Provide abuse-resistant gypsum board in corridors with heavy patient, cart or equipment traffic, to be located on the bottom 1200mm of the corridor wall, in order to increase resistance to abrasion, indentation and penetration of interior walls.

6.9.2.2(5) Use glass mat surfaced gypsum sheathing board wherever exterior gypsum sheathing is required at exterior walls.

6.9.2.3 Ceramic Tilework

6.9.2.3(1) Ceramic tilework will comply with all applicable standards, including the Terrazzo Tile and Marble Association of Canada (TTMAC) Specification Guide 09300 Tile Installation Manual.

6.9.2.3(2) In order to reduce opportunities for the spread of infection, avoid use of ceramic tile in interior applications at patient and other clinical areas, and if used limit to no more than 10% of such applications.

6.9.2.3(3) Ceramic tile, when used in a flooring application, will have a minimum dynamic coefficient of friction (DCOF) rating of 0.42 in accordance with ANSI A317.1 recommendations. Provide tile with a higher DCOF rating where required to ensure non-slip safety in wet or non-level locations. Review cleaning and maintenance requirements related to each type of tile with the Authority.

6.9.2.3(4) For exterior installations, provide frost-resistant exterior tiles with a moisture absorption rating of 3.0% or less.

6.9.2.3(5) Provide control joints and expansion joints in conformance with the recommendations of the TTMAC Tile Installation Manual.

6.9.2.3(6) Provide a waterproof membrane under ceramic floor and wall tile in showers and other wet areas. The membrane will be trowel- applied, built-up, liquid-applied or sheet-applied.

6.9.2.3(7) Provide crack isolation membranes to resist crack transmission from the substrate due to lateral movement; design for use in thin- set applications of tile over a cracked substrate. Use elastomeric sheets or trowel-applied materials suitable for subsequent bonding of ceramic tile.

6.9.2.3(8) Set ceramic tile with latex modified mortar and grout with epoxy grout.

6.9.2.4 Ceilings

6.9.2.4(1) Acoustic Tile Ceilings

6.9.2.4(1)a. Acoustic ceiling tiles in metal suspension system will be used in at least the following locations:

- 6.9.2.4(1)a.1 Hallways;
- 6.9.2.4(1)a.2 Offices, meeting rooms;
- 6.9.2.4(1)a.3 Common lobby, admitting areas;
- 6.9.2.4(1)a.4 Waiting areas;
- 6.9.2.4(1)a.5 Quiet rooms;
- 6.9.2.4(1)a.6 Staff sleep rooms
- 6.9.2.4(1)a.7 Medication rooms;
- 6.9.2.4(1)a.8 Patient Rooms
- 6.9.2.4(1)a.9 Resident rooms in long term care
- 6.9.2.4(1)a.10 Examination rooms;
- 6.9.2.4(1)a.11 Soiled, clean and storage rooms
- 6.9.2.4(1)a.12 Patient and staff lounges; and
- 6.9.2.4(1)a.13 Other areas requiring a non-institutional finish.

6.9.2.4(1)b. Acoustic Panel: Non-directional, fissured pattern, Imperial dimension white ceiling panel, trim edge detail (square) to fit a standard 15/16” T-bar grid panel size.

6.9.2.4(1)c. Install acoustic ceiling tiles in the suspension system that comply with the requirements of Appendix 1C Acoustics and Noise Control Measures and provide the levels of sound attenuation required to suit the intended function of the room.

6.9.2.4(1)d. All acoustic tile ceilings used in spaces which do not have special cleaning, maintenance or environmental needs (as in food preparation areas or high temperature / humidity areas) will have a Noise Reduction Co-efficient of 0.80 or greater.

6.9.2.4(1)e. Provide accessibility to the ceiling spaces where access is required to mechanical, electrical or other service systems.

6.9.2.4(1)f. Provide special surface-treated ceiling tiles, such as mylar, vinyl- faced or metal-faced tiles, where maintenance and ease of cleaning are priorities as well as the accessibility and acoustic requirements.

6.9.2.4(1)g. Provide acoustical panels that are appropriate for the temperature range and humidity of the space where they will be used.

6.9.2.4(1)h. Use tiles with scratch-resistant surfaces in any area where lay-in ceiling panels frequently need to be removed for plenum access.

6.9.2.4(1)i. For ceilings installed in food preparation areas, use acoustic panels capable of being cleaned without undue wear on the panel.

6.9.2.4(2) Hard Ceilings

6.9.2.4(2)a. Construct hard ceilings of 16 mm gypsum wall board or fire-rated gypsum board as required. Finish hard ceilings as per the paint specifications outlined in Section 6.10.2.7. Provide hard ceilings for the following rooms:

- 6.9.2.4(2)a.1 housekeeping and utility rooms;
- 6.9.2.4(2)a.2 washrooms and shower rooms;
- 6.9.2.4(2)a.3 procedure rooms and any other rooms where invasive procedures may be performed;
- 6.9.2.4(2)a.4 sterile supply rooms;
- 6.9.2.4(2)a.5 other areas where infection prevention and control may be an issue;
- 6.9.2.4(2)a.6
- 6.9.2.4(2)a.7 over wash areas in the food services kitchen
- 6.9.2.4(2)a.8 airborne isolation and protective isolation rooms and anterooms; and
- 6.9.2.4(2)a.9 other areas where infection prevention and control may be an issue.

6.9.2.4(2)b. Not used.

6.9.2.4(3) Access Panels

6.9.2.4(3)a. Where hard ceilings are used, provide access panels to allow for mechanical and electrical servicing in the ceiling.

6.9.2.4(3)b. Access panel to be prefinished.

6.9.2.5 Flooring

6.9.2.5(1) All Rooms Except Wet Rooms

6.9.2.5(1)a. Use solid homogeneous sheet flooring (or an equivalent product approved in advance by the Authority) unless specified otherwise. Acceptable products:

- 6.9.2.5(1)a.1 Tarkett iQ Granit
- 6.9.2.5(1)a.2 Tarkett Micro Granit
- 6.9.2.5(1)a.3 Tarkett Optima

6.9.2.5(1)b. Meets the American Society Testing Materials (ASTM) F 1913 Standard Specification for Vinyl Sheet Floor Covering Without Backing consisting of a non-layered flooring with the same colour and pattern extended throughout.

6.9.2.5(1)c. Select products that will require no sealers, no wax and no finish for the life of the product.

6.9.2.5(1)d. Hot weld all joint seams.

6.9.2.5(1)e. Form coved bases 150 mm high, straight cut, finished with clear silicone caulking. Do not cap.

6.9.2.5(1)f. External corners are formed using a Butterfly Piece, otherwise known as a V-plug.

6.9.2.5(1)g. Use low VOC flooring adhesive of a type recommended by the flooring manufacturer.

6.9.2.5(1)h. Where there is no existing product to butt against, finish edging finish with vinyl finishing strip as per manufacturers' specifications

6.9.2.5(1)i. Finish flooring with high speed buffing as per manufacturers' specification. Do not apply sealer or wax.

6.9.2.5(2) Wet Rooms

6.9.2.5(2)a. Use slip-resistant solid sheet flooring (or an equivalent product approved in advance by the Authority) appropriate for the specific use for all wet rooms. Acceptable products:

- 6.9.2.5(2)a.1 Tarkett Granit Safe.T,
- 6.9.2.5(2)a.2 Tarkett Granit Multisafe,
- 6.9.2.5(2)a.3 Tarkett Safetred Aqua,
- 6.9.2.5(2)a.4 Tarkett Multisafe Aqua.
- 6.9.2.5(2)a.5 Altro Aquarius
- 6.9.2.5(2)a.6 Altro Commerical Kitchen line (Altro Classic 25, Altro Atlas 40, Altro Strong Hold 30)

6.9.2.5(2)b. Meets the American Society Testing Materials (ASTM) F1303 type 2 grade 1 consisting of a non-layered flooring with the same colour and pattern extended throughout.

6.9.2.5(2)c. Hot weld all joint seams.

6.9.2.5(2)d. Form coved bases 150 mm high, straight cut, finished with clear silicone caulking. Do not cap.

6.9.2.5(2)e. External corners are formed using a Butterfly Piece, otherwise known as a V-plug.

6.9.2.5(2)f. Use low VOC flooring adhesive of a type recommended by the flooring manufacturer.

6.9.2.5(2)g. Finish flooring as per manufacturer's specification. Do not apply sealer or wax.

6.9.2.5(2)h. The following rooms are "wet rooms":

- 6.9.2.5(2)h.1 Medical Inpatient Washroom
- 6.9.2.5(2)h.2 Medical Inpatient Washroom (Bariatric)
- 6.9.2.5(2)h.3 Palliative Care Washroom
- 6.9.2.5(2)h.4 LDRP Washroom (shower)
- 6.9.2.5(2)h.5 Resident washrooms
- 6.9.2.5(2)h.6 Bariatric Resident Washroom
- 6.9.2.5(2)h.7 Tub Room
- 6.9.2.5(2)h.8 Decontamination Room (in the Emergency Department)
- 6.9.2.5(2)h.9 Housekeeping Closets

6.9.2.5(3) Stair Covering

6.9.2.5(3)a. Stair treads will be one piece solid vinyl Johnsonite VIRTR (visually impaired roundel tread riser) with carborundum strip (product approved in advance by the Authority)..

6.9.2.5(3)b. Use a low volatile organic compound adhesive approved by the flooring manufacturer.

6.9.2.5(4) Comply with all applicable standards, including the National Floor Covering Association (NFCA) Specification Standards Manual. US Federal Specification RR-T-650d.

6.9.2.5(5) Select flooring materials that are suitable for:

6.9.2.5(5)a. ease of cleaning and maintenance;

6.9.2.5(5)b. pedestrian and rolling traffic;

6.9.2.5(5)c. the acoustic requirements of the space;

6.9.2.5(5)d. infection prevention and control; and

6.9.2.5(5)e. the aesthetics of the Facility.

6.9.2.5(6) Where epoxy flooring is used in wet areas, use water and slip- resistant grade and prevent water or moisture transmission to the substrate. Terminate flooring at the walls in the form of 150 mm high flash coves.

6.9.2.5(7) Use heavy-duty materials for flooring on which wheeled or service vehicle traffic is anticipated and to which wear and damage may result.

6.9.2.5(8) Use suitable flooring in patient and staff areas where cart or stretcher traffic is expected or where cleaning on a regular or emergency basis is necessary.

6.9.2.5(9) Use water resistant and slip-resistant flooring inpatient washrooms, medical inpatient washrooms (including bariatric), resident washrooms (including bariatric), housekeeping closets, and decontamination room.

6.9.2.5(10) Resilient tile products with performance equal to or exceeding the requirements for sheet flooring may be considered for flooring in service corridors and service areas and approved by the Authority.

6.9.2.5(11) Use anti-static flooring material for telecommunication rooms.

6.9.2.5(12) Resilient Flooring

6.9.2.5(12)a. Choose products with exposed surface having anti-bacterial properties to prevent entry of gram-positive and gram-negative micro-organisms. Weld all seams. Provide integral cove bases.

6.9.2.5(12)b. Slip-resistant sheet vinyl will have a static coefficient of friction of 0.6 on level surfaces and 0.8 on ramps.

6.9.2.5(12)c. Do not use linoleum sheet flooring.

6.9.2.5(12)d. Hot weld all seam joints.

6.9.2.5(12)e. Form cove bases 150 mm high, straight cut, and welded seams.

6.9.2.5(12)f. Use solvent-based, low-odour flooring adhesive of a type recommended by the flooring manufacturer.

6.9.2.5(12)g. Finish flooring with high-speed buffing as per manufacturer's specification.

6.9.2.5(12)h. Provide tactile warning strips and stair nosing to assist the visually-impaired.

6.9.2.5(12)i. Use adhesive for resilient flooring that meets or exceeds the United States Environmental Protection Agency (EPA) Standards for acceptable VOC concentration and emission rates.

6.9.2.5(13) Patient Activation Flooring

6.9.2.5(13)a. Provide a resilient, vinyl surface, multipurpose, sport flooring surface.

6.9.2.5(13)b. Vinyl is to be 5 mm thick minimum for shock absorption.

6.9.2.5(13)c. Choose products with exposed surface having anti-bacterial properties to prevent entry of gram-positive and gram-negative micro-organisms. Weld all seams. Provide integral cove bases.

6.9.2.5(13)d. Static coefficient of friction of 0.6 on level surfaces.

6.9.2.5(13)e. Hot weld all seam joints.

6.9.2.5(13)f. Form cove bases 150 mm high, straight cut, and welded seams.

6.9.2.5(13)g. Use solvent based low odour flooring adhesive.

6.9.2.5(13)h. Finish flooring with high speed buffing as per Manufacturer's specification.

6.9.2.6 Acoustic Treatment

6.9.2.6(1) Design and construct the Facility to comply with the minimum sound transmission ratings between spaces described in Appendix 1C Acoustics and Noise Control Measures.

6.9.2.6(2) In addition, provide acoustic treatment where sound attenuation, soundproofing or other sound control measures are necessary to create a healing environment for patients and a safe and comfortable environment for staff and where confidentiality is required.

6.9.2.6(3) Sound control will generally include:

6.9.2.6(3)a. attenuation of sound within public, patient and staff environments;

6.9.2.6(3)b. sound isolation between the exterior and interior spaces

6.9.2.6(3)c. sound isolation between interior spaces within the building at both horizontal and vertical separations;

6.9.2.6(3)d. sound and vibration isolation of building service noises and sound isolation of building service rooms; and

6.9.2.6(3)e. sound isolation as required for specialty rooms

6.9.2.6(4) Use acoustic screens, vibration isolators, and carefully selected exterior equipment to prevent exterior noise that neighbours may find offensive. See Section 4.2.5, Community Noise Protection;

6.9.2.7 Painting and Protective Coatings

6.9.2.7(1) Comply with LEED requirements for Low Emitting Materials Paints and Coatings, including:

6.9.2.7(1)a. architectural paints, coatings and primers: low voc.

6.9.2.7(1)b. anti-corrosive and anti-rust: low voc.

6.9.2.7(1)c. clear wood finishes, floor coatings, stains and shellacs: low VOC.

6.9.2.7(2) Walls, doors and shelving

6.9.2.7(2)a. Use eggshell or semi-gloss for all walls, doors and painted shelving.

6.9.2.7(3) Door frames and metal doors

6.9.2.7(3)a. Use semi-gloss for all door frames and metal doors.

6.9.2.7(4) Wood finish doors

6.9.2.7(4)a. Use clear coat interior rub varnish for all wood finish doors.

6.9.2.7(5) Paint Grade Doors

6.9.2.7(5)a. Use semi-gloss for all paint grade doors.

6.9.2.7(6) Ceilings

6.9.2.7(6)a. Use eggshell paint for all ceilings.

6.9.2.7(7) Floors, concrete

6.9.2.7(7)a. Use a 2-component (base component A, curing agent B).

6.9.2.7(7)b. Use a primer if part of coating system.

6.9.2.7(8) Paint painted patient care areas with a semi-gloss finish.

6.9.2.7(9) Conform to all applicable standards, including the material and workmanship requirements of Master Painters Institute (MPI) Architectural Painting Specification Manual.

6.9.2.7(10) Use exterior paints of a quality designed to protect substrate materials from weather and climate conditions.

6.9.2.7(11) Use exterior and interior finish materials with surface finishes either as integral to the finish material or field-applied separately to the surface of the finish material.

6.9.2.7(12) Treat exterior masonry materials such as brick and concrete block with water-repellent coatings to prevent water ingress into or through the material.

6.9.2.7(13) Provide a special protective coating on exterior and interior materials that are subject to corrosion from exposure to moisture or other corrosive agents, and where painting is deemed to be insufficient protection. Materials requiring a special protective coating include exterior and interior structural, galvanized, and miscellaneous steel.

6.9.2.7(14) Use paints with a minimal VOC level in patient, staff, and public interior areas.

6.9.2.7(15) Use interior paint materials of a quality to withstand regular or repeated cleaning as the function of the area dictates.

6.9.2.7(16) Do not use materials containing lead and mercury.

6.9.2.8 Vinyl Acrylic Wall Covering

6.9.2.8(1) If vinyl/acrylic wall covering is used, provide vinyl/acrylic high impact rigid sheet, nominal 2.0mm thickness with colour-matched vinyl/acrylic trim for joint/transitions.

6.9.2.8(2) Furnish complete packaged system containing all primers and adhesive. Use non water-based and non-hazardous primer and adhesive materials.

6.10 Specialties (Division 10)

6.10.1 Basic Requirements

6.10.1.1 Provide specialty products manufactured for the specific purposes intended and installed in strict accordance with the manufacturer's directions.

6.10.2 Tack boards and Whiteboards

6.10.2.1 Provide, as required in Appendix 1B Furniture and Medical Equipment:

6.10.2.1(1) tack board surfaces that allow pin penetration of the surface materials and have reasonable resistance to deterioration; and

6.10.2.1(2) whiteboard surfaces that allow use of felt-type writing instruments and allow erasing and cleaning with minimal effort. Use porcelain ceramic on steel surface, magnetic, scratch and abrasion-resistant and have maximum contrast, glare control, and reflectivity.

6.10.2.2 Provide tack boards and whiteboards with extruded aluminum frames, accessory trays, map rails and map hooks.

6.10.2.3 Use non-toxic, water based lamination adhesive for tack boards and whiteboards.

6.10.3 Projection Screens

6.10.3.1 Provide, as required in Appendix 1B Furniture and Medical Equipment:

6.10.3.1(1) projection Screens mounted from recesses in ceilings or wall mounted; and

6.10.3.1(2) where appropriate, provide for motorized screens.

6.10.3.2 Provide supports and power as required to coordinate with mobile or fixed projector units, including ceiling mounted projectors.

6.10.3.3 Provide for trims and finishes compatible with the design of the rooms.

6.10.4 Compartments and Cubicles

6.10.4.1 Provide compartments and cubicles including toilet partitions, change cubicles, shower partitions, and other compartments and cubicles requiring privacy and security.

6.10.4.2 Provide exposed surfaces that are permanent, water-resistant, corrosion-proof, and readily cleaned and maintained.

6.10.4.3 Secure partitions and standards to the floor or ceiling structure, and in a manner to resist lateral loading and impact.

6.10.4.4 For compartment/cubicle doors, use material matching the partitions and include permanent, purpose-made hardware. Design doors and hardware to provide barrier-free access.

6.10.4.5 Provide a mirror in all change compartments.

6.10.5 Toilet Partitions

6.10.5.1(1) Galvannealed sheet metal will conform to ASTM A653 with minimum ZF001 (A01) zinc coating. Finish in polyester, baked enamel or powder coating.

6.10.5.1(2) For stainless steel, use Type 304 conforming to ASTM A240 with No. 4 finish.

6.10.5.1(3) For plastic laminate, use Grade 10/HGS GP50 scuff-resistant, high pressure laminate, conforming to NEMA LD-3.

6.10.5.1(4) Fibre-reinforced plastic (fibreglass) will be a moisture resistant grade.

6.10.5.1(5) Solid Phenolic with laminate or stainless steel finish.

6.10.6 Change Cubicle Partitions

6.10.6.1(1) Where adjacent to showers, change cubicle partitions will be the same as shower partitions.

6.10.6.1(2) Where not adjacent to showers, change cubicle partitions will comply with the requirements for toilet partitions.

6.10.7 Shower Partitions

6.10.7.1(1) Use solid phenolic laminated thick stock, factory-laminated with decorative finish both faces of core and conforming to CAN3-A172 or NEMA LD3.

6.10.8 Metal Lockers

6.10.8.1 Provide individual and shared storage facilities in designated staff and patient areas in the Building based on expected staffing requirements as described in Appendix 1A Clinical Specifications and as appropriate for operation of the Building. Such storage facilities may be metal lockers and metal locker systems of sizes, numbers, and groupings as determined in consultation with the Authority. Lockers will include a mix of full height, half size and purse lockers. Minimum locker size to be W: 300mm x D: 450mmFor sheet metal, use galvannealed steel conforming to ASTM A653 with ZF001 (A01) zinc coating.

6.10.8.2 Lockers will be placed on minimum 150 mm high bases finished with cove bases integral with the floor finish. Bases will be sealed to prevent moisture and dust ingress.

6.10.8.3 Lockers will fit tightly below gypsum board bulkheads or be complete with sloped metal tops.

6.10.8.4 Finish steel surfaces with polyester baked enamel or powder coating.

6.10.8.5 For single, double, or multiple-tier metal lockers for staff use, include a provision for locking with padlock, and complete with number plates, and 2 hanging hooks per locker.

6.10.9 Storage Shelving Systems

6.10.9.1 Provide storage systems for materials in designated storage areas.

6.10.9.2 Adjustable shelving systems may be specifically manufactured for storage purposes, such as plywood or steel-slotted angle industrial shelving for bulk materials of plastic laminate- faced plywood for clean storage.

6.10.9.3 For mobile storage systems, provide a high - density system designed to make maximum use of available space by eliminating need for access aisle for each run of shelving. Install and brace systems to resist seismic loads. The mobile storage system to be either power assisted or to be easily operable without undue required strength by any person.

6.10.10 Washroom Accessories

6.10.10.1 Provide institutional quality washroom accessories as specified in Appendix 1B Furniture and Medical Equipment and this Schedule in all public, patient, resident and staff washrooms. Determine the type, size, and number of accessories and placement on walls with regard for the numbers and categories of users, in consultation with the Authority.

6.10.10.2 Install washroom accessories to allow cleaning and maintenance of the accessory and surrounding wall area.

6.10.10.3 Accessories with appropriate safety features will be selected for Mental Health / Psychiatry and other areas where there is increased risk of patient injury

6.10.10.4 Recessed dispensers (such as those for paper towels, soap and waste receptacle) will not be used.

6.10.10.5 Use commercial grade accessories free from imperfections in manufacture and finish.

6.10.10.6 Use fittings with concealed fastening for security and discouragement of tampering.

6.10.10.7 Staff and public washroom accessories will include the following:

6.10.10.7(1) soap dispensers;

6.10.10.7(2) toilet paper dispensers;

6.10.10.7(3) paper towel dispensers – “hands free” type;

6.10.10.7(4) paper towel disposals;

6.10.10.7(5) mirrors;

6.10.10.7(6) barrier-free grab bars (with integral tactile grip finish);

6.10.10.7(7) coat hooks;

6.10.10.7(8) sanitary napkin dispensers;

6.10.10.7(9) sanitary napkin disposals;

6.10.10.7(10) baby change table is required in public washrooms only; and

6.10.10.7(11) utility shelf.

6.10.10.8 Patient and Resident washroom accessories will include the following:

6.10.10.8(1) soap dispensers;

6.10.10.8(2) toilet paper dispensers;

6.10.10.8(3) paper towel dispensers;

6.10.10.8(4) paper towel disposals;

6.10.10.8(5) mirrors;

6.10.10.8(6) barrier-free grab bars (with integral tactile grip finish);

6.10.10.8(7) coat hooks; and

6.10.10.8(8) utility shelf.

6.10.10.9 Patient ensuite washrooms will include the following accessories:

6.10.10.9(1) soap dispensers;

6.10.10.9(2) toilet paper dispensers;

6.10.10.9(3) paper towel dispensers;

6.10.10.9(4) paper towel disposals;

6.10.10.9(5) mirrors;

6.10.10.9(6) barrier-free grab bars (with integral tactile grip finish);

6.10.10.9(7) shower seat;

6.10.10.9(8) coat hooks; and

6.10.10.9(9) utility shelf.

6.10.10.10 Resident ensuite washrooms will include the following accessories:

6.10.10.10(1) soap dispensers;

6.10.10.10(2) toilet paper dispensers;

6.10.10.10(3) paper towel dispensers;

6.10.10.10(4) paper towel disposals;

6.10.10.10(5) mirrors;

6.10.10.10(6) barrier-free grab bars (with integral tactile grip finish);

6.10.10.10(7) shower seat;

6.10.10.10(8) lockable storage cabinet;

6.10.10.10(9) coat hooks; and

6.10.10.10(10) utility shelf.

6.10.10.11 Shower rooms or showers in Patient and Resident washrooms will include the following accessories:

6.10.10.11(1) shower curtain and track or rod as appropriate;

6.10.10.11(2) handicap grab bars; and

6.10.10.11(3) fold-down shower seat.

6.10.11 Privacy Curtains

6.10.11.1 Provide and install hook-less hospital privacy curtain panels, ceiling mounted tracks, wall flanges, angle brackets, ceiling flanges, end stops, T plates, 4-way plates and all other accessories as required, at cubicles and other locations as determined in consultation with the Authority.

6.10.11.2 Provide the number of cubicle curtains required to fully enclose the opening, with a minimum of three sets of curtain panels for each location.

6.10.11.3 Curtains will comply with CAN/ULC S109-03 Flame Tests of Flames Resistant Fabrics and Films.

6.10.11.4 For cubicle tracks, use extruded, anodized aluminum, entirely enclosed except for the track guide.

6.10.11.5 Basis of design for the hook-less privacy curtain system will be On The Right Track. Other hook-less privacy curtain systems of equal performance may be acceptable to the Authority.

6.10.11.6 Curtain and curtain track will be structurally supported.

6.10.11.7 Provide cubicle curtains in the following locations:

6.10.11.7(1) Inpatient bedrooms and treatments bays in the Medical Inpatient unit;

6.10.11.7(2) The emergency department at stretcher, bed and chair bays, treatment areas, holding spaces, examination rooms, procedure room and resuscitation/trauma room;

6.10.11.7(3) Diagnostic Imaging at change cubicles;

6.10.11.7(4) Ambulatory Services and examination rooms; and

6.10.11.7(5) Any other location identified in Appendix 1A Clinical Specifications.

6.10.12 Shower Curtains

6.10.12.1 Provide shower curtains and track in the following locations:

6.10.12.1(1) Medical Inpatient unit at inpatient washrooms;

6.10.12.1(2) Any other location identified in Appendix 1A Clinical Specifications.

6.10.13 Not used

6.10.14 Inpatient Bed Headwalls

6.10.14.1 In private inpatient rooms, design the head wall adjacent to the inpatient bed:

6.10.14.1(1) to allow for one oxygen connection, one medical air connection and one vacuum connection on each side of the bed, for a total of 6 medical gas outlets; and

6.10.14.1(2) to meet or exceed all relevant CSA and ULC codes and regulations for the full range of requirements for an Acuity Adaptable Direct Patient Care Area and environment;

6.10.14.1(3) to provide all rails, accessories and backing required for mounting monitors, baskets, and other equipment as required,

6.10.14.1(4) to provide bed dock locators behind the bed,

6.10.14.1(5) to allow for data, communication and electrical power outlets on both sides of the bed , and

6.10.14.1(6) see Section 7.7 Communications (Division 27); and

6.10.14.1(7) so that medical gases, service outlets, rails, equipment and accessories are configured in an horizontal and modular system, which may be either a horizontal modular headwall strip or a complete wall unit.

6.10.14.2 In bariatric rooms provide two headwalls that comply with the requirements of section 6.10.14.1, one behind the bariatric bed and the other on the opposite wall, in order to support a second inpatient bed during over capacity.

6.10.15 Electric Fireplace

6.10.15.1 Provide manufactured electric fireplaces in the long term care Living Room.

6.10.15.2 Fireplaces will have all components and accessories for a complete, functional unit listed to UL or WHI and will be front view, opening-sealed unit and non- venting, with a fire on/off switch, log set and log grates.

6.10.16 Mail Slots

6.10.16.1 Provide mail slots that are a minimum of 25mm wide, 350mm high and 400mm deep, in locations identified in Appendix 1A Clinical Specifications.

6.11 Equipment (Division 11)

6.11.1 Food Services

6.11.1.1 Refer to Appendix 1 H(I) Food Services Equipment List.

6.11.1.2 Refer to Appendix 1 H(III) Food Services Specifications.

6.11.1.3 All equipment in Appendix 1H(I) and Appendix 1H(III) will be Category 4.

6.11.2 Laundry

6.11.2.1 Refer to Appendix 1H(II) Laundry Equipment List.

6.11.2.2 All equipment in Appendix 1H(II) will be Category 4.

6.11.3 Ceiling-Mounted Patient Lifts

6.11.3.1 Refer to Appendix 1A Clinical Specifications and Appendix 1B(II) Furniture and Medical Equipment for information regarding locations and ceiling-mounted patient lift configurations

6.11.3.2 Ceiling-mounted patient lift motors designated as bariatric will have minimum 374.2 kg (825 lb) capacity. All other ceiling-mounted patient lift motors will have minimum 272.2 kg (600 Lb) capacity.

6.11.3.3 All ceiling-mounted patient lift suspension components below the floor/roof assembly but above the finished ceiling including but not limited to steel hangers and seismic bracing will be designed for bariatric capacity.

6.11.3.4 All components of the ceiling-mounted patient lift system including but not limited to tracks, rails and lift motors, will be from the same manufacturer and designed to work together as a system.

6.11.4 Base Building Items

6.11.4.1 Refer to Appendix 1K Base Building Items for a list of Design-Builder supply and install items, over and above items noted in Appendix 1B(II) Furniture & Equipment List.

6.12 Furnishings (Division 12)

6.12.1 Millwork, Casework, Clinical Systems Furniture and Systems Furniture

6.12.1.1 The Facility and its components must be accessible by people with different functional capacitates including, children, the elderly, Persons with Disabilities. The Design-Builder will apply “Universal Design” principles in the design and planning to ensure the furnishings are usable by all people without the need for specialized design or adaptation. Counters, desks, and work surfaces in non-office areas will include wheelchair access for both Patients and the public.

6.12.1.2 In addition to the Design-Builder’s obligation to provide Category 4 Equipment, the Design-Builder will provide and install all millwork, casework, clinical systems furniture, systems furniture and accessories as required to support the programs and functions described in Appendix 1A Clinical Specifications or as required to support the operation of the Facility.

6.12.1.3 Appendix 1B Furniture and Medical Equipment lists the locations in which clinical systems furniture or systems furniture are required. Subject to Sections 6.13.1.5 and 6.13.1.6, the Design-Builder may use millwork, casework, clinical systems or systems furniture interchangeably to satisfy the requirements of Appendix 1B Furniture and Medical Equipment. The Design-Builder will submit an initial layout and configuration submittal by the Authority.

6.12.1.4 The Design-Builder will establish which option (millwork, casework, clinical systems or systems furniture) best meets the Authority’s functional needs for each space and will achieve the most appropriate level of flexibility, re-configurability, serviceability, and reusability between all areas of the Facility.

6.12.1.5 Millwork means custom fabricated wood or metal cabinetry and counter components and accessories that are installed with little or no modification. Millwork or casework may require mechanical, electrical power and data service connections.

6.12.1.6 Millwork or casework components can include but are not limited to work surfaces (such as counters and work benches) and storage (such as cabinetry, files, drawers, wardrobes and cabinets).

6.12.1.6(1) The Design-Builder will provide the following as millwork:

6.12.1.6(1)a. kitchen and pantry counters, upper and lower cabinets, drawers and shelving;

6.12.1.6(1)b. utility room counters, storage cabinetry and shelving;

6.12.1.6(1)c. patient and resident room wardrobes, including shelving, drawers, coat rods, counters and cabinets;

6.12.1.6(1)d. workroom counters and storage;

6.12.1.6(1)e. security kiosks;

6.12.1.6(1)f. vanity counters containing sinks; and

6.12.1.6(1)g. any other locations identified in Appendix 1A Clinical Specifications;

6.12.1.6(1)h. medication room work surfaces, upper and lower cabinetry, shelving and storage components; and

6.12.1.6(1)i. clinical, exam and treatment room counters, upper and lower cabinets, shelving and storage.

6.12.1.7 Modular Casework means a composition of factory produced, quickly installed parts that are easily replaceable, reconfigurable and interchangeable. Casework can be rearranged to change configuration or to include additional modules as needed.

6.12.1.7(1) The Design-Builder will provide the following as modular casework:

6.12.1.7(1)a. lab casework;

6.12.1.7(1)b. not used;

6.12.1.7(1)c. not used; and

6.12.1.7(1)d. not used.

6.12.1.8 Clinical systems furniture means a factory produced, component system designed to be replaceable, reconfigurable, and interchangeable, and designed for specific use in health care facilities. Clinical furniture systems can be rearranged to change the configuration or to include additional modules and accessories as necessary. Clinical systems furniture requires electrical power and data service connections.

6.12.1.8(1) Without limitation, the Design-Builder may use clinical systems furniture for the following:

6.12.1.8(1)a. nursing workstations;

6.12.1.8(1)b. charting alcoves

6.12.1.8(1)c. triage desk;

6.12.1.8(1)d. unit clerk stations;

6.12.1.8(1)e. nursing stations;

6.12.1.8(1)f. registration cubicles;

6.12.1.8(1)g. adjustable height workstations;

6.12.1.8(1)h. reception desks; and

6.12.1.8(1)i. information desks;

6.12.1.9 The Design-Builder will provide all accessories, storage, cabinetry, upper and lower shelving, keyboard trays and counters necessary to facilitate efficient clinical operations.

6.12.1.10 Systems furniture means a composition of factory-produced wall mounted or partition components that are easily reconfigurable and interchangeable. Systems furniture is designed for office or commercial use and includes accessories and attachments to complete its functionality. Systems furniture requires electrical power and data service connections.

6.12.1.10(1) Without limitation, the Design-Builder may use systems furniture for the following

6.12.1.10(1)a. office workstations including desks, shelving, cabinets, keyboards and accessories;

6.12.1.10(1)b. cubicle partitions;

6.12.1.10(1)c. reception desks; and

6.12.1.10(1)d. information desks.

6.12.2 Furniture

6.12.2.1 Furniture means loose or unattached items that can be rearranged to suit various activities and includes:

6.12.2.1(1) coffee tables and side tables;

6.12.2.1(2) unattached seating (such as chairs and stools);

6.12.2.1(3) waiting room seating;

6.12.2.1(4) sofas and lounge chairs and

6.12.2.1(5) office desks.

6.12.2.2 All furniture and millwork supplied by the Design-Builder will meet the following requirements:

6.12.2.2(1) Flexibility

6.12.2.2(1)a. Products must offer modular solutions that will enable flexibility and LEAN principles to be practiced. Furniture pieces will:

6.12.2.2(1)a.1 allow for individualization;

6.12.2.2(1)a.2 possess the ability to be used in different applications or flex easily for future use;

6.12.2.2(1)a.3 use non-handed solutions that work in multiple configurations, when possible.

6.12.2.2(2) Durability

6.12.2.2(2)a. Activity, waiting, and dining room furniture will be engineered for high traffic use.

6.12.2.2(2)b. Patient room furniture will be designed in conjunction with healthcare professionals and Facility residents and be tested to ensure durability and function.

6.12.2.2(2)c. Furniture will conform to Upholstery Section under “Cleaning and Ease of Maintenance” for additional criteria related to durability

6.12.2.2(3) Construction

6.12.2.2(3)a. The quality and make of the product (its construction, finish materials, and maintenance requirements) will be suitable for long term use and be designed for intense performance.

6.12.2.2(3)b. Products with replaceable components are preferred.

6.12.2.2(3)c. Wood furniture should be avoided and requires review by the Authority when proposed. Where utilized, wood furniture components will be constructed of:

6.12.2.2(3)c.1 Solid wood frames of kiln dried wood for added strength and long term durability.

6.12.2.2(3)c.2 A frame capable of supporting varying weights and body types and offering ease and reassurance to both patients and care providers.

6.12.2.2(3)c.3 Plastic laminates can be used in place of real wood when a wood-look is desired.

6.12.2.2(3)d. Wood furniture will not be used in clinical areas (such as patient rooms, waiting rooms, unit offices, nurses' stations, staff rooms and conference rooms).

6.12.2.2(4) Seating

6.12.2.2(4)a. In waiting room and patient seating, steel tube construction and spring‐seat construction are required.

6.12.2.2(4)b. Seating with wall-saver legs or a wall-saver back design is preferred.

6.12.2.2(4)c. Seating products with arms will include polyurethane arm caps rather than upholstered arm caps.

6.12.2.2(4)d. Refer to upholstered notes referenced throughout Schedule 1 Statement of Requirements for information on upholstered seating products.

6.12.2.2(5) Tables

6.12.2.2(5)a. For durability in waiting rooms and high traffic areas, horizontal table surfaces of solid surface material tops or plastic laminate are required.

6.12.2.2(5)b. Low VOC polyurethane sealed woods can be used on vertical surfaces if plastic laminate is not available.

6.12.2.2(5)c. Design edges with an ergonomic profile for user comfort and be of durable material composition and construction.

6.12.2.2(6) Workstations/Desks

6.12.2.2(6)a. When installed, two adjoining end panels of work surfaces will be levelled so work surfaces sit at the same height.

6.12.2.2(6)b. Tack board, if specified with desk and/or workstation, between hutch and worktop, will span from work surface top to underside of overhead cabinetry leaving no visible gaps, while, at the same time, managing task light wires, if specified with assembly.

6.12.2.2(6)c. Front edge of keyboard platform will be set back from front edge of work surface and/or table.

6.12.2.2(6)d. Any "smart" or "hardwired" furniture will be fully coordinated for proper circuitry and any other building requirements.

6.12.2.2(7) Filing / Storage

6.12.2.2(7)a. Filing is for letter filing, unless specified otherwise. In order to maximize filing capacity, files will be set up for side‐to‐side filing.

6.12.2.2(7)b. Provide for storage of drawings and other records in Facility Maintenance as required in Appendix 1A Clinical Specifications.

6.12.2.2(7)c. During installation, the conversion parts of the files will be left in the file to allow for front-to-back / side-to-side conversion at a later time.

6.12.2.2(7)d. Filing will be equipped with hanging frames at the time of installation.

6.12.2.2(7)e. At a minimum, two-drawer files will include a counter- balance package as recommended by the product manufacturer.

6.12.2.2(7)f. Lockable storage will be keyed as per the building keying system. Keying schedule to be determined with the Authority.

6.12.2.2(8) Filing / Storage Systems (Compact Shelving)

6.12.2.2(8)a. Provide complete high-density mobile shelving system as required in Appendix 1A Clinical Specifications.

6.12.2.2(8)b. Configuration of the system will be confirmed by the Authority during design.

6.12.2.2(9) Cleaning and Ease of Maintenance

6.12.2.2(9)a. The size, shape, and design of the furniture will allow easy access for cleaning.

6.12.2.2(9)b. Materials, upholstery, and finishes will be capable of withstanding institutional grade detergents, cleaners, and disinfectants with no effect on the appearance, integrity, or life of the product. Selection should be based on the understanding of the principles of decontamination and maintenance requirements (able to withstand multiple applications of diluted disinfectants over time).

6.12.2.2(9)c. The Design-Builder will request that manufacturers provide detailed cleaning and disinfection guidelines prior to the Design-Builder's purchase along with a thorough listing of which cleaning products can be used on their products. The Design- Builder will review instructions to ensure they are clear and cleanable with Authority approved detergents and disinfectants.

6.12.2.2(9)d. Other upholstered soft furnishings will have the following characteristics:

6.12.2.2(9)d.1 Be seamless where possible or have double stitched seams located on the non-contact areas of the furniture or sealed.

6.12.2.2(9)d.2 Limited pleating.

6.12.2.2(9)d.3 Upholstered furniture in care areas will be covered with fabrics that are fluid-resistant, non-porous and can withstand cleaning with hospital grade disinfectants.

6.12.2.2(9)d.4 Seating will have removable seat cushions for cleanability and/or "clean-out" spaces between the seat and back for lounge seating applications.

6.12.2.2(9)d.5 Seating will have removable upholstery covers for both the seat and back, if applicable. Attic stock of the removable upholstery covers will be ordered with the original purchase, in the amount of 5% of the total waiting room and patient room seating.

6.12.2.2(9)d.6 Have high-destiny foam cores with a moisture barrier and resistance to mould.

6.12.2.2(9)e. Upholstery will:

6.12.2.2(9)e.1 be impermeable to water and quick-drying;

6.12.2.2(9)e.2 be anti-microbial, and/or have anti-microbial inhibitor technology;

6.12.2.2(9)e.3 have a good abrasion rating for high-use areas (with a minimum of 100,000 DR (ASTM D4157- 02 Wyzenbeek Test Method);

6.12.2.2(9)e.4 have a high-rating for colour-fastness, exceeding 40 hours (AATCC Method 16A);

6.12.2.2(9)e.5 be stain-resistant;

6.12.2.2(9)e.6 be latex-free;

6.12.2.2(9)e.7 have low volatile organic compounds;

6.12.2.2(9)e.8 contain no heavy metals;

6.12.2.2(9)e.9 have no halogenated flame retardant materials or perfluorinated chemicals;

6.12.2.2(9)e.10 have limited use of polyvinyl chloride, avoiding use of polyvinyl chloride where possible, subject to 6.13.5.(9)(c)

6.12.2.2(10) Infection Prevention and Control

6.12.2.2(10)a. Avoid the use of upholstered furnishings and organic finish substances (e.g. wood), which can be exposed to a liquid in areas where immunocompromised patients are present.

6.12.2.2(10)b. The use of impermeable upholstery (such as vinyl) is permitted in high-risk areas (high-risk applies to any areas specifically used by patients/residents/clients, including patient rooms and waiting rooms) and any area where a healthcare worker goes after providing direct patient care (including Nursing Station, staff lounge, report area, conference rooms and office within patient care areas). Polyurethane fabrics are required, if they meet the requirements of the application.

6.12.2.2(10)c. Durable, cleanable fabrics are appropriate in low risk areas. A low level of risk applies to any office areas where staff members are not providing direct patient care or return to after providing direct patient care.

6.12.2.2(11) Environmentally Sensitive

6.12.2.2(11)a. Products will be GREENGUARD certified and be designed to achieve reduced environment impact.

6.12.2.2(11)b. If wood products are used, lumber should come from responsibly managed forests, with each piece utilized to its full capacity. Wood should have low formaldehyde emissions with little to no CFC's used in the production of the materials.

6.12.2.2(11)c. Furnishings will follow the LEAN principles outlined in Section 3.4 of this Schedule.

6.12.2.2(12) Comfort, Ergonomics, and Safety

6.12.2.2(12)a. Waiting room furniture will be designed to promote comfort and long term durability.

6.12.2.2(12)b. The product construction and design should avoid stress and fatigue to the patient.

6.12.2.2(12)c. Seating will have the stability to assist the patient or visitor in entering and exiting the chair.

6.12.2.2(12)d. All items of furniture (including tables) will be stable and will not move or tip over when touched by a person requiring support.

6.12.2.2(12)e. Furniture will not constitute a hazard for persons who have visual limitations and will be usable by persons with varying abilities and disabilities.

6.12.2.2(12)f. Products will accommodate and facilitate comfort and well- being.

6.12.2.2(12)g. Back support will be provided on seating pieces, through the use of a high or mid back, to provide adequate back support to various populations.

6.12.2.2(12)h. A minimum of 20% of seating will be designed to meet bariatric requirements of 720 lbs. Review specific locations with the Authority.

6.12.2.2(12)i. Task seating will be ergonomically correct with respect to the seat height and pan depth. Seating will be height adjustable, with height adjustable lumbar support to maintain correct body alignment, adjustable back rest tilt, adjustable seat pan depth, height, width, and swivel adjustable armrests. The seat pan will have a waterfall edge on the seat pan or a radius front seat cushion to avoid restriction of circulation to the lower legs. The overall dimensions will be appropriate for the vast majority of users.

6.12.2.2(12)j. General meeting room seating will have a backrest recline function, be stackable, mobile, cleanable and durable.

6.12.2.2(12)k. Boardroom seating will be height adjustable, feature a backrest recline function, be stackable, mobile, cleanable and durable.

6.12.2.2(12)l. Waiting room seating will include armrests to aid sitting and standing and have a raised seat pan for hip and knee considerations.

6.12.2.2(13) Office and Workstation Allocation Guidelines

6.12.2.2(13)a. Single-user or Multi-user workstations for computer, reading, and writing:

6.12.2.2(13)a.1 Allow leg clearance and movement under the work surface and keyboard to be placed at elbow height for most users (692 mm).

6.12.2.2(13)a.2 Depth: Allow room for keyboard, document holder between the keyboard and monitor and monitor positioned for comfortable viewing (760 mm). Additional depth may be required depending on the tasks completed at the workstation.

6.12.2.2(13)a.3 Width: Accommodate keyboard and mouse, telephone, writing and reading areas (min. 700 mm). Additional width depending on tasks completed at the workstation.

6.12.2.2(13)b. The Design-Builder will be responsible for verifying field measurements to ensure proper clearance for fitting items per the specifications and drawings.

6.12.2.2(14) Supplemental Standards and/or Guidelines:

6.12.2.2(14)a. In addition to the above listed features, furnishings will be designed and specified in accordance with all appropriate ergonomic design principles and best design practices of the Authority. Products should also meet minimum criteria set out in BC Building Code and in accordance with the Occupational Health and Safety Regulations and the Ergonomics (MSI) Requirements of WorkSafe B.C.

6.12.2.2(14)b. The Facility and its components must be accessible by people with different functional capacitates including, children, the elderly, handicapped, and the disabled as defined in the BC Building Code. The Design-Builder will apply “Universal Design” principles in the design and planning to ensure the furnishings are usable by all people without the need for specialized design or adaptation. Counters, desks, and work surfaces in non-office areas will include wheelchair access for both patients and the public.

6.12.2.2(14)c. Products, including foam and upholstery, will be fire retardant to meet applicable building code requirements.

6.12.2.2(15) Furniture List and Specifications

6.12.2.2(15)a. The furniture is described in Appendix 1B Furniture and Medical Equipment in generic terms and by a furniture identification number. The quantity column demonstrates the number of identical items in a room. All room numbers, room names, and department names are the same or are derivatives of the Appendix 1A: Clinical Specifications.

6.12.2.2(15)b. Furniture pieces and layouts will follow the accessibility principles of the Facilities as a whole. Refer to section 3.11 Accessible Equitable Design

6.12.3 Laboratory Casework

6.12.3.1 General Approach

6.12.3.1(1) Provide laboratory casework:

6.12.3.1(1)a. for the specific and particular functions to be performed by the casework;

6.12.3.1(1)b. to give the end users a good working ergonomic environment that is suited to their specific needs; and

6.12.3.1(1)c. with structural rigidity and chemical resistivity to withstand the service conditions for which they are exposed.

6.12.3.1(2) All casework will be modular and consistent throughout the Facility.

6.12.3.1(3) All casework will be lockable.

6.12.3.1(4) Casework will be wood, metal and/or epoxy resin, selected to minimize cleaning and maintenance operations and maximize infection control capabilities.

6.12.3.1(5) All epoxy resin material bench tops will be acid resistant.

6.12.3.1(6) Provide all lab benches with cabinets for approximately 50% of the length of the benches.

6.12.3.1(7) Lab bench systems will hide and organize instrument tubing, electrical and/or data cables.

6.12.3.1(8) Casework will comply with all applicable standards, including:

6.12.3.1(8)a. at a minimum, the quality standards of the Architectural Woodwork Manufacturer's Association of Canada (AWMAC) for Premium Grade; and

6.12.3.1(8)b. the BC Building Code "Building Requirements for Persons with Disabilities".

6.12.3.1(9) Use non-toxic, non-solvent adhesive glue complying with AWMAC Quality Standards Manual, and that of Canadian "Eco-Logo" program or equivalent, with a Total Volatile Organic Carbon (TVOC) emissive content of 20 gr/litre.

6.12.3.1(10) Provide casework anchorage that complies with the seismic restraint requirements of BC Building Code.

6.12.3.1(11) Steel for cabinet construction for laboratory casework will be levelled prime quality furniture grade cold rolled steel.

6.12.3.2 Cabinets

6.12.3.2(1) All parts and sub-assemblies (doors, drawers, tracks and back panels) will be interchangeable in the field without requiring special tools. Doors and drawers will be interchangeable with like- sized cabinets. Cabinets will be constructed so that a standard height drawer can be removed and two ½ height drawers installed in its place. Likewise, a cupboard door or doors can be removed and replaced by a like-sized combination of drawers or vice versa. This interchangeability will permit rearrangement in the field of all components in addition to being able to relocate the entire cabinet, should changing needs dictate a revision in the layout of cabinets. All cabinets are to be enclosed with lockable doors; hardware will be stainless steel. Provide modesty panels where the back of the benches are exposed.

6.12.3.3 Wood Laboratory Casework

6.12.3.3(1) Wood casework is not preferred in the Laboratory.

6.12.3.4 Stainless Steel Casework

6.12.3.4(1) Fabricate from Type 316L, No. 4 finish stainless steel

6.12.3.4(2) Corners will be welded, ground, polished and crevice-free. Joints and welds will be polished to a uniform No. 4 satin finish. No filler or solders will be used. Straight lengths will be one-piece with all seams, including field joints, welded.

6.12.3.4(3) Sound-deaden tops and reinforce with waterproof plywood core, bonded to tops with waterproof contact cement. Seal underside of top (plywood core) with a waterproof finish. The front edges of the tops will be marine edge. Form splashback as an integral part of the tops, radiused where the splashback occurs in the top. Bond all splashbacks to plywood core, bonded the same as specified for the tops. Fabricate countertops, splashbacks, and front aprons out of one piece of stainless steel. Weld counter and sink assemblies into single units without seams or joints. Drill splashbacks, tops and sinks to receive plumbing and electrical fittings.

6.12.3.4(4) Form integral sinks with all-welded rounded corners, seamless construction with all traces of welding removed. Weld stainless steel sinks integrally into tops without seams or joints. Slope tops for sinks and adjacent drain boards to sinks. Provide sinks with drain outlets with removable stainless steel strainer. Stainless steel bench and or counter tops are required where staining or similar procedures are performed.

6.12.3.5 Leg Frame Laboratory Casework System

6.12.3.5(1) The leg frame system will provide complete independent rigid support for all overhead shelving, undercounter suspended cabinets, service cover panels, countertops, sinks and fittings including all mechanical and electrical line work, as necessary to make the assembly operational.

6.12.3.5(2) The concept will permit the addition, relocation or removal of suspended base cabinets, the removal of the entire leg frame module including base cabinet and countertop, leaving intact the separate service strip with all its service fittings, service lines and cover panels as a finished operational component. The countertop height will be designed to be from desk to counter height adjustable without the addition of framing components.

6.12.3.5(3) Base framing modules on basic standard cabinet modules.

6.12.3.5(4) Steel frame will comprise vertical wall channels and independent self- contained pipe chase and leg sets which will allow for the removal and/or interchange of work surfaces and suspended under-counter mounted cabinets and upper shelving. Determine pipe chase location in consultation with the Authority.

6.12.3.5(5) Fabricate system from prime quality furniture grade cold rolled steel. Form all components to create a rigid interlocking structure. All services will be fully accessible through removable cover panels, no special assembly tools are required. Bench legs to be fully adjustable. All legs will have Leveller bolt. Suspended cabinets will be interchangeable and easily moved from workstation to workstation. Adjustable leg frame modules will be capable of adjusting countertop heights in 25 mm increments from 750 mm height up to 1100 mm height.

6.12.3.5(6) Finish for steel surfaces will be as specified above.

6.12.3.6 Miscellaneous Accessories

6.12.3.6(1) Laboratory casework will include the following accessory items:

6.12.3.6(1)a. countertops and splashbacks;
6.12.3.6(1)b. service fittings;
6.12.3.6(1)c. drying racks;
6.12.3.6(1)d. pegboards;
6.12.3.6(1)e. acid storage cabinets;
6.12.3.6(1)f. flammable storage cabinets;
6.12.3.6(1)g. glassware drying cabinets;

6.12.3.6(1)h. framed sliding glass doors;
6.12.3.6(1)i. sliding glass doors;
6.12.3.6(1)j. open storage units;
6.12.3.6(1)k. emergency eye wash;
6.12.3.6(1)l. emergency shower head;
6.12.3.6(1)m. safety shower station;
6.12.3.6(1)n. bin cabinets;
6.12.3.6(1)o. file drawer cabinets; and
6.12.3.6(1)p. mobile cabinets.

6.12.4 Window Coverings

6.12.4.1 Provide window coverings as follows:

6.12.4.1(1) all exterior windows are to receive shading devices providing privacy, sun and heat control, that are easy to clean and do not support or provide a surface that encourages spread of infectious disease (i.e. do not become electrostatically charged);

6.12.4.1(2) roller shades are required for use on exterior windows.

6.12.4.1(3) all interior windows to receive blinds where privacy may be a concern; and

6.12.4.1(4) in all Medical Inpatient and long term care inpatient and resident rooms, provide window coverings that prevent visibility into the patient bedrooms at night from the exterior.

6.12.4.1(5) any other locations identified in Appendix 1A Clinical Specifications.

6.12.4.2 Blinds should be selected to provide optimum privacy, sun and heat control, are easy to clean, are not prone to become electrostatically charged and their surface does not encourage the spread of infectious disease.

6.12.4.3 Window coverings will allow control of exterior light entering the room during daylight hours and provide privacy during daylight and non-daylight hours.

6.12.4.4 Provide black‐out window coverings for all patient rooms , LDRP and long term care resident rooms.

6.12.4.5 Where window coverings are required for black-out functions, provide materials, tracks, seals, and operation suited to that purpose.

6.12.4.6 Use window coverings manufactured from materials and mechanisms that minimize cleaning and maintenance operations and maximize infection prevention and control.

6.12.5 Window Shade Systems

6.12.5.1 Use manual roller shades with one piece extruded aluminum roller tube, extruded vinyl fabric spline, aluminum profile hem bars.

6.12.5.2 Install recessed in ceiling pockets, facilitating easy removal and replacement. Use galvanized or zinc-plated steel mounting brackets and non-corrosive fasteners.

6.12.5.3 Use shading fabric of non PVC coated fibreglass yarn and that:

6.12.5.3(1) is waterproof, washable, rot-proof, flame-resistant, fungal and bacteria- resistant, colourfast to light, glare-reducing, and able to control heat gain and provide external visibility;

6.12.5.3(2) conforms to CAN/CBSB-4.162-M, “Hospital Textiles - Flammability Performance Requirements”; and

6.12.5.3(3) is tested in accordance with ASHRAE Standard 74073 for shading coefficient, fungal resistance in accordance with ASTM G21, and bacterial resistance.

6.12.5.4 Audio-visual Light Blocking Shades: Fabricated from black-out shade panel material, designed to eliminate all visible light gaps when shades are fully closed.

6.12.5.5 Manual shade operation with continuous loop bead chain, clutch, cord tensioner and bracket lift operator.

6.12.5.6 Motorized operation utilizing in-tube motor dive, externally located control wheels and manual switch control.

6.13 Special Construction (Division 13)

6.13.1 Radiation Protection

6.13.1.1 Comply with all applicable requirements of the National Council on Radiation Protection and Measurement (NCRP); and Radiation Protection Service, B.C., Centre for Disease Control, Government of B.C., 655 – 12 Ave West, Vancouver, B.C. V5Z 4R4.

6.13.1.2 Provide radiation protection in walls, doors, floors, ceilings and windows as required and appropriate to protect staff and patients from x-ray, imaging digitizing, CT scanner, radiology, nuclear medicine radioactive storage decay and other rooms in the radiation protection shield.

6.13.1.3 Provide radiation protection by incorporating lead sheet of appropriate weight and thickness into wall and door assemblies and leaded glass manufactured for radiation shielding purposes into window assemblies.

6.13.1.4 Radiation shielding will be 9.75 kq/m2, not less than 0.9 mm lead to 2.1 m above the floor level as a minimum.

6.13.1.5 For sheet lead, comply with ASTM B749 Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate and meet or exceed Federal Specification QQL-201F Grade C.

6.13.1.6 For lead-lined gypsum board, comply with ASTM C36 or and ASTM C1396/1396M, Type X.

6.13.1.7 For lead glass, meet or exceed Federal Specification DD-G-451.

6.13.1.8 For cassette transfer cabinets, meet or exceed MIL-C-3673 (DM) Radiation shielded.

6.13.1.9 For radiation shielded doors, meet or exceed American National Standards Institute/ National Woodworkers Manufacturers Association (ANSI/NWMA) Industry Standard for wood doors and NCRP Report #49.

6.13.1.10 Fabricate radiation-shielded doors using a single layer of sheet lead with wood core laminated on each side of the lead. Bond cores using poured lead dowels at edges.

6.13.1.11 Fabricate radiation-shielded door frames with lead-lining.

6.13.1.12 Lead glass or lead louvers occurring in radiation shielded doors will be equivalent rated to sheet lead in doors.

6.13.1.13 For lead-laminated gypsum wallboard, use a single unpierced sheet of lead.

6.13.1.14 For sheet lead applied directly to partition steel studs, provide a continuous and complete protective shield.

6.13.1.15 Provide radiation shielding barriers, mobile or fixed, modular and transparent barriers to protect medical personnel by providing a full body shield. Provide units with distortion- free, lead-plastic windows.

6.14 Conveying Equipment (Division 14)

6.14.1 Codes and Standards

6.14.1.1 The following are Essential:

6.14.1.1(1) Elevators will conform all applicable federal, provincial and local codes, ordinances and bylaws, including the following standards (latest applicable edition and supplements.

6.14.1.1(1)a. B651 Accessible design for the built environment.

6.14.2 Elevators

6.14.2.1 The following are Essential:

6.14.2.1(1) Provide elevator(s) as required for vertical circulation between all levels of the Building.

6.14.2.1(2) If public elevator(s) are provided they will be configured as follows:

6.14.2.1(2)a. Main public elevator will have a cab that is hospital configuration (longer than deep) with minimum car dimensions of 1725 mm wide by 2745 mm deep and 3050 mm high.

6.14.2.1(2)b. Main public elevator will have a minimum capacity of 2270 kg.

6.14.2.1(2)c. Main public elevator will have 1370 mm wide, two-speed side opening doors.

6.14.2.1(2)d. Main public elevator will have front doors only, except in a single elevator solution whereby front and rear doors will be permitted.

6.14.2.1(2)e. Main public elevator will utilize machine-room-less (MRL) traction equipment with gearless machines.

6.14.2.1(2)f. Main public elevator will have rated speeds of not less than 1.0 m/s.

6.14.2.1(2)g. Main public elevator will have durable elevator cab finishes suitable for the environment, including stainless steel returns, handrails and bumpers, porcelain tile flooring, texturized stainless steel wall panels, and a mirror above the handrail on the back wall.

6.14.2.1(3) If a service elevator which serves all levels if the Building is configured with more than one level..

6.14.2.1(3)a. Service elevator will have a cab with hospital configuration (longer than deep) with minimum car dimensions of 1725 mm wide and 2745 mm deep and 3050 mm high.

6.14.2.1(3)b. Service elevator will have a minimum capacity of 2270 kg.

6.14.2.1(3)c. Service elevator will have 1370 mm wide, two-speed, side-opening doors.

6.14.2.1(3)d. Service elevator will have front and rear doors at all levels served.

6.14.2.1(3)e. Service elevator will utilize machine-room-less (MRL) traction equipment with gearless machines.

6.14.2.1(3)f. Service elevator will have rated speeds of not less than 1.0 m/s.

6.14.2.1(3)g. Service elevator will have durable elevator cab finishes suitable for the environment, including stainless steel returns, handrails and bumpers, porcelain tile flooring, and texturized stainless steel wall panels.

6.14.2.1(4) Equipment will have a proven track record of at least five years in Canada, of satisfactory operation on other installations in similar environments and configurations.

6.14.2.1(5) Arrange that the equipment can be maintained and adjusted by any competent elevator company without the use of proprietary tools, information or equipment or, if such tools, information or equipment are required, provide them (these will become the property of the Authority). Do not incorporate any running time, cycle counters, or trip counters that would cause the equipment to shut down or alter its operation in any way.

6.14.2.1(6) Elevators will be provided with security card reader access.

6.14.2.1(7) Elevators will be provided with CCTV cameras.

6.14.2.1(8) Elevators will be provided with Hospital Service (aka Code Blue, Medical Emergency Operation).

6.14.2.1(9) All elevator signage visible to the public, audible messages, braille and tactile messages will be in English and French.

6.14.2.1(10) Provide Emergency Power Operation such that the elevator is fed with emergency power. Coordinate with electrical design & requirements.

6.14.2.1(11) Elevators used for support services will be configured with platforms to accommodate easy movement of material carts.

6.14.2.1(12) Provide all permits, labour, materials, products, equipment, services and all else necessary for the design, manufacture, delivery, installation and services required for a complete and fully functioning elevator system.

6.14.2.1(13) Obtain and pay for design submission, registration, inspection and permit, as required (except for ownership and operating license), and make such tests as required by the British Columbia Safety Authority prior to licensing.

6.14.2.1(14) Refer to Sections 7.6, 7.7 and 7.8 for requirements related to programming elevators to integrate with communication, networks, fire alarms and other systems in the Facility, to the approval of the Authority.

6.14.3 Scope of Work

6.14.3.1 Supply and install vertical transportation equipment.

6.14.3.2 Arrange and pay for all necessary permits, certificates, approvals, variances, and inspections.

6.14.4 Warranty

6.14.4.1 Warrant work of this Section for a period of 2 years against defects and/or deficiencies.

6.14.4.2 Maintain the manufacturer's warranties on all Communications Systems equipment and ensure that the warranties are assignable to the Authority.

6.14.5 Maintenance

6.14.5.1 Provide full maintenance of the equipment for a period of 24 months after Substantial Performance.

6.14.5.2 Within one month following Substantial Performance, perform a complete clean- down of the hoist way, car top and machine room of each elevator.

6.14.5.3 Perform monthly maintenance at a minimum.

6.14.5.4 Provide 24 hour a day, seven days a week call-back service, including overtime call-backs.

6.14.6 Training

6.14.6.1 Provide a training session for the Authority's staff after Substantial Performance consisting of a review of the documentation and operation of the equipment and features.

6.14.7 Trademarks

6.14.7.1 Do not apply trademarks, company name or logo visible to the general public on any piece of equipment.

6.14.8 Fixtures and Finishes

6.14.8.1 Provide signal fixtures, such as push buttons and position indicators, with LED illumination.

6.14.8.2 Provide push buttons, with tactile plates corresponding in size.

6.14.8.3 Provide push buttons with metal targets.

6.14.8.4 Provide vandal resistant buttons, including:

6.14.8.4(1) An enclosure rating of not less than IP54 (per EN 60529);

6.14.8.4(2) A positive stop on the back of the button to prevent excessive force from transferring to the contact; and

6.14.8.4(3) Buttons compliant with EN 81-71 Class 2.

6.14.8.5 Provide, unless otherwise indicated, stainless steel number four finish for visible natural metal finishes.

6.14.9 Operating Environment

6.14.9.1 Provide material and equipment to function normally when the ambient temperature is between 3.5 and 36.0 degrees Celsius (38 and 97 degrees Fahrenheit).

6.14.9.2 Provide material and equipment to function normally when the ambient relative humidity is between 25% and 100%.

6.14.9.3 Provide material and equipment to function normally when the supply voltage is within minus 10% and plus 8% of the nominal voltage and the frequency is within 5% of the nominal frequency.

6.14.10 Seismic Requirements

6.14.10.1 Comply with Section 8.4 (Elevator Safety Requirements for Seismic Risk Zone 2 or Greater) of the B44 Safety Code for Elevators and any other code which may govern the installation.

6.14.11 Generic Maintenance

6.14.11.1 Arrange that the equipment can be maintained and adjusted by any competent elevator company without the use of proprietary tools, software, information or equipment.

6.14.11.1(1) If such tools, software, information or equipment are required, provide them as "on board" equipment or as separate devices and these will become the property of the Authority.

6.14.11.2 Provide a customer tool or such similar device, if necessary, to carry maintenance and testing activities (e.g. for temporarily bypassing the appropriate circuits for full load overspeed safety tests).

6.14.11.3 Do not incorporate any running time, dates, cycle counters or trip counters that would cause the equipment to shut down or alter its operation in any way.

6.14.12 Inspections

6.14.12.1 Arrange and pay for an acceptance inspection by the authority having jurisdiction prior to placing each elevator into public use, in accordance with CSA B44 Safety Code for Elevators and Escalators section 8.10 requirements as well as the requirements of the authority having jurisdiction.

6.14.12.2 Complete a commissioning inspection for contract compliance by a specialist in elevating devices having a QEI Elevator Inspector license from NAESA International.

6.14.12.3 Supply to the Authority the final acceptance inspection reports from the authority having jurisdiction and commissioning report(s) from the QEI Elevator Inspector.

6.14.12.4 Provide assistance as necessary for inspections by the Authority to verify that the work is in compliance with the Specifications.

6.14.13 Machine Room Equipment – Traction Elevators

6.14.13.1 Provide a machine of the gearless electric traction type or a basement geared traction hoisting machine (provide gearless for all MRL applications) including an AC motor, electromechanical brake, steel sheave shaft and traction sheave.

6.14.13.2 Provide a spring applied electric brake, held open by an electro-magnet actuated by the controller. Design the brake to automatically apply in event of interruption of power supply from any cause.

6.14.13.3 Provide an automatic reset governor located in the hoist way that can be maintained from the car top. When the governor has tripped, arrange that it will be reset when the car is moved in the up direction.

6.14.13.4 Provide sound and vibration isolation pads such that there is no direct contact between the machine and the building structure.

6.14.13.5 Provide a spring applied electric brake, held open by an electro-magnet actuated by the controller. Design the brake to automatically apply in event of interruption of power supply from any cause.

6.14.13.6 Provide an emergency brake to stop the elevator if it overspeed's or if it moves more than 500 mm (20") away from the floor with the doors open.

6.14.13.7 Provide a solid state regenerative drive complete with isolation transformers, filters (to meet IEEE Standard 519-1992 for Special Applications), and isolation pads.

6.14.13.8 Provide a digital velocity encoder on the motor, giving feedback to the controller on motor speed and position.

6.14.13.9 Provide a microprocessor based controller consisting of relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overload relays, power supplies, circuit boards, static drive units, wiring terminal strips, and related components all enclosed in a cabinet with hinged door panels.

6.14.13.10 Provide an electrically released brake system, to permit momentary nudging of elevator within the hoist way under test or emergency conditions.

6.14.13.11 For MRL applications, locate the controller room adjacent to the top of the elevator hoist way or remotely at roof level, immediately above, or in near proximity to elevator core.

6.14.14 Hoist way Equipment

6.14.14.1 Provide entrances consisting of doors, frames, sills, sight guards, door hangers, tracks, interlocks, door closers, gibs, and all other equipment required for a complete installation.

6.14.14.2 Provide entrance doors and frames finished in brushed stainless steel.

6.14.14.3 Provide standard 'T' section steel guide rails for the car and counterweight with brackets fastened to the building structure.

6.14.14.4 Provide spring mounted car and counterweight roller guides for elevators with a contract speed in excess of 0.76 m/s (150 fpm).

6.14.14.5 Provide suspension means of sufficient size and number to lift the load and ensure proper wearing qualities. Ensure that where ropes are provided, all ropes for a particular installation are from the same manufacturing run.

6.14.14.6 Provide a counterweight to counterbalance the elevator for smooth and economical operation with cast iron or steel plate weights contained in a structural steel frame, balanced to between 45 and 50 percent of the rated capacity.

6.14.14.7 Provide fascia from each hall sill to the entrance header below, extended into the pit and the overhead.

6.14.14.8 Provide a car frame constructed of steel channels and a platform constructed of steel channels with a wood or metal sub-floor.

6.14.14.9 Isolate the frame and platform from one another so that there is no metal to metal contact in order to prevent the transmission of noise and vibration.

6.14.14.10 Mount the elevator cab shell on the platform in alignment with the hoist way entrances. Isolate the cab from the car frame and platform.

6.14.15 Cab Equipment

6.14.15.1 Provide car doors, jambs, headers, hangers, tracks, door closers, gibs, electrical contacts, and all other equipment required for a complete installation.

6.14.15.2 Provide swing return car stations incorporating floor push buttons, door open and close buttons, an alarm button, a phone button, and other fixtures required for normal operation.

6.14.15.3 Provide for each floor button a call registered light and momentary audible tone.

6.14.15.4 For Patient Transfer/Service Elevators and dedicated surgical processing elevators provide Door Hold Open Push Button in car stations.

6.14.15.5 Provide a Firefighters' Emergency Operation panel.

6.14.15.6 Provide in the car station a locked service cabinet containing devices other than those used for normal operation.

6.14.15.7 Engrave the car station with the elevator capacity, identification number, government installation number, and other markings required by code.

6.14.15.8 For each elevator with front and rear doors provide two car stations. Otherwise, provide one car station per elevator.

6.14.15.9 Provide a digital (dot matrix or segmented) car position indicator located above each car station with a minimum 50 mm (2") high display.

6.14.15.10 Do not install any certificates or licenses in the cab. Arrange and pay for a variance from the authority having jurisdiction for this, if required.

6.14.15.11 Provide a voice synthesizer for each elevator with automatic verbal announcement of each floor at which the elevator stops. Provide a system that is capable of providing a variety of other messages and indications as may be required by the Authority at a later date.

6.14.15.12 Provide a multiple infra-red beam door detector device capable of reliably detecting carts, wheelchairs of varying heights and finishes, including chrome.

6.14.15.13 Provide battery operated emergency cab lighting.

6.14.15.14 Provide a two speed exhaust fan mounted in the cab top.

6.14.15.15 Provide a heavy duty closed loop door operator to open and close the car and hoist way doors simultaneously with an average opening speed of 600 mm (24") per second and an average closing speed of 300 mm (12") per second.

6.14.15.16 Provide a linear door operator with either one or two permanent magnet synchronous AC drive motors rated at a total of 250 W minimum.

6.14.15.17 Provide a hands-free two-way voice intercommunication / telephone system. Provide communication from each car to the building’s security station located in the Hospital.

6.14.15.18 Provide pad hooks in the Main Public elevators. Provide one set of cab protective pads that cover all walls and the cab front return panel.

6.14.15.19 Provide in the Main Public elevators a LCD video screen capable of displaying programmable messages and video.

6.14.16 Hall Equipment

6.14.16.1 Provide hoist way access switches located in the entrance frame or in the hall door sight guard at the terminal landings for each elevator regardless of the elevator speed or floor-to-floor heights of the elevator.

6.14.16.2 Provide hoist way door unlocking devices (by lunar key) on the hall doors at all floors.

6.14.16.3 Provide one riser of hall stations for each group of elevators.

6.14.16.4 For each elevator, provide a digital (dot matrix or segmented) hall position indicator located above the main floor entrance with a minimum 50 mm (2") high display.

6.14.16.5 For the Main Public elevators, provide hall lanterns with electronic tones at each entrance.

6.14.16.6 For single elevators, provide either in-car lanterns with electronic tones or hall lanterns with electronic tones at each entrance.

6.14.16.7 Provide a remote fire recall switch for each group of elevators at the CACF (or Fire Alarm Panel).

6.14.16.8 Provide, at the CACF (or Fire Alarm Panel), a lobby panel for the elevators that includes car position indicators, in-service pilot lights, parking switches, emergency power indicators, Firefighter's Emergency Operation indicators, voice communication and other elements required by the Specifications.

6.14.16.9 Arrange that the elevators are tied into the BMS for monitoring. At a minimum, an elevator management system will be provided that will monitor the elevator operation and status, generate fault log reports, and provide the ability to lock-out service (car and hall calls) to any floor.

6.14.17 Electric Wiring

6.14.17.1 Provide copper wiring to connect the equipment.

6.14.17.2 Run the wire in metal conduit, duct or electrical metallic tubing.

6.14.17.3 Provide travelling cable between car stations and the controller in the machine room.

6.14.17.4 Provide at least eight pairs of spare shielded wires and two spare coaxial conductors in the travelling cable. This is in addition to the wiring identified elsewhere in this specification and required for the basic operation of the elevators.

6.14.17.5 Provide at least ten percent spare wires in each travelling cable.

6.14.17.6 Provide on the controller a separate junction box for non-elevator devices such as telephones, cameras, and security systems.

6.14.18 Operational Features

6.14.18.1 Provide for installation of security cameras in the elevators. Install and wire the security cameras provided by another trade. Provide the required wiring in the travelling cable run between the car top and the controller as well as power to the car top for the camera.

6.14.18.2 Provide equipment and labour for the future installation of a card reader security system to control car calls. Provide the required wiring between the card readers and the elevator security box in the machine room along with appropriate elevator controller connections and circuits for the security system (including floor tracking). Arrange that the elevator system functions without restriction by the security system until such time that that the security system is installed.

6.14.18.3 For Main Passenger Elevators and the Patient Transfer (Pharmacy, Surgery) Elevators provide Hospital Service (also known as Code Blue or Medical Emergency Service) and Priority Service Operation with key switches at each all floors served, in each cab, and provisions for remote activation of these features.

6.14.18.4 For all elevators providing access to patient care areas provide Wandering Patient System Operation and Infant Abduction System Operation such that the elevator is locked down when activated.

6.14.18.5 Provide independent service.

6.14.18.6 Provide Firefighters' Emergency Operation (Phase 1 and Phase II) for all elevators.

6.14.18.7 Provide emergency power operation of the elevators such that all elevators are fed with emergency power and arrange that at least one elevator per group can operate simultaneously on emergency power.

6.14.18.8 Provide equipment and features complying with the applicable Seismic requirements of the Code.

6.14.19 Performance

6.14.19.1 Cause the car to stop automatically at floor level, without overshoot, regardless of load or direction of travel so that the car sill is level, within 6 mm, with respect to the hoist way sill.

6.14.19.2 Arrange that the horizontal acceleration front to rear or side to side measured in the car with the elevator travelling, with a load of less than 10 per cent of capacity, from top to bottom and bottom to top does not exceed 0.15 m/s2 measured between two consecutive points of opposite value.

6.14.19.3 Arrange that the vertical acceleration measured in the car with the elevator travelling, with a load of less than 10 per cent of capacity, from top to bottom and bottom to top at contract speed, does not exceed 0.10 m/s2 measured between two consecutive points of opposite value.

6.14.19.4 Adjust the door equipment so that the noise level is less than 60 decibels during a full door open and door close operation. Measure the noise levels using a sound level meter set to the "A" scale for a fast response.

6.14.19.4(1) Arrange the machine room equipment so that the noise level with the elevator running is less than 78 decibels. Measure the noise levels using a sound level meter set to the "A" scale for a fast response.

PART 7 Facilities Services Subgroup Specifications

7.1 Fire Suppression (Division 21)

7.1.1 Fire Protection

7.1.1.1 Basic Requirements

7.1.1.1(1) Provide all required fire protection for the Facility.

7.1.1.1(2) The fire suppression system will be designed to be Post Disaster.

7.1.1.1(3) Provide a fire protection sprinkler that complies with the British Columbia Building Code (BCBC) and NFPA 13: Standard for the installation of Sprinkler Systems, and all applicable guidelines, codes, standards and bylaws.

7.1.1.1(4) All fire protection systems will be hydraulically sized to NFPA standards. Hydraulic calculations will include the applicable inside/outside hose stream allowance for the hazard served. Hydraulic calculations will be including in all building permit submissions.

7.1.1.1(5) All fire protection equipment will be ULC approved.

7.1.1.1(6) All fire protection equipment installations will be in accordance with manufacturers' requirements and will follow all BCBC and applicable NFPA requirements.

7.1.1.1(7) The Design-Builder sprinkler installer will be licensed and regularly engaged in the installations of fire protection systems and will install, test, commission and certify all fire protection systems and equipment.

7.1.1.1(8) Not used.

7.1.1.1(9) Fire protection sprinkler zone areas in the Facility containing patient sleeping rooms will match the Facility fire compartment floor areas as defined by the BCBC. The Facility will be divided into sprinkler zones that coincide with smoke control and fire alarm zones.

7.1.1.1(10) Each sprinkler zone will be served by a zone control valve connected to the fire line riser.

7.1.1.1(11) Seismic bracing will be provided for all fire protection systems based on the designed Seismic Hazard Level (SHL) of the Facility and based on the Building being deemed Post Disaster.

7.1.1.1(12) The fire protection systems and equipment will be designed to the occupancy classification that it protects.

7.1.1.1(13) Provide additional 15% flow reserve capacity above the Facility requirements within each system including all equipment, mains, and branch lines.

7.1.1.1(14) Fire suppression systems supply piping will be routed away from areas where a leak or a break could endanger vulnerable patients, equipment or supplies. Fire suppression piping will not be run within or through IT Rooms except for piping required to service the IT Rooms.

7.1.1.2 Water Services

7.1.1.2(1) The fire sprinkler system will be fed from a single Municipal water service.

7.1.1.2(2) Connections will have premise protection consisting of approved detector-type double check valve assemblies with approved listed OS&Y gate valves on both sides complete with tamper switches.

7.1.1.2(3) Incorporate redundancy in the installation to maintain uninterrupted Facility operation while cleaning, servicing, repairing, or replacing devices.

7.1.1.3 Fire Pumps

7.1.1.3(1) The Design-Builder will confirm, based on their proposed design, if a fire pumps are required. Calculations will be based on lowest seasonal available water pressure from the municipal service.

7.1.1.3(2) If fire pumps are required, they will be provided complete with controllers. Controller will include integral transfer switches for essential system power supply.

7.1.1.3(3) Fire pump assemblies will be approved by UL, ULC, FM, CSA and comply with NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection.

7.1.1.3(4) Each fire pump will be complete with a pressure maintenance pump (jockey pump) and controller installed in compliance with applicable Standards.

7.1.1.4 Building Fire Department Connections

7.1.1.4(1) Fire department connection(s) and location(s) will be provided and coordinated (approved) by the Fort Saint James District Emergency Services (Fire department) and the Fort Saint James District (governing authority).

7.1.1.4(2) Type of hose inlet connections (threaded or Storz) will be as required by the Fort Saint James Fire Department.

7.1.1.5 Fire department Hose Connections

Section not used.

7.1.1.6 Zone Control

7.1.1.6(1) Provide zone control with shut-off valves, flow switches and flow switch test connections that are readily identifiable and accessible within the basement sprinkler room.

7.1.1.6(2) Not used.

7.1.1.6(3) Not used.

7.1.1.7 Dry Sprinkler Systems

7.1.1.7(1) Provide dry-type sprinkler heads and / or a dry-type sprinkler system in all areas that may be subject to freezing temperatures.

7.1.1.7(2) Wet sprinkler piping serving dry-type sprinkler heads will run within heated spaces.

7.1.1.7(3) Heat tracing of branch lines will not be permitted.

7.1.1.8 Pre-Action Sprinkler Systems

7.1.1.8(1) Provide a double interlocked pre-action sprinkler system complete with detection devices in critical rooms where water damage will affect the operation of key areas/equipment, including the following rooms.

7.1.1.8(1)a. Main electrical transformer and switchgear room(s);

7.1.1.8(1)b. Primary and Secondary equipment and telecommunications room(s) (IMIT);

7.1.1.8(1)c. Rooms with medical imaging equipment (Diagnostic Imaging);

7.1.1.9 Fire extinguishers

7.1.1.9(1) Fire Extinguishers will be selected and installed based on the hazard classification of the space it serves.

7.1.1.9(2) Fire extinguishers in finished areas will be installed within fully recessed cabinets.

7.1.1.9(3) Provide all fire extinguishers as required under applicable Standards and any additional as required by the Fort Saint James District Emergency Services (Fire Department).

7.1.1.10 Additional Requirements

7.1.1.10(1) Provide water curtain sprinklers or other fire protection measures necessary to maintain fire ratings at or near the adjacent buildings (including the existing hospital), along paths of egress, and/or as required for any code equivalencies.

7.1.1.10(2) Provide concealed pendant quick-response type sprinkler heads in all areas with dropped ceilings with temperature ratings to suit the specific hazard area. Escutcheon plates will be chrome plated or painted to match the ceiling.

7.1.1.10(3) Provide wire cage guards over sprinkler heads in areas where sprinkler heads are susceptible to damage, in all plant spaces, electrical rooms and communication rooms.

7.1.1.10(4) Provide spare sprinkler heads for each type and a wrench suitable for each head type.

7.1.1.10(5) Provide fire suppression systems for all commercial kitchen range hood as required by NFPA 96 and the Fort Saint James District. Each hood will be served by an independent, dedicated, suppression system.

7.2 Plumbing (Division 22)

7.2.1 Site Services - Basic Requirements

7.2.1.1 Provide the following services to the new Facility, sized to meet the hospital's usage needs plus 15% additional capacity for future allowance:

7.2.1.1(1) Municipal water service, for domestic water use and fire protection

7.2.1.1(2) Natural gas service

7.2.1.1(3) Sanitary services

7.2.1.1(4) Storm services

7.2.1.2 Coordinate locations of these services with the requirements of Part 4 and the local Fort Saint James municipal service providers.

7.2.1.3 Municipal water services provided to the Facility will meet the water quality requirements outlined in applicable Codes and Standards. Installation of the new water services will also be required to meet the requirements of NFPA for all Fire Services supply mains.

7.2.1.4 Installation will incorporate redundancy to maintain uninterrupted Facility operation while cleaning, repairing, or replacing devices.

7.2.1.5 Domestic water pressure serving the Facility will be as provided by the Fort Saint James District Municipal water system and should be considered constant under all normal operating and seasonal conditions.

7.2.1.6 If domestic water system pressure exceeds the acceptable delivery pressure noted in the British Columbic Building Code of 80 PSI, then pressure reducing valves will be required with N+N redundancy.

7.2.1.7 Place the Pressure Reducing Valves in an accessible locations within plant spaces or mechanical rooms.

7.2.1.8 All service piping within the Facility will be accessible. No service piping inside or outside the Facility will run in or under any concrete slabs.

7.2.1.9 Durable piping materials will allow for 24 hour a day operation with minimal downtime and ensure an operational life of at least 50 years.

7.2.1.10 Provide plumbing connections to all medical and food services equipment.

7.2.1.11 Ensure the domestic cold water and domestic hot water quality is within the required conditions of the applicable codes, standards, and manufacturer's recommendations for all equipment. Provide water treatment as required to eliminate the consequence of Hard-Water conditions to all equipment supplied by the Design-Builder or he Authority.

7.2.1.12 All sanitary sumps located in the Facility will have bolted-down lids and be gasketed to be airtight.

7.2.1.13 Insulate storm drainage, domestic water piping, cooling water and exposed p-traps throughout. Ensure plumbing systems are not installed in locations subject to freezing. Except as required by BC Plumbing Code Division B clause 2.3.5.4 and Schedule 1 SOR clause 7.4.8.26, heat tracing is not allowed.

7.2.2 Water Services

7.2.2.1 Water delivered to the Facility will meet the water quality requirements of all applicable standards and laws, including CSA-A317.1 and the Drinking Water Protection Regulation (British Columbia). Filter systems must be capable of operating at high turbidity levels. (http://www.bclaws.ca/civix/content/crbc/crbc/1421132707/01009/200_2003_dir/?xsl=/templates/browse.xsl).

7.2.2.2 There may be as many as three private water service connections from the municipal water system to the existing building, including a fire supply service main that was installed in 2016.

The existing water service connection at Junkers will be abandoned.

The most easterly water service connection, if found to exist, will be abandoned at the existing valve near the entrance at Stuart Drive East.

The existing on-site fire protection service connection installed in 2016, may be re-used as a portion of the municipal water supply solution (SOR 4.4.3.2), provided it is tested by the Design Builder to reasonably show that it is "sound" and suitable for inclusion as a municipal water supply main.

Water supply to the Facility will be provided by two new, separate, and isolatable municipal water services. Each new service will be separately connected to the new municipal water supply main that is proposed to cross the site. The intention of providing two connections is to allow the hospital to function if the municipal water supply crossing the hospital site is being worked from either side of the site. Each new water service connection from this loop main will be capable of supplying the domestic and fire service demands plus an additional future demand of 15%.

7.2.2.3 Each of the water supply services to the Facility will be provided with a pair of 100% redundant premise isolation backflow prevention stations.

7.2.2.4 Provide self-cleaning strainers on each incoming domestic water service.

7.2.2.5 The water supply services will combine into a common main within the Facility, complete with isolation valves, upstream of required PRV stations.

7.2.2.6 Provide a utility meter for domestic water services to the Facility. The location of the water service will be coordinated with the District. Each meter will have the ability to connect to the Facility Building Management System (BMS).

7.2.2.7 Provide flexible pipe connection on both water services at the exterior face of the Facility.

7.2.2.8 Flexible connectors will be specifically designed to withstand seismic activity and will have the ability to accommodate both vertical and horizontal seismic movement.

7.2.2.9 Cross-connect all water service mains within the Facility to allow for seamless Facility operation from either water service.

7.2.2.10 Provide turbine style water meters with remote readers and be capable of connection to the Facility BMS.

7.2.2.11 The incoming water stations will incorporate 100% redundancy to maintain uninterrupted Facility operation while cleaning, repairing, or replacing devices including backflow preventers and PRVs within the water station.

7.2.2.12 Provide flushing and disinfection of domestic water systems in accordance with CSA Z317.1. Provide soda ash treatment where source water pH is lower than 7.0. Provide independent testing of piping systems once flushing and cleaning has been completed and provide complete documentation of testing to the Authority.

7.2.2.13 Ensure that the design of the incoming domestic water station provides for adequate drainage systems that will handle both the maintenance and operational flow rates from the strainer discharge and the backflow preventers in full operational mode.

7.2.3 Domestic Water Booster System

7.2.3.1 The Design-Builder will confirm, based on their proposed design, if a domestic water booster system is required for the Building. If the lowest expected Municipal service pressure is insufficient to meet the worst case pressure requirements (plus 15% for future capacity), provide a domestic water booster pump system, in an N+N configuration, to serve the Facility.

7.2.3.2 The domestic water booster pump system serving the Facility will be capable of operating during post disaster conditions where a tanker water supply will be provided.

7.2.4 Sanitary Services

7.2.4.1 Sanitary services to the Facility will be provided by a single municipal connection. The sanitary service will be sized to meet the hospital's usage needs plus15% additional capacity for future allowance:

7.2.4.2 Provide a 72 hour raw sewage overflow / storage system in case of failure of the municipal service for full redundancy to the site.

7.2.4.3 Provide flexible pipe connection on the sewer service at the exterior face of the Facility.

7.2.4.4 Flexible connectors will be specifically designed to withstand seismic activity and will have the ability to accommodate both vertical and horizontal seismic movement.

7.2.5 Storm Services

7.2.5.1 Storm services to the Facility will be provided by a single municipal connection.

7.2.5.2 The storm service will be sized to meet the local rainfall requirements of the hospitals plus 15% additional capacity for future allowance:

7.2.6 Natural Gas services

7.2.6.1 Provide a dedicated Natural Gas enclosure with access from the exterior of the Building.

7.2.6.2 Provide natural gas metering and distribution, from the gas enclosure, to meet the usage needs of the Facility, plus 15% additional capacity in the service for future allowance.

7.2.6.3 Provide utility meters natural gas services to the Facility. The location of the gas meter will be coordinated with the local utility provider (Pacific Northern Gas Ltd.). The meter will have the ability to connect to the Facility BMS system.

7.2.6.4 Provide flexible pipe connection on the natural gas services at the exterior face of the Facility.

7.2.6.5 Flexible connectors will be specifically designed to withstand seismic activity and will have the ability to accommodate both vertical and horizontal seismic movement.

7.2.7 Sub Surface Drainage

7.2.7.1 The Design-Builder's Geotechnical Engineering Report will be used to determine the extent and scope of ground water subsurface drainage that will need to be handled from the site.

7.2.7.2 The Design-Builder will determine if subsurface drainage is required, based on the design, to alleviate water pressure exerted onto the bottom of the foundations and/or floor slabs. If it is required, all work will proceed based on the recommendations in the Design-Builders Geotechnical Engineering report.

7.2.7.3 All under slab drainage will be required to be collected into a sediment sump chamber and / or pump chamber, which will be capable of handling the maximum design flow rate. All water from the sediment sump chamber will be discharge to the site storm system.

7.2.7.4 All elements of the under slab drainage system will be coordinated with the Structural design.

7.2.8 Radon Protection

7.2.8.1 The Design-Builder's Geotechnical Engineering Report will be used to determine the extent and scope of Radon Protection required.

7.2.9 Domestic Water Distribution

7.2.9.1 Design the Plumbing system to British Columbia Building Code (BCBC), CSA Z317.1 and all other applicable codes, standards and guidelines. Plumbing system design, fixtures and components will comply with requirements of CSA-Z8000 CSA Standards, and the BCBC.

7.2.9.2 Distribute domestic water and recirculation systems to each department by means of a building wide main distribution pipe loop.

7.2.9.3 In addition, each department (requiring domestic water) will be provided with a pipe loop, within the department, that connects back to the main service on both sides. These loops will be provided with sufficient inline valves to allow isolation of any department without impacting other areas of the hospital.

7.2.9.4 Design the plumbing distribution systems to avoid and minimize disruption to the operation of the Facility during maintenance or repairs. In addition, design so that, as much as possible, clinical rooms do not need to be entered when performing maintenance or repairs. Locate all isolation, maintenance, balancing, and other service valves in corridor ceiling spaces or Non-Clinical Spaces. Access will be through lockable security access panels that are accessible to maintenance staff.

7.2.9.5 Provide solenoid type water shutoff valves to groups of fixtures in high risk rooms (Observation Rooms, Emergency Department) and Inpatient Units. Valves are to be controllable from the Nursing Station and to be monitored and controllable from the BMS. Install manual valves upstream of the solenoid valves for maintenance purposes. Access to water shutoff valves is not permitted within the Secure Room.

7.2.9.6 The design of the plumbing systems will provide consideration to location of shut-off valves in relation to the possible need to isolate sections of the system for safety and security reasons. Shutoff valves in patient care areas should be located near nursing stations or other staff locations. Shutoff valves will be located as close to the supply mains as possible to prevent dead legs, as defined in CSA Z317.1, during renovation work or isolation of parts of the system for Safety or security reasons.

7.2.9.7 Per CSA Z317.1 “Except for pipe run-out to fixtures, the hot water system will not have dead legs.in any service mains or branch lines.” This includes the domestic water distribution loops throughout the building.

7.2.9.8 Domestic hot, cold and recirculation water piping will be type k copper or stainless steel.

7.2.9.9 Provide flushing and disinfection of domestic water systems to CSA Z317.1 requirements. Review the requirements of CSA infection control standards to ensure that all aspects of flushing and disinfection have been addressed. Provide independent testing of piping systems once flushing and cleaning has been completed and provide documentation of testing to the approval of the Authority.

7.2.9.10 Provide appropriately sized domestic water supply connections for equipment and fixtures that are installed throughout the Facility..

7.2.9.11 Provide all accessories needed to make the connection suitable for the intended use, to meet relevant Standards, and to meet manufacturer’s requirements for any connected equipment. This includes shut off valves, point-of-use micron filtration, pressure reducing valves, thermostatic mixing valves, backflow preventers.

7.2.10 Domestic Hot Water Systems

7.2.10.1 Provide a domestic hot water system, including a hot water circulation, designed to meet the hot water demand of the facility in accordance with the British Columbia Building Code, ASPE Plumbing Engineering Design Handbook, and the requirements of CSA Z317.1.

7.2.10.2 Provide a domestic hot water system with sufficient capacity and recovery rate for the hot water requirements of the Facility. Allow for 15% expansion capacity within each system for future flexibility. The domestic hot water heating system will be configured so that with one component out of service the Facility has adequate capacity to meet the Facility demands including redundancy.

7.2.10.3 The domestic hot water equipment and systems will meet or exceed the energy efficiency requirements of ASHRAE 90.1.

7.2.10.4 Supply temperatures:

7.2.10.4(1) The Domestic hot water supply temperatures will serve the needs of the Facility and be stored and circulated at temperatures noted in CSA Z317.1.

7.2.10.4(2) Provide a central mixing valve, in N + 1 configuration, to reduce the distributed temperature from stored tank temperature to distribution temperature as required by CSA Z317.1 (i.e. distribution temperature at minimum 60°C). Provide fail safe bypass for over temperature water after central mixing valve. Provide alarm to BMS for over temperature conditions.

7.2.10.4(3) To permit uninterrupted service provide normally closed bypass around the mixing and diverting valves complete with lockable valve.

7.2.10.4(4) Bypass will connect to piping upstream of over temperature monitoring sensor to permit continuous monitoring of domestic hot water system supply temperature.

7.2.10.4(5) Provide pressure balanced/ thermostatic mixing valves, where temperatures are required to be less than (per the recommendations of CSA Z317.1) 60ºC at point of use as required by CSA Standards.

7.2.10.5 The domestic hot water system will be provided with multiple storage tanks with the remaining capacity to be supplied from a minimum of (2) two sources (heat exchangers for example) in an N +1 configuration.

7.2.10.6 The domestic hot water distribution system will be arranged as recommended in CSA Z317.1 to provide hot water at every outlet on demand.

7.2.10.7 Ensure that the design of the domestic hot water system will provide timely delivery of hot water to all fixtures with no dead legs in the system and will include a recirculation system between the distribution system and the hot water generation equipment.

7.2.10.8 Locate pressure / thermostatic mixing valves serving plumbing fixtures will be placed as close as possible to the fixture it serves to minimize dead legs.

7.2.10.9 Domestic hot water mixing valves when used for temperature sensitive locations within the hospital such as specialty baths or sinks will be required to have visual temperature gauges accessible at the point of use and are to have a high temperature alarm that would be both local and on the BMS.

7.2.10.10 Design the domestic hot water system to prevent growth and spread of bacteria (including Legionella) within the hot water generation plant, piping, fixtures, or any other component. Design methods may include heat-based control, active treatment systems, eliminating dead-leg piping; flush to drain valves; and minimizing uncirculated piping by connecting the circulation system as close as possible to fixtures. Designs will conform to the latest ASHRAE / NSF/ ASPE standard on Legionella Design for Health Care Facilities.

7.2.10.11 Install copper-silver ionization systems on each new domestic hot water system to treat the water and prevent the proliferation of legionellosis.

7.2.10.11(1) Each new unit installed will be an N+N redundancy configuration.

7.2.10.11(2) Performance Criteria

7.2.10.11(2)a. Provide a domestic hot water generating plant and hot water storage equipment to meet the requirements of CSA Z317.1 and within the design guidelines as mentioned above.

7.2.10.11(2)b. Recirculate domestic hot water from the distribution system(s) back to the generating equipment within each appropriate pressure zone.

7.2.10.11(2)c. Piping and valves will be appropriately sized to ensure adequate flow which does not promote stagnation or accelerated pipe erosion.

7.2.10.11(2)d. Monitor hot water temperatures, at the storage tank, in the supply and return piping, and at the ends of each piping loop on each floor, via the BMS and provide alarm outputs when the temperature exceeds or drops below the design set point range.

7.2.11 Valve Stations and Isolation Valves

7.2.11.1 Place valves stations in accessible locations within the plant rooms with provisions for adequate drainage of all components in the immediate vicinity of the stations.

7.2.11.2 The water systems within the Facility will ensure water is supplied at the required pressures for optimal fixture operation to all water outlets. Minimum domestic water pressure will be maintained at 240 kPa to the most remote fixture and is to be demonstrated during commissioning.

7.2.11.3 Provide isolation valves for all plumbing services to fixtures and equipment. Clearly identify the location of all valves, both on site and on the "Record Documents."

7.2.11.4 Valves will be located, at a minimum, at each set of piping branches from the main distribution line, at all locations where the branches serve group of rooms with similar uses, to each patient washroom group, on branches serving individual speciality equipment and fixtures and on all branch lines to hose bibs.

7.2.11.5 Provide isolation valves for all plumbing services and clearly identify the location of all valves.

7.2.11.6 Isolation valves for piping 50 mm and smaller will be ball valves with solid bronze body and a chrome plated bronze ball with lever handles. All isolation valves 100 mm and larger will be of a butterfly style with gear operators.

7.2.12 Back Flow Preventors

7.2.12.1 All backflow preventers will be installed and located in areas where maintenance and testing of the devices can be properly and easily addressed.

7.2.12.2 Drainage for all backflow preventors will be provided in the immediate vicinity of all backflow prevention stations and are to be sized to handle both the maintenance and operational flow rates from the backflow preventers in full operational mode.

7.2.12.3 In locations throughout the facility where back flow preventers are required to serve equipment in finished areas, the entire assembly will be installed in a stainless steel cabinet with a solid door with a key access.

7.2.12.4 The cabinet will have a drain connection adequately sized to accommodate the discharge from the backflow preventer relief ports. All downstream drainage piping will be sized to accommodate the relief port flow.

7.2.12.5 Pressure reducing valves dedicated to specific equipment throughout the facility with specific pressure requirements may be mounted beside the equipment served and do not require redundancy.

7.2.12.6 The number and arrangement of plumbing pumps will be such that peak demand will be met in the event of failure of any one pump. The number of pumps in the pump package will address both high and low flow conditions and the associated issues related to variable speed capabilities. If all conditions cannot be met, then additional pumps will be required to be added to the package.

7.2.12.7 Pumps will be connected to delayed essential power and will be required to provide minimum pressure requirements. Include the domestic water pumping system in the emergency generator calculations. The system will provide uninterrupted water service and constant pressure under all conditions including during the post disaster period.

7.2.12.8 Design pumping systems for subsurface, storm, or sanitary drainage with 100% redundancy (one redundant unit for each active unit) and supply related equipment with emergency power. Design the sump with twin compartments (separate chambers for settling and pumping) and size the sump to prevent short cycling of the pump.

7.2.12.9 Provide engineered packaged pumping system(s) complete with controls and alarms including high water level and pumps failure alarms. Provide local alarms annunciation with audible and visible alarms indication and remote connection via the BMS.

7.2.12.10 All pump chambers will have premanufactured access lids in either single or double configuration with hydraulic assist lift chambers. Design of the access lids will require consideration regarding the loads that will pass over the installation and be supplied accordingly.

7.2.13 Water Filtration and Treatment

7.2.13.1 Domestic water service, to point of use filtration for most applications, will utilize filters with 5 microns cartridges and will be designed with redundancy to allow for filter replacement without affecting water flow to equipment. Specialized equipment including scope washers and Ice machines will require finer level of filtration and water treatment.

7.2.13.2 Provide water softening system to prevent scale build-up in piping, on the domestic water service. Provide N+1 redundancy such that there is no disruption in either water service when maintenance or replacement of components is required.

7.2.13.3 Provide charcoal filtration for coffee, water and ice machines. Refer to manufacturers' literature for additional requirements. Filter housing will be stainless steel.

7.2.14 Labelling and Marking of Piping

7.2.14.1 All systems will be clearly labelled, and colour coded in accordance with the ANSI / ASME A13.1 Pipe Labelling and Marking Standards. Labelling will include including painting and labelling of all pipes, ceiling identification dots, valve tagging, flow directions, emergency valve identification signage etc.

7.2.15 Reverse Osmosis Water Systems – Non Dialysis

7.2.15.1 Reverse Osmosis Water Systems are to be equipment-based owner supply equipment – refer to Appendix 1 – Equipment lists.

7.2.16 Plumbing Fixtures - General

7.2.16.1 All plumbing fixtures will comply with the requirements of CSA Z317.1

7.2.16.2 Provide fixtures as described in the Schedule 1 Statement of Requirements and as needed to comply with all applicable codes and regulations.

7.2.16.3 Provide all plumbing fixtures made of impervious, durable materials suitable for a hospital facility. Select fixtures with proven acceptable hospital performance from previous installations.

7.2.16.4 All plumbing fixtures will be supplied complete with all hangers, accessories for mounting, water supplies and shutoffs, flexible connectors, drain waste and vent connections, water hammer arrestors, all low voltage wiring supplies, wall boxes and access panels.

7.2.16.5 All fixtures that are used for hand washing (lavatories, scrub sinks, and hygiene sinks) will be provided with hands-free type faucets as required by CSA Z317.1.

7.2.16.6 All plumbing fixtures will be provided with a single temperature discharge that can be adjusted and set to the CSA Z317.1 required temperatures (table 1) and delivery timeframes (10 seconds), at the mixing valve, below the fixture.

7.2.16.7 All low voltage wiring, cables will be mounted in junction boxes located within the wall below the fixture and will include stainless steel face plates with vandal proof screws.

7.2.16.8 All line voltage plugs to low voltage wiring connections will be concealed in access boxes that are not accessible to the public or in concealed ceiling locations that are not visible without removal of an access panel.

7.2.16.9 Select fixtures as determined with the Authority and pay special attention to performance relative to infection control and prevention of the spread of diseases.

7.2.16.10 Provide all appropriate services and connections to all equipment for Patient care areas and all other areas. Provide all accessories as needed.

7.2.16.11 All Faucets will have laminar flow design per CSA Z317.1

7.2.16.12 If system pressure exceeds the acceptable delivery pressure, then provide pressure reducing valves with 100% redundancy. Place the valves in accessible locations; and

7.2.16.13 The domestic hot water recirculation system will be connected to each fixture's hot water supply immediately next to the fixture shut-off at the wall;

7.2.17 Electronic Faucets will be powered from

7.2.17.1 10 year battery packs or

7.2.17.2 The base building power source - delayed vital - hard wired with concealed power boxes, transformers or

7.2.17.3 The base building power source with battery backup.

7.2.17.4 All sensors will be hardwired and served by the delayed vital electrical system or provided with 10 year battery packs, so that water is available during a power outage;

7.2.17.5 The duration of sensor faucet flow will be adjustable. All sensors will be set at 10 seconds (as required by CSA Z317.1) but will be able to operate for a minimum of 45 seconds without interruption of flow, to facilitate proper hand washing;

7.2.17.6 Sensors will retain the ability to turn off automatically when hands are no longer in the sensor range;

7.2.17.7 Provide water hammer arresters on the cold water and hot water supply to each fixture or bank of fixtures served by a single branch in accordance with PDI Standards;

7.2.17.8 Ensure fixtures with electronic flush valves also have a manual flush operator. Pressure assist flush valves will not be used;

7.2.18 Faucet Overflows

7.2.18.1 All sinks are not permitted, by CSA Z317.1, to have an overflow opening installed in the body of the basin.

7.2.18.2 All faucets will be free of overflow opening installed in the body of the basin per CSA Z317.1.

7.2.18.3 Lavatories (sinks) with overflow outlets that are plugged with aftermarket plugs will not be accepted.

7.2.18.4 Fixtures not equipped with overflows will be provided with a waste tailpiece that does not have overflow openings.

7.2.19 Lavatory and Faucet Selections

7.2.19.1 Clinical lavatory fixtures will be wall-hung style fixtures.

7.2.19.2 Non-clinical lavatory fixtures will be wall hung style fixture or drop- in style vitreous china basin, or a solid surface fixture which is moulded into a countertop.

7.2.19.3 Counter-mounted lavatory basins will have all surfaces which slope into the basin.

7.2.19.4 All openings required for the faucet installation will be factory installed.

7.2.19.5 Select all lavatory and faucet combinations to minimize the potential for splatter and contamination.

7.2.19.6 High-profile, gooseneck lavatory faucet fittings will be provided for all lavatory basins, and the faucets will have anti-splash, anti- aerosolizing faucet fittings (i.e. laminar flow) that do not retain air. Low-profile gooseneck faucet fittings are not acceptable.

7.2.19.7 All public lavatory basins will not have drain plugs but will be installed with PO perforated drain openings.

7.2.19.8 All lavatory basins will have the water and waste fittings below the fixture protected with a skirt, provided by the manufacturer, to hide the plumbing components and to address infection control. The design of the skirt will be in conformance with the requirements of the Accessibility Requirements of the BCBC.

7.2.19.9 Access for the plumbing and electrical to these fixtures will be provided external to the actual washroom complete with access panels for secure rooms or similar spaces to be confirmed by the User Group. For the remainder of the fixtures, access will be provided within the washroom (within the fixture shroud or access panels is acceptable).

7.2.19.10 Lavatories deemed necessary by the User Group selected for these applications will have fully enclosed basins and skirts and be specifically designed for ligature resistant applications and will be limited in quantity.

7.2.20 Bariatric Fixtures

7.2.20.1 Lavatories provided for Bariatric applications will be constructed as a wall mounted epoxy coated stainless steel sinks suitable for installation in a Bariatric room and will be capable of withstanding a downward pressure of 500 kg on the front of the fixture. The lavatory deck may be either epoxy coated stainless steel or be a solid surface material.

7.2.20.2 Bariatric fixtures will not be supported from the Facility walls but must be supported by an independent support structure that is attached to the floor on which the fixture is installed. Stainless-steel Sinks – Utility Sink, Process Sink, Kitchen Sink and Scrub Sink., used in a clinical setting throughout the facility, will be either a stand-alone wall hung stainless steel fixtures with wall hangers or will be stainless steel bowls which have been integrally welded into a continuous stainless-steel counter.

7.2.20.3 The grade of the stainless steel used for the fixture will need to be selected to match the application in which the fixture will be used. The size, depth, and number of bowls for each fixture will need to be selected in consultation with the Authority to accommodate the intended use of the fixture.

7.2.20.4 The bowls of the sink will have fully rounded corners and will be complete with a drain assembly which is appropriate for the intended end use of the fixture.

7.2.20.5 Drop-in or under-mounted stainless-steel sinks are not permitted in all clean area.

7.2.20.6 Drop in style stainless steel sinks can be considered for locations such as nutrition stations, staff room, non-patient rooms and workshops. All drop in stainless steel sinks will have a back ledge included with all necessary punchings to accommodate the selected faucets.

7.2.20.7 Sinks will meet the requirements of CSA Z8000 including materials, size, construction, location, controls, backsplash, soap and lotion dispensers, and accessibility.

7.2.21 Hand Hygiene Sinks

7.2.21.1 Provide hand hygiene sinks that meet the requirements of CSA Z317.1. The basin of the sink will be wall hung and adequately sized and constructed in compliance with CSA Z8000. The hand hygiene sinks will be designed for proper washing and scrubbing of hands, including size, construction, location, backsplash, soap and lotion dispensers and accessibility.

7.2.21.2 Hand Hygiene sinks will be a single basin vitreous china scrub sink with integral backsplash, hands-free faucet, and soap dispenser for hand hygiene. Faucets will not discharge directly into the drain opening.

7.2.21.3 Hand washing sinks or Hand Hygiene Stations for nursing stations, patient care areas, examination rooms, food services, emergency room, soiled utility rooms and other similar function rooms will have electronic hands-free type faucets with either a gooseneck wall mounted spouts or an ozonated bubbler systems that will supply single temperature water to the sink.

7.2.21.4 The hand hygiene sink faucet will have sufficient clearance and height to allow for proper scrubbing to occur and will have a spray head that will provide no splash coverage during usage.

7.2.21.5 The water supply temperature will be pre adjusted and be set for the required temperature defined in CSA Z317.1 at the concealed mixing valve.

7.2.21.6 Electronic faucets will be connected to the base building power source - delayed vital - hard wired with concealed power boxes and transformers or will be provided with min 10 year battery operated units.

7.2.21.7 Access for the plumbing and electrical to these fixtures will be provided below the hand hygiene sink complete with access panels. Fixtures selected for these applications are to have fully enclosed basins and skirts and be specifically designed for scrub procedures.

7.2.22 Scrub Sinks

7.2.22.1 Provide scrub sinks suitable for a user conducting sterile procedures and supplied as a proprietary equipment item by a medical equipment manufacturer.

7.2.22.2 The faucet will have sufficient clearance and height to allow for proper surgical scrubbing to occur and will have a spray head that will provide no splash coverage during usage.

7.2.22.3 The water supply temperature will be pre adjusted and be set for the required temperature defined in CSA Z317.1 at the concealed mixing valve.

7.2.22.4 Scrub sink faucet will be foot pedal operated.

7.2.22.5 Faucet will have a single temperature mixing valve to supply integral temperature control that can be user adjusted.

7.2.22.6 Not used.

7.2.22.7 Access for the plumbing to these fixtures will be provided below the scrub sink complete with access panels. Fixtures selected for these applications are to have fully enclosed shroud, basins and skirts and be specifically designed for scrub procedures.

7.2.22.8 Fixtures selected for these applications are to have fully enclosed basins and skirts and be specifically designed for hospital scrub procedures.

7.2.23 Utility and other Miscellaneous Sinks

7.2.23.1 Provide Utility Sinks that meet or exceed the requirements of CSA Z317.1.

7.2.23.2 Sinks will be type 316 stainless steel sink with under deck mount faucets with 150 mm blade handle and gooseneck spout. Sinks will be large and deep enough to accommodate the intended application.

7.2.23.3 For equipment cleaning sinks and other utility sinks, provide sinks with underdeck-mounted, 200 mm manual blade handle faucets and gooseneck laminar flow spout. Ensure sinks provided are large and deep enough to accommodate proper washing of equipment and that materials and waste piping are suitable for the intended application of the sink.

7.2.23.4 The water supply temperature will be pre-adjusted and set for the required temperature defined in CSA Z317.1 at the concealed mixing valve.

7.2.23.5 Faucets for lunchrooms, staff rooms, and general purpose work rooms may be deck-mounted, 200 mm centre to centre, with laminar flow gooseneck spout and 150 mm manual blade handles.

7.2.23.6 Faucets for all other areas will be chosen to ensure that infection control is addressed but will include underdeck-mounted faucet body, gooseneck spout with laminar flow discharge and either electronic control or 200 mm long blade handles.

7.2.24 Barrier Free Requirements

7.2.24.1 Select all wall mounted sinks for patient and handicap use to have a removable, purpose-built skirt to house the water and drain components. Skirt to be designed to allow for handicap access to the fixture, to protect patients from touching hot objects, and for ease of maintenance.

7.2.24.2 Barrier-free plumbing fixtures, fittings, and carriers are to be provided where required and will need to be suitable for use by bariatric users. Water closets not designated specifically for bariatric use will be floor mounted.

7.2.24.3 Barrier-free plumbing sink fixtures, fittings, and carriers are to be provided where required in the Clinical Specification and will be installed in accordance with the BCBC requirements.

7.2.25 Water Closets

7.2.25.1 Water closets are to be constructed of either vitreous china or stainless steel and are to be selected from fixtures that will reduce the spread of infection. The bowl must be designed to accommodate the flow rate of the flush valve and to minimize the aerosolization of the toilet contents. All water closets must meet a certified MAP rating of 1000.

7.2.25.2 All wall-hung fixtures are to be designed for installation in accordance with the manufacturer recommendation.

7.2.25.3 No requirement for Recessed Bedpan Flushers to be installed with water closets.

7.2.25.4 Provide seat covers on all patient and accessible water closets. Ensure that all flush valve operators extend above the height of the open cover. All water closet seats are to be heavy duty construction with stainless steel posts and self-sustaining hinges.

7.2.25.5 Public water closets will consist of floor mounted elongated bowls with an open front seat with no cover. Flush Valve will be an electronic, hands- free flush valves with manual override. Flush valve connection to the water closet will be through an exposed top spud. Height to be 430 to 480 mm from floor to rim of seat.

7.2.25.6 Patient water closets will consist of floor mounted elongated bowls, with an open front seat and with cover. Flush valve will be a manual high/low dual flow flush valves. Flush valve connection to the water closet will be through an exposed top spud. Mounting height to be 430 to 480 mm from floor to rim of seat.

7.2.25.7 Accessible water closets will consist of floor-mounted, elongated bowls with an open front seat, with cover. Flush valves will be, manual high/low dual flow flush valves. Flush valve connection to the water closet will be through an exposed top spud. Mounting height to be 430 to 480 mm from floor to rim of seat. The location of the flush valve will be accordance with the accessibility requirements of the BCBC.

7.2.25.8 Provide barrier-free water closets that are suitable for use by bariatric users. Provide Designated Bariatric Patient washrooms with floor mounted, back discharge, anti-ligature, epoxy coated stainless steel toilet with integral seat, push button controls and in wall concealed flush valve with a minimum load for Bariatric Residents. Bariatric water closets will be chosen and positioned to allow for the use of commodes.

7.2.26 Urinals

7.2.26.1 Urinals will be wall-hung, vitreous china, institutional fixtures with wing walls to contain splashing.

7.2.26.2 The fixture will have a low-consumption, concealed, electronic, hands-free flush valve operation.

7.2.26.3 Each urinal will be installed with a separate urinal carrier that is floor-mounted and independent of the wall systems.

7.2.27 Soiled Utility Room Fixtures

7.2.27.1 Each Soiled Utility Room will have a hand hygiene sink (HHS) located in the room.

7.2.27.2 Each Soiled Utility Room will have a plumbed-in, wall-mounted, exposed, emergency eyewash station.

7.2.27.3 Soiled Utility Rooms will have large, stainless-steel sinks to be used for cleaning equipment and hospital goods. These sinks will be an integral part of a larger stainless-steel counter.

7.2.27.4 The size of the sink will be appropriate to the size of the equipment and goods to be washed. Minimum depth to be 250 mm. The size, depth, and number of bowls for each fixture will be selected, in consultation with the Authority, to accommodate the intended use of the fixture.

7.2.27.5 Each sink will have a deck-mounted faucet with gooseneck spout and 200 mm manual blade handles on the hot and cold water supply. Each sink will also have a hot and cold water wall mounted pre-rinse spray with 200 mm manual blade handles on the hot and cold water supply.

7.2.28 Waste Disposal Systems

7.2.28.1 Each Soiled Utility Room will have a wall-mounted, closed-system waste disposal system. Appliance installation will be flush to the wall with a mounting frame. The appliance will have hot and cold water connections for a concealed application.

7.2.28.2 Water, drainage, and sanitary vent piping will be installed in accordance with the British Columbia Building Code, CSA, and the manufacturer's recommendations.

7.2.29 Housekeeping Room Plumbing Fixtures

7.2.29.1 The Housekeeping Room will have a floor-mounted mop sink for use in general housekeeping within the facility. Supply Housekeeping Room with a plumbed eyewash station.

7.2.29.2 The size of the sink will be 600 mm x 900 mm x 250 mm deep and will have rigid vinyl protective caps on exposed sides and heavy duty stainless-steel wall guards on the walls.

7.2.29.3 Each fixture will have a two sets of wall-mounted faucets each with manual cross blade handles on the hot and cold water supply. The one set of faucets will have a top pail brace, integral vacuum breaker, hose end, and integral stops for general water supply to mop pails. The second faucet will have 12 mm reduced-pressure back flow preventors on the hot and cold supply, hose end supply, integral stops, hose end connections to allow for connection of chemical mix tanks.

7.2.29.4 The reduced-pressure back flow preventors will be mounted in a stainless-steel box with hinged solid door located within the walls of the housekeeping room and will have a direct drain from the box to the utility sink.

7.2.30 Emergency Room – Cast Area Plumbing Fixtures

7.2.30.1 The Emergency room will be provided with single compartment stainless-steel sinks, as required, to assist with the removal and setting of casts. Sinks for this purpose will have the following:

7.2.30.1(1) Gooseneck spout faucets with laminar flow outlet, manual 100 mm wrist blade handles, and will be mounted on wall behind the sink.

7.2.30.1(2) Sinks will have wall-mounted, pre-rinse spray assembly with heavy-duty hose and hose retainer.

7.2.30.1(3) Water supply will have thermostatic mixing valves with temperatures pre-set to meet the temperature and delivery time requirements of CSA Z317.1.

7.2.30.1(4) Stainless-steel solids interceptors with perforated, removable, stainless-steel baskets. These interceptors will be mounted on a stainless-steel dolly with ball caster and will have valves and couplings on both inlet and outlet to allow for removal and cleaning.

7.2.31 Patient Shower Fixtures

7.2.31.1 Provide patient showers as required to meet the needs of the facility.

7.2.31.2 Patient shower stalls will be free of barriers with no lip between the washroom floor and shower. Showers will have pressure-balanced and high limit shower mixing valve with additional soft-seated check valves on each of the water supplies to meet the requirements of CSA Z317.1.

7.2.31.3 Handheld shower hoses will have smooth, easy-to-clean surfaces. The length of the shower hoses will be sized to ensure the shower head cannot be submerged in any adjacent plumbing fixture.

7.2.31.4 If the shower stall is a fixed architectural stall, ensure that a floor drain is installed with the floor sloped to the drain.

7.2.31.5 Slide bars provided for handheld showers must be designed and load-rated to act as grab bars.

7.2.31.6 Shower bases must ensure that water is sloped towards the shower drain and contained within the shower area and drain fully without puddling. Shower bases constructed of fibreglass or acrylic are not permitted.

7.2.32 Staff Showers

7.2.32.1 Provide showers for staff to meet the needs of the facility.

7.2.32.2 Showers will be fibreglass or acrylic and will be not less than 1200 mm x1200 mm. Staff showers will have pressure-balanced and high temperature limit shower mixing valves with additional soft-seated check valves on each of the water supplies to meet the requirements of CSA Z317.1.

7.2.32.3 Staff showers will be handheld style with a slide bar and locking mechanism. Handheld shower hoses must have smooth, easy-to-clean surface.

7.2.33 Emergency Eyewash and Showers

7.2.33.1 Provide emergency eyewash and shower stations required to serve the facility, which meet the requirements of WorkSafeBC, CSA, the British Columbia Occupational Health and Safety Regulation, and the British Columbia Building Code.

7.2.33.2 Emergency showers and eyewashes stations are to be located and designed to supply tempered water within an acceptable time frame in accordance with the Occupational Health and Safety legislation of British Columbia. Provide signs identifying location and directions for their use. Eyewash stations will be activated when pulled down into position.

7.2.33.3 Emergency shower and eyewash assemblies are to be supplied by approved thermostatic mixing valve assemblies that are specifically designed for safety equipment installation. Each mixing valve assembly will be certified to ANSI Z358.1, will be sized to serve the demand of the fixtures served, and will fail safe to cold water. The hot water recirculation system will be installed as close as possible to the mixing valve assembly.

7.2.33.4 Where standalone emergency eyewash stations are required, the fixtures are to be a stainless steel recessed wall mounted assembly complete with a water receptor, two soft spray eye / face wash spray heads, tempered water supply and drain piping. The eyewash station will have a highly visible hand paddle that will operate the eyewash upon activation.

7.2.33.5 Where emergency eyewash stations are required to be located with a plumbing utility sink, the fixture will be a highly visible, swing away assembly that contains two soft spray heads, caps, and tempered water service.

7.2.33.6 The emergency shower / eyewash stations located within public and finished work areas of the Facility are to be recessed but highly visible. Activation of the shower will be from a wall mounted lever adjacent to the shower assembly. The eyewash component of the shower station will be a wall mounted concealed assembly which will be pulled down out of the wall and will activate upon dropping down. The waste from the eyewash will be hard piped back into the wall and connected to the Sanitary Waste system.

7.2.33.7 Floor drains will not be used in clinical areas as recommended by CSA Z317.1.

7.2.33.8 Cold Water Hose Bibbs will be used as required throughout the Facility.

7.2.33.9 Exterior hose bibb / hydrants serving outdoor spaces will be encased non-freeze concealed type with lockable hinged doors. Each hose bibb / hydrant will require an individual shut off on the branch line servicing the fixture located in a non-freeze location within the building.

7.2.33.10 The Facility water supply will be protected by an approved backflow prevention device.

7.2.33.11 Interior hose bibb/ hydrants for workshops and mechanical room will be exposed chrome plated ball valve with hose end fitting and cap securely anchored to the structure.

7.2.33.12 Hose bibb/ hydrants located on the roof to service equipment maintenance and the cooling towers will be non-freeze upright roof hydrants with shut off valves and drains located internal to the building.

7.2.33.13 Provide an irrigation system for automatic (via timed/condition controlled system) watering for all garden plots.

7.2.34 Morgue Plumbing Systems

7.2.34.1 In the Morgue, provide isolated plumbing services to all Morgue plumbing fixtures from "Non-Potable" water supply that is protected from back flow to the rest of the building.

7.2.34.2 All water services suppling the Morgue plumbing fixtures will require reduced-pressure backflow preventors (N+N redundant)) on the main service to the Morgue department / zone. The backflow stations will need to be located exterior to the actual Morgue department in a location that allows for proper maintenance.

7.2.34.3 All sanitary waste piping and all floor drains / trench drains will be required to be constructed of stainless steel with mechanical couplings.

7.2.35 Plumbing Drainage and Venting Systems

7.2.35.1 Provide sanitary, storm, specialty drainage, and venting systems to avoid disruption to the operation of the Facility or interference with other services during operation and maintenance activities. Design the systems so that, as much as possible, Type I and Type II rooms do not need to be entered when performing these functions. Refer to CSA for space Type definitions.

7.2.35.2 Design all drainage systems such that the system connects to the site drainage services, utilizing gravity drainage.

7.2.35.3 Provide drainage and venting piping and fittings of a material suitable for the expected effluent.

7.2.35.4 All pipe materials acceptable by the British Columbia Building Code for drainage systems are acceptable.

7.2.35.5 All vents will terminate outdoors; the use of air admittance valves will not be permitted.

7.2.35.6 All piping will be installed parallel to Facility gridlines. Vertical piping will be installed plumb and horizontal piping level or graded as required by code for sanitary or storm systems. Provide support under all wyes located at ends of branches and all p-traps.

7.2.35.7 Conceal all sanitary, waste, and water piping in walls. Only trap arms and water supply piping will be permitted to be exposed below fixtures.

7.2.35.8 Provide solid supply tubing to sinks and lavatories for ease of cleaning, no braided flex supplies are permitted.

7.2.35.9 Drainage piping material may only be changed downstream at the following points:

7.2.35.9(1) where the hazardous properties of the effluent is reduced so a different piping material is suitable: i.e. the branch connects into a main drain line, such that the additional effluent flow dilutes the discharge; and

7.2.35.9(2) where a device is placed in-stream to reduce the hazard of the discharge, such as an acid neutralizer.

7.2.35.9(3) All piping at risk of freezing will be piped, wherever possible, to avoid installing piping outside of a heated space. Except as required for Schedule 1 SOR clause 7.4.8.26, or by the BC Plumbing Code Division B clause 2.3.5.4, sanitary drainage containing fats, oils and grease, and freezer evaporator drains, heat tracing is not allowed.

7.2.35.10 Adjustable Height Fixtures

7.2.35.10(1) Fixture outlet piping for adjustable height fixtures will be installed so that no water can collect in the piping at any fixture height.

7.2.36 Floor Drains

7.2.36.1 Floor drains will not be provided in clinical areas other than the areas defined in CSA Z317.1.

7.2.36.2 Provide floor drains in all mechanical rooms as required to drain equipment, laboratory, kitchen (Floor Drains, Floor Sinks), workshop, showers, service spaces etc. as recommended in CSA Z317.1.

7.2.36.3 Floor drains will be sized to handle the maximum anticipated flows including sprinkler test full flow and from backflow preventer relief ports at full flow rated as noted in the manufacturer's information. Ensure all equipment drain piping is terminated at floor drains with the proper air gap. Ensure that drains are properly selected and of adequate size to prevent spillover of the waste product into adjacent areas.

7.2.36.4 Provide floor or hub drains for all devices that may discharge water, including, emergency showers and backflow prevention devices not located in clinical spaces.

7.2.36.5 Provide electronic trap primers that are controlled by electronic time clocks or BMS or other equally effective means as approved by the Authority at all drains that are subject to losing the trap seal, including infrequently used fixtures as required by the British Columbia Building Code. Trap primers which rely on fixture use or pressure drop will not be accepted.

7.2.36.6 Any machinery/service rooms located below grade will be fitted with fast acting, free flowing drains to rapidly disperse flood waters arising from both outside the Facility (such as severe weather), as well as from any internal fluid system breaches.

7.2.36.7 Drainage flow capacity will exceed that of the calculated maximum flow from the worst case system breech

7.2.36.8 Provide accessible clean-outs for all sinks and lavatories above the flood-level of the sink.

7.2.37 Oil and Grease Interceptors

7.2.37.1 Provide grease interceptors for oil and grease, where necessary, and as required by the BC Building Code and the Fort Saint James District or other municipal requirements.

7.2.37.2 Provide interceptors in accordance with the manufacturer's specifications.

7.2.37.3 Sizing of the interceptors will be in accordance with the guidelines set out in the ASPE Design manuals, Fort Saint James District municipal guidelines, Plumbing Drainage Institute (PDI) design guidelines.

7.2.37.4 Provide grease interceptors to serve all kitchen sinks, floor drains, floor sinks and equipment in the Food Services areas. Run an independent drainage system sloped at a minimum 2%. Locate interceptors outside the food preparation areas to allow for servicing of the fixture. Hand Hygiene sinks and dishwashers do not need to connect to the grease interceptor.

7.2.37.5 Each grease trap installation for the kitchen will be complete with 50 mm stainless steel vacuum suction line running from the grease trap to a designated exterior location for grease removal. Each end of the vacuum tubing will have Camlock fittings attached.

7.2.37.6 Each grease trap installation will be complete with a 20 mm hot water hose bibb on the wall in the general vicinity of the grease trap that will be connected to the 60°C hot water system.

7.2.37.7 Provide appropriate fuel oil interceptors systems at all fuel storage tanks and filling stations to prevent fuel leakage beyond the designated containment area, and in accordance with all applicable standards.

7.2.37.8 Drainage from Ambulance Garage will be linked to sump pumps/panels and oil receptors as required.

7.2.38 Plaster Traps

7.2.38.1 Install plaster traps for all process sinks where dust is expected in the room or where dust could be washed down the drainage system. Includes any locations where cast or splint procedures are done, modification to casts or splints (grinding bench for example) or workshops (carpentry etc.).

7.2.38.2 Plaster trap installations are to be designed to allow for removal of the entire trap and taken to a maintenance location where it can be cleaned and returned to service.

7.2.38.3 Provide acid neutralizers at either the point of acid discharge to the drainage system or at the acid waste drainage system termination.

7.3 Medical Gases (Division 22)

7.3.1 The Design-Builder will provide required cylinders, piping, manifolds, equipment, and bulk supplies as required, to suit the needs of the new building, for new medical gases for the facility plus 15% additional capacity.

7.3.2 Medical gases and vacuum systems will be distributed and sized throughout the hospital to each department with capped connection points to allow for an additional 15% for future expansion.

7.3.3 All medical gas systems will be designed and constructed to CSA Z7396.1 - Medical gas pipeline systems - Part 1: Pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems.

7.3.4 The following minimum systems will be provided:

7.3.4.1 Medical air;

7.3.4.2 Medical Vacuum;

7.3.4.3 Instrument Compressed Air; and

7.3.4.4 Medical Oxygen.

7.3.5 Medical Gas Equipment

7.3.5.1 Medical gas equipment (Vacuum Pumps, Compressed Air etc.) will be located in a dedicated medical gas equipment room. All equipment will be sized and will consist of duplex, triplex or quadplex units to provide adequate resiliency, redundancy and meet CSA requirements. The minimum equipment, that will be provided, includes:

7.3.5.1(1) Medical vacuum pumps;

7.3.5.1(2) Medical grade compressed air units and dryers including reserve compressed air cylinders;

7.3.5.1(3) Instrument grade compressed air units and dryers;

7.3.5.1(4) Standard equipment (non-Medical grade) compressed air units and dryers including reserve compressed air cylinders and

7.3.5.2 Provide new central medical air and medical vacuum pump systems. Medical air and medical vacuum pump systems will each consist of at least three (3) interconnected sources of supply. Systems will be capable of supplying the system flow with any two (2) sources of supply out of service.

7.3.5.3 Provide 'fail-safe' controls: all units will continue to run and maintain service in the event of failure of the electronic controls, without human intervention. Provide multi and/or variable speed systems to allow for varying conditions. Provide for 15% increase in a capacity, including control panels, for future.

7.3.5.4 Provide an oil-free medical vacuum system.

7.3.5.5 Connect new central medical air and medical vacuum systems to the essential system power supply in conformance with CSA Z32. Provide an essential system power supply from at least two (2) separate circuits such that these essential services are maintained in the event a motor control centre is de-energized.

7.3.5.6 Medical air compressors will be equipped with a carbon monoxide alarm system to measure the level of carbon monoxide in parts per million by volume in the medical air. The system will initiate an alarm and provide a means to prevent gas from entering the piping system if the level exceeds 10 parts per million by volume. Alarm will notify the BMS.

7.3.5.7 Air intakes for medical air compressors will be provided with carbon filters with pressure drop alarm notifying the BMS.

7.3.6 Medical Gas Cylinders and Manifolds

7.3.6.1 Medical gas cylinders and their associated manifolds will be located in dedicated storage rooms. All equipment will be sized to provide adequate resiliency, redundancy and to meet CSA requirements.

7.3.6.2 Provide bottle medical gas reserve capacity within the Facility within a separate room for centralized bottle manifold supply systems for the following medical gases:

7.3.6.2(1) Oxygen;

7.3.6.2(2) Medical Air; and

7.3.6.2(3) Compressed Air;

7.3.6.3 Design the centralized bottle manifold supply systems so that they will, when required, automatically switch to the spare bank of bottles (and that switching to the spare bank is alarmed at the master alarm). Only medical gas piping and valves necessary for the installation of bottle manifolds will be included in the manifold supply room.

7.3.6.4 The manifold rooms will have designated storage space and racking for spare bottles equal to 72 hours capacity for each system not connected to the manifolds.

7.3.6.5 The Facility will be provisioned with adequate space at the loading dock for the storage and exchange of medical gasses, and a prescribed holding area. The sizes of these locations to be dependent on Quantity of each gas utilized, with spare capacity to meet the Facility's functional needs and requirements, and as supported by the established distribution of said mentioned gases. For handling provide racks to secure bottles for transit from loading dock to storage. A piping system for these gases is not required. Refer to Clinical Specifications, Appendix 1A for more detail and functional requirements.

7.3.6.6 Flexible connectors will be specifically designed to withstand seismic activity and will have the ability to accommodate both vertical and horizontal seismic movement.

7.3.6.7 Frequency of fills for all medical gas cylinders will be coordinated, by the design build team, based on consumption demand for the hospital plus 15% and local delivery capabilities to ensure delivery timelines will be adequate to ensure that the hospital has adequate medical supply at all times.

7.3.7 Medical Gas Zone Control and Monitoring

7.3.7.1 Provide a zone control valve box complete with zone alarm panel and removable window with pull-out ring at each zone.

7.3.7.2 Provide a main alarm panel to monitor all the medical gas systems installed in the Facility.

7.3.7.3 Supply systems will be equipped with alarm sensors as required by CSA Z7396.1. Sensing devices will also initiate audible and visual alarms on the control panels for the medical air compressor system, medical vacuum system, instrument air system and the AGSS. All alarms will notify the BMS. Provide BMS alarm interface signal to the Facility central system for critical alarms such as high or low pressure. Auditory alarm signals will be clearly audible and produce a sound level of not less than 70 dBA at a distance of 2 metres and will require manual silencing.

7.3.7.4 Provide the medical gas system so that there is a minimum of one zone shut off valve per programmed area as well as isolation valves for each patient room.

7.3.7.5 Provide a local alarm panel for each zone. Alarm panels will be connected to the essential system power supply in conformance with CSA Z32. Provide a master medical gas alarm panel to monitor all medical gas functions. Remote alarm annunciation will be provided at a location with 24 hour continuous monitoring by personnel. Provide an interconnected status and alarm point and signal to the BMS.

7.3.7.6 All master alarm panels will be individually connected to the BMS. Provide an alarm interface signal to the BMS for critical alarms such as low or high pressure. Master alarms will be connected to the essential system power supply in conformance with CSA Z32.

7.3.7.7 All medical gas systems will be certified in accordance with CSA standards and reviewed by an independent and qualified testing agency (provided by the Authority).

7.3.7.8 All systems components requiring electrical power will be connected to the essential system power supply in conformance with CSA Z32.

7.3.7.9 The medical gas supply system will be for patient consumption only. If equipment and/or procedure(s) require instrument air, then provide separate dedicated source equipment, piping, valving, and monitoring to accommodate that application.

7.3.7.10 Design-Builder will conduct all installation tests of the medical gas supply systems required by CSA Z7396.1 including leak tests and cross connection tests.

7.3.7.11 Zone valves will be installed immediately outside each anaesthetizing location.

7.3.8 Medical Gas Outlets

7.3.8.1 Provide medical gas outlets in conformance with the Clinical Specification and meeting the requirements of CSA Z7396.1 and CSA Z9170.1.

7.3.8.2 Each patient room and each Long Term Care room (to be acuity adaptable for Inpatient Care) will be complete with two oxygen, air, and vacuum outlets. Outlet types will be DISS. Medical gas types and quantities provided for other clinical areas will be as determined with the users. Local and master alarm panels will be provided as required by CSA Z7396.

7.3.8.3 Provide Medical gases outlets in the following patient locations

7.3.8.3(1) On both sides of all patient beds.

7.3.8.3(2) At each baby care area in each LDRP room.

7.3.8.4 Provide Diameter Index Safety System (DISS) type outlets for all medical gases. Medical gas outlets provided in the Decontamination areas will be concealed.

7.3.8.5 Each medical gas outlet will have a permanently marked, colour-coded non-interchangeable index system so as to prevent the connection of the wrong gases. Provide a secondary check valve to hold the line pressure if the primary valve is removed for maintenance.

7.3.8.6 All medical gas outlets in procedure and patient rooms will be provided with a Patient Reference Grounding system in conformance with the Canadian Electrical Code.

7.3.8.7 All oxygen outlets to be dual connect style (two ports).

7.3.9 Medical Gas Piping and Valves

7.3.9.1 Medical gas piping will be degreased type 'L' copper for piping 3” NPS and under and type ‘K’ Copper for any pipes over 3” NPS. Medical gas supply piping and equipment will be sized to allow for 15% growth in capacity.

7.3.9.2 All piping and components of the pipeline distribution systems which come into contact with the medical gases will be supplied clean and free from oil, grease, and particulate material and capped or sealed to prevent contamination. On site cleaning of medical gas piping will not be permitted.

7.3.9.3 Service isolation valves will be valves of three piece bolted construction for medical gas service and will have ULC listing and CRN number. Valves will be labelled showing the appropriate gas service & pressure rating. All ball valves will have a quarter turn from closed to open and swing out during installation. Shut off valves exceeding 65mm used for medical vacuum systems may be butterfly valves. Provide degreased copper tube stubs with purge ports.

7.3.9.4 Area zone shut off valves will be housed in a single steel box comprised of multiple shut off valves with tube extensions, removable window incorporating a centre pull out ring. Provide pressure/vacuum gauges for each service. Provide label stating rooms served by valves. Boxes will be designed so that the shut off valve handles prevent the closure of the box door or replacement of the cover when the valve is in the off position. The boxes will be large enough to permit the manual operation of the shut off valves. The valves will be arranged such that the operation of one valve will not interfere with the proper operation of other valves located in the same box.

7.3.9.5 Departments will be served from looped medical gas piping such that the piping can be served from two directions if part of the systems is out of service. These loop mains will be provided with service valves so sections of each department can be isolated without affecting the remaining floor operation.

7.3.10 External Emergency Medical Gas Supplies

7.3.10.1 Provide concealed connections for Oxygen, Medical Vacuum, Medical Air on the exterior of the Facility for supply into the Facility from external emergency support from tanks, trucks, etc..

7.3.10.2 Auxiliary medical gas and vacuum connections will be provided at the exterior of the Building, complete with valving, to provide emergency supply of oxygen, medical air and medical vacuum to the system

7.3.11 Laboratory and Instrument Air

7.3.11.1 Where laboratories or any other Non-Clinical Area requires an air or a vacuum system, these systems will be independent from the medical air and medical vacuum systems, Per CSA Z7396.1.

7.3.11.2 Instrument air with N+1 redundancy for non-patient use will be clean and dry and used in such areas as Biomed/Pharmacy/Labs, braking systems on ceiling columns and operating door open and door close on sterilizers.

7.3.11.3 Connect systems to emergency power. System pressure will depend on requirements of final devices and equipment procured. Outlet pressures will be adjustable by the Authority. Instrument air supply and piping systems will comply with the requirements of CSA Z7396.1.

7.3.11.4 General laboratories, media preparation and tissue culture labs may require instrument air or nitrogen. Design-Builder will provide the services required to meet the requirements of the final equipment and devices procured.

7.3.11.5 Laboratory Instrument Air will be provided to the Lab and other areas requiring Instrument Air.

7.3.12 Utility Compressed Air

7.3.12.1 Utility compressed air system used in mechanical rooms and maintenance shops for pneumatic tool operation will include reciprocating or rotary screw air compressors, air dryers and receiver tank. Point of use quick connect outlets will include upstream filters and pressure regulators. Depending on the tools used, lubricators may be required.

7.3.12.2 Utility compressed air systems will be independent from the medical air and instrument systems.

7.3.13 Medical Gas Reliance Recommendations

7.3.13.1 Auxiliary medical gas connections will be provided at the exterior of the building, complete with valving, to provide emergency supply of oxygen to the system

7.4 Heating, Ventilating and Air Conditioning (Division 23)

7.4.1 Heating Plant:

7.4.1.1 The heating plant will be designed to meet the peak coincident load with the largest heating source unit out of operation (N+1 redundancy) as required by CSA Z317.2.

7.4.1.2 Pumps, heat exchangers and other ancillary equipment redundancy will match that of the main equipment. Ensure that no failure of any single pump, fan, variable frequency drive (VFD), or central system control valve will be able to prevent heating of the Facility to the required design conditions.

7.4.1.3 All Heating boilers will be of dual fuel design and will be capable of operating on natural gas or No. 2 fuel oil by operation of valves and controls only.

7.4.1.4 Apply energy heat recovery systems to offset plant heating requirements.

7.4.1.5 Provide treatment equipment for introducing cleaners and/or corrosion inhibitors. Provide side stream filters for hydronic systems.

7.4.1.6 Design the heating equipment to sufficiently meet the maximum simultaneous Facility demand for all systems served by the central plant.

7.4.1.7 Ensure the plant is capable of controlling and responding to periods of low usage.

7.4.1.8 Heating plant equipment will be connected to the delayed vital essential electrical system in such a way that at least two-thirds of plant capacity (with 100% of the required heating capacity) is available at all times.

7.4.2 Heating Hot Water System

7.4.2.1 Hot water for heating will be provided using a primary heating water loop running at a 71.1°C supply and 48.9°C return. Redundancy will be based on meeting the final plant capacity with one boiler out of service. In addition, redundancy will be provided, when one boiler is out of service, from more than one boiler in service.

7.4.2.2 Heating water boilers will be of dual fuel design, high efficiency and configured for condensing operation when operated on natural gas. Provisions will be made to allow the boilers to operate safely on fuel oil, condensing mode is not required.

7.4.2.3 Boilers will be forced draft type, fully modulating, low NOx, complete with variable speed burner fan, continuous oxygen trim and utilizing electronic ignition and flame sensing. Boilers will include a control package which will monitor all safety functions and will communicate with the overall process control system.

7.4.2.4 Provide primary hot water pumps with VFDs in N+1 arrangement, to distribute hot water throughout the primary loop. Boiler system to operate on variable flow principles governed by secondary loop demands.

7.4.2.5 Provide dedicated secondary pumping systems to serve the required loads and to maximize the temperature differential before the water is returned to the central plant.

7.4.2.6 Reheat systems will be based on low temperature distribution to maximize primary hot water loop temperature differential and to provide opportunity to use recovered heat. Reheat loop temperature will be scheduled to 48.9°C (120°F) maximum.

7.4.2.7 Provide automatic isolation valves on the inlet of each boiler.

7.4.2.8 Provide coalescing type dirt and air separator on the primary hot water supply main in the central plant.

7.4.2.9 Provide energy metering to measure the heating load at the supply/ return mains.

7.4.2.10 Modular expansion tanks are to be provided in accordance with system volumes at Substantial Completion as well as future system volume. The allowance for future system volume is an additional 10% over Substantial Completion volumes. Make-up water will be measured via flow meter.

7.4.3 Humidification

7.4.3.1 Provide humidification for the Facility as required to meet the full range of space humidity requirements as outlined in Table 1 of CSA Z317.2.

7.4.3.2 Provide standalone steam generation equipment for all humidification requirements within the Facility. Use of gas fired humidifiers at the point of use (one per each Air Handling Unit) is acceptable.

7.4.3.3 Ensure the feed water quality to steam generators is within the required conditions of the applicable codes, standards, and manufacturer's recommendations for both the generator and the downstream equipment. Steam quality must be condensate free and minimum 97% saturated vapour.

7.4.3.4 Provide connections in the steam system near the point-of-use, which can be used to access the steam for quality measurement.

7.4.4 Flues

7.4.4.1 All flues will be accessible without the need for temporary ladders. Provide fixed structural platform(s) if required.

7.4.4.2 Provide individual flues for each hot water heating boiler, steam boiler and generator. Flues will be individually insulated.

7.4.4.3 Flues will not permit entrainment into Facility air intakes and openings.

7.4.4.4 Wind loading, seismic zone, exposure factor, and deflection will be in accordance with the BCBC.

7.4.5 Fuel Systems - Boilers

7.4.5.1 Buried fuel tanks are not allowed.

7.4.5.2 Final above-ground storage capacity will be sufficient for 72 hours of operation at the design load.

7.4.5.3 Include duplex fuel pump package to supply 1.5X the flow of aggregate boiler demand. Duplex set to be run/ standby with dedicated pump control panels for true redundancy.

7.4.5.4 Provide anti syphon valve on the supply line from the storage tanks to the fuel supply header.

7.4.5.5 All storage tank fuel supply lines to be piped into a common header with individual automatic solenoid valves acting as tank selectors. Header to be provided with drain and priming connection.

7.4.5.6 Duplex pump set to send fuel oil through supply loop disseminating fuel to all boilers in parallel. Provide an oil de-aerator complete with oil filter for each boiler.

7.4.5.7 Supply back pressure valve at end of supply main to maintain an upstream pressure on the suction of each burner of no more than 20 kPa or the pressure required by the equipment for proper operation.

7.4.5.8 All excess fuel pumped and returned from boilers will be piped into a common header with individual return lines along with automatic solenoid valves returning fuel to each tank.

7.4.5.9 Provide fully automated fuel management system.

7.4.5.10 Individual fuel fill wall mounted cabinets with overfill alarm and vents will be provided in accessible location for a fuel tanker yet as discreet as possible.

7.4.5.11 Provide new intermediary, let-down pressure station for natural gas to the central plant sized to supply all boilers at peak demand. Location to be screened from view and secured (fenced compound with pad-locked door) and protected with bollards.

7.4.5.12 Provide fully automated fuel filtration system for all fuel storage tanks.

7.4.6 Fuel Systems - Generators

7.4.6.1 Final storage capacity will be sufficient for 72 hours of operation at full nameplate prime kW rating of all generators combined.

7.4.6.2 Provide dedicated above-grade fuel oil day tanks for each generator along with all safeties, protections, and valves to meet CSA B139 and/or National Fire Code.

7.4.6.3 Provide duplex fuel pump package supplying 2.5X the aggregate flow of generators' demand. Duplex set to be run/ standby with dedicated pump control panels for true redundancy.

7.4.6.4 Provide anti syphon valve on supply line from the storage tanks to the fuel supply header.

7.4.6.5 All storage tank fuel supply lines to be piped to a common header with individual automatic solenoid valves acting as tank selectors. Header to be provided with drain and priming connection.

7.4.6.6 All day tank overflows will be returned by gravity and piped into a common header. Thereafter, individual gravity return lines along with automatic solenoid valves, return fuel to each main storage tank.

7.4.6.7 Provide fully automated fuel management system.

7.4.6.8 Provide fully automated fuel filtration system for all fuel storage tanks.

7.4.7 Cooling

7.4.7.1 Chilled water will be produced in a central plant. The design and operation of the central plant must be optimized to allow energy recovery (for heating purposes) and to minimize the greenhouse gas usage on site.

7.4.7.2 Cooling plant equipment will be connected to the delayed vital essential electrical system in such a way that critical cooling and 24/7 cooling loads are served at all times as required in CSA Z317.2

7.4.7.3 All chillers are to be selected with less than 30 kPa water side pressure drop through evaporator and condenser sections. Single and two-pass heat exchangers only are acceptable. Three pass and higher are not acceptable.

7.4.7.4 Each chiller plant will be configured in a parallel arrangement with means of automatic isolation of each chiller prevent flow through inactive units.

7.4.7.5 Each chiller plant will be designed with minimum 8.5°C temperature differential to minimize pumping power.

7.4.7.6 Design each chilled water system to have both a primary (variable) and secondary (variable) piping configuration.

7.4.7.7 Provide equipment for all necessary cooling, including the required redundancy in the cooling systems and cooling required by Facility systems in a post disaster event.

7.4.7.8 Provide 100% outdoor air for free cooling as the first means of space cooling. Heat recovery strategies may override this requirement.

7.4.7.9 Apply sensible and latent energy recovery systems to offset plant cooling requirements.

7.4.7.10 Cooling towers will be provided with variable speed controllers on all motors. Provide sump heaters for cooling towers designed to operate in winter.

7.4.7.11 Chilled water plant to be controlled to optimize operation based on outdoor temperature and cooling demand.

7.4.7.12 Chillers will have multiple individual refrigerant circuits. Prime mover nameplate ratings for each circuit will not exceed 200 kW for groups Al, A2 or B1 refrigerants.

7.4.7.13 No open-type cooling towers are allowed except spray coil (closed circuit evaporative fluid cooler) type cooling towers, if such towers:

7.4.7.13(1) are located away from fresh air intakes.

7.4.7.14 Chillers and cooling towers will be designed and located so as not to have an adverse effect on the mechanical systems for this Facility or any adjacent building.

7.4.7.15 Provide chillers and cooling towers for ease of operation, accessibility for maintenance, safety, and appearance.

7.4.8 Facility Heat Recovery Chillers:

7.4.8.1 The chilled water system will be capable of operating as a heat recovery system.

7.4.8.2 Design the cooling plant to meet the maximum simultaneous Facility demand for all systems served by the cooling plant, as well as being capable of controlling and responding to periods of low usage. Systems include air handling units, fan-coil units, and heat recovery coils. All chillers will have the capability to unload down to 15% of rated capacity, to accommodate Facility part load conditions.

7.4.8.3 All chillers are to be institutional grade with expected life span of minimum 30 years.

7.4.8.4 Chilled water distribution will be configured to serve the Facility and future loads from supply and return headers located in the chiller room. Provide valved connections for the Facility and connections for future loads.

7.4.8.5 Central plant main chillers will be water cooled, high efficiency, electrical centrifugal chillers utilizing magnetic bearings, rated in accordance with AHRI 550/590. No absorption chillers may be used. Chillers will utilize non-CFC refrigerant.

7.4.8.6 Chillers will have minimum 10% higher efficiency than called for by ASHRAE 90.1 standard at AHRI testing conditions. The 10% higher efficiency is to be achieved at ASHRAE design conditions for 25%, 50%, 75% and 100% loading. The IPLV rating of each chiller will be minimum 10% better than required by ASHRAE 90.1.

7.4.8.7 Chiller control sequences will include chiller staging to maximize the overall plant efficiency at all loading conditions.

7.4.8.8 Chiller control sequences will also include chilled water temperature and system differential pressure reset and variable water flow. Base chilled water temperature and differential pressure reset on tracking position of all control valves (positive feedback).

7.4.8.9 Provide continuously available (24/7) cooling for all areas containing specialized equipment (such as Diagnostic Imaging) and continuous internal heat gains such as elevator machine rooms, server rooms, electrical, UPS and Communications Rooms via a process chilled water loop that can operate either independently or interconnected with the main chilled water system.

7.4.8.10 Design the heat recovery chiller plant to meet the maximum simultaneous Facility heating and cooling demand (including heat extracted by heat recovery coils), as well as being capable of controlling and unloading down to 15% of rated capacity to respond to periods of low usage.

7.4.8.11 All chillers are to be custom high lift industrial grade with expected life span of minimum 30 years.

7.4.8.12 Chillers will be water cooled, high efficiency, electrical screw chillers rated in accordance with AHRI 550/590. Chillers will utilize non CFC refrigerants.

7.4.8.13 Chillers will have minimum 10% higher efficiency than called for by ASHRAE 90.1 standard at AHRI testing conditions.

7.4.8.14 Heat recovery chillers to be arranged to extract heat from the main chiller condenser water loop downstream of main chillers. Provide by-pass around main chillers such that the heat recovery chillers can be used to extract heat directly from the Facility chilled water system.

7.4.8.15 The heat recovery chiller plant will be configured such that units can be added to increase plant capacity. Redundancy will be based on meeting the plant capacity with the largest chiller out of service. The plant will be configured such that 50% of the capacity will be fed from one electrical feeder, and 50% from a second feeder.

7.4.8.16 Heat recovery to be provided by separate, multiple-compressor chillers capable of heat recovery operation. Chillers will utilize non CFC refrigerants.

7.4.8.17 Chiller redundancy will be such that a failed chiller can be repaired and/or removed and replaced without impacting ongoing operations.

7.4.8.18 Optimize heat recovery from the chiller system such that all the heat extracted from the main chilled water system condenser water can be recovered to provide heat to the Facility and the central plant. Recovered heat uses include all Facility heating, reheat, and domestic hot water preheating. Full or partial heat rejection to the cooling towers will be enabled when the ability to use the recovered heat is reduced or not available.

7.4.8.19 Provide chilled water pumps with VFDs in N+1 arrangement, to distribute chilled water throughout the primary Facility loop. Primary chilled water loop is to work on variable flow principles governed by secondary loop demands.

7.4.8.20 Provide condenser water pumps with VFDs in N+1 arrangement, to distribute condenser water throughout the condenser water loop.

7.4.8.21 Ensure that no failure of any single pump, fan, variable frequency drive (VFD), or central system control valve will be able to prevent cooling of the Facility.

7.4.8.22 Provide multi-cell induced draft cooling towers, with condenser water to cells valved to isolate individual cells while keeping the remainder of the cooling tower operational at full design capacity. Locate the cooling towers to ensure cooling tower discharge does not enter the Facility or any other buildings through air intakes or other openings. Provide each tower drain pan as all stainless steel construction, with a ladder and maintenance access platform to service all sides of each tower. Provide walking platform inside the basin and provide discharge isolation dampers. Provision for ancillary equipment, and structures, as required for maintenance and serviceability of each cooling tower. Make-up water to the cooling towers will be measured via flow meter. Cooling tower frame/structure will be epoxy coated steel.

7.4.8.23 Provide energy meters on the main chilled water loop and condenser water loop.

7.4.8.24 Provide energy meters on the heat recovery chiller condenser loop to measure the heat recovered from the chillers.

7.4.8.25 Chilled water plant is to operate on variable primary flow principles governed by Facility demands. Chillers are to be selected to operate on variable flows through both the evaporator and condenser. Minimum flow limits to be provided by chiller and cooling tower manufacturer.

7.4.8.26 For winter operation of chillers, sufficient cooling tower capacity in an N+1 arrangement will be winterized, and heat traced. The winterized tower section will be easily isolated from the rest of the array when seasonal equipment is drained.

7.4.8.27 Provide automatic isolation valves on the inlet side of each chiller and cooling tower.

7.4.8.28 Provide coalescing type dirt and air separator on chilled water supply main leaving the central plant. Provide side stream cartridge filters, chemical pot feeders, and corrosion coupons for all chilled water systems.

7.4.8.29 Provide water treatment packages for the condenser water systems. Provide treatment equipment for introducing corrosion inhibitors and biocides into the cooling towers. Provide packaged high efficiency solids separators.

7.4.8.30 Modular expansion tanks are to be provided in accordance with designed system volumes. Make-up water to the chilled water system will be measured via flow meter.

7.4.9 Space Heating and Cooling

7.4.9.1 Heating, ventilation, and air conditioning (HVAC) system will provide a comfortable internal environment for the patients and staff and will meet the required environmental conditions for the equipment.

7.4.9.2 Provide all necessary space, ventilation, and process heating for the Facility.

7.4.9.3 Space heating and cooling capacity must be sufficient to meet the required indoor design temperature and relative humidity.

7.4.9.4 Space heating capacity must be sufficient to meet the required indoor design temperatures while using the January 1% outside design temperature for the nearest City as outlined in the British Columbia Building Code.

7.4.9.5 Space cooling capacity must be sufficient to meet the required indoor design while using the July 2.5% outside design wet and dry bulb temperatures for the nearest City as outlined in the 2050 cooling requirements (refer to definitions in Section 1.1 for 2050 & 2080 cooling requirements).

7.4.9.6 Connect sources of heating to electrical power in accordance with CSA Z32.2.

7.4.10 Hydronic Pumps

7.4.10.1 Design pumps to:

7.4.10.1(1) Operate at the system fluid temperature without vapour binding and cavitation;

7.4.10.1(2) Be non- overloading in parallel or individual operation;

7.4.10.1(3) Operate within 25% of the midpoint of published maximum efficiency curve;

7.4.10.1(4) Incorporate a variable frequency drive (VFD) for pumps with 3HP or higher motors for energy savings under part-load conditions and to allow for balancing and adjustments in the future.

7.4.10.2 Ensure pump construction and installation will permit complete pump servicing without disrupting piping or motor connections.

7.4.11 Hydronic Piping

7.4.11.1 Insulate all piping, equipment, and accessories in accordance with all applicable standards as a minimum.

7.4.11.2 Provide seismic mitigation and Facility separation devices for all piping that crosses Facilities and/or utility corridors.

7.4.11.3 Provide adequate expansion compensation for heating piping. Locate anchors and guides, design expansion compensation loops and select expansion compensation devices based on a thorough review of piping layout and engineered piping stress analysis.

7.4.12 Cooling Systems

7.4.12.1 Ensure that no air within the air conditioning system, outside of the central air handling equipment, drops below its dew point temperature.

7.4.12.2 All refrigerants used will be environment friendly and will comply with the project's LEED rating target and all current Standards.

7.4.12.3 Once through cooling (single-pass cooling using domestic water, for example) is not permitted for any process or service within the Facility.

7.4.12.4 Provide continuously available chilled water or condenser water systems for all areas containing specialized medical equipment, Communication Rooms, elevator machines, server systems and electrical rooms for managing continuous internal heat gains.

7.4.12.5 Cooling and heat rejection for these critical loads may be served by the central cooling plant provided the system incorporates redundancy per CSA Z317.2 requirements and is connected to the Delayed-Vital electrical system.

7.4.12.6 Design HVAC terminal components in conjunction with equipment location in order to mitigate unnecessary heat gain into the space.

7.4.12.7 Provide air-cooled packaged DX systems dedicated to serving Freezer and Cooler located in Food and Nutrition Services department. System(s) serving freezer shall be separate from system serving Cooler. Each system shall have N+1 redundancy, integrated with BMS for monitoring and alarms, connected to emergency power.

7.4.12.8 HVAC terminal components for cooling of Communication Rooms (PER & SER) and electrical rooms will be N+N redundancy.

7.4.13 Hydronic Piping

7.4.13.1 In case pipes containing pressurized fluid are to be used, provide measures to minimize risk of leakage and provide leak detector system. Leak detection will communicate with the BMS.

7.4.13.2 Interconnect the risers on each floor with isolation valves. Arrange the piping and provide sufficient isolation valves on risers and interconnecting pipes such that individual department may be isolated to facilitate repair or future renovations, while not impacting operation of occupied areas.

7.4.13.3 Install piping in an orderly manner (aligned with structural elements and at right angles). Slope piping to permit complete drainage of the system.

7.4.13.4 Install equipment and piping with adequate service space, access panels and the ability to remove equipment for servicing or replacement.

7.4.13.5 Locate services that require access for regular maintenance above non- critical spaces, such as corridors, to minimize or eliminate disruptions to the delivery of health care services. Coordinate placement of ceiling devices to ensure sufficient access to ceiling spaces.

7.4.13.6 Equip all high points in piping with air removal devices such as air collection chambers and air vents. Do not locate automatic air vents above the ceilings of occupied spaces.

7.4.13.7 Provide isolation valves, unions, and bypass piping to allow for equipment isolation and removal without unduly affecting the system operation or major drain down.

7.4.13.8 Provide balancing valves, flow-measuring devices, and temperature and pressure sensors throughout the system to facilitate system balancing.

7.4.13.9 Ensure all piping is accessible. No under-slab piping is permitted, with the exception of glycol piping as noted above.

7.4.13.10 Room return air in specific spaces indicated in CSA Z317.2 will not recirculate within the terminal units serving the space.

7.4.13.11 Provide perimeter radiant heating for all perimeter zones.

7.4.13.12 Any ventilation and/or radiant heating sources serving the patient rooms will be connected to the Facility's emergency power supply.

7.4.13.13 Insulate all chilled water and condenser water piping, equipment, and accessories in accordance with the most stringent of applicable Standards, including BCICA and ASHRAE standards. Provide a canvas or PVC service jacket on all exposed piping inside; exterior piping will have aluminum jacketing.

7.4.13.14 Chilled water, heating water, and condenser water piping will be Schedule 40 Steel or Type L copper. Copper piping for run outs and coil connections will be soldered with lead free or 95/5 solder.

7.4.13.15 Utilize screw fittings for 50mm piping and smaller and welded fittings for 65mm piping and larger for steel piping. If used selectively, grooved fittings are acceptable, given prior approval from the Authority.

7.4.13.16 CFC and HCFC based refrigerants will not be used in the refrigeration equipment.

7.4.14 Ventilation

7.4.14.1 Provide all necessary ventilation for all spaces as required by CSA Z317.2. Submit calculations with each design submittal showing Air Change Rates proposed for each space in the hospital. Include SMACNA recommended duct leakage rates for sizing air systems.

7.4.14.2 Design the air handling equipment for the Facility to provide 100% outdoor air capability at all times of the year per the requirements of CSA Z317.2 to provide Internal Catastrophic Event Management. Requirement for 100% outside air includes operation during fire mode smoke control sequences and any internal catastrophic event (outbreak etc.).

7.4.14.3 Design the air handling equipment for the Facility to provide 100% recirculation air capability at all times of the year per the requirements of CSA Z317.2 to provide External Catastrophic Event Management. Requirement for 100% recirculation air includes operation during fire mode smoke control sequences and any external catastrophic event (forest fire, etc.).

7.4.14.4 The clinical support spaces, administration spaces, meeting spaces, and central plant ventilation systems may be designed to ASHRAE Standard 170 for Health Care Facilities provided these spaces are not served from a common ventilation system serving the Facility.

7.4.14.5 HVAC systems that maintain appropriate pressure relationships between various areas of the Facility and provide necessary outdoor air quantity, air filtration, cleansing and exhaust to control the transmission of infection.

7.4.14.6 Provide air handling units with sectional heating and cooling coils and manual isolation valves that will enable isolation and repairs to the damaged sections of coils without stoppage of the system. Provide air handling units with freeze proof coils. Air handling units will incorporate preheat coils using inhibited propylene glycol as the heating medium.

7.4.14.7 Design and construct the Facility to comply with the requirements of CSA Z317.2 (Special requirements for heating, ventilation & air conditioning systems in health care facilities) for a Class A-1 HCF (Health Care Facility).

7.4.14.8 Provide ventilation to the workshop as follows:

7.4.14.8(1) A local wall mounted dust collector unit, 110v fan suction with bag collector and hose connection accessories for woodworking activities.

7.4.14.8(2) For acetylene torch cutting, brazing, soldering and welding, provide a fume extraction system with a single location articulating capture arm, with a minimum of 14" diameter metal hood and double articulation.

7.4.15 HVAC systems for Communications rooms including Entrance Facility Room, Main Electrical Room and Tech Room will condition the spaces to meet temperature and relative humidity requirements as per the most restrictive of ASHRAE 2015 Environmental Guidelines for Datacom Equipment, TIA-942-A-2012

7.4.15.1 Temperature: 18-27°C dry bulb;

7.4.15.2 Maximum relative humidity: 60%;

7.4.15.3 Maximum dew point: 15°C; and

7.4.15.4 Maximum rate of temperature change: 5°C per hour.

7.4.15.5 The Design-Builder will provide cooling for equipment and systems required in 7.6 Communications (Division 27). This includes cooling loads in Communications rooms, Entrance Facility Room, the Main Electrical Room, etc. as required for the Design-Builders proposed design.

7.4.15.6 Provide air filtration in accordance with all applicable standards. Provide a minimum filtration level of MERV 15 on all outdoor air intakes with the exception of generator radiator cooling air intakes. The use of Dynamic Electronic or Particle Control Technology filtration is acceptable. Ensure all HVAC systems will perform such that any indoor contaminants are maintained at less than 50% of their occupational exposure limits (OELs).

7.4.15.7 Provide dedicated supply air with HEPA filters for spaces as required by applicable standards.

7.4.15.8 Provide the ventilation system and all components in accordance with all applicable standards.

7.4.15.9 Provide fans with Variable Frequency Drives (VFDs) for energy savings under part-load conditions. Motor loads of 100 hp or greater will be provided with reduced voltage motor starter acceptable to BC Hydro. Provide shaft grounding rings on all motors with VFDs.

7.4.15.10 Provide a heat recovery system on all Facility exhaust and relief air systems (other than highly contaminated exhaust). Air to air heat recovery is not permissible. Chilled water heat extraction coils are to be selected for minimum 15°F water side temperature differential to minimize pumping power. Each heat recovery coil to be selected to extract both sensible and latent heat to 48°F WB. Heat recovery systems will include a bypass for heat recovery coils and air filters for use when there is no demand for heat to avoid wasting fan power.

7.4.15.11 Provide factory-fabricated air handling equipment to ensure the highest construction standard. The controls contractor will provide the associated monitoring and controls for connection to the BMS.

7.4.15.12 Air handling units will have double-walled construction with minimum 50mm thick insulation, painted steel exterior; stainless steel or painted aluminum interior.

7.4.15.13 Air handling unit floors will be reinforced minimum 3mm aluminum or 14-gauge stainless steel checker plate with continuously welded seams. Base will be structural steel minimum 150mm C-channel around perimeter.

7.4.15.14 Interior surfaces of air handling units will be light in colour, washable, smooth, non-porous and free of obstructions which may impede airflow or the ability to thoroughly clean the unit.

7.4.15.15 There will be no standing water in air handling units. Install leak-proof drain pans with continuously welded seams and corners. Drain pans will be 16-gauge type 304 stainless steel, double sloped to drain. Drain size minimum 32mm (1-1/4”).

7.4.15.16 The air handling unit will have a 40mm perimeter collar around the entire unit and around each floor opening to ensure the unit is internally watertight. Each section of the air handling unit will have a capped and threaded drain connection.

7.4.15.17 All air handling units will be provided with a blank filter rack that can take either of the following future filters:

7.4.15.17(1) 100 mm MERV 13 pre-filter for use during forest fire situation to help filter smoke and ash. MERV 13 filter pressure drop will not exceed 125Pa at 2 m/s.

7.4.15.17(2) 100 mm HEPA filter rack. HEPA filter pressure drop will not exceed 249Pa at 2 m/s.

7.4.15.18 Provide an exhaust air system suitable for the laboratory requirements and any other special venting requirements as per CSA standards. These systems will be interlocked with the supply air systems. If system serves more than one piece of equipment, provide N+1 redundancy in fans.

7.4.15.19 Laboratory ventilation systems will supply sufficient make-up air for exhaust systems to maintain proper pressurization throughout the Facility.

7.4.15.20 Isolation rooms will be designed to function as typical patient rooms when not in use as Isolation.

7.4.15.21 All spaces designated as infectious control or isolation will be connected to emergency power for ventilation and pressurization control.

7.4.15.22 Supply-air handling unit may serve areas of different use provide that the requirements of the most critical occupancy as specified in CSA Z317.2:19 section 6.5.2 are satisfied.

7.4.15.23 Provide HEPA systems from all Type I spaces, to prevent risk of recirculation of the exhausted air to this or any nearby Facility. These spaces include isolation and decontamination rooms even if CSA requirements are less stringent.

7.4.15.24 Ensure the ventilation systems are designed to accommodate any additional ventilation supply needed for commercial spaces to maintain proper pressurization throughout the Facility.

7.4.15.25 Ensure the ventilation of residential dryers and range hoods exhaust air is ducted to the exterior. If the ducting exceeds the dryer's maximum allowable distance, provide an interlocked booster fan.

7.4.15.26 Provide all ventilation for the Food Services department including NFPA exhaust hoods for the cooking equipment and condensate canopies over the dishwashers.

7.4.15.27 Provide ventilation systems for central plant rooms including:

7.4.15.27(1)a. Boiler room combustion air and room ventilation system;

7.4.15.27(1)b. Chiller room ventilation and exhaust system;

7.4.15.27(1)c. Control room and staff area heating, cooling, and ventilation;

7.4.15.27(1)d. Water entry room ventilation; and

7.4.15.27(1)e. Electrical room ventilation and cooling.

7.4.15.28 Provide a ventilation system for the Ambulance Garage as follows:

7.4.15.28(1) Heating will be provided by direct vent natural gas radiant heaters.

7.4.15.28(2) Each door to the exterior of the Garage will have an air curtain.

7.4.15.28(3) A continuous general exhaust ventilation system will be provided to exhaust air from the Garage to the outdoors at a rate of 2.5 l/s per m2.

7.4.15.28(4) An intermittent exhaust ventilation system will be provided to exhaust air from the Garage to the outdoors at a rate of ten air changes per hour. Air will be exhausted from both high and low level at the back of the Garage through a fan to the outside.

7.4.15.28(5) Provide a motorized damper where the air is exhausted.

7.4.15.28(6) Provide means of a variable air heated make-up air volume, to offset air exhausted by the fans. Provide an offset between supply and exhaust to keep Garage negatively pressurized relative to the rest of the Facility.

7.4.15.28(7) The intermittent exhaust fan and dampers will be controlled by the BMS through:

7.4.15.28(8) Door switches for each overhead door, to operate the fan system for a period of six minutes;

7.4.15.28(9) CO, NOx, and propane gas detection sensors;

7.4.15.28(10) A humidistat, set to switch at a maximum of 55% RH; and

7.4.15.28(11) Gas detection sensors will activate the intermittent fan at: CO sensor – 25 ppm, NOx sensor – 1ppm.

7.4.15.29 Provide ventilation for smudging as follows:

7.4.15.29(1) For rooms where smudging is likely to occur on a more regular basis including the Spiritual Care, provide a dedicated exhaust system for use during the smudge and for a period of time after the smudge has ended to ensure that the room has been purged of smoke. When these rooms are being used for smudging, the air will not be returned to the central system.

7.4.15.29(2) When the rooms are not being used for smudging, the air supplied may be returned. The rooms will be negatively pressurized relative to the rest of the Facility.

7.4.15.29(3) Not used.

7.4.15.29(4) See section 7.4.14.8

7.4.15.30 Performance Criteria

7.4.15.30(1) Allow for the installation and removal of major HVAC equipment such as fans without disrupting Facility operations.

7.4.15.30(2) Locate fans, common filters (e.g. HEPA), and other equipment in the central mechanical rooms. Allow for adequate clearance for service access. Do not place this equipment in confined spaces and avoid small doors and hatch access.

7.4.15.30(3) Provide bag in – bag out HEPA filters with bubble tight dampers as per CSA Z317.2 and 100% redundancy for exhaust systems serving Airborne Isolation Rooms and their associated washrooms. Filter system will be designed so that filters can be replaced without impacting the operation of the rooms served by the system.

7.4.15.30(4) All equipment for supply air, return air shall be located inside the building. All supply air, return air, and general exhaust air systems will be accessible for routine maintenance without exposure to the elements/outdoors.

7.4.15.30(5) Exhaust systems will be designed to meet the requirements of CSA Z317.2 Section 6.13 Exhaust systems. This includes the location of equipment for dedicated exhaust systems that are transporting potentially contaminated air streams (Morgue, Bio-Safety cabinets, Decontamination etc.). Discharge and Exhaust fans for these airflow will be located exterior to the Facility and equipment will be designed and constructed to withstand the exposure to outdoor conditions.

7.4.15.30(6) Make allowances in supply, return and exhaust duct sizing and equipment selections to provide flexibility for future changes in spaces. Allow for a future increase in capacity of duct mains and the capability of the air handling units in accordance with the requirements set out in Section 5 Mechanical Systems Design Principles.

7.4.15.30(7) Provide fresh air intakes, cooling coil drain pans, air handling units, ductwork, and all other interconnected components to prevent moisture or contaminants from collecting within the system. Provide sufficient access panels to allow for inspection and cleaning. Do not use duct mounted humidifiers.

7.4.15.30(8) Locate fresh air intakes so as not to entrain contaminants from outdoor sources, including existing exhaust points of adjacent buildings, Facility exhaust points, or parking areas. Locate all intakes in areas that are not accessible by the public and are not near exhaust air outlets. Take into account the location of the emergency generator exhaust and ensure that fumes from the generator exhaust are not introduced into the Facility or adjacent buildings' fresh air intakes.

7.4.15.30(9) Ensure all supply, return, and exhaust air is fully ducted to the space being served. Ceiling area will not be used as return air plenums. Door grilles are only permitted for non-medical storage and service rooms without a Fire-Rating. Utilizing door undercuts or door leakage to transfer air for rooms with greater than 45 l/s (95 cfm) air change requirements or located within a fire separation are not permitted.

7.4.15.30(10) Locate services that require access for regular maintenance above non- critical spaces so that there is minimal disruption to the delivery of health care services. VAV boxes serving individual inpatient rooms located on the patient care floors in the Facility must be located in the ceiling of the corridor.

7.4.15.30(11) Insulate all ductwork to all applicable standards as a minimum. Insulate all exposed to outside air exhaust ducts from connection to the exhaust equipment up to termination point on roof or outside walls. Provide canvas service jacket on all exposed insulation inside and up to 3 metres above finished floor in mechanical rooms.

7.4.15.30(12) Provide seismic mitigation and building separation devices for all ductwork that crosses buildings and/or utility corridors.

7.4.15.30(13) No in-slab or under slab-on-grade ductwork is permitted. 7.3.9.2(14) Refer to Appendix 1A Clinical Specifications for a description of the different types of isolation rooms and their locations. Provide the following:

7.4.15.30(13)a. For all infection isolation rooms (negatively pressurized), locate supply air diffusers and exhaust air grilles to reduce the exposure of uninfected occupants in the space. Utilize directional and dilution airflow principles: supply air from high- level non-aspirating diffusers located away from the patient bed, and exhaust air from low-level grilles located next to the patient's head. Provide differential pressure monitors at isolation rooms to monitor and to ensure proper pressurization has been achieved as required. Incorporate door contact switches for all differential pressure monitors to prevent nuisance alarming;

7.4.15.30(13)b. For isolation rooms with an ante room, provide the ante room with both supply and exhaust air. Differential pressure monitors will measure pressure between the isolation room and adjacent corridor, between the isolation room and the ante room, and between the ante room and adjacent corridor;

7.4.15.30(14) Ensure all ductwork that provides humid air is constructed of welded stainless steel of a suitable alloy or of a material equally resilient to corrosion. Ensure all ducts are sloped to drain points and are accessible for inspection and cleaning.

7.4.16 Exhaust Systems

7.4.16.1 Design exhaust air discharges to ensure that there is no cross contamination with outdoor air intakes and operable windows on the Site. Refer to dispersion study requirement in submittals.

7.4.16.2 Provide exhaust fans and locate them at the end of the exhaust ductwork systems. Ensure that the fans will be readily serviceable and are separated from spaces that house other mechanical equipment.

7.4.16.3 Provide welded pressure ductwork after isolation and other contaminated exhaust fans to the Facility exterior.

7.4.16.4 Integrate control of the exhaust systems with the ventilation supply air systems for spaces with differential pressure requirements from adjacent spaces.

7.4.16.5 Provide exhaust air systems suitable for special venting requirements.

7.4.16.6 Interlock these systems with associated supply air systems.

7.4.16.7 Provide commercial-grade NFPA-96 exhaust hood systems where commercial cooking operations will occur. Interlock the hood(s) with a make-up air system to ensure proper pressurization within the Facility is maintained.

7.4.16.8 Ensure exhaust termination points are located so flue gases are not entrained in air intakes, operable windows or any other building opening for the Facility or adjacent buildings.

7.4.16.9 Provide refrigerant detection and exhaust system.

7.4.16.10 Make provisions in the Facility exterior for connections of portable negative pressurization ventilation units that are used during future Facility renovations. These connection points will be available for use without adversely affecting the Facility envelope. Provide four (4) connection points on each floor at the Facility exterior (north, east, south, west) so all internal areas can be served by negative pressurization ventilation units.

7.4.16.11 In addition to the cooling requirements called for in previous clauses, provide exhaust for elevator machine rooms and/or elevator shafts.

7.4.16.12 Provide local exhaust within vicinity of all sanitary sumps within the Facility.

7.4.16.13 Performance Criteria

7.4.16.13(1) Isolation rooms and their associated washrooms and the Decontamination unit will be provided with dedicated exhaust systems with 100% redundancy. HEPA filters will be provided in the Isolation room exhaust ductwork in readily accessible locations for servicing.

7.4.16.13(2) Biosafety cabinets, laminar flow cabinets, fume hoods, chemical storage cabinets, grossing tables/specimen mounting tables and downdraft tables will be provided with dedicated exhaust systems that are appropriate for their CSA class and type. Provide canopies connected to the general exhaust system for ovens, autoclaves and other heat emitting equipment belonging to the Authority. Where multiple cabinets are tied into a common system, a 100% redundant central exhaust system will be provided. Specimen mounting tables and grossing tables will be equipped with counter top level exhaust. Provide a close capture exhaust arm for the biomedical workbench. Ensure that all equipment, rough in for equipment and support systems have been accounted for and provided. Allow for ducting, commissioning, testing, and balancing the exhaust from all biosafety cabinets, fume hoods, chemical storage cabinets, grossing workstations and laminar flow cabinets. Include face velocity, containment and any other testing for fume hoods as required by WorkSafe BC.

7.4.16.13(3) Provide vents to outdoors for flammable storage cabinets. Installation to meet applicable fire code and WorkSafe BC requirements.

7.4.16.13(4) Fume hoods and other smoke/fume generating process booths/space will be provided with dedicated exhaust systems that are corrosion/ chemical resistant to the exhaust media.

7.4.16.13(5) Provide dedicated exhaust systems as required for medical equipment.

7.4.16.13(6) Do not use portable systems.

7.4.16.13(7) Ensure all ductwork that exhausts humid air at or near saturation is constructed of welded stainless steel of a suitable alloy or of a material equally resilient to corrosion. Ensure all ducts are sloped to drain points and are accessible for inspection and cleaning. Provide all recovery coils with drain pans and properly sloped drains.

7.4.17 Metering Requirements for Energy Measurement and Verification

7.4.17.1 Refer to Section 7.4 Integrated Automation (Division 25) and Schedule 9 – Energy for additional requirements to this section.

7.4.17.2 Provide meters on all services connecting to the Facility from an external infrastructure including natural gas service, domestic water and electrical service.

7.4.17.3 Provide all required meters, sensors, and trend logging equipment at end uses within the Facility to meet the energy monitoring requirements set out in Schedule 9 Energy.

7.4.17.4 Connect all meters to the BMS to monitor, record, report and analyze energy consumption. Coordinate electrical metering and the energy management system with the applicable requirements of in this Schedule.

7.4.17.5 Design metering intervals to be fifteen minutes or less with all points trended and data logged for a minimum of 14 months for all points associated with LEED or energy model verification.

7.4.18 Sound Attenuation and Vibration Isolation

7.4.18.1 Design all mechanical systems to prevent sound and vibration transmission between spaces, to prevent transmission from mechanical equipment to the spaces, and to minimize sound and vibration transmission to the outside of the Facility. Provide sound attenuation to limit sound levels in accordance with SOR required Acoustics and Noise Control Measures.

7.4.18.2 All flexible rubber connections and isolators are to have been manufactured no more than one year prior to installation to ensure maximum service life. Date of manufacture is to be clearly shown on each device.

7.4.18.3 Systems will be provided with noise attenuation screening if the equipment or their exterior openings are located facing and within 200 m of residential areas.

7.4.18.4 Provide vibration isolation devices on all equipment with rotating components.

7.4.18.5 Ensure all suspended equipment utilize spring isolators designed for the weight and vibration characteristics of the equipment.

7.4.18.6 Provide flexible connections to isolate mechanical equipment sound and vibration from ducting, piping, and electrical wiring systems.

7.4.18.7 Ensure duct silencers meet or exceed the requirements of the ductwork for cleanliness and inspection and comply with CSA standards for infection control.

7.4.18.8 Utilize fibre free internal insulation.

7.4.18.9 Meeting rooms, telehealth rooms, conference rooms, video conference rooms and any rooms used for similar purposes will:

7.4.18.9(1) be designed for privacy and to prevent exterior sound from interfering with the interior sound;

7.4.18.9(2) have an ambient sound level of NC-30 or less;

7.4.18.9(3) include acoustic tiles with an absorption rate of NRC .9 or greater;

7.4.18.9(4) use acoustic absorption panels on walls;

7.4.18.9(5) have an echo or reverberation time between 0.5 seconds;

7.4.18.9(6) have walls made with ½" QuietRock gypsum;

7.4.18.9(7) have walls are insulated with noise insulating wool;

7.4.18.9(8) have doors with a weighted sound reduction rating of 35dB; and

7.4.18.9(9) ensure no reflective wall decorations are used avoid echoing or reflections

7.4.18.10 Refer to Section 5.7 Structural Design for structural vibration limits.

7.4.19 Variable Frequency Drives

7.4.19.1 Provide VFDs complete with harmonic filters for equipment and applications designated in all sections of this Schedule.

7.4.19.2 All VFDs and ancillary components will be procured by one supplier in order to assure an integrated system and one point of contact for service.

7.4.19.3 Manufacturer will have 24/7 response on, and overnight availability and stock of the standard drives, modification kits, and spare parts for the power input range of drives used in this Facility.

7.4.19.4 Provide a minimum 3-year warranty on all VFDs from date of Project substantial completion. Warranty will include all parts and labour.

7.4.19.5 Each VFD, with all standard and optional features, will be factory packaged in a ULC rated and listed enclosure most appropriate for each application and location, completely assembled and tested by the manufacturer in an ISO9001 facility. VFD assembly, associated options and peripherals will comply with the applicable requirements of the latest standards of ANSI, IEEE, NEMA, and the Canadian Electrical Code.

7.4.19.6 The VFD will meet product standard EN 61800-3 for the First Environment restricted level (Category C2). Base drives that only meet the Second Environment (Category C3, C4) will be supplied with filters to bring the drive in compliance with the First Environment levels.

7.4.19.7 The VFD assembly, including the bypass (if specified), will be seismically certified and label as such. Seismic importance factor of 1.5 rating is required and will based upon actual shake table test data as defined by ICC AC-156.

7.4.19.8 VFDs sized less than 100 HP to be of the 6-pulse Pulse-Width Modulated (PWM) type with a full wave diode bridge converter to convert incoming fixed voltage/frequency to a fixed DC voltage. The PWM strategy will incorporate a microprocessor to handle all logic functions as well as the complex, sine-coded PWM generating algorithms that control output stage switching.

7.4.19.9 The variable frequency drives will convert three-phase, 60 Hz utility power to proportionally variable voltage and frequency, three-phase, AC power using the latest insulated-gate bipolar transistor (IGBT) technology for step less motor speed control of one or more three- phase induction motors. The VFD output waveform to be the PWM or Vector type waveform producing smooth torque at low frequencies and low motor current harmonics.

7.4.19.10 VFDs will be capable of controlling and setup for either variable or constant torque load as follows:

7.4.19.10(1) Variable torque: loads such as centrifugal fans, pumps, and compressors.

7.4.19.10(2) Constant torque: loads such as positive displacement pumps, reciprocating compressors, and screw compressors.

7.4.19.11 VFD will provide full rated output from voltages +/-10% of nominal voltage. Overload rating of the drive will be minimum 110% of its normal duty current rating for 1 minute in every 10 minutes.

7.4.19.12 VFDs will be capable of continuous full load operation under the installed environmental operating conditions.

7.4.19.13 All VFDs will have the same customer interface, including digital display, and keypad regardless of horsepower rating.

7.4.19.14 VFDs will have cooling fans. Fans will be replaceable without requiring VFD removal or removal of circuit boards. VFD cooling fans will cycle via thermal sensing and not operator continuously.

7.4.19.15 Loss-of-load (broken belt / broken coupling) relay output. The drive will be programmable to signal the loss-of-load condition via keypad warning, relay output, and / or over the serial communications bus.

7.4.19.16 If the input reference is lost, the VFD will give the user the option of: (1) stopping and displaying a fault, (2) running at a programmable pre-set speed, (3) hold the VFD speed based on the last good reference received, or (4) cause a warning to be issued, as selected by the user.

7.4.19.17 VFDs will be capable of starting into a coasting load (forward or reverse) up to full speed and accelerate or decelerate to set point without tripping or component damage (flying start).

7.4.19.18 VFDs will have the ability to automatically restart after an over-current, over-voltage, under-voltage, or loss of input signal protective trip. The number of restart attempts, trial time, and time between attempts will be programmable.

7.4.19.19 VFDs will also be capable of DC injection braking that can be employed to stop a freewheeling motor before starting to avoid overvoltage nuisance tripping.

7.4.19.20 VFDs will be capable of automatically extending the ramp down time to keep the drive from tripping on overvoltage caused by regeneration of power by the load.

7.4.19.21 Line Conditioning and Filtering. In addition to the requirements in Division 23 and Division 26:

7.4.19.21(1) Provide internal swinging (non-linear) chokes providing impedance equivalent to 5% to reduce the harmonics to the power line. Linear chokes are not acceptable. 5% impedance may be from dual (positive and negative DC bus) chokes, or 5% swinging AC line chokes. VFDs with only one DC choke will add an AC line choke.

7.4.19.21(2) Provide a coordinated AC transient surge protection system consisting of 4 MOVs (phase to phase and phase to ground), a capacitor clamp, 1600 PIV Diode Bridge and internal chokes. The MOVs will have a minimum 125 joule rating per phase across the diode bridge. VFDs that do not include coordinated AC transient surge protection will include an external TVSS (Transient Voltage Surge Suppressor).

7.4.19.21(3) Provide EMI / RFI filters. VFD assembly to be CE Marked and comply with product standard EN 61800-3 for the First Environment restricted level (Category C2). Second environment (Category C3, C4) is not acceptable. Submit certified test reports with the shop drawing submittal confirming compliance.

7.4.19.21(4) Provide an additional output (load) reactor directly downstream of the inverter, for all applications where the motor wiring downstream of the inverter exceeds 30m.

7.4.19.22 VFDs will automatically reduce applied motor voltage to the motor to optimize energy consumption and reduce audible motor noise. VFDs will have selectable software for optimization of motor noise, energy consumption, and motor speed control.

7.4.19.23 VFD Interface:

7.4.19.23(1) Provide a backlit LCD display. The display will be in complete English words for programming and fault diagnostics (alpha- numeric codes are not acceptable). All VFD faults will be displayed in English words

7.4.19.23(2) The keypad will include Hand-Off-Auto selections and manual speed control.

7.4.19.23(3) The drive will incorporate “bump less transfer” of speed reference when switching between “Hand” and “Auto” modes.

7.4.19.23(4) There will be a built-in time clock in the VFD keypad. The clock will have a battery backup with 10 years minimum life span.

7.4.19.23(5) The clock will date and time stamp faults and record operating parameters at the time of fault. VFD programming will be held in non-volatile memory and is not dependent on battery power

7.4.19.23(6) All applicable operating values will be capable of being displayed in engineering (user) units. Minimum display values will be:

7.4.19.23(6)a. Output Frequency;
7.4.19.23(6)b. Motor Speed (RPM, %, or Engineering units);
7.4.19.23(6)c. Motor Current;
7.4.19.23(6)d. Motor Torque;
7.4.19.23(6)e. Motor Power (kW);
7.4.19.23(6)f. DC Bus Voltage; and
7.4.19.23(6)g. Output Voltage.
7.4.19.23(6)h. Provide a fireman’s override input.

7.4.19.24 Serial Communications. All VFDs will have a TIA-485 (RS-485) port as standard for interface with Facility BACnet IP network. BACnet protocol will be certified with BTL listing. The use of non-certified protocols are not allowed.

7.4.19.24(1) Serial communication minimum capabilities will include: run- stop controls; speed setpoint adjustment; output speed / frequency; current (in amps); percent torque; power (kW); kilowatt hours; operating hours; drive temperature; all diagnostic warming and fault information; monitoring of VFD relay output status, digital input status, and all analogue input and output values; remote VFD fault reset.

7.4.19.24(2) Serial communication minimum capabilities when in bypass mode will include bypass run-stop control; monitoring bypass relay output status and all digital input status; all bypass diagnostic warning and fault information; remote bypass fault reset; control of bypass digital and analogue outputs.

7.4.19.25 VFD Bypass. Bypasses will be furnished and mounted by the manufacturer as required for the application and specified in Division 22, 23, 25 or 26. All VFD with bypass configurations will be ULC listed by the manufacturer as a complete assembly and carry a UL508 label.

7.4.19.25(1) A complete factory wired and tested bypass system consisting of a door interlocked; pad lockable circuit breaker, output contactor, bypass contactor, and fast acting VFD input fuses. UL Listed motor overload protection will be provided in both drive and bypass modes.

7.4.19.25(2) Standalone keypad with LCD display.

7.4.19.25(3) The VFD and bypass package will have a UL listed short circuit current rating (SCCR) of 100,000 Amps and this rating will be indicated on the UL data label.

7.4.19.25(4) Motor protection from single phase power conditions - the bypass system will be able to detect a single-phase input power condition while running in bypass, disengage the motor in a controlled fashion, and give a single-phase input power indication.

7.4.19.25(5) The bypass system will be designed for stand-alone operation and will be completely functional in both Hand and Automatic modes even if the VFD has been removed from the system for repair / replacement. Serial communications will remain functional even with the VFD removed. Bypass systems that do not maintain full functionality with the drive removed are not acceptable.

7.4.19.25(6) Serial communications – the bypass will be capable of being monitored and / or controlled via serial communications that match the VSD

7.4.19.25(7) The bypass serial communications will allow control of the drive/bypass (system) digital outputs via the serial interface. This control will be independent of any bypass function or operating state. All system analogue and digital I/O will be capable of being monitored by the BMS system.

7.4.19.25(8) Provide manual or automatic transfer to bypass. Drive faults for automatic transfer to bypass mode will be user selectable for the following drive fault conditions:

7.4.19.25(8)a. Over current;

7.4.19.25(8)b. Over voltage;

7.4.19.25(8)c. Under voltage; and

7.4.19.25(8)d. Loss of analogue input.

7.4.19.25(9) The bypass will include the ability to select the operating mode of the system (VFD/Bypass) from either the bypass keypad or digital input.

7.4.19.25(10) Provide a separate terminal strip for connection of freeze, fire, smoke contacts, and external start command. All external safety interlocks will remain fully functional whether the system is in VFD or Bypass mode. The remote start/stop contact will operate in VFD and bypass modes. The terminal strip will allow for independent connection of up to four (4) unique safety inputs.

7.4.19.25(11) Fireman's Override Mode: Programmable override input which will allow the user to configure the unit to acknowledge some digital inputs, all digital inputs, ignore digital inputs or any combination of the above to suit the local authority having jurisdiction (AHJ). The Override action may be initiated via the serial communications link.

7.4.19.26 Harmonics Testing. Design-Builder is to demonstrate a computerized harmonics analysis of the facility electrical system based on the final single line diagram. Analysis will illustrate the effect of all VFDs (including pump VFDs) on system harmonics. Design-Builder is to provide input line reactors and/or line filters required to reduce the total harmonic distortion (THD) at the point of common coupling or at each VFD input where the analysis has shown that the incremental effect of the addition of the VFDs would cause the THD to exceed these values as per IEEE 519 latest edition standard.

7.4.20 Testing, Adjusting, Balancing (TAB) and Commissioning (Cx)

7.4.20.1 Without limiting the Design-Builder's commissioning obligations of the Project Agreement, the Design-Builder will:

7.4.20.1(1) perform TAB & Cx of all mechanical equipment and systems.

7.4.20.1(2) demonstrate to the Authority that the mechanical and electrical systems are substantially operational by testing, adjusting, balancing, and commissioning the systems. Demonstration to the Authority will include redundancy in the case of equipment failure and spare capacity.

7.4.20.1(3) retain an Independent Commissioning Agent to conduct the Facility commissioning of mechanical systems. Balancing work to be performed under the supervision of the Independent Commissioning Agent. Integrate the TAB & commissioning into the project Construction and start-up schedules. Configure the TAB & commissioning plan so it will support a phased occupancy of the Facility, if required by Construction conditions and approved by the Authority.

7.4.20.1(4) utilize a quality assurance system throughout the TAB & Cx process to ensure that TAB & Cx has been performed to all equipment and systems requiring TAB & Cx. Demonstrate the quality assurance system to the Authority prior to beginning TAB & Cx;

7.4.20.1(5) ensure any construction or installation errors are identified and remedied prior to the start of Cx functional testing;

7.4.20.1(6) perform follow-up TAB & Cx services during each season over the first year of the Facility's operation starting from Substantial Completion;

7.4.20.1(7) make all TAB & Cx reports available to the Authority. The reports will identify how much additional capacity and redundancy is available for in all systems, as required by Section 5.10 Mechanical Systems Design Principles; and

7.4.20.1(8) independent Commissioning Agent to complete records of all TAB and Cx data and submit one copy to Independent Commissioning Authority for record purposes and retention by the Authority.

7.5 Integrated Automation (Division 25)

7.5.1 Overview

7.5.1.1 Principles, Guidelines and Requirements

7.5.1.1(1) Design-Builder will provide an integration and automation framework to converge all base-building systems and select equipment into an open, interoperable software platform for centralized command and control.

7.5.1.1(2) The software platform will employ object-oriented technology for representation of all data and control devices within the FM Management System.

7.5.1.1(3) All components and controllers supplied will be true “peer-to-peer” communicating devices. Components or controllers requiring “polling” by a host to pass data will not be acceptable.

7.5.1.1(4) All networked devices for systems identified as integrating to the FM Management System will connect to the Authority Network. There will be no silo vendor networks/switches permitted except as approved by the Authority through the Review Procedure.

7.5.1.1(5) Software for all Facility systems will reside on Authority provided FM servers and computers. All Facility software applications will be required to operate within a virtualized server environment. There will be no silo vendor servers and/or computers except as approved by the Authority through the Review Procedure.

7.5.1.1(6) Adherence of all Facility systems to industry standard protocol ANSI / ASHRAE STD 135-2016 BACnet/IP is required to assure protocol and data object interoperability between all system components. Minimum BACnet protocol revision compliance is Level 4 or greater, with the ability to support data read and write functionality.

7.5.1.1(7) All devices to use BACnet\IP and physical connection will be via Ethernet. If BACnet\IP is not available for a device connection, other protocols may be used on a case by case basis if they can seamlessly integrate into the FM Management.

7.5.1.1(8) All control point naming and tagging conventions will be standardized using the ASHRAE 223P (Haystack) standard.

7.5.1.1(9) All Facility systems will be designed to operate independently, such that if they lose server connectivity they continue to function without loss of service.

7.5.1.1(10) Design-Builder will provide a virtualized environment for the FM Management System simulating a facility of similar size to the Facility. This virtualized environment will simulate all systems contained in Division 25 and be used to train Authority user groups on the programming and use of the FM Management System by a system expert provided by Design-Builder. Design-Builder will make this training service available to the Authority at least twelve months prior to Substantial Completion.

7.5.2 FM Management System

7.5.2.1 Basic Requirements

7.5.2.1(1) System Overview

7.5.2.1(1)a. The FM Management System will consist of an Integrated Building Management Platform (IBMP) software, which is composed of a Folio Database and Analytics Platform.

7.5.2.1(2) The IBMP will be integrated to the Mechanical BMS to pull point data and Facility alarm information from the BMS.

7.5.2.1(2)a. The IBMP will be integrated to selected electrical and other equipment systems to pull point data and Facility alarm information from these systems.

7.5.2.1(3) Applicable Area

7.5.2.1(3)a. Applies to the Facility.

7.5.2.1(4) System Responsibilities

7.5.2.1(4)a. Authority will:

7.5.2.1(4)a.1 Provide design feedback to Design-Builder.

7.5.2.1(4)b. Design-Builder will:

7.5.2.1(4)b.1 Select the system as determined with the Authority;

7.5.2.1(4)b.2 Design, supply, install and commission all system infrastructure;

7.5.2.1(4)b.3 Design, supply, install and commission all system equipment;

7.5.2.1(4)b.4 Design, supply, install and commission all system software;

7.5.2.1(4)b.5 Train the Authority's team on the use of the system; and

7.5.2.1(4)b.6 Integrate the system to the following equipment and sub-systems:

7.5.2.1(4)b.7 The BMS;

7.5.2.1(4)b.8 Electrical systems, including:

.7.5.2.1.4.b.8.1 Generators;

.7.5.2.1.4.b.8.2 Lighting controls;

.7.5.2.1.4.b.8.3 Load management system;

.7.5.2.1.4.b.8.4 Metering;

.7.5.2.1.4.b.8.5 Switchgear;

.7.5.2.1.4.b.8.6 UPS;

.7.5.2.1.4.b.8.7 Fire Alarm System; and

.7.5.2.1.4.b.8.8 Clock System.

7.5.2.2 Performance Criteria

7.5.2.2(1) Integrated Building Management Platform (IBMP)

7.5.2.2(1)a. Requirements of the IBMP include analyzing data produced by energy and equipment systems in order to identify faults, trends, anomalies and opportunities for improved performance and reduced energy use in the operation of Facility mechanical, electrical, and equipment systems.

7.5.2.2(1)b. The IBMP will utilize a database technology designed for the efficient storage and analysis of large volumes of time series data. Time stamps will support second resolution and be synchronized to the wireless clock system time. The software will not employ a relational database structure but will instead use tagging to model and describe data and will support the use of the open source data modelling/tagging standards developed by Project-Haystack (ASHRAE 223P). In addition to supporting all Project-Haystack tags, the system will support the creation of custom tags as required by the Authority.

7.5.2.2(1)c. Provide a folio database within the IBMP that organizes data into a three-tier hierarchy:

7.5.2.2(1)c.1 Tier 1: Projects are the top-level unit of organization used to group records together (typically corresponds to a real-life project). Projects encapsulate a flat list of records, there are no pre-defined tree structures or tables in folio.

7.5.2.2(1)c.2 Tier 2: Records are the basic unit of data modelling. Records are essentially associative arrays defined by a flat map of tags.

7.5.2.2(1)c.3 Tier 3: Tags are the leaf level of the model. A tag is a name/value pair.

7.5.2.2(1)d. Design-Builder will use name and tagging conventions developed by Project Haystack to provide a consistent, standardized methodology for naming and describing data points associated with the networked devices and Integrated Automation Topology for this Project. This includes the building automation systems, equipment systems, energy metering systems, other smart devices including mobile assets, and associated descriptive information known as metadata.

7.5.2.2(1)e. The IBMP is to provide verification that energy optimization measures are operating as expected through the analysis of energy usage at the point of use, identification of faults showing where control sequences are not functioning as prescribed, and identification of opportunities for improved performance in the operation of Facility systems.

7.5.2.2(1)f. In consultation with the Authority, Design-Builder will create energy optimization measures and analytical rules to verify the sequence of operations as specified for each Facility system for use during commissioning and on-going Facility operations.

7.5.2.2(1)g. The analytic software application will operate on the latest versions of Microsoft Windows, Linux and Apple OSX operating systems available at Substantial Completion.

7.5.2.2(1)h. The IBMP will accept and normalize data from a variety of sources via connectors for BACnet\IP, oBIX Modbus TCP, Sedona, OPC, MQTT and the web services protocol defined by Project-Haystack. It will also support data access via SQL compatible databases, CSV format files, XML format files, web services, JSON, and other electronic data interchange techniques. Once data has been imported, the software will provide a unified data format to enable analytics algorithms to identify patterns across the different data sets independent of original format.

7.5.2.2(1)i. The IBMP will provide open, REST-based APIs to enable integration with third party software applications. The open APIs will enable data to be entered/imported into the database, exported from the database, posting of analytic queries from external applications and output of analytic results to external applications, and integration with third party software applications such as maintenance management and work order processing. APIs will be fully documented and available as part of the standard product. All data and analytic results will be available via the REST API.

7.5.2.2(1)j. The IBMP will be able to be deployed either locally in the Facility (on-premise), or on cloud based software. Deployment will not be limited to a SaaS (Software as a Service) deployment model. Cloud-based operation will be supported on Microsoft Azure and Amazon Web Services as a minimum.

7.5.2.2(1)k. The IBMP will include a built in subscription to a worldwide weather service providing weather data for all major metropolitan areas. Weather service will provide an update frequency of at least every 3 hours. Weather data will include:

- 7.5.2.2(1)k.1 Current temperature;
- 7.5.2.2(1)k.2 High temperature for the day;
- 7.5.2.2(1)k.3 Low temperature for the day;
- 7.5.2.2(1)k.4 Sunrise and sunset times;
- 7.5.2.2(1)k.5 Relative Humidity; and
- 7.5.2.2(1)k.6 Degree days (heating and cooling with adjustable balance point value).

7.5.2.2(1)l. The weather service will include a three-day forecast and provide historical weather data extending back at least one (1) year. The IBMP software must be capable of integrating to other weather services and locally connected sensors via a documented weather data API.

7.5.2.2(1)m. The IBMP will provide automatic notification of detected issues via email as well as automated emailing of reports. The rules and conditions that trigger automated notification will be created in consultation with the Authority.

7.5.2.2(1)n. Email notification services will as a minimum provide:

- 7.5.2.2(1)n.1 immediate notification of detected issues;
- 7.5.2.2(1)n.2 daily digest or summary of detected issues; and
- 7.5.2.2(1)n.3 the ability to delineate which issue notifications are sent to which recipients down to the level of specifying that specific issues or categories of issues are sent to individual recipients.

7.5.2.2(1)o. Email notifications will include hyperlinks which when selected will take the user directly to the visualization of the issue in the software application. Users will be required to authenticate for access to the visualizations.

7.5.2.2(1)p. Email of reports formatted as PDF, HTML, PNG, or Excel documents.

7.5.2.2(1)q. The IBMP will provide the ability to develop customized rules and algorithms tailored to the operational needs and characteristics of individual departments within the Facility, monitoring and verification of any data points in the Facility, and the fault detection requirements of the project without dependence on the manufacturer for rule development. Tools for user development of customized rules will be provided as a standard part of the product and fully documented.

7.5.2.2(1)r. The IBMP will provide an extensive library of standard analytic functions. In consultation with the Authority, Design-Builder will use these standard analytic functions as elements to build custom analytic rules for the specific needs of individual facilities. Source code for the standard analytic functions will be provided as part of the standard product.

7.5.2.2(1)s. The IBMP will present all views and data visualizations in a standard web browser using HTML5 technology. The use of plug-ins or Java in the browser will not be permitted. The system will support the use of the current version of industry leading browsers as a minimum.

7.5.2.2(1)t. The IBMP will include standard views to present analytic results, which will be automatically generated when issues are found by analytic rules. No programming or development will be required to create these views. These views will include as a minimum:

- 7.5.2.2(1)t.1 All rule violations across a portfolio of sites, all rule violations per site, and rule violations per equipment system, including time, date, and duration of all violations.
- 7.5.2.2(1)t.2 Cost relationships assigned to rules to provide cost calculations. Cost calculations will be selectable on a minimum of 3 factors including: duration of violation, occurrence of violation, per day that a violation is detected. In addition, the system will support development of custom formula-based cost calculations.
- 7.5.2.2(1)t.3 Standard filters to enable the user to easily look at rule violations by site, data, exception type for any selected date or date range.
- 7.5.2.2(1)t.4 Automatic calculation and presentation of Key Performance Indicators (KPIs). It will be possible to define custom KPIs as needed. It will be possible to filter KPI results based on: Department, building, KPI type, and date range as a minimum.
- 7.5.2.2(1)t.5 Custom KPIs are to be developed in consultation with the Authority through the Design and Review process and as part of the extended training for the system.

7.5.2.2(1)u. The IBMP will allow for any standard view to be saved as a report for easy access by the Authority and will allow all reports to be emailed as PDF, HTML, PNG, or Excel documents. Any standard system view will be able to be saved as a custom report including its configuration criteria, e.g., time range, targets (sites or equipment), rule violations or other configuration options as applicable to the standard system view.

7.5.2.2(1)v. In consultation with the Authority, Design-Builder will use the IBMP to create custom reports and data views. Custom reports will be able to be created by making queries against the database and saving the query as a saved report. Saved reports will be able to be executed by typical system users with a single mouse click.

7.5.2.2(1)w. The IBMP will allow for the export of any and all report views and will support export in CSV, Excel, XML, HTML PNG, SVG and text format. Export of report views will be a feature available to the typical operator and be able to be accomplished with 2-3 mouse clicks and include the ability for operators to send the report as an email when selecting the export format.

7.5.2.2(1)x. The IBMP will automatically create 2-axis charts for all-time series data once it has been entered into the database.

7.5.2.2(1)y. Examples of data that will be presented in auto-generated charts include: sensor values, control point status, setpoints and other numeric, time stamped data values. An application to enable navigation of the data charts will be provided and will organize data into groups related to equipment systems.

7.5.2.2(1)z. The IBMP will support the presentation of analytic results on mobile and handheld devices providing the following capabilities as a minimum:

7.5.2.2(1)z.1 Presentation of analytic information in a text-based format with drill down hierarchy including site level summary, equipment level summary, and detailed listing of detected issues on individual equipment.

7.5.2.2(1)z.2 Ability to view graphic representations data and analytic visualizations in a standard PDF file format.

7.5.2.2(1)z.3 Handheld user interface will not require the download or installation of an application. Rather, the handheld user interface will utilize native web interfaces for presentation of information to the user.

7.5.2.3 Integration

7.5.2.3(1) Facility System Alarms

7.5.2.3(1)a. The IBMP will record and annunciate all Facility base-building events and alarms, including mechanical, electrical, fire alarm, security alarms, lighting, UPS, generators and switchgear alarms, temperature and humidity set point deviations;

7.5.2.3(1)b. Design-Builder will integrate the IBMP to the following systems:

7.5.2.3(1)b.1 The BMS;

7.5.2.3(1)b.2 Electrical systems:

.7.5.2.3.1.b.2.1 Generators;

.7.5.2.3.1.b.2.2 Lighting controls;

.7.5.2.3.1.b.2.3 Load management system;

.7.5.2.3.1.b.2.4 Metering;

.7.5.2.3.1.b.2.5 Switchgear;

.7.5.2.3.1.b.2.6 UPS;

.7.5.2.3.1.b.2.7 Fire Alarm System; and

.7.5.2.3.1.b.2.8 Clock System.

7.5.2.3(1)c. Elevators

7.5.2.3(2) Equipment Alarms

7.5.2.3(2)a. The IBMP will record and annunciate equipment alarms including the status, temperature, humidity, and asset data for equipment including freezers, coolers, labs, and medical equipment; and

7.5.2.3(2)a.1 Sterilizers; and

7.5.2.3(2)a.2 Fridges and Freezers.

7.5.3 Building Management System

7.5.3.1 System Overview

7.5.3.1(1) The BMS network will reside on the Authority Network.

7.5.3.1(2) All BMS software will reside on Authority servers and computers.

7.5.3.1(3) The BMS includes the following sub-systems as minimum but not limited to:

7.5.3.1(3)a. DDC and PLC controls network systems,

7.5.3.1(3)b. Energy metering and other Sub-Metering

7.5.3.1(3)c. HVAC and Environmental Controls,

7.5.3.1(3)d. Any other Mechanical systems Controls,

7.5.3.1(3)e. Steam and condensate related systems controls,

7.5.3.1(3)f. Plumbing system controls (sewer and storm drainage pumping and other system stations controls),

7.5.3.1(3)g. Plumbing system controls (Domestic hot, cold, tempered, and other associated potable water systems controls),

7.5.3.1(3)h. Any other plumbing systems controls,

7.5.3.1(3)i. Medical gases and other Facility gases system controls (this applies to generated, bottled or any other sources of supply),

7.5.3.1(3)j. Compressed air system controls,

7.5.3.1(3)k. Lab Instrumentation Air systems,

7.5.3.1(3)l. Sterilization and other associated equipment,

7.5.3.1(3)m. Kitchen systems controls, (including but not limited to: Make-up air system, kitchen exhaust air and general exhaust system, space thermal and other controls, Coolers and Freezers systems,),

7.5.3.1(3)n. Other specific medical or other unique hospital/Facility equipment (in consultation with the Authority) to be monitored for alarms or other parameters (such as, but not limited to: freezers, coolers)

7.5.3.1(3)o. Fire Suppression, including Fire Alarm Panel Integration,

7.5.3.1(3)p. Smoke “Evacuation” system controls,

7.5.3.1(3)q. Smoke “Management” system controls,

7.5.3.1(3)r. Electrical systems monitoring, including:

7.5.3.1(3)r.1 Generators;

7.5.3.1(3)r.2 Lighting controls;

7.5.3.1(3)r.3 Load management system;

7.5.3.1(3)r.4 Electrical metering;
7.5.3.1(3)r.5 Switchgear;
7.5.3.1(3)r.6 ATS;
7.5.3.1(3)r.7 UPS;
7.5.3.1(3)r.8 Fire Alarm System;
7.5.3.1(3)r.9 Clock System; and
7.5.3.1(3)r.10 Other systems identified in Division 25 and 26.

7.5.3.1(3)s. Post disaster unique systems pertaining to mechanical, plumbing, fire protection, and other building systems being part of it,

7.5.3.1(3)t. Back-up systems pertaining to mechanical, plumbing, fire protection, and other building systems being part of it,

7.5.3.1(3)u. Other specific medical or other unique hospital/Facility equipment (in consultation with Authority) to be monitored for alarms or other parameters (such as, but not limited to: "closed loop sanitizers," patient lifts, freezers, coolers,

7.5.3.1(3)v. Other systems called for within this Division or in Schedule One - Statement of Requirements to be integrated with BMS.

7.5.3.1(4) The Design-Builder will:

7.5.3.1(4)a. Select the system as determined by the Authority. This system is considered to be a critical system with serviceability and maintenance being the priority. The Owner reserves the right to reject this system based on consideration of this priority. Note the following vendors are acceptable for this project:

7.5.3.1(4)a.1 Delta/ESC
7.5.3.1(4)a.2 Siemens
7.5.3.1(4)a.3 Honeywell
7.5.3.1(4)a.4 Reliable Controls

7.5.3.1(4)b. Design, supply and install all system infrastructure.

7.5.3.1(4)c. Design, supply and install all system equipment.

7.5.3.1(4)d. Design, supply and install all system software.

7.5.3.1(4)e. Commission all system infrastructure, equipment, and software.

7.5.3.1(4)f. Integrate the system to the following systems/network levels:

7.5.3.1(4)f.1 Authority Network; and
7.5.3.1(4)f.2 Integrated Building Management Platform.

7.5.3.2 Basic Requirements

7.5.3.2(1) Provide a complete and fully functional integrated building management system (BMS) which resides on dedicated network with static IP address (integrated with Authority network and Integrated Building Management Platform) for the Facility that performs the following functions:

7.5.3.2(1)a. Automatically operates, monitors, and manages the Facility's mechanical and other systems to provide a high level of occupant comfort and maintains a healthy and productive environment without disruption to the delivery of clinical and patient treatment services.

7.5.3.2(1)b. Provides an internet-based means of external monitoring by the Authority, including all associated hardware and software. Change or control rights by external access will not be allowed.

7.5.3.2(1)c. Interfaces with the Facility mechanical, electrical and Communications Systems, and controls.

7.5.3.2(1)d. Meters, trends, and archives all data related to the flow of services into and out of the Facility, including domestic water, steam, condensate, medical oxygen, electricity, gas, and hot water and considers seasonal variations in flow rate.

7.5.3.2(1)e. Annunciates building and equipment alarms, including fire alarm, security alarms, freezer alarms, lab alarms, medical equipment alarms, medical gas alarms, space pressure alarms, lighting, UPS, emergency systems switchgear alarms, temperature and humidity setpoint alarm. Coordinate with Authority for any additional alarm monitoring requirements. Monitors the status, temperature, humidity and alarms for equipment identified in consultation with the Authority.

7.5.3.2(1)f. Acquires, collates, and archives all data associated with energy measurement and verification.

7.5.3.2(1)g. Contains safeguards to prevent unauthorized external access and follows vendor best practices for security handling.

7.5.3.2(2) Design the controls system to allow monitoring and operation of the Facility from a BMS location in the Facility, from the central plant control room, or from any location with appropriate security controls in place via an integrated BMS over IP. BMS to operate on a dedicated network.

7.5.3.2(3) The BMS will be non-proprietary and designed with open protocol.

7.5.3.2(4) The BMS platform will be completely integrated (front-end and back-end) Native BACnet/IP system and able to facilitate integration of a wide range of building systems via BACnet or protocol gateways to convert the data into BACnet.

7.5.3.2(5) All equipment and point naming conventions for all BMS points will follow the ASHRAE 223P (Project Haystack) standard.

7.5.3.2(6) The BMS will be provided as a complete package from one manufacturer, not a composite of several.

7.5.3.2(7) The BMS will optimize the system performance under all operating conditions to minimize Facility energy usage.

7.5.3.2(8) The BMS will accommodate future technological changes, and the architecture of the BMS will permit expansion of the system for future renovations.

7.5.3.2(9) The BMS will be an independent system separate from the fire alarm and other control systems.

7.5.3.2(10) Provide BMS complete with automated fault detection, diagnosis, and reporting (AFDDR) software. The system will be able to set an optimized baseline of Facility operation for future re-commissioning. Configure and operate the AFDDR Software to ensure Facility remains continuously optimized, and the need for fault diagnosis by the Facility operator is minimized. AFDDR Software will provide customizable web- accessible reports available to the Authority, with rules and dashboard customized in consultation with the Authority.

7.5.3.2(11) Data archiving, Measurement & Verification and Continuous Commissioning: provide a data collection and data archiving and analytics package to facilitate Measurement & Verification, Continuous Commissioning and AFDDR.

7.5.3.2(12) BMS hardware will be connected to vital power and UPS to ensure continued availability during utility power disruptions.

7.5.3.2(13) BMS system to include all necessary devices and programming to provide automatic changeover to all backup systems with no unnecessary delays.

7.5.3.2(14) The BMS will monitor, control, indicate alarms, and provide trending where applicable for all connected sensors and control points.

7.5.3.2(15) User Interface will be graphical in nature with animated graphics to indicate equipment operation. Graphics will be grouped in systems and in departments.

7.5.3.2(16) The BMS documentation will include a detailed narrative description of the sequence of operation of each system.

7.5.3.2(17) Install equipment to provide access and ease of maintenance.

7.5.3.2(18) Connect to equipment specified in other sections and to equipment supplied and installed by other Divisions or by the Authority.

7.5.3.2(19) Provide a separate, dedicated VLAN on the Authority Network for the BMS.

7.5.3.2(20) Provide integration of setpoint control for all major equipment, zone setpoints and energy dashboard with Authority Network level interface.

7.5.3.2(21) Provide industrial grade sensors, valves, and actuators for large AHUs where supply fan installed nameplate power is 50 hp and larger.

7.5.3.3 Zoning.

7.5.3.3(1) Zoning for HVAC systems will be based on occupancy, room location within the Facility, CSA C371.2 space classification, room orientation, and room heating and cooling loads. Configure zoning to minimize reheat/re-cool.

7.5.3.3(2) Provide independent zone for each patient care room, procedure room and consult rooms.

7.5.3.3(3) For non-patient care areas, a maximum of 3 rooms will be on one zone.

7.5.3.3(4) Interior control zones will not exceed 180 m2 per zone for Open Areas.

7.5.3.3(5) Perimeter zones will be no more than 4.7m from an outside wall along a common exposure. Perimeter zones will not exceed 30 m2.

7.5.3.3(6) Provide zone level display on zone sensor of all sensed parameters required by CSA Z317.2, Table 5.

7.5.3.3(7) Zone floor areas to provide control of smoke in a fire situation.

7.5.3.3(8) Zone floor areas to ensure infection control for each of the Nursing Stations.

7.5.3.3(9) Measure supply air temperature delivered to each zone. Where zone heating or cooling coils are utilized, modulate coil output to maintain zone supply air temperature at setpoint. Directly controlling off the zone temperature control loop is not acceptable.

7.5.3.3(10) Design all components to default to a safe position upon failure and install all components to ensure reliable operation at any failure situation. Fail safe components will be hard-wired to provide reliable operation in all circumstances.

7.5.3.3(11) Monitor critical alarms for essential building and life safety systems at the BMS. Critical alarms include:

7.5.3.3(11)a. Fire alarm system for alarm, supervisory and trouble

7.5.3.3(11)b. All temperature alarms resulting from setpoint deviations

7.5.3.3(11)c. Failure of any HVAC or plumbing equipment including zone level equipment

7.5.3.3(11)d. Medical gas system high- and low-pressure alarms

7.5.3.3(11)e. All alarms relating to the fire protection system

7.5.3.3(11)f. All alarms relating to the emergency and standby power generators and transfer switch control system.

7.5.3.4 BMS Performance

7.5.3.4(1) System will conform to the following minimum standards:

7.5.3.4(1)a. Graphic Display. A graphic with 20 dynamic points will display with current data within 10 sec.

7.5.3.4(1)b. Graphic Refresh. A graphic with 20 dynamic points will update with current data within 8 sec. and will automatically refresh every 15 sec.

7.5.3.4(1)c. Configuration and Tuning Screens. Screens used for configuring, calibrating, or tuning points, PID loops, and similar control logic will automatically refresh within 6 sec.

7.5.3.4(1)d. Object Command. Devices will react to command of a binary object within 2 sec. Devices will begin reacting to command of an analogue object within 2 sec.

7.5.3.4(1)e. Alarm Response Time. An object that goes into alarm will be annunciated at the workstation within 45 sec.

7.5.3.4(1)f. Program Execution Frequency. Custom and standard applications will be capable of running as often as once every 5 sec. Select execution times consistent with the mechanical process under control.

7.5.3.4(1)g. Performance. Programmable controllers will be able to completely execute DDC PID control loops at a frequency adjustable down to once per sec. Select execution times consistent with the mechanical process under control.

7.5.3.4(1)h. Multiple Alarm Annunciation. Each workstation on the network will receive alarms within 5 sec of other workstations.

7.5.3.4(1)i. Reporting Accuracy. System will report values with minimum end-to-end accuracy listed in Table 1.

7.5.3.4(1)j. Control Stability and Accuracy. Control loops will maintain measured variable at setpoint within tolerances listed in Table 1.

7.5.3.4(1)j.1 Table 1: Sensors, Meters, Calculated Values, and Required Accuracies.

Table 1									
#	**Object Description and Location if Applicable**	**Sensor or Value Type**	**Sensor Type or Calculation Method**	**Expected Range**	**Required End-to-End Accuracy**	**Display Resolution**	**Refresh Interval min**	**Trend Interval min**	**Accuracy Required for Control**
S1	Ambient Dry-Bulb Temperature	AI	Locate in weather station or ventilated enclosure in fully shaded location away from thermal mass bodies	-29°C to 40°C	±0.5°C	±0.25°C	1	10	±1.0°C
S2	Ambient Wet-Bulb Temperature	AI	Locate in weather station or ventilated enclosure in fully shaded location away from thermal mass bodies	–29°C to 40°C	±1.5°C	±0.25°C	1	10	±1.5°C
S6	Building Main Meter Power	AI/BI (pulse)	Refer to Electrical Sections						
S8	Zone (Space) Temperatures	AI	10000 ohm Thermistor or 1000 ohm RTD	–1°C to 38°C	±0.5°C	±0.25°C	1	1	±0.5°C
S9	Carbon Dioxide	AI	Nondispersive Infrared Sensor Technology	0 to 2000 ppm	±50 ppm	50 ppm	1	1	50 ppm
S10	Carbon Monoxide	AI	Electrochemical Sensor	0 to 100 ppm	±5 ppm	50 ppm	1	1	50 ppm
S11	Air Pressure (Ducts)	AI	Variable Capacitance	0 to 2 kPa	±25 Pa	125 Pa	1	1	25 Pa
S12	Air Pressure (Space)	AI	Variable Capacitance	-25 to 25 Pa	3 Pa	3 Pa	1	1	1.3 Pa
S13	Water Pressure	AI		0 to 1034 kPa	±2% of Full Scale	7 kPa	1	1	3.5 kPa

Table 1									
#	**Object Description and Location if Applicable**	**Sensor or Value Type**	**Sensor Type or Calculation Method**	**Expected Range**	**Required End-to-End Accuracy**	**Display Resolution**	**Refresh Interval min**	**Trend Interval min**	**Accuracy Required for Control**
S14	Water Temperature	AI		(0°C to 107°C)	±0.5°C	±0.5°C	1	1	±0.5°C
S15	Delta-T	AI	10000 ohm Thermistor or 1000 ohm RTD Matched Pair		±0.15°C	±0.25°C	1	1	±0.15°C
S16	Relative Humidity	AI		0% to 100%	±5% RH	5%	1	1	±5% RH
S17	Water Flow	AI			±2% of Reading	1000 L/s	1	1	
S18	Ducted Air Temperature	AI	10000 ohm Thermistor or 1000 ohm RTD	7°C to 60°C	±0.5°C	±0.5°C	1	1	±0.5°C
S19	Electrical (Amps, Volts, Watts, PF not specified elsewhere)	AI/BI (Pulse)	Refer to Electrical Sections						
S28	Airflow Rate (Measuring Stations)	AI	Electronic or Differential Pressure		±5% of Reading Down to 0.75 m/s)	0.05 L/s	1	1	±5% of Reading Down to 0.75 m/s
S30	Airflow (Terminal)	AI	Electronic or Differential Pressure		±10% of Reading	47 L/s	1	1	±10% of Reading
S31	Airflow (Pressurized Spaces)	AI	Electronic or Differential Pressure		±3% of Reading	24 L/s	1	1	±3% of Reading

AI = analogue input; BI = binary input; calculated = value calculated by the BMS hardware or BMS software

7.5.3.5 Interface with Other Systems

7.5.3.5(1) Control/monitor and interface with systems.

7.5.3.5(2) Work, materials, and equipment will comply with the most restrictive of local, provincial, and federal authorities' codes and ordinances or as specified herein.

7.5.3.6 Materials

7.5.3.6(1) Use new products the manufacturer is currently manufacturing and selling for use in new installations. Do not use this installation as a product test site unless explicitly approved in writing by Authority. Spare parts will be available for at least five years after completion of this contract.

7.5.3.7 Communication and System Architecture

7.5.3.7(1) All networked control products will be comprised of an industry standard open protocol BACnet internetwork. Communication involving control components (i.e. all types of controllers and operator interfaces) will conform to ASHRAE Standard 135. Networks and protocols proprietary to one company or distributed by one company are prohibited.

7.5.3.7(2) Provide new wiring and network devices as required to provide a complete and workable control network.

7.5.3.7(3) Each controller will have a communication port.

7.5.3.7(4) Network operator interface and value passing will be transparent to internetwork architecture.

7.5.3.7(4)a. An operator interface connected to the BMS will allow the operator to interface with each networked controller as if directly connected. BMS information such as data, status, reports, system software, and custom programs will be viewable and editable.

7.5.3.7(4)b. Inputs, outputs, and control variables used to integrate control strategies across multiple controllers will be available on the network.

7.5.3.7(5) Workstations, building control panels, and controllers with real-time clocks will use the BACnet time synchronization service. System will automatically synchronize system clocks daily from an operator- designated device via the internetwork. The system will automatically adjust for daylight saving and standard time as applicable.

7.5.3.7(6) Provide at a minimum one (1) operator interface to be designated at the BMS server with server application software. Additional operator interfaces will use operator workstation licensees or connect via a thin- client application.

7.5.3.7(7) BMS server will be capable of simultaneous direct connection and communication with BACnet/IP, OPC and TCP/IP corporate level networks without the use of interposing devices.

7.5.3.7(8) Any break in ethernet communication between the standard client and server workstations on the network will result in a notification at each workstation.

7.5.3.7(9) The building controllers (BCs) will be capable to support subnetwork MS/TP communication with terminal unit controllers.

7.5.3.7(10) The network architecture will consist of two levels of networks:

7.5.3.7(10)a. The automation and floor level network will be BACnet/IP over ethernet. It will network all the building controllers (BCs), advanced application controllers (AACs), the automation server, and operator workstations. Provide network media converters, routers and switches as necessary for a complete network. Network will interface with the Authority Network.

7.5.3.7(10)b. Sub-network: Subnetworks will be BACnet MS/TP LAN. These subnetworks will network Advanced Application Controllers (ASCs), Custom Application Controllers (CACs) and Application Specific Controllers (ASCs). Each MS/TP subnetwork will be limited to a maximum of 70 connected devices. Each MS/TP subnetwork will be limited to one floor level.

7.5.3.7(11) The following devices will reside on the automation level BACnet/IP over ethernet network:

7.5.3.7(11)a. All systems and their controllers (other than ones indicated below to be on MS/TP) indicated in 1.1.3. will be on BACnet/IP network

7.5.3.7(12) The following devices can reside on MS/TP sub-networks:

7.5.3.7(12)a. Terminal units such as VAV units or fan coils.

7.5.3.7(12)b. Other minor terminal equipment,

7.5.3.7(12)c. Advanced application controllers for AHUs less than 2,500 L/s.

7.5.3.7(12)d. Controllers for air moving equipment less than 2,500 L/s.

7.5.3.7(12)e. Local hydronic circulating equipment not part of the central plant and less than 5 hp.

7.5.3.7(13) Zone and floor level controllers, terminal units, packaged AC units, auxiliary equipment will reside on either BACnet/IP over ethernet network of a MS/TP sub-network.

7.5.3.7(14) The system will meet peer-to-peer communication services such that the values in any one controller can be read or changed from all other controllers. The software will provide transparent transfer of all data, control programs, schedules, trends, and alarms from any one controller through the internetwork to any other controller, regardless of subnetwork routers.

7.5.3.7(15) Central plant Network

7.5.3.7(15)a. All central plant equipment associated with the central plant will utilize Direct Digital Controls (DDC) for increased reliability. Provide back-up electrical systems which will permit the BMS system to operate in the event of a power failure. Central plant controllers will communicate on the BMS network through a dedicated sub-network to all I/O interfaces (hard-wired points).

7.5.3.7(15)b. The BMS shall provide a control and data system interface for control, trending, archiving. Provide interface from central plant controllers to BMS BACnet/IP network. Provide graphics, dedicated server, on-site trend logging, and storage (historian).

7.5.3.7(15)c. All heating plant, cooling plant, heat recovery plant, steam plant and other central plant systems in the central plant will be controlled by the BMS system.

7.5.3.7(15)d. Provide network capability to pick up all network cards within all packaged equipment within central plant, including VFDs, chillers, boilers for any points that are not required to be hard-wired..

7.5.3.7(16) Provide a dedicated static IP address for each network including the central plant network.

7.5.3.7(17) BMS (dedicated) network will interface with building Authority Network and high-level monitoring/controlling platform (Sky spark or similar).

7.5.3.8 Distributed Control Requirements

7.5.3.8(1) The loss of any one controller will not affect the operation of other systems, only for the points connected to the controller.

7.5.3.8(2) The system will be scalable in nature and will permit expansion of both capacity and functionality through the addition of sensors, actuators, controllers, and operator devices.

7.5.3.8(3) System architecture will eliminate dependence upon any single device for alarm reporting and control execution. Each controller will operate independently by performing its own specified control, alarm management, operator I/O, and data collection. The failure of any single component or network connection will not interrupt the execution of any control strategy, reporting, alarming and trending function, or any function at any operator interface device.

7.5.3.8(4) Controllers will be able to access any data from or send control commands and alarm reports directly to any other controller on the network without dependence upon a central processing device.

7.5.3.8(5) Controllers will also be able to send alarms to multiple operator workstations without dependence upon a central or intermediate processing device.

7.5.3.8(6) Control panels will be mounted in the same mechanical room as the equipment being controlled, or an adjacent utility room.

7.5.3.8(7) Remote sensors will be wired to the control panel of the equipment it is controlling, not across the network.

7.5.3.8(8) Signals to remote motor control centres will be hard wired to the control panel, not across the network.

7.5.3.9 Operator Interface

7.5.3.9(1) Operator Interface. Web server and PC-based workstations will reside on a high-speed network with building controllers. Each workstation or each standard browser connected to the server will be able to access all BMS information.

7.5.3.9(2) Workstation and controllers will communicate using BACnet protocol. Workstation and control network backbone will communicate using ISO 8802-3 (ethernet) data link/physical layer protocol and BACnet addressing as specified in ANSI/ASHRAE Standard 135 guidelines and requirements.

7.5.3.9(3) Provide dedicated operator interface stations for the central plant.

7.5.3.9(4) Provide dedicated operator interface for the central plant PLC-based control system.

7.5.3.9(5) Provide dedicated operator interface stations for each mechanical room.

7.5.3.9(6) Provide laptop or tablet with full operator interface capability.

7.5.3.9(7) Hardware. Each operator workstation or web server will consist of the following:

7.5.3.9(7)a. Computer. Hardware will meet or exceed BMS manufacturer's recommended specifications and will meet response times specified elsewhere in this Division. The following hardware requirements also apply:

7.5.3.9(7)a.1 The hard disc will have enough memory to store all required operator workstation software; A BMS database at least four-times the size of the delivered system data-based; and two years of trend data based on all points being trended at a trend interval of 5-minutes.

7.5.3.9(7)a.2 Provide additional hardware (communication ports, video drivers, network interface cards, cabling) to facilitate all control functions and software requirements specified for the BMS.

7.5.3.9(8) System Software.

7.5.3.9(8)a. Operating system. Provide a concurrent multitasking operating system. The operating systems also will support the use of other common software applications. Examples include Microsoft Excel, Microsoft Access, or other SQL database software. Acceptable operating systems are Windows or the latest Windows Server release.

7.5.3.9(8)b. All BMS software (not residing on system controllers) such as operator workstation software, BMS database and trend data will reside on Authority provided FM servers and computers. There will be no silo vendor servers and/or computers except as approved by the Authority through the Review Procedure.

7.5.3.9(8)c. System Graphics. The operator workstation software will be graphically oriented. The system will allow display of up to 10 graphic screens at once for comparison and monitoring of system status. Provide a method for the operator to easily move between graphic displays and change the size and location of graphic displays on the screen. The system graphics will be able to be modified while online. An operator with the proper password level will be able to add, delete, or change dynamic objects on a graphic. Dynamic objects will include analogue and binary values, dynamic text, static text, and animation files. Graphics will have the ability to show animation by shifting image files based on the status of the object.

7.5.3.9(8)d. Custom Graphics. Custom graphic files will be created with the use of a graphics generation package furnished with the system. The graphics generation package will be a graphically based system that uses the mouse to create and modify graphics that are saved in industry standard formats. The graphics generation package also will provide the capability of capturing or converting graphics from other programs such as Designer or AutoCAD.

7.5.3.9(8)e. Graphics Library. Furnish a complete library of standard HVAC equipment graphics such as chillers, boilers, air handlers, terminals, fan coils, and unit ventilators, and others are required for this project. This library also will include standard symbols for other equipment including fans, pumps, coils, valves, piping, dampers, and ductwork. The library will be furnished in a file format compatible with the graphics generation package program.

7.5.3.9(9) System applications. Each workstation will provide operator interface and off-line storage of system information. Provide the following applications at each workstation:

7.5.3.9(9)a. Automatic system database save and restore. Each workstation will store on the hard disk a copy of the current database of each building controller. This database will be updated whenever a change is made in any system panel. The storage of these data will be automatic and not require operator intervention. In the event of a database loss in a building management panel, the first workstation to detect the loss will automatically restore the database for that panel. This capability may be disabled by the operator.

7.5.3.9(9)b. Manual database save and restore. A system operator with the proper password clearance will be able to save the database from any system panel. The operator also will be able to clear a panel database and manually initiate a download of a specified database to any panel in the system.

7.5.3.9(9)c. System configuration. The workstation software will provide a method of configuring the system. This will allow for future system changes or additions by users under proper password protection.

7.5.3.9(9)d. Online help. Provide a context-sensitive online help system to assist the operator in operating and editing the system. Online help will be available for all applications and will provide the relevant data for that particular screen. Additional help information will be available through the use of hypertext.

7.5.3.9(9)e. Security. Each operator will be required to log on to the system with a username and password in order to view, edit, add, or delete data. System security will be selectable for each operator. The system supervisor will have the ability to set passwords and security levels for all other operators. Each operator password will be able to restrict the functions accessible to viewing and/or changing each system application, editor, and object. Each operator will automatically be logged off the system if no keyboard or mouse activity is detected. This auto logoff time period will be user adjustable. All system security data will be stored in an encrypted format.

7.5.3.9(9)f. System diagnostics. The system will automatically monitor the operation of all workstations, printers, network connections, building management panels, and controllers. The failure of any device will be annunciated to the operator.

7.5.3.9(9)g. Alarm processing. Any object in the system will be configurable to alarm in and out of normal state. The operator will be able to configure the alarm limits, alarm limit differentials, states, and reactions for each object in the system.

7.5.3.9(9)h. Alarm messages. Alarm messages will use the English language descriptor for the object in alarm in such a way that the operator will be able to recognize the source, location, and nature of the alarm without relying upon acronyms or other mnemonics.

7.5.3.9(9)i. Alarm reactions. The operator will be able to determine (by object) what, if any, actions are to be taken during an alarm. Actions will include logging, printing, starting programs, displaying messages, dialling out to remote stations, paging, providing audible annunciation, or displaying specific system graphics. Each of these actions will be configurable by workstation and time of day.

7.5.3.9(9)j. Trend logs. The operator will be able to define a custom trend log for any data object in the system. This definition will include interval, start time, and stop time. Trend data will be sampled and stored on the building controller panel, be archived on the hard disk, and be retrievable for use in spreadsheets and standard database programs. Trend data will be exportable in a standard electronic format (e.g., .xls, .csv, .xml) for analysis external to the BMS.

7.5.3.9(9)k. Alarm and event log. The operator will be able to view all system alarms and change of states from any location in the system. Events will be listed chronologically. An operator with the proper security level may acknowledge and clear alarms. All that have not been cleared by the operator will be archived to the hard disk on the workstation.

7.5.3.9(9)l. Group trend time series plots.

- 7.5.3.9(9)l.1 Provide user-selectable Y points.
- 7.5.3.9(9)l.2 Provide user-editable titles, point names, and Y axis titles.
- 7.5.3.9(9)l.3 Individual trended points will be able to be grouped in groups of up to five points per plot with up to four plots per page.

7.5.3.9(9)m. X-Y Trend Plots

- 7.5.3.9(9)m.1 User-selectable X and Y trend inputs
- 7.5.3.9(9)m.2 User-editable titles, point names, and X and Y axis titles.
- 7.5.3.9(9)m.3 user-selectable time period. The user will be able to select the beginning and ending period for each X-Y chart, within the time domain of the database being used.
- 7.5.3.9(9)m.4 User-selectable display of up to 6 plots per screen in 2 columns.

7.5.3.9(9)n. Object and property status and control. Provide a method for the operator to view and edit if applicable, the status of any object and property in the system. The status will be available by menu, on graphics, or through custom programs.

7.5.3.9(9)o. Reports and logs. Provide a reporting package that allows the operator to select, modify, or create reports. Each report will be definable as to data content, format, interval, and date. Report data will be archivable on the hard disk for historical reporting. Provide the ability for the operator to obtain real-time logs of all objects by type or status (e.g., alarm, lockout, normal).

Reports and logs will be stored on the hard disk in a format that is readily accessible by other standard software applications, including spreadsheets and word processing.

Reports and logs will be readily printed to the system printer and will be set to be printed either on operator command or at a specific time each day.

7.5.3.9(9)p. Standard reports. The following standard BMS reports will be provided for the Facility. Provide ability for the Authority to readily customize these reports for this project.

7.5.3.9(9)p.1 All objects/points/variables: all system (or subsystem) objects, points, variables, configuration properties, and their current values.

7.5.3.9(9)p.2 Alarm summary: all current alarms (except those in alarm lockout).

7.5.3.9(9)p.3 Disabled objects/points: all objects/points that are disabled.

7.5.3.9(9)p.4 Alarm lockout objects/points: all objects/points in alarm lockout (whether manual or automatic).

7.5.3.9(9)p.5 Alarm lockout objects/points in alarm: all objects/points in alarm lockout that are currently in alarm

7.5.3.9(9)p.6 Logs:

.7.5.3.9.9.p.6.1 Alarm history

.7.5.3.9.9.p.6.2 System messages

.7.5.3.9.9.p.6.3 System events

.7.5.3.9.9.p.6.4 Trends

.7.5.3.9.9.p.6.5 Operator Activity. At a minimum, system will log operator log in and log out, control parameter changes, schedule changes, and alarm acknowledgment and deletion. System will date and time stamp logged activity.

7.5.3.9(9)q. Custom reports. Provide the capability for the operator to easily define any system data into a daily, weekly, monthly, or annual report. These reports will be time and date stamped and will contain a report title and the name of the facility. Provide the following custom reports for this project:

7.5.3.9(10) Workstation applications editors. Each workstation will support editing of all system applications. Provide editors for each application at the workstation. The applications will be downloaded and executed at one or more of the controller panels.

7.5.3.9(10)a. Controller. Provide a full-screen editor for each type of application that will allow the operator to view and change the configuration, name, control parameters, and set points for all controllers.

7.5.3.9(10)b. Scheduling. An editor for the scheduling application will be provided at each workstation. Provide a method of selecting the desired schedule and schedule type. Exception schedules and holidays will be shown clearly on the calendar. Provide a method for allowing several related objects to follow a schedule. The start and stop times for each object will be adjustable from this master schedule. Schedules will be easy to copy to other objects and/or dates.

7.5.3.9(10)c. Custom Application Programming. Provide the tools to create, modify, debug, and download custom programs. The operator will be able to create, edit, and download custom programs at the same time that all other system applications are operating. The BMS will be fully operable while custom routines are edited, compiled, and downloaded.

7.5.3.9(11) Provide software update on all operator workstations at Substantial Completion to the most current commercially available software version.

7.5.3.10 Graphics

7.5.3.10(1) Provide graphics for all systems interfaced, controlled and monitored by the BMS. Show on each graphic all input and output points for the system and relevant calculated points such as setpoints.

7.5.3.10(2) Provide an overall Facility graphic.

7.5.3.10(3) Provide separate floor plan graphics of the Facility for each integrated, controlled, and monitored systems.

7.5.3.10(4) Provide dedicated graphics for fire alarm system monitoring and smoke control management.

7.5.3.10(5) Provide dedicated graphics for each system and sub-system with graphically representation of all equipment including all input and output points and relevant calculated points.

7.5.3.10(6) Provide graphic summary tables for all demand-based reset parameters.

7.5.3.10(7) Show terminal equipment information on a graphic summary table.

7.5.3.10(8) Provide dynamic information for each point shown.

7.5.3.11 Alarms

7.5.3.11(1) Provide full integration of all alarms with the Authority Network for monitoring and acknowledgement of alarms.

7.5.3.11(2) All alarms will include a time/date stamp using real-time and date.

7.5.3.11(3) Each alarm will be configured in terms on level, latching (requires acknowledgement of a return to normal), non-latching (does not require acknowledgement of a return to normal), entry delay, exit deadband, and post suppression period.

7.5.3.11(4) Operators will be able to sort alarms based on level, time and date, and current status.

7.5.3.11(5) Alarms will be reported with the following information:

7.5.3.11(5)a. Date and time of the alarm;

7.5.3.11(5)b. Level of the alarm;

7.5.3.11(5)c. Description of the alarm;

7.5.3.11(5)d. Equipment tags for the units in alarm;

7.5.3.11(5)e. Possible causes of the alarm provided by the fault detection routines; and

7.5.3.11(5)f. The source that serves the equipment in alarm.

7.5.3.11(6) Provide the following levels of alarm:

7.5.3.11(6)a. Level 1: Life-safety message

7.5.3.11(6)b. Level 2: Critical equipment message

7.5.3.11(6)c. Level 3: Urgent message

7.5.3.11(6)d. Level 4: Normal message

7.5.3.11(7) Maintenance mode. Operators will have the ability to put any device in/out of maintenance mode. All alarms associated with a device in maintenance mode will be suppressed except for life safety alarms. A daily Level 3 alarm will be issued at a scheduled time indicating that the device is still in maintenance mode.

7.5.3.11(8) Entry delays. All alarms will have an adjustable delay time such that the alarm is not triggered unless the alarm condition is true for the delay time. Default entry delays are as follows:

7.5.3.11(8)a. Level 1 alarms: 1 second

7.5.3.11(8)b. Level 2 alarms: 10 seconds

7.5.3.11(8)c. Level 3 alarms: 1 minute

7.5.3.11(8)d. Level 4 alarms: 5 minutes

7.5.3.11(9) Exit Hysteresis

7.5.3.11(9)a. Each alarm will have an adjustable time-based hysteresis to exit the alarm. Once set, the alarm does not return to normal until the alarm conditions have ceased for the duration of the hysteresis. Default hysteresis is 5 seconds.

7.5.3.11(9)b. Each analogue alarm will have an adjustable percent-of-limit- based hysteresis the alarmed variable required to exit the alarm. Alarm conditions have ceased when the alarmed variable is below the triggering threshold by the amount of the hysteresis.

7.5.3.11(10) Latching. Each alarm can be configured as latching or non-latching. A latching alarm requires acknowledgment from the operators before it can return to normal, even if the exit deadband has been met. A non-latching alarm does not require acknowledgment. Default latching status is as follows:

7.5.3.11(10)a. Level 1 alarms: latching;

7.5.3.11(10)b. Level 2 alarms: latching;

7.5.3.11(10)c. Level 3 alarms: non-latching; and

7.5.3.11(10)d. Level 4 alarms: non-latching.

7.5.3.11(11) Postexit suppression period. To limit alarms, each alarm will have an adjustable suppression period such that, if the alarm is triggered, its post suppression timer is triggered, and the alarm will not trigger again until the post suppression timer has expired. Post suppression only applies to a particular instance of an alarm. Default suppression periods are as follows:

7.5.3.11(11)a. Level 1 alarms: 0 minutes;

7.5.3.11(11)b. Level 2 alarms: 5 minutes;

7.5.3.11(11)c. Level 3 alarms: 8 hours; and

7.5.3.11(11)d. Level 4 alarms: 2 days.

7.5.3.11(12) For both latching and non-latching alarms, the operator will be able to acknowledge the alarm. Acknowledging an alarm clears the alarm, the exit deadband, and suppression period. A device can go right back into alarm as soon as the entry delay elapses.

7.5.3.11(13) Hierarchical Alarm Suppression

7.5.3.11(13)a. For each piece of equipment and zone, define its relationship (if any) to other equipment in terms of “source”, “load” or “system”.

7.5.3.11(13)a.1 A component is a “source” if it provides resources to a downstream component.

7.5.3.11(13)a.2 A component is a “load” if it receives resources from an upstream component.

7.5.3.11(13)a.3 The same component can be both a load (receiving resources from an upstream source) and a source (providing resources to a downstream load).

7.5.3.11(13)a.4 A set of components is a “system” if they share a load in common.

7.5.3.11(13)b. For each system, there will be a SystemOK flag, which is either true or false.

7.5.3.11(13)c. SystemOK will be true when all of the following are true:

7.5.3.11(13)c.1 The system is proven on;

7.5.3.11(13)c.2 The system is achieving its temperature and/or pressure set point(s) for at least 5 minutes;

7.5.3.11(13)c.3 The system is ready and able to serve its load

7.5.3.11(13)d. SystemOK will be false while the system is starting up or when enough of the system’s components are unavailable to disrupt the ability of the system to serve its load. This threshold will be proposed for each system by the Design-Builder. and reviewed for acceptance by the Authority.

7.5.3.11(13)d.1 By default, Level 1 through Level 3 component alarms will inhibit SystemOK. Level 4 component alarms will not affect SystemOK.

7.5.3.11(13)d.2 The operator will have the ability to individually determine which component alarms will and will not inhibit SystemOK.

7.5.3.11(13)e. The BMS will selectively suppress alarms for load components if SystemOK is false for the source system that serves that load.

7.5.3.11(13)e.1 If SystemOK is false for a cooling water system, then only high-temperature alarms from loads will be suppressed.

7.5.3.11(13)e.2 If SystemOK is false for a heating water system, then only low-temperature alarms from loads will be suppressed.

7.5.3.11(13)e.3 If SystemOK is false for an air-side system, then all alarms from the loads will be suppressed.

7.5.3.11(13)f. Hierarchical suppression will cascade through multiple levels of load-source relationship such that alarms at downstream loads will also be suppressed.

7.5.3.11(13)g. The following types of alarms will never be suppressed by this logic:

7.5.3.11(13)g.1 Life safety and Level 1 alarms;

7.5.3.11(13)g.2 Failure-to-start alarms;

7.5.3.11(13)g.3 Failure-to-stop alarms;

7.5.3.11(13)g.4 All alarms associated with critical environment areas

7.5.3.11(14) Time-based suppression. Calculate a time-delay period after any change in setpoint based on the difference between the controlled variable and the time of the change and the new setpoint. The default time delay period will be as follows:

7.5.3.11(14)a. For thermal zone temperature alarms: 10 minutes per °C of difference but no longer than 120 minutes;

7.5.3.11(14)b. For thermal zone temperature cooling requests: 5 minutes per

7.5.3.11(14)c. °C of difference but no longer than 30 minutes;

7.5.3.11(14)d. For thermal zone temperature heating requests: 5 minutes per

7.5.3.11(14)e. °C of difference but no longer than 30 minutes.

7.5.3.12 Energy Sub-Metering Systems and Energy Reporting

7.5.3.12(1) Provide all required meters, sensors, and trend logging equipment at end uses within the Facility to meet the energy monitoring requirements outlined in Schedule 9.

7.5.3.12(2) All meters will be connected to an integrated energy management system to monitor, record, report, and analyze energy consumption. Coordinate electrical metering and the energy management system with the requirements of Electrical (Division 26).

7.5.3.12(3) Provide complete digital metering systems.

7.5.3.12(4) Provide runtime logs on all compressors included freezers.

7.5.3.12(5) Metering intervals will be confirmed with the Authority's Mechanical engineer prior to meter selection and programming.

7.5.3.12(6) Refer to measurement and verification section for more information on Metering data storing and reporting.

7.5.3.12(7) Energy Reports. System will include an easily configured energy reporting tool that provides the capabilities described in this section.

7.5.3.12(7)a. The energy reporting tool will be accessible through the same user interface (Web browser or operator workstation software) as is used to manage the BMS.

7.5.3.12(7)b. The energy reporting tool will be preconfigured to gather and store energy demand and consumption data from each energy source that provides metered data to the BMS. Meter data will be stored at 5-minute intervals. This data will be maintained in an industry standard SQL database for a period of not less than five years.

7.5.3.12(7)c. The energy reporting tool will allow the operator to select an energy source and a time period of interest (day, week, month, year, or date range) and will provide options to view the data in a table, line graph, bar graph, or pie chart. The tool will also allow the operator to select two or more data sources and display a comparison of the energy used over this period in any of the listed graph formats, or to total the energy used by the selected sources and display that data in the supported formats.

7.5.3.12(7)d. The energy reporting tool will allow the operator to select and energy source and two time periods of interest (day, week, month, year, or date range) and display a graph that compares the energy use over the two time periods in any of the graph formats listed in the previous paragraph. The tool will also allow the operator to select multiple energy sources and display a graph that compares the total energy used by these sources over the two time periods.

7.5.3.12(7)e. The energy reporting tool will allow the operator to easily generate the previously described graphs "on the fly," and will provide an option to store the report format so the operator can select that format to regenerate the graph at a future date. The tool will also allow the user to schedule these reports to run on a recurring basis using relative time periods, such as automatically generating a consumption report on the first Monday of each month showing consumption over the previous month. Automatically generated reports will be archived on the server in a common industry format such as Adobe PDF or Microsoft Excel with copies e-mailed to a user editable list of recipients.

7.5.3.12(7)f. The energy reporting tool will be capable of collecting and displaying data from all the connected meter types.

7.5.3.12(7)g. The User will have the option of using multiple unit types. All selected sources will be automatically converted to the selected units. The user will similarly have the option of entering facility area and occupancy hours and creating reports that are normalized on an area basis, an annual use basis, or an occupied hour basis.

7.5.3.12(7)h. The User will have the option of entering benchmark data for an individual facility or a group of facilities.

7.5.3.12(7)i. The user will have the option of displaying any or all of the following data on any chart, line, or bar graph generated by the energy reporting tool:

- 7.5.3.12(7)i.1 Low/High/Average value of the metered value being displayed.
- 7.5.3.12(7)i.2 Heating and/or Cooling Degree Days for the time period(s) being displayed.
- 7.5.3.12(7)i.3 The Environmental Index for the facilities and time periods being displayed.

7.5.3.12(7)j. Provide dashboard configured as per the energy breakdown requirements as defined in Schedule 9: Energy to assist the Independent Energy Consultant assess the energy performance of the Facility. Provide all required KPIs.

7.5.3.12(7)k. Provide a dedicated energy report per department (per AHU). Report for each department will include end-use breakdown and KPIs.

7.5.3.12(7)l. ASHRAE Standard 147 Report: provide a daily report that shows the operating conditions of each chiller as recommended by ASHRAE Standard 147.

7.5.3.13 Controller Software

7.5.3.13(1) Furnish the following applications for building and energy management. All software application will reside and operate in the system controllers. Applications will be editable through operator workstation, web browser interface, or engineering workstation.

7.5.3.13(2) Provide software update on all controllers at Substantial Completion to the most current commercially available software version.

7.5.3.13(3) System security. User access will be secured using individual security passwords and user names. Passwords will restrict the user to the objects, applications, and system functions as assigned by the system manager. User log on/log off attempts will be recorded. The system will protect itself from unauthorized use by automatically logging off following the last keystroke. The delay time will be user adjustable.

7.5.3.13(4) System coordination. Provide a standard application for the proper coordination of equipment. This application will provide the operator with a method of grouping together equipment based on function and location. This group may then be used for scheduling or other applications.

7.5.3.13(5) Scheduling. Provide the capability to execute control functions according to a user created or edited schedule. Each schedule will provide the following schedule options as a minimum:

7.5.3.13(5)a. Weekly Schedule. Provide separate schedules for each day of the week. Each schedule will be able to include up to 5 occupied periods (5 start-stop pairs or 10 events).

7.5.3.13(5)b. Exception Schedules. Provide the ability for the operator to designate any day of the year as an exception schedule.

7.5.3.13(5)c. Exception schedules may be defined up to a year in advance. Once an exception schedule has executed, the system will discard and replace the exception schedule with the standard schedule for that day of the week.

7.5.3.13(5)d. Holiday Schedules. Provide the capability for the operator to define up to 24 special or holiday schedules. These schedules will be repeated each year. The operator will be able to define the length of each holiday period.

7.5.3.13(6) Binary Alarms. Each binary object will have the capability to be configured to alarm based on the operator-specified state. Provide the capability to automatically and manually disable alarming.

7.5.3.13(7) Analog Alarms. Each analogue object will have both high and low alarm limits. The operator will be able to enable or disable these alarms.

7.5.3.13(8) Alarm Reporting. The operator will be able to determine the action to be taken in the event of an alarm. An alarm will be able to start programs, print, be logged in the event log, generate custom messages, and display on graphics.

7.5.3.13(9) Remote Communication. The system will have the ability to transmit the alarm/event using the BACnet control network.

7.5.3.13(10) Demand Limiting.

7.5.3.13(10)a. The demand-limiting program will monitor building power consumption from signals generated by a pulse generator mounted at the building power meter or from a watt transducer or current transformer attached to the building feeder lines.

7.5.3.13(10)b. The demand-liming program will predict the probable power demand such that action can be taken to prevent exceeding the demand limit. When demand prediction exceeds demand limit, action will be taken to reduce loads in a predetermined manner. When demand prediction indicates the demand limit will not be exceeded, action will be taken to restore loads in a predetermined manner.

7.5.3.13(10)c. Demand-limiting parameters, frequency of calculations, time intervals, and other relevant variables will be based on the means by which the local power company computes demand charges.

7.5.3.13(10)d. Provide demand-limiting prediction and control for any individual meter monitored by the system or for the total of any combination of meters.

7.5.3.13(10)e. Any implemented demand-limiting will not compromise patient care functions or patient care area environmental and thermal comfort.

7.5.3.13(11) Maintenance Management. The system will monitor equipment status and generate maintenance messages based upon user-designated runtimes, starts, and/or calendar data limits. Configure and enable maintenance alarms based on equipment manufacturer recommended maintenance schedule.

7.5.3.13(12) Sequencing. Provide application software based upon the sequence of operation to properly sequence chillers, boilers, pumps, and additional system equipment to provide orderly start-up, operation, and shut- down of equipment.

7.5.3.13(13) PID Control. System will provide direct- and reverse-acting PID (proportional-integral-derivative) algorithms. Each algorithm will have anti-windup and selectable controlled variable, setpoint, and PID gains. Each algorithm will calculate a time-varying analogue value that can be used to position an output or to stage a series of outputs. The calculation interval, PID gains, and other tuning parameters will be adjustable by a user with the correct security level.

7.5.3.13(14) Will stagger controlled equipment restart after power outage. Operator will be able to adjust equipment restart order and time delay between equipment restarts.

7.5.3.13(15) Energy Calculations. Provide software to allow instantaneous power or flow rates to be accumulated and converted to energy usage data.

7.5.3.13(16) Provide an algorithm that calculates a sliding-window average (e.g., rolling average). The algorithm will be flexible to allow window intervals to be user specified (e.g., 15 min, 30 min, 60 min). provide an algorithm that calculates a fixed-window average. A digital input signal will define the start of the window period (e.g., signal from a utility meter) to synchronize the fixed-window average with that used by the energy service provider.

7.5.3.13(17) Anti-Short Cycling. All binary output objects will be protected from short cycling by means of adjustable minimum on-time and off-time settings.

7.5.3.13(18) On and Off Control with Differential. Provide an algorithm that allows a binary output to be cycled based on a controlled variable and a setpoint. The algorithm will be direct-acting or reverse-acting and incorporate an adjustable differential.

7.5.3.13(19) Runtime Totalization. Provide software to totalize runtime for each binary input and output. Operator will be able to enable runtime alarm based on exceeded adjustable runtime limit. Configure and enable runtime totalization and alarms as specified.

7.5.3.14 Controllers

7.5.3.14(1) Provide an adequate number of Building Controllers, Advanced Application Controllers (AAC), Application Specific Controllers (ASC), Smart Actuators (SA), and Smart Sensors (SS) as required to achieve performance specified in this Division. Every device in the system which executes control logic and directly controls HVAC equipment will conform to a standard BACnet Device profile as specified in ANSI/ASHRAE 135, BACnet Annex L. Unless otherwise specified, hardwired actuators and sensors may be used in lieu of BACnet Smart Actuators and Smart Sensors.

7.5.3.14(1)a. Building Controllers. Each Building Controller will conform to BACnet Building Controller (B-BC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L, and will be listed as a certified B-BC in the BACnet Testing Laboratories (BTL) Product Listing.

7.5.3.14(1)b. Advanced Application Controllers (AACs). Each AAC will conform to BACnet Advanced Application Controller (B-AAC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and will be listed as a certified B-AAC in the BACnet Testing Laboratories (BTL) Product Listing.

7.5.3.14(1)c. Application Specific Controllers (ASCs). Each ASC will conform to BACnet Application Specific Controller (B-ASC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and will be listed as a certified B-ASC in the BACnet Testing Laboratories (BTL) Product Listing.

7.5.3.14(2) Smart Sensors (SSs). Each SS will conform to BACnet Smart Sensor (B-SS) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and will be listed as a certified B-SS in the BACnet Testing Laboratories (BTL) Product Listing.

7.5.3.14(3) Each piece of equipment will be controlled by a single controller to provide stand-alone control in the event of communication failure. All I/O points specified for a piece of equipment will be integral to its controller. Provide stable and reliable stand-alone control using default values or other method for values normally read over the network such as outdoor air conditions, supply air or water temperature coming from source equipment.

7.5.3.14(4) Provide a separate controller for each AHU or other HVAC system. A controller may control more than one system provided that all points associated with the system are assigned to the same controller. Points used for control loop reset, such as outside air or space temperature, are exempt from this requirement.

7.5.3.14(5) All controllers will use the same programming language.

7.5.3.14(6) All controllers and software will be BTL listed at the time of installation.

7.5.3.15 Packaged Equipment Controls

7.5.3.15(1) Electronic controls packaged with any equipment provided under this contract will communicate with the Facility BMS. The BMS will communicate with these controls to read the information and change the control setpoints. The information to be communicated between the BMS and the controls will be in the standard object format as defined in ANSI/ASHRAE Standard 135 (BACnet). Controllers will communicate with other BACnet objects on the network using the read (execute) property service as defined in clause 15.5 of Standard 135.

7.5.3.15(2) Controllers will be capable of stand-alone operation and will continue to provide control functions if the network connection is lost.

7.5.3.15(3) Controllers will contain sufficient I/ O capacity to control the target system.

7.5.3.15(4) Controllers will have a physical connection for a laptop computer or a portable operator’s tool.

7.5.3.15(5) The hardware will be suitable for the anticipated ambient conditions. Controllers used outdoors and/or in wet ambient conditions will be mounted within waterproof enclosures and rated for be expected ambient temperature conditions. Controllers used in conditioned space will be mounted in dust-proof enclosures and be rated for expected operating temperature conditions.

7.5.3.15(6) Provide diagnostic LEDs for power, communication, and processor. All wiring connections will be made to field removable, modular terminal strips or to a termination card connected by a ribbon cable.

7.5.3.15(7) Controllers will maintain all BIOS and programming information in the event of a power loss for at least 30 days.

7.5.3.15(8) Controllers will be able to operate at 90% to 110% of nominal voltage rating.

7.5.3.15(9) Power supply for the controllers will be rated at minimum of 125% of ASC power consumption and will be fused or current limiting type.

7.5.3.15(10) Packaged controllers will not be used for air handling units (AHUs).

7.5.3.16 Input/output Interface

7.5.3.16(1) Hardwired inputs and outputs may tie into the BMS through BCs, AACs, ASCs.

7.5.3.16(2) All input points and output points will be protected such that shorting of the point to itself, to another point, or to ground will cause no damage to the controller. All input and output points will be protected from voltage up to 24 V of any duration, such that contact with this voltage will cause no controller damage.

7.5.3.16(3) Binary inputs will allow the monitoring of on/off signals from remote devices. The binary inputs will provide a wetting current of at least 12 mA to be compatible with commonly available control devices and will be protected against contact bounce and noise. Binary inputs will sense dry contact closure without application of power external to the controller.

7.5.3.16(4) Pulse accumulation inputs will conform to all binary input requirements and will also accumulate up to 10 pulses per second.

7.5.3.16(5) Analog inputs will allow the monitoring of low-voltage (0–10 Vdc), current (4–20 mA), or resistance (thermistor or RTD) signals. Analog inputs will be compatible with and field configurable to commonly available sensing devices.

7.5.3.16(6) Binary outputs will provide for on/off operation or a pulsed low-voltage signal for pulse width modulation control. Binary outputs on BCs and AACs will have three-position (on-off-auto) override switches and status lights. Outputs will be selectable for normally open or normally closed operation.

7.5.3.16(7) Analog outputs will provide a modulating signal for the control of end devices. Outputs will provide either a 0–10 Vdc or a 4–20 mA signal as required to properly control output devices. Analog outputs on BCs and AACs will have status lights and a two-position (auto-manual) switch and manually adjustable potentiometer for manual override. Analog outputs will not drift more than 0.4% of range annually.

7.5.3.16(8) The use of tri-state outputs are not permitted.

7.5.3.16(9) I/O points will be universal type, i.e., controller input or output may be designated (in software) as either binary or analogue type point with appropriate properties. ASCs are exempted from this requirement.

7.5.3.16(10) The system size will be expandable to at least twice the number of input/ output objects required for this project. Additional controllers (along with associated devices and wiring) will be all that is necessary to achieve this capacity requirement. The operator interfaces installed for this project will not require any hardware additions or software revisions in order to expand the system.

7.5.3.17 Hardwired Points

7.5.3.17(1) Control points used for control or equipment may use BACnet unless controlling rooms which are deemed a critical environment, whereby they will be hardwired.

7.5.3.17(2) All control and monitoring points for critical environment rooms such as, but not limited to labs, pharmacy, clean rooms, operating theatres, ante rooms, and isolation rooms will be hardwired points.

7.5.3.18 Software Points

7.5.3.18(1) Integrate all software points available via equipment BACnet interface.

7.5.3.19 Power Supplies

7.5.3.19(1) All BMS and controls hardware will be connected to UPS to ensure continued availability during utility power disruptions.

7.5.3.19(2) Power Supplies. Control transformers will be approved for installation in Canada. Furnish Class 2 current-limiting type or furnish over-current protection in primary and secondary circuits for Class 2 service in accordance with CEC requirements. Limit connected loads to 80% of rated capacity.

7.5.3.19(3) Power Line Filtering. Provide internal or external transient voltage and surge suppression for workstations and controllers.

7.5.3.19(4) Immunity to power and noise. Controllers and control equipment will be able to operate at 90% to 110% of nominal voltage rating. Operation will be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 1 m.

7.5.3.19(5) Power-fail restart. Controllers and control equipment to have power fail auto restart to ensure proper safety during power failure and a safe orderly recovery after power restoration.

7.5.3.20 Wiring

7.5.3.20(1) All wiring installations will comply with the Canadian Electrical Code, and all applicable governing codes, statutes, and ordinances.

7.5.3.20(2) All line voltage wiring will be approved products in approved raceway according to Canadian Electrical Code and Division 26 requirements.

7.5.3.20(3) All low-voltage wiring will meet CEC Class 2 requirements. Low-voltage power circuits will be sub-fused when required to meet Class 2 current limit.

7.5.3.20(4) All wiring (line and low-voltage) will be installed in conduit in all areas of the Facility.

7.5.3.20(5) Do not install Class 2 wiring in raceways containing Class 1 or line voltage wiring. Boxes and panels containing line-voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interfacing the two (e.g. relays and transformers).

7.5.3.20(6) All wiring within enclosures will be neatly bundled and anchored to permit access and prevent restriction to devices and terminals.

7.5.3.20(7) All wiring will be installed as continuous lengths, with no splices permitted between termination points.

7.5.3.20(8) Size of raceway and size and type of wire type will be the responsibility of the Design-Builder in keeping with the manufacturer's recommendations and CEC requirements, except as noted elsewhere.

7.5.3.20(9) Use colour-coded conductors throughout with conductors of different colours.

7.5.3.20(10) Adhere to this specification's Division 26 requirements where raceway crosses building expansion joints.

7.5.3.20(11) Design-Builder. will maintain updated (record) wiring diagrams with terminations identified at the Facility.

7.5.3.20(12) All insulated wire to be copper conductors, approved and labelled for 90°C minimum service.

7.5.3.20(13) Life-safety wiring raceways to be a distinctive colour different from other wiring types.

7.5.3.21 Communication Wiring

7.5.3.21(1) All communication wiring will be run in conduit or cable tray in all areas of the Facility.

7.5.3.21(2) Do not install communication wiring in raceways containing line voltage, Class 1, or Class 2 wiring.

7.5.3.21(3) Verify the integrity of the entire network following cable installation.

7.5.3.21(4) When a cable enters or exits a building, a lightning arrestor will be installed between the lines and ground. The lighting arrestor will be installed according to the manufacturer's instructions.

7.5.3.21(5) All runs of communication wiring will be unspliced length when that length is commercially available.

7.5.3.21(6) All communication wiring will be labelled to indicate origination and destination data.

7.5.3.21(7) BMS communication wiring will be provided in a distinct colour from other building network wiring.

7.5.3.21(8) BACnet MS/TP communications wiring will be installed in accordance with ASHRAE/ANSI Standard 135.

7.5.3.21(9) Ethernet and MS/TP cabling can be run together.

7.5.3.21(10) Fibre optics can be run with Ethernet and MS/TP cabling as long as conduit is bent to fibre optic standards, fibre optic cable is protected from damage by a protective sheath, and junction boxes are sized for fibre optic use.

7.5.3.22 Sensors

7.5.3.22(1) Provide sensors to achieve end-to-end accuracy specified in Table 1.

7.5.3.22(2) Install sensors in accordance with the manufacturer's recommendations.

7.5.3.22(3) Mount sensors rigidly and adequately for the environment in which the sensor operates.

7.5.3.22(4) Room temperature sensors will be installed on concealed junction boxes properly supported by wall framing.

7.5.3.22(5) All wires attached to sensors will be air sealed in their raceways or in the wall to stop air transmitted from other areas affecting sensor readings.

7.5.3.22(6) Sensors used in mixing plenums and at air handling unit discharge air will be of the averaging type.

7.5.3.22(7) All pipe-mounted temperature sensors will be installed in wells. Install all liquid temperature sensors with heat-conducting fluid in thermal wells.

7.5.3.22(8) Install outdoor air temperature sensors on north wall, complete with sun shield at designated location.

7.5.3.22(9) Piping to the pressure ports on all pressure transducers will contain a capped test port located adjacent to the transducer.

7.5.3.22(10) All pressure transducers, other than those controlling variable air volume (VAV) boxes, will be located in field device panels, not on the equipment monitor or on ductwork. Mount transducers in a location accessible for service without use of ladders or special equipment.

7.5.3.22(11) All air and water differential pressure sensors will have gauge tees mounted adjacent to the taps. Water gauges will also have shutoff valves installed before the tee.

7.5.3.22(12) Smoke detectors, freeze stats, high-pressure cut-offs, and other safety switches will be hard-wired to de-energize equipment as described in the sequence of operation. Switches will require manual reset. Provide contacts that allow BMS to monitor safety switch status.

7.5.3.22(13) Install humidity sensors for humidifiers at least 3 m downstream of the humidifier. Do not install filters between the humidifier and the sensor.

7.5.3.22(14) Sensor range will be suitable for the specific application.

7.5.3.22(15) Humidity sensors will not drift more than 1% of full scale annually.

7.5.3.22(16) Provide matched calibrated sensors for differential temperature measurement applications.

7.5.3.22(17) Provide adjustable type thermostats in all patient rooms with temperature readout. The BMS will control the temperature range and be able to lock out manual adjustments of the thermostats.

7.5.3.22(18) Provide airflow sensors at infectious control isolation dampers in ductwork to ensure isolation has been achieved.

7.5.3.22(19) Provide sensors to monitor outdoor air volumes, space CO2 levels, and other levels as required.

7.5.3.22(20) Provide continuously-operating sensors between all spaces requiring differential pressurization to monitor that the required pressure differential is in place. In addition to BMS alarms, provide local audio and visual alarms at the room entrance as well as at the local monitoring station if applicable.

7.5.3.22(21) Provide particle count sensors downstream of all HEPA filter installations.

7.5.3.22(22) Provide thermostats and humidity sensors throughout the Facility as required by CSA Z317.2. For areas critical to Facility operation, room sensors will be provided. Mercury-containing components are not permitted.

7.5.3.22(23) Provide adjustable type thermostats in all patient rooms with temperature readout. The BMS will control the temperature range and be able to lock out manual adjustments of the thermostats.

7.5.3.22(24) In secure rooms, provide electronic, flat plate type (transducer) thermostats located flush mount on wall surface at minimum 2.4m above finished floor. Temperature control for Secure rooms will be controlled by the BMS – no user override is permitted.

7.5.3.22(25) Provide local pressure control for each isolation room and anteroom. Provide a local annunciator panel located in the corridor outside each of these rooms.

7.5.3.22(26) Occupancy sensors will utilize Passive Infrared (PIR) and/or Microphonic Passive technology to detect the presence of people within a room. Sensors will be mounted as indicated on the approved drawings. The sensor output will be accessible by any lighting and/or HVAC controller in the system. Occupancy sensors will be capable of being powered from the lighting or HVAC control panel, as shown on the drawings. Occupancy sensor delay will be software adjustable through the user interface and will not require manual adjustment at the sensor.

7.5.3.22(27) Outdoor air temperature sensors.

- 7.5.3.22(27)a. Each building within the Facility will have a separate outdoor air temperature sensor.
- 7.5.3.22(27)b. Each air handling unit processing outdoor air will have a dedicated outdoor air temperature sensor.
- 7.5.3.22(27)c. Outdoor air sensors will be located on the north or east side of the building with a waterproof enclosure and sun shield to minimize the effects of solar loading.

7.5.3.22(28) Provide a human machine interface (HMI) for display, monitoring and adjustment of zone environment parameters for all critical environment rooms. For each application provide display, monitoring and adjustment to the following parameters: space pressure, air change rate, temperature, humidity, door contact switch status, occupancy mode, lighting level.

7.5.3.23 Motorized Control Dampers

7.5.3.23(1) Type. Outdoor and return air mixing dampers and face-and-bypass dampers will be parallel-blade and will direct airstreams toward each other. Other modulating dampers will be opposed-blade. Two-position shut-off dampers will be parallel- or opposed-blade.

7.5.3.23(2) Leakage. Damper will be AMCA rated for leakage class 1A at 250 Pa static pressure differential.

7.5.3.23(3) All damper will be modulating type, unless noted otherwise.

7.5.3.23(4) Floating actuators are not acceptable for modulating service.

7.5.3.23(5) All control dampers will have spring-return mechanism or electronic failsafe, configured for specified fail position.

7.5.3.23(6) Provide damper position feedback output for all motorized dampers.

7.5.3.23(7) Provide a visible and accessible indication of damper position on the drive shaft ends.

7.5.3.23(8) Dampers blades, axles, and linkages will operate without binding. On multiple assemblies, all sections will open and close simultaneously.

7.5.3.24 Smoke Dampers

7.5.3.24(1) Smoke dampers will be UL/ULC approved for use in passive systems, smoke control systems, and smoke management systems.

7.5.3.24(2) Smoke dampers will be UL/ULC rated leakage Class 1.

7.5.3.24(3) Actuators will be factory-mounted as required by UL 555S / ULC-S112.1.

7.5.3.24(4) Ensure smoke dampers function properly and respond to the proper fire alarm system general, zone, and/or detector trips.

7.5.3.25 Control Valves

7.5.3.25(1) Control valves will be installed so that they are accessible and serviceable and so that actuators may be serviced and removed without interference from structure or other pipes and/or equipment.

7.5.3.25(2) Isolation valves will be installed so that the control valve body may be serviced without draining the supply/return side piping system. Unions will be installed at all connections to screw-type control valves.

7.5.3.25(3) Provide manual bypass valves around all control valves serving air handling unit coils to allow uninterrupted operation during valve servicing.

7.5.3.25(4) All control valves will be modulating type, unless noted otherwise.

7.5.3.25(5) Provide valve position status output, beyond open/closed status for all control valves, for only those control valves that service major equipment or equipment needing monitored modulations to establish critical function of the system.

7.5.3.25(6) All control valves will have spring-return mechanism or electronic failsafe, configured for specified fail position.

7.5.3.25(7) Control valves

7.5.3.25(7)a. Zone valves – normally open.

7.5.3.25(7)b. Heating coils at air handlers – normally open.

7.5.3.25(7)c. Chilled water control valves at air handlers – normally closed.

7.5.3.25(7)d. Steam humidification control valves –

7.5.3.25(7)e. All other valves – normally open or closed as required to provide safe and reliable operation under failure situation.

7.5.3.25(8) Control Valves – Hydronic.

7.5.3.25(8)a. Valve actuator and trim minimum close-off (differential) pressure rating will be 150% of total system (pump) head for two-way valves and the greater of 300% of pressure differential between ports A and B at design flow or 100% of total system (pump) head for 3-way valves.

7.5.3.25(8)b. Sizing Criteria: Two-position service will be line size to minimize pressure drop. Modulating service will be sized to maintain adequate control valve authority to provide stable control of the load served.

7.5.3.25(9) Control Valves – Steam.

7.5.3.25(9)a. Valve actuator and trim minimum close-off (differential) pressure rating will be 150% of operating (inlet) pressure.

7.5.3.25(9)b. Sizing Criteria.

7.5.3.25(9)b.1 Two-position service: pressure drop 10% to 20% of inlet pressure.

7.5.3.25(9)b.2 Modulating service (100 kPa or less): pressure drop 80% of inlet pressure.

7.5.3.25(9)b.3 Modulating service (101 kPa to 350 kPa): pressure drop 50% of inlet pressure.

7.5.3.25(9)b.4 Modulating service (over 350 kPa): pressure drop 50% of inlet pressure.

7.5.3.26 Valve and Damper Actuators

7.5.3.26(1) Floating actuators are not acceptable for modulating service.

7.5.3.26(2) Stall Protection. Mechanical or electronic stall protection will prevent actuator damage throughout the actuator's rotation.

7.5.3.26(3) Spring-return Mechanism. Actuators used for power-failure and safety applications will have an internal mechanical spring-return mechanism or an uninterruptible power supply (UPS).

7.5.3.26(4) Manual Positioning. Operators will be able to manually position each actuator when the actuator is not powered. Non-spring-return actuators will have an external manual gear release. Spring-return actuators with more than 7 N·m (60 in-lb) torque capacity will have a manual crank.

7.5.3.27 Airflow Monitoring

7.5.3.27(1) Provide airflow meters where required as part of the sub-metering system, where required for LEED prerequisites/credits, and where specified elsewhere in the Statement of Requirements.

7.5.3.27(2) Provide airflow monitoring of all outdoor air intakes.

7.5.3.27(3) Provide airflow monitoring of supply air and return/exhaust air from all air handling units.

7.5.3.27(4) Provide airflow monitoring of all exhaust systems larger than 2,500 L/s.

7.5.3.27(5) All airflow monitoring stations will comply with minimum end-to-end accuracy requirements specified in Table 1.

7.5.3.27(6) Provide type of flow meter suitable for application and level of air contamination. Selected device will maintain specified accuracy throughout expected range of flow variation for specific system application.

7.5.3.28 Fluid Flow Meters

7.5.3.28(1) Provide fluid flow meters where required as part of the sub-metering system and as required for optimized system operation. Refer to Schedule 9 :Energy.

7.5.3.28(2) All fluid flow meters to comply with minimum end-to-end accuracy requirements specified in Table 1.

7.5.3.28(3) Each meter will be individually calibrated and tagged accordingly against the manufacturer's primary standards which will be accurate to within 0.1% of flow rate and traceable to the National Institute of Standards and Technology (NIST).

7.5.3.28(4) All wetted metal parts will be stainless steel.

7.5.3.28(5) Required accuracy will be maintained through expected range of flow variation for specific system application.

7.5.3.28(6) Provide type of flow meter suitable for application and service fluid. For hydronic flow meters, provide electromagnetic flow-tube type to reduce maintenance requirements.

7.5.3.28(7) Strap-on flow meters are not permitted.

7.5.3.29 Thermal Energy Meters

7.5.3.29(1) Provide thermal energy meters where required as part of the sub- metering system.

7.5.3.29(2) All thermal energy meters to comply with minimum end-to-end accuracy requirements specified in Table 1.

7.5.3.29(3) All meters will be factory calibrated and traceable to NIST with certification.

7.5.3.30 Auxiliary Control Devices

7.5.3.30(1) Flow switches

7.5.3.30(1)a. Flow-proving switches will be paddle (water service only) or differential pressure type (air or water service). Switches will be ULC listed, single-pole double-throw (SPDT) snap-acting, and pilot duty rated (125 VA minimum). Paddle switches will have adjustable sensitivity. Differential pressure switches will have scale range and differential suitable for intended application.

7.5.3.30(1)b. Use correct paddle for pipe diameter.

7.5.3.30(2) Relays

7.5.3.30(2)a. Control relays will be plug-in type, ULC listed, and will have dust cover and LED "energized" indicator. Contact rating, configuration, and coil voltage will be suitable for application.

7.5.3.30(2)b. Time delay relays will be solid-state plug-in type, UL listed, and will have adjustable time delay. Delay will be adjustable ±100% from setpoint shown. Contact rating, configuration, and coil voltage will be suitable for application.

7.5.3.30(3) Override timers

7.5.3.30(3)a. Unless implemented in control software, override timers will be spring-wound line voltage, ULC Listed, with contact rating and configuration required by application. Provide 0–6 hour calibrated dial unless otherwise specified. Flush mount timer on local control panel face or where shown.

7.5.3.30(4) Current transmitters

7.5.3.30(4)a. AC current transmitters will be self-powered, combination split- core current transformer type with built-in rectifier and high- gain servo amplifier with 4–20 mA two-wire output. Full-scale unit ranges will be 10 A, 20 A, 50 A, 100 A, 150 A, and 200 A, with internal zero and span adjustment. Unit accuracy will be ±1% full-scale at 500-ohm maximum burden.

7.5.3.30(4)b. Transmitter will meet or exceed ANSI/ISA S50.1 requirements and will be CSA approved.

7.5.3.30(5) Current transformers

7.5.3.30(5)a. AC current transformers will be CSA approved and will be completely encased (except for terminals) in approved plastic material.

7.5.3.30(5)b. Transformers will be available in various current ratios and will be selected for ±1% accuracy at 5 A full-scale output.

7.5.3.30(6) Voltage transmitters

7.5.3.30(6)a. AC voltage transmitters will be self-powered single-loop (two- wire) type, 4–20 mA output with zero and span adjustment.

7.5.3.30(6)b. Adjustable full-scale unit ranges will be 100–130 VAC, 200–250 VAC, 250–330 VAC, and 400–600 VAC. Unit accuracy will be ±1% full-scale at 500-ohm maximum burden.

7.5.3.30(6)c. Transmitters will meet or exceed ANSI/ISA S50.1 requirements and will be UL/CSA recognized at 600 VAC rating.

7.5.3.30(7) Voltage transformers

7.5.3.30(7)a. AC voltage transformers will be CSA approved, and have built-in fuse protection.

7.5.3.30(7)b. Transformers will be suitable for ambient temperatures of 4°C– 55°C (40°F–130°F) and will provide ±0.5% accuracy at 24 VAC and 5 VA load.

7.5.3.30(8) Power monitors

7.5.3.30(8)a. Selectable rate pulse output for kWh reading, 4–20 mA output for kW reading, N.O. alarm contact, and ability to operate with 5.0 A current inputs or 0–0.33 V inputs.

7.5.3.30(8)b. 1.0% full-scale true root mean square (RMS) power accuracy, +0.5 Hz, voltage input range 120–600 V, and auto range select.

7.5.3.30(8)c. Under voltage/phase monitor circuitry.

7.5.3.30(8)d. Current transformers having a 0.5% full scale accuracy, 600 VAC isolation voltage with 0–0.33 V output. If 0–5 A current transformers are provided, a three-phase disconnect/shorting switch assembly is required.

7.5.3.30(9) Current switches

7.5.3.30(9)a. Current-operated switches will be self-powered, solid-state with adjustable trip current. Select switches to match application current and BMS system output requirements.

7.5.3.30(10) Pressure transducers

7.5.3.30(10)a. Transducers will have linear output signal and field-adjustable zero and span.

7.5.3.30(10)b. Transducer sensing elements will withstand continuous operating conditions of positive or negative pressure 50% greater than calibrated span without damage.

7.5.3.30(10)c. Water pressure transducer diaphragm will be stainless steel with minimum proof pressure of 1000 kPa (150 psi). Transducer will have 4–20 mA output, suitable mounting provisions, and block and bleed valves.

7.5.3.30(10)d. Water differential pressure transducer diaphragm will be stainless steel with minimum proof pressure of 1000 kPa (150 psi). Over-range limit (differential pressure) and maximum static pressure will be 2000 kPa (300psi.) Transducer will have 4–20 mA output, suitable mounting provisions, and 5-valve manifold.

7.5.3.30(11) Differential pressure switches

7.5.3.30(11)a. Differential pressure switches (air or water service) will be UL listed, SPDT snap-acting, pilot duty rated (125 VA minimum) and will have scale range and differential suitable for intended application and NEMA 1 enclosure unless otherwise specified.

7.5.3.30(12) Pressure-electric (PE) switches

7.5.3.30(12)a. Will be metal or neoprene diaphragm actuated, operating pressure rated for 0–175 kPa (0–25 psig), with calibrated scale minimum setpoint range of 14–125 kPa (2–18 psig) minimum, UL listed.

7.5.3.30(12)b. Provide one- or two-stage switch action as required by application. Electrically rated for pilot duty service (125 VA minimum) and/or for motor control.

7.5.3.30(12)c. 7.4.3.29(12)(c) Switches will be open type (panel-mounted) or enclosed type for remote installation. Enclosed type will be NEMA 1 unless otherwise specified.

7.5.3.31 Identification

7.5.3.31(1) Warning labels. Provide permanent warning labels to all equipment that can be automatically started by the control system. Permanent warning labels will be affixed to all motor starters and control panels that are connected to multiple power sources utilizing separate disconnects.

7.5.3.31(2) Control equipment and device labelling.

7.5.3.31(2)a. Permanently label or code each point of field terminal strips to show the instrument or item served.

7.5.3.31(2)b. Identify all control panels. Install panel identification label on outside of panel door.

7.5.3.31(2)c. Identify all other control components with permanent labels. All plug-in components will be labelled such that label removal of the component does not remove the label.

7.5.3.31(2)d. Labels and tags will match unique identifiers shown on the record drawings.

7.5.3.31(2)e. All sensors and actuators not in occupied areas will be tagged.

7.5.3.31(2)f. Each device inside enclosures will be tagged.

7.5.3.31(3) Manufacturers' nameplates and CSA certification/approval labels will be visible and legible after equipment is installed.

7.5.3.31(4) Identification of wires.

7.5.3.31(4)a. All wiring and cabling, including that within factory-fabricated panels will be labelled at each end of termination with control system address or termination number.

7.5.3.31(4)b. Tag each network wire with a common identifier on each end.

7.5.3.31(4)c. Tag each power source with the panel and breaker number it is fed from.

7.5.3.31(4)d. Identify low voltage conduit runs as BMS conduit, power feeds not included.

7.5.3.31(4)e. Identify each electric box, junction box, utility box with permanent label. Provide control company label.

7.5.3.31(4)f. For conduit runs more than 2.4m between junction boxes in one room, place identifier at least every 2.4 m.

7.5.3.31(4)g. Place identify on each side where a conduit passes through a wall or other inaccessible path.

7.5.3.31(4)h. Identify BMS communication conduits in same manner as above.

7.5.3.31(5) Provide tags for all control valves indicating service and number.

7.5.3.31(6) Provide tags for all motorized dampers indicating service and number.

7.5.3.32 Programming

7.5.3.32(1) Provide sufficient internal memory for the specified sequence of operation and trend logging of all points at 5-minute intervals for a period of 2-years

7.5.3.32(2) All equipment and point naming conventions for all BMS points will follow the ASHRAE 223P (Project Haystack) standard.

7.5.3.32(3) Provide all programming for each system to provide a fully operating system under all operating conditions.

7.5.3.32(4) Imbed into the control program sufficient comment statements to clearly describe each section of the program.

7.5.3.32(5) Use the appropriate programming types. All techniques used will provide actions for all possible situations and will be documented.

7.5.3.32(6) All setpoints, timers, deadbands, PID gains will be adjustable by the user with appropriate access level. Software points will be used for these variables. Fixed scalar numbers will not be embedded in programs except for physical constants and conversion factors.

7.5.3.32(7) Values for all points, including read (hardware) points used in control sequences will be capable of being overridden by the user with appropriate access level. If hardware design prevents this for hardware points, they will be equated to a software point, and the software point will be used in all sequences. Exceptions will be made for machine or life safety.

7.5.3.33 Automatic Fault Detection and Diagnostics

7.5.3.33(1) Provide BMS complete with automated fault detection, diagnosis, and reporting (AFDDR) software, hardware interface and communication devices. Configure the AFDDR software to ensure building systems remain continuously optimized and the need for fault diagnosis by the Facility operator is minimized. Ensure the AFDDR software will record and provide reports of the BMS controller database software modification instances, facility air quality, key performance indication of central system HVAC equipment control loops, key performance indication of zone control loops, occupant comfort, energy performance, ability to create virtual metering utilizing the BMS points to allow drill down capability from the main metering points to facilitate the operators in isolating poorly performing systems, operation / machine fault, manual override and other customizable web-accessible reports available to the Authority. AFDDR software vendor will advise BMS of all points necessary to meter or build virtual meters that optimize AFDDR function. AFDDR Software will provide customizable web-accessible reports available to the Authority, with rules and dashboard customized in consultation with the Authority.

7.5.3.34 Measurement and Verification (M&V)

7.5.3.34(1) Provide a complete measurement and verification (M&V) system for collection and storage of Facility energy and water consumption and performance to confirm Facility performance.

7.5.3.34(2) Provide all physical and virtual meters as required.

7.5.3.34(3) Provide a complete digital metering system to monitor and track electricity, natural gas, thermal meter, and domestic water measurements of the building via the BMS.

7.5.3.34(4) Software will store all data in comma separated variable (.CSV) file format. Meters and points are to be read and stored every 5 minutes.

7.5.3.34(5) The software will allow the user to view instantaneous readings of voltage, current, energy, power, phase angle, present and peak demand from all electricity meters.

7.5.3.34(6) The software will allow the user to view all meter measurements in either metric or imperial units for any thermal or water meter.

7.5.3.34(7) The software will have the ability to export data into reporting applications (e.g. Web, Excel, and notepad).

7.5.3.34(8) The software will store measurements for a minimum period of 36 months. Measurements will commence from the date of occupancy and be stored for the entire duration of the measurement and verification period.

7.5.3.34(9) The software will include service menus for diagnostic monitoring of the metering equipment.

7.5.3.34(10) The software will allow remote access through either a modem/telephone link or Internet access. Provide security access control to assign permission levels for remote access.

7.5.3.34(11) Output file format and storage.

7.5.3.34(11)a. Data will be recorded every hour.

7.5.3.34(11)b. Data will be provided in comma separated value (.CSV) files.

7.5.3.34(11)c. Each row in the output file will represent a successive sample time.

7.5.3.34(11)d. Include a time stamp for each line in the file.

7.5.3.34(11)e. Separate each field by a single comma character.

7.5.3.34(11)f. Each required monitoring point will contain a unique and understandable identifier.

7.5.3.34(11)g. Each required monitoring point will be identified with a unique and understandable column.

7.5.3.34(11)h. All recorded data is to be stored on the BMS server.

7.5.3.34(11)i. Provide data files to the Authority in electronic format.

7.5.3.34(12) The system will be capable of storing data for a minimum of all metering points for a period of no less than 36 months.

7.5.3.34(13) The BMS will be utilized for the M&V process. All energy measurement points (mechanical and electrical) will be connected to the BMS for energy and water monitoring and calculation.

7.5.3.34(14) Division 22 and 23 energy metering devices will be connected directly to the BMS system. The BMS will provide for continuous monitoring of all related M&V metering points.

7.5.3.34(15) BMS system will connect separately to the main incoming electrical utility meter and other electrical sub-meters through BACnet interface connection to measure the total power consumption and subsystems of the building.

7.5.3.34(16) To reconcile actual energy use to predicted energy use, energy by end- use will be metered.

7.5.3.34(17) Energy metering for mechanical systems.

7.5.3.34(17)a. Divisions 22 and 23 energy metering will include various thermal energy meters, domestic water flow meters, airflow stations, air and water temperature sensors, electrical power consumption of variable frequency drives (pumps and fans) from BACnet interface, start/stop status of pump, fan as well as current transformers (CTs) used for measuring mechanical equipment consumption, and other inputs indicated in the M&V Plan. All mechanical equipment not being supplied by packaged network interface card capable of recording energy consumption, will be equipped with dedicated CTs used for metering purposes.

7.5.3.34(17)b. All variable frequency drives for fans and pumps will provide system status, speed (%) and power consumption (kW or kWh) information to the BMS.

7.5.3.34(17)c. Configure VFDs such that they populate continuous power consumption data to the BMS. Any energy optimization capabilities available within the VFD will also be programmed and activated.

7.5.3.34(17)d. Water meters other than the municipal meter will have a digital output to the BMS providing flow rate and instantaneous totalizing water volume/consumption information.

7.5.3.34(17)e. Thermal energy meters will connect to the BMS providing instantaneous data for liquid flow rate, supply and return water temperatures, kW and kWh and load/energy information.

7.5.3.34(17)f. Gas meters will have connection to the BMS providing instantaneous data for totalizing gas consumption in cubic meters.

7.5.3.34(18) Energy metering for electrical systems

7.5.3.34(18)a. The electrical system metering will be capable to measure the power line through dedicated meter and CTs for interior lighting, exterior lighting, emergency lighting, plug load and mechanical circuits. The BMS will connect to the electrical systems meters through BACnet interface connection.

7.5.3.34(18)b. CTs interval trending for lighting and plug loads to be minimum 30sec.

7.5.3.34(19) Provide commissioning of the metering system to the satisfaction of the Authority and demonstrate the proper functioning of the metering system on the BMS.

7.5.3.34(20) Calibrate and test all energy and water monitoring sensors. Provide a calibration report to verify that the meters have been installed and calibrated to read within acceptable limits of accuracy as specified in Division 22, 23, 25 and 26.

7.5.3.35 Start-Up and Checkout Procedures

7.5.3.35(1) Start-up testing. All testing will be performed by the Design-Builder and will make up part of the necessary verification of an operating control system. this testing will be completed before the Authority is notified of the system demonstration.

7.5.3.35(2) Start up, check out, and test all hardware and software and verify communication between all components.

7.5.3.35(3) Verify that all control wiring is properly connected and free of all shorts and ground faults. Verify that terminations are tight.

7.5.3.35(4) Verify that all input/output points read properly.

7.5.3.35(5) Verify all alarms and interlocks.

7.5.3.35(6) Verify operation of the integrated system.

7.5.3.35(7) Calibrate and prepare for service all instruments, controls, and accessory equipment furnished as part of the Project.

7.5.3.35(8) Verify calibration of all input devices individually. Perform calibration procedures according to manufacturer's recommendations.

7.5.3.35(9) Verify that all binary output devices operate properly and that the normal positions are correct.

7.5.3.35(10) Verify that all analogue output devices are functional, that start and span are correct, and that direction and normal positions are correct. Verify that all control valves and automatic dampers to ensure proper action and closure.

7.5.3.35(11) Verify that the system operation adheres to the sequences of operation.

7.5.3.35(12) Simulate and observe all modes of operation. Tune all control loops.

7.5.3.35(13) Check each alarm separately to ensure correct annunciation.

7.5.3.35(14) Test all interlocks to check logic and ensure that the fail-safe condition is in the proper direction.

7.5.3.36 Control System Demonstration and Acceptance

7.5.3.36(1) Prior to acceptance, the control system will undergo a series of performance tests to verify operation and compliance with this specification. These tests will occur after installation is complete, equipment has been started up, and system and equipment tests have been completed.

7.5.3.36(2) Provide the tests described in this section in addition to the tests required as a necessary part of the installation, start-up, and debugging process. The Authority's representative will be present to observe and review these tests. Provide at least 14 days notification in advance of the start of the testing procedures.

7.5.3.36(3) The demonstration process will follow that approved at part of the Commissioning procedures. Approved checklists and forms will be completed for all systems as part of the demonstration.

7.5.3.36(4) Demonstrate actual field operation of each control and sensing point for all modes of operation including day, night, occupied, unoccupied, fire/smoke alarm, seasonal changeover, and power failure modes. The purpose is to demonstrate the calibration, response, and action of every point and system. Provide all test equipment required to prove proper operation.

7.5.3.36(5) Provide a log indicating the date, technician's initials, and any corrective action taken or needed for each control input and output.

7.5.3.36(6) Demonstrate compliance with "System Performance" section of Division 25.

7.5.3.36(7) Demonstrate compliance with sequences of operation through all modes of operation.

7.5.3.36(8) Demonstrate complete operation of operator interface.

7.5.3.36(9) Provide trend data output in a graphical form showing the step response of each BMS control loop. The test will show the loop's response to a change in setpoint, which represents a change of actuator position of at least 25% of its full range. The sampling rate of the trend will be from 10 seconds to 3 minutes, depending on the speed of the control loop. The trend data will show for each sample the setpoint, actuator position, and controlled variable values. Provide all tuning necessary to ensure each loop operates in an optimally tuned manner.

7.5.3.36(10) Provide trend data output showing the action of demand limiting on a minute-by-minute basis over at least a 30-minute period. The trend will include kW, demand limiting setpoint, and the status of sheddable equipment outputs.

7.5.3.36(11) Provide trend data output showing the capability of optimum start/stop algorithms. The change-of-value or change-of-stage trends will include the output status of all optimally started and stopped equipment, as well as temperature sensor inputs of affected areas.

7.5.3.36(12) Demonstrate interface to the building fire alarm system.

7.5.3.36(13) Demonstrate compliance with smoke control sequences of operation through all modes of fire and smoke event response throughout the Facility.

7.5.3.36(14) Provide operational logs for each system that indicate all setpoints, operating points, valve positions, modes, and equipment status. These logs will cover three 48-hour periods and have a sample frequency of not more than 5 minutes.

7.5.3.36(15) Provide all necessary repairs or revisions to the hardware and software as required to successfully complete all tests.

7.5.3.36(16) All tests described in Division 25 will be performed to the satisfaction of the Authority prior to the acceptance of the control system as meeting the requirements of completion.

7.5.3.36(17) The system will not be accepted until all forms and checklists have been completed as part of the demonstration and are submitted and approved as required.

7.5.3.37 Training

7.5.3.37(1) Provide training for Authority staff prior to Authority taking over the Facility. Training will be provided on-site and be video recorded for future self-paced training.

7.5.3.37(2) Train the designated Authority staff to enable them to do the following:

7.5.3.37(2)a. Day-to-day operators:

- 7.5.3.37(2)a.1 Proficiently operate the system;
- 7.5.3.37(2)a.2 Understand BMS architecture and configuration;
- 7.5.3.37(2)a.3 Understand system components;
- 7.5.3.37(2)a.4 Understand system operation, including BMS control and optimizing routines and algorithms;
- 7.5.3.37(2)a.5 Operate the workstation and peripherals;
- 7.5.3.37(2)a.6 Log on and off the system;
- 7.5.3.37(2)a.7 Access graphics, point reports, and logs;
- 7.5.3.37(2)a.8 Adjust and change system setpoints, time schedules, and holiday schedules;
- 7.5.3.37(2)a.9 Recognize malfunctions of the system by observation of graphical visual signals;
- 7.5.3.37(2)a.10 Understand system drawings and operating and maintenance manuals;
- 7.5.3.37(2)a.11 Access data from controllers; and
- 7.5.3.37(2)a.12 Operate portable operator's terminals.

7.5.3.37(2)b. Advanced operators:

- 7.5.3.37(2)b.1 Make and change graphics on the workstation;
- 7.5.3.37(2)b.2 Create, delete, and modify alarms, including annunciation and routing of these;
- 7.5.3.37(2)b.3 Create, delete, and modify point trend logs and graph;
- 7.5.3.37(2)b.4 Create, delete, and modify reports;
- 7.5.3.37(2)b.5 Add, remove, and modify system's physical points;
- 7.5.3.37(2)b.6 Create, modify, and delete programming
- 7.5.3.37(2)b.7 Add panels when required;
- 7.5.3.37(2)b.8 Add operator interface stations;
- 7.5.3.37(2)b.9 Create, delete, and modify system displays, both graphical and others;
- 7.5.3.37(2)b.10 Perform BMS field checkout procedures;
- 7.5.3.37(2)b.11 Perform BMS controller unit operation and maintenance procedures;
- 7.5.3.37(2)b.12 Perform workstation and peripheral operation and maintenance procedures;
- 7.5.3.37(2)b.13 Perform BMS diagnostic procedures;

7.5.3.37(2)b.14 Configure hardware including PC boards, switches, communication, and I/O points; and

7.5.3.37(2)b.15 Maintain, calibrate, and replace system components.

7.5.3.37(2)c. System managers and administrators:

7.5.3.37(2)c.1 Maintain software and prepare backups;

7.5.3.37(2)c.2 Interface with project-specific, third-party operator software; and

7.5.3.37(2)c.3 Add new users and understand password security procedures.

7.5.3.37(3) Provide a virtualized environment for the BMS simulating a facility of similar size to the Facility. This virtualized environment will simulate all systems contained in Division 25 and be used to train Authority user groups on the use and troubleshooting of the BMS by a system expert provided by Design-Builder. Design-Builder will make this training service available to the Authority at least twelve months prior to Substantial Completion.

7.5.3.37(4) Provide an expert in the BMS who has experience using the system in healthcare environments. The expert will assist in commissioning the BMS, as well as programming to assist in smart commissioning of the Facility and provide ongoing training and system development.

7.5.4 Electrical Systems

7.5.4.1(1) System Overview

7.5.4.1(1)a. Electrical systems requiring BMS interfaces include:

7.5.4.1(1)a.1 Generators;

7.5.4.1(1)a.2 Lighting controls;

7.5.4.1(1)a.3 Load management system;

7.5.4.1(1)a.4 Electrical metering;

7.5.4.1(1)a.5 Switchgear;

7.5.4.1(1)a.6 UPS;

7.5.4.1(1)a.7 Fire Alarm System; and

7.5.4.1(1)a.8 Clock System.

7.5.4.1(2) Applicable Area

7.5.4.1(2)a. Applies to the Facility.

7.5.4.1(3) System Responsibilities

7.5.4.1(3)a. Authority will:

7.5.4.1(3)a.1 Provide design feedback to the Design-Builder.

7.5.4.1(3)b. Design-Builder will:

7.5.4.1(3)b.1 Design the system as determined by the Authority.

7.5.4.1(3)b.2 Provide BMS interfaces for the control, data and alarm points listed under “Performance Requirements” below, and as noted in Division 26 sections.

7.5.4.1(3)b.3 Design, supply and install all system infrastructures.

7.5.4.1(3)b.4 Design, supply and install all system equipment.

7.5.4.1(3)b.5 Design, supply and install all system software.

7.5.4.1(3)b.6 Commission all system infrastructure, equipment and software.

7.5.4.1(3)b.7 Integrate the system to the following systems:

.7.5.4.1.3.b.7.1 Integrated Building Management Platform.

7.5.4.1(4) Performance Criteria

7.5.4.1(4)a. Generators (for each generator);

7.5.4.1(4)a.1 Generator trouble points (all available points);

7.5.4.1(4)a.2 Generator run status;

7.5.4.1(4)a.3 Coolant temperature;

7.5.4.1(4)a.4 Battery voltage; and

7.5.4.1(4)a.5 Fuel level for each tank.

7.5.4.1(4)b. Lighting controls;

7.5.4.1(4)b.1 Refer to requirements in Section 7.5

7.5.4.1(4)c. Load management system;

7.5.4.1(4)c.1 Refer to requirements in Section 7.5

7.5.4.1(4)d. Electrical metering;

7.5.4.1(4)d.1 Refer to requirements in Section 7.5

7.5.4.1(4)e. Switchgear;

7.5.4.1(4)e.1 Refer to requirements in Section 7.5

7.5.4.1(4)f. UPS;

7.5.4.1(4)f.1 Refer to requirements in Section 7.5

7.5.4.1(4)g. Fire Alarm System;

7.5.4.1(4)g.1 Refer to requirements in Section 7.5

7.5.4.1(4)h. Clock System

7.5.4.1(4)h.1 Alarm for loss of central time signal; and

7.5.4.1(4)h.2 Synchronization of BMS system time and all alarm inputs with central time signal.

7.5.5 Network and Infrastructure Requirements

7.5.5.1 Intrabuilding backbone structured cabling will be provided as part of the structured cabling system defined in Section 7.7 - Communications (Division 27).

7.5.5.2 Design-Builder will provide all cabling infrastructure including, but not limited to: horizontal structured cabling, connectors, pathways, supports, patch cords, jacks, faceplates, labels required to connect all systems and field devices that are not part of Division 27 or Division 28 to the Authority Network.

7.5.5.3 Provide complete Category 6A cabling for each device that requires access to the Authority Network or FM Management System:

7.5.5.3(1) BMS controllers and devices that require connections to the Authority Network;

7.5.5.3(2) lighting controllers;

7.5.5.3(3) electrical meters;

7.5.5.3(4) Load Management System devices;

7.5.5.3(5) elevator controllers;

7.5.5.3(6) IBMP connected devices;

7.5.5.3(7) sterilizers; and

7.5.5.3(8) other devices identified by the Authority.

7.5.5.4 The Design-Builder will provide a dedicated software application to monitor and troubleshoot all BACnet/IP device traffic on the Authority Network.

7.5.5.5 Design-Builder will provide a single software GUI for the Authority Network to manage all network operations without the need for Command Line Interface (CLI) programming. The GUI will allow for a simple to use centralized management of the following for all network devices:

7.5.5.5(1) VLAN assignments;

7.5.5.5(2) PoE; and

7.5.5.5(3) Port Restrictions.

7.5.5.5(4) Design-Builder will provide all necessary project management, qualified technical expertise, infrastructure design, installation coordination, labour, materials, equipment, services, and other items required to fulfil its scope of work as defined in this section.

7.6 Electrical (Division 26)

7.6.1 Design Principles

7.6.1.1 This section is accompanied and will be read in conjunction with all the Appendices.

7.6.1.1(1) All electrical systems, materials and equipment will be new and of a type and quality intended for use in a health care facility. Configure electrical systems to meet requirements of the identified program and patient care needs in an efficient manner with optimal utilization of space, staff, and equipment resources.

7.6.1.1(2) Configure electrical systems to meet requirements of the identified program and patient care needs in an efficient manner with optimal utilization of space, staff, and equipment resources.

7.6.1.1(3) Provide electrical systems that provide redundancy, protection, continuity of service and a comfortable and safe working environment for patients, visitors, and staff.

7.6.1.1(4) Integrate systems where integration provides efficiency, operational and cost advantage.

7.6.1.1(5) Design for an adaptable electrical system allowing for additions, or modifications to reduce; the costs of ever on-going changes in the Facility, and associated services interruptions.

7.6.1.1(6) Include systems and equipment coordinated to provide synergy and reliable electrical performance for the various Facility functions.

7.6.1.1(7) Provide provisions to minimize the noise and vibrations of electrical equipment/components (transformers, luminaries, cables etc.) to below an acceptable level as required in a health care facility.

7.6.1.1(8) Locate electrical rooms and power distribution equipment in order to provide easy access for the equipment to be moved in and out of the electrical rooms and or replace the distribution equipment with new. Locate power distribution equipment to avoid interference with other services and equipment.

7.6.1.1(9) Provide clear aisle ways and routes to permit removal of major electrical equipment from the Facility as well as to bring in new equipment into the electrical rooms without impacting Hospital operations and site access.

7.6.1.1(10) Indicate on the floor plans the removal aisle ways and routes for major electrical equipment including transformers sized 225kVA and greater and switchgear sections.

7.6.1.1(11) Install equipment, conduits, piping, ductwork etc. in electrical rooms such that a minimum clear height of 2100 mm (7’-0”) AFF is available.

7.6.1.1(12) Electrical and communication rooms will not have drain pipes, plumbing pipes or water-cooled fan-coil units located in the room.

7.6.1.1(13) Incorporate energy management systems to minimize demand pressures on the facility systems and minimize the anticipated increase to energy costs.

7.6.1.1(14) Refer to Appendix 9 Energy regarding energy incentive programs. Integrate any requirements of those programs into the electrical systems.

7.6.1.1(15) Electrical systems to be made up of components with proven systems that are available at time of installation.

7.6.1.1(16) EMI is to be considered in installation of electrical equipment. EMI reduction to be achieved by electromagnetic shielding for transformers and switchgear, use of ferrous raceways including EMT as required by electrical Code, close spacing of conductors in feeders, running all the spaces of a feeder together to cancel net magnetic fields, locating all distribution transformers in electrical rooms and running feeders in service spaces and ceiling spaces away from occupied areas. Should there be an electromagnetic field that results in interference to equipment, Design-Builder will mitigate the electromagnetic field with appropriate techniques.

7.6.1.1(17) Install electrical systems and equipment in a fixed and permanent manner, seismically restrained to meet post-disaster facility standards. Plan installation of equipment to allocate space for future additions and to facilitate easy access to other systems and equipment which will require inspection or maintenance.

7.6.1.1(18) Incorporate redundancy into the electrical system design such that failure of any electrical equipment or feeder will not impair Facility operation or leave any area, room, floor plate or Component, or department of the Facility without at least one active light and one active receptacle unless stated otherwise.

7.6.1.1(19) Design and construct all systems with protection, grounding, isolation, and control to address the functional requirements where they are located. Power throughout the building will comprise of a combination of 347/600V for mechanical loads and 120/208V for all power, lighting and equipment loads except where 277/480V is required for the Authority’s equipment. Localized transformers will be allowed for the Authority’s equipment with specialized power requirements as required.

7.6.1.1(20) In addition to allowing for known future requirements, operating factors, safety factors, and mechanical loads and requirements, design and construct the Facility electrical systems with a minimum 20% spare capacity. This spare capacity is to be provided throughout the distribution network elements on secondary distribution and all major electrical equipment.

7.6.1.1(21) Redundancy will be incorporated into electrical systems and associated equipment such that the failure of a major feeder conductor or a single piece of electrical distribution equipment will not impair the operation of the Facility, or the clinical, or administrative, activities.

7.6.1.1(22) The installation will efficiently utilize available space, leaving space for future additions, and will be planned to facilitate easy access to other systems and equipment, including mechanical equipment, building systems access ways and architectural building components which will require periodic inspection or maintenance.

7.6.2 Wiring Methods, Materials and Devices

7.6.2.1 Basic Requirements

7.6.2.1(1) Use wiring methods, materials and devices that result in a safe, reliable, and flexible electrical power, lighting control, communication, data and life safety system.

7.6.2.1(2) Install all wiring in a neat and secure manner so that it is protected from damage, is not in conflict with mechanical or architectural components and allows for future changes and additions.

7.6.2.1(3) Do not install conduit or wiring in floor slabs, except where it is impossible to supply the device from the ceiling, or specific approval has been granted by the Authority.

7.6.2.1(4) Feeders to panelboards will be routed to the panelboard from the ceiling space above. Panelboards will not be fed via the slab below, nor will they be 'daisy-chained' through floors.

7.6.2.1(5) Branch circuits from panelboards will be routed to a large pullbox located in the ceiling space immediately above the panelboard for distribution through the above-ceiling service space.

7.6.2.1(6) Colour of power receptacles will be as follows:

7.6.2.1(6)a. Conditional power – YELLOW

7.6.2.1(6)b. Not used

7.6.2.1(6)c. Delayed Vital - BLUE

7.6.2.1(6)d. Vital power – RED

7.6.2.1(6)e. Not used

7.6.2.1(6)f. Housekeeping – BLACK

7.6.2.1(7) All power receptacles will be identified with panel and circuit number. Colour of labelling will be in accordance with Authority colour coding standards as follows:

7.6.2.1(7)a. Vital power - RED with WHITE text

7.6.2.1(7)b. Delayed vital power - BLUE with WHITE text

7.6.2.1(7)c. Conditional power - YELLOW with BLACK text

7.6.2.1(7)d. UPS - GREY with BLACK text

7.6.2.1(7)e. Not used

7.6.2.1(8) Design-Builder will submit to the Authority the proposed classification of all patient care areas in the Facility as per relevant CSA standard. The Authority will review these classifications and confirm the areas as basic, intermediate, or critical care. Provide as a minimum the circuit and receptacle requirements identified in the relevant CSA standard. Where this Schedule identifies requirements beyond the relevant CSA standard. The Design-Builder will comply with the requirements of this Schedule 1 Statement of Requirements.

7.6.2.1(9) Design-Builder will provide room reference bonding in accordance with all relevant CSA standards. The Design-Builder will provide a dedicated room reference ground bus located in accessible location, typically in the ceiling space behind the door to the room. Room reference ground bus will consist of a CSA listed enclosure complete with terminal strips, and mechanical divider to isolated different sources. All branch circuits will enter the room reference ground bus. Design-Builder to provide #8 AWG bond conductors for all Clinical Spaces bonding. Design-Builder will oversize conductors to all branch circuits within the patient care environment as defined by the relevant CSA standard to accommodate the voltage drop requirements and to facilitate the code required CSA Z32 testing.

7.6.2.1(10) All outlets to be installed at a height which allows for good ergonomics and not less than 460mm AFF unless required by code. Outlets to be typically installed at 460mm AFF except in, storage rooms, and equipment rooms, MDR, operating room, and procedure rooms will be mounted at 1100 mm AFF unless noted otherwise or as developed and agreed upon through Review Procedure.

7.6.2.1(11) Outlets, connections, and data for equipment must be coordinated with all equipment included in Schedule 1 Statement of Requirements.

7.6.2.1(12) Not used.

7.6.2.2 Performance Criteria

7.6.2.2(1) Utilize non-alloyed copper for all conductors and all conducting components of electrical equipment, which form part of the Facility's wiring systems. Minimum conductor size will be #12 AWG. Aluminum conductors installed in conduits may be used for feeders larger than #2/0 AWG.

7.6.2.2(2) All conductors #12 AWG and larger will be stranded.

7.6.2.2(3) Do not make use of TECK cable.

7.6.2.2(4) Armoured cable (BX) may be used for final connections from concealed junction boxes to lighting fixtures on suspended ceilings in non-clinical areas. The maximum length of any armoured cable from the junction box to the lighting fixture is 3 metres.

7.6.2.2(5) Armoured cable (BX) may be provided for receptacles and light switches for non-clinical areas in the Long Term Care area. Armoured cable AC90 ISO-BX may be provided for receptacles and light switches for clinical areas in the Long Term Care area. All installation of armoured cabling will be concealed in ceiling spaces and partition walls and will originate from an easily located and accessible junction box mounted above the ceiling of the room it serves. This junction box will only serve one room, and will utilise conduit to home run its circuits back to a panelboard. Horizontal runs of armoured cabling within the ceiling space will not exceed 3m. Armoured cable may be daisy-chained within a single wall, but will not extend around a corner or horizontally beyond 10 metres of its vertical drop. There will be no excess armoured cabling in the ceiling space and all wiring will be neatly strapped to the underside of slab or onto dedicated wire management supports. Do not support armoured cabling from mechanical ducts, pipes or equipment, or suspended ceiling systems.

7.6.2.2(6) Each branch circuit will be provided with a dedicated neutral conductor.

7.6.2.2(7) Provide panel boards, feeders, and branch circuiting with double neutral(s) capacity where significant non-linear load(s) are anticipated. This includes all offices, open offices, drop-down areas, workstations diagnostic and treatment equipment, and other areas with a medium to high density of personal computers.

7.6.2.2(8) Conceal all wiring and wiring support systems from public view.

7.6.2.2(9) Separate all wiring for systems of different voltages and from different sources and do not run in common raceways. Maintain adequate shielding and/or separation between wiring for power and Communications Systems to prevent interference.

7.6.2.2(10) Provide hospital grade receptacles for all patient care areas. Receptacles in all other areas will be specification grade. Receptacles will be colour coded.

7.6.2.2(11) Utilize smooth stainless steel -cover plates for receptacles and switches. Grouped receptacles and switches will have a single cover plate for the whole group.

7.6.2.2(12) Provide minimum quantity of receptacles as indicated in relevant CSA standard, unless a higher quantity is required in this Schedule and is required to support the needs of the equipment or activities being performed in the area.

7.6.2.2(13) Design-Builder will provide receptacles and connections as directed by the user group to all Authority supplied equipment.

7.6.2.2(14) Design-Builder will provide power, data and make all connections in accordance with manufacturer’s installation recommendations for the following: all light arms, articulation arms, equipment booms, anaesthesia booms, auxiliary booms, diagnostic treatment, testing and observation equipment.

7.6.2.2(15) Design-Builder will make allowances for the installation of all Authority supplied equipment, surgical and procedure equipment, devices noted in this schedule as well as based on experience, industry standards and good practice.

7.6.2.2(16) Unless otherwise requested by the Authority or required elsewhere in this specification, provide emergency power in patient care environments as per the relevant CSA standard. Feed 75% of types of receptacles within the Emergency Department from the Vital distribution and the remainder of the receptacles in the Emergency Department will be provided with conditional or UPS emergency power.

7.6.2.2(17) Allow a maximum connection of three general use receptacles to one 15/20 A circuit.

7.6.2.2(18) Provide one (1) duplex receptacle rated at 15A or 20A, 125V for all microwaves, coffee makers, refrigerators, ice machines, water dispensers as noted in the Appendix 1B Furniture and Medical Equipment, and Appendix 1A Clinical Specifications. This is in addition to all other receptacles identified in this Schedule and all other relevant references in all other associated Appendices.

7.6.2.2(19) Provide one (1) duplex convenience receptacle rated at 15A, 125V in all rooms. This is in addition to all other receptacles identified in this Schedule.

7.6.2.2(20) Utilize NEMA 5-20R 15/20Amp style receptacles for printers and copiers. Provide 20A rated dedicated circuits for each printer and copier.

7.6.2.2(21) In staff, long-term care and patient washrooms, provide one (1) GFCI 15A 120V duplex receptacle above the counter connected to Conditional power.

7.6.2.2(22) Utilize NEMA 5-20R 15/20Amp style receptacles for housekeeping staggered on alternate sides of the hallways spaced a maximum of 10 meters apart. Provide 20A rated dedicated circuits for each area, to a maximum of four (4) receptacles per circuit.

7.6.2.2(23) 15/20A 120V duplex receptacle and one 20A, 208V twist lock receptacle in Back of House areas spaced at 10 meter centres maximum. Each wall will have minimum one (1) receptacle. Connect these receptacles to the conditional power branch.

7.6.2.2(24) Provide a minimum of one (1) power outlet on each wall in all offices. In single occupancy offices, two (2) outlets will be quadplexes located to serve the location of possible workstations, the other two (2) will be convenience duplexes. One of the two (2) quadplexes outlets will be fed from vital power.

7.6.2.2(25) One (1) receptacle per workstation in each office, open office or drop-down workstation will be complete with USB charging ports..

7.6.2.2(26) Provide two (2) USB receptacles per public areas, lounges, staff rooms waiting areas and similar areas.

7.6.2.2(27) Provide one (1) USB receptacles per patient room headwall.

7.6.2.2(28) Provide a minimum of two (2) 20Amp outlets for all alcoves.

7.6.2.2(29) Provide one (1) 20Amp outlet for pumps, IVs etc. in all storage closets.

7.6.2.2(30) Provide a minimum of one (1) conditional and one (1) vital 20Amp circuits per four open office workstations.

7.6.2.2(31) Provide a minimum of one (1) conditional 20Amp circuit per two single person enclosed offices and provide a minimum of one (1) vital circuit per three single person offices

7.6.2.2(32) In each multi-occupancy office provide a minimum of one (1) quadplex receptacles for each desk or workstation and a minimum of one (1) duplex receptacle spaced every 3 meters of open wall space. A minimum of one (1) outlet will be on vital power.

7.6.2.2(33) Each workstation will have a minimum of two (2) receptacles utilizing one quad receptacle (dedicated circuit) and one (1) duplex receptacle (shared circuit). Locate at a minimum the quad receptacle above the work surface. Final layout and location of receptacles will be as directed by the Authority during the review process.

7.6.2.2(34) Provide a minimum of five (5) duplex receptacles connected to three (3) dedicated circuits in each exam or treatment room, two of which will be fed from vital power.

7.6.2.2(35) Provide a minimum of six (6) duplex receptacles at each clean utility room, 50% of which will be fed from vital power and the remainder connected to conditional power.

7.6.2.2(36) In each Nursing Station (nurse station), and satellite nursing station provide one quadplex receptacle spaced 1 m on centre below work counters in knee space or above counter if no knee space is provided. 50% of these receptacles will be fed from vital power and the remainder connected to conditional power.

7.6.2.2(37) In each conference, meeting rooms, break-out room, similar rooms and all rooms noted in Appendix 1A Clinical Specifications that are noted as requiring video conferencing capabilities will be provided at a minimum, one duplex receptacle spaced every 1.5 meters of wall space and one duplex receptacle spaced a maximum every meter above work counters. In addition, provide receptacles for all dedicated equipment such as microwaves, coffee makers, refrigerators. At all locations with overhead projectors provide 15Amp 120 volt receptacle located at ceiling.

7.6.2.2(38) Provide three (3) duplex receptacles at each patient treatment bed or care location in patient care areas defined by relevant CSA standard as "Basic Care Area" and connect one of the receptacles to vital power.

7.6.2.2(39) Provide six (6) duplex receptacles per patient care location in patient care areas defined by relevant CSA standard as “Intermediate Care Area” and connect three of the receptacles to vital power.

7.6.2.2(40) Provide twelve (12) duplex receptacles per patient care locations defined by relevant CSA standard as “Critical Care Area” and connect 75% of these receptacles to vital power. Remainder of receptacles will be connected to conditional power.

7.6.2.2(41) Provide one (1) duplex receptacle for each electric bed where applicable in all patient care areas and connect to vital power. Provide one 15A, 120V dedicated circuit for two patient beds maximum.

7.6.2.2(42) Provide a minimum of four (4) duplex receptacles at each medication room, connect 50% of these receptacles to vital power.

7.6.2.2(43) Provide one (1) duplex receptacle for every 10 square meters, or portion thereof, of service, housekeeping, and storage space. A minimum of one (1) duplex receptacle will be provided per room.

7.6.2.2(44) Provide special receptacles for fixed and moveable equipment as defined in the Appendix 1B ¬ Furniture and Medical Equipment List.

7.6.2.2(45) In procedure rooms and similar usage rooms, provide one (1)15/20A 120V duplex receptacle at 2 meter centres, connected to vital and UPS branches as determined by the Authority through Review Procedure.

7.6.2.2(46) In each procedure rooms and similar usage rooms and as directed by department representative provide one (1) 15/20A 120V duplex receptacle for housekeeping outlet in two locations.

7.6.2.2(47) In each procedures room and similar usage rooms as directed by department representative provide one (1)20A, 208V twist lock receptacle in one location.

7.6.2.2(48) Provide each workbench (testing stations) in the Biomedical Engineering department with two (2) 30A, 120/208V single outlets with a NEMA L14-30R configuration, plus ten (10) dedicated 20A, 120V circuits each of which serves one (1) duplex receptacle for a total of twenty (20) plug-in locations. 50% of the receptacles will be provided with vital power circuits. Provide three (3) ceiling mounted retractable cord reels complete with two (2) single NEMA 5-20R 15/20Amp style receptacles or one (1) NEMA 5-20R duplex receptacle on one (1) dedicated circuit per cord reel.

7.6.2.2(49) Locate two (2) cord reels within the food services area as directed by the Authority. Exact locations to be confirmed during the review procedure process.

7.6.2.2(50) Provide one (1) NEMA 5-20R 15/20Amp style receptacle for every 5 square meters, or portion thereof, of service and storage space. One (1) GFCI duplex receptacle will be provided, and at a minimum, one (1) 15/20A housekeeping receptacle on each wall in housekeeping rooms.

7.6.2.2(51) Provide special receptacles for fixed and moveable equipment. Provide all necessary electrical equipment devices as required to provide an electrical installation in accordance with manufacturers installation recommendations and make all connections for Authority supplied equipment. Provide source of power as directed by department representative.

7.6.2.2(52) Provide two (2) digital count up and count down timers in each procedure rooms and as directed by department representative.

7.6.2.2(53) Provide NEMA 5-20R 15/20 Amp, 120V vital circuit, low voltage transformers, and junction box for all ceiling lifts and overhead lifting equipment. Make all required connections and install in accordance with the manufacturer's recommendations.

7.6.2.2(54) Provide NEMA 5-20R 15/20 Amp, 120V duplex receptacles in two (1) locations located on the ceiling of all procedures rooms and similar usage rooms.

7.6.2.2(55) Provide 15A, 120V circuit for all hands-free automatic door operators throughout the Facility. Typically, procedure room medication, utility rooms, storage rooms and similar usage rooms will be provided with automatic door operators. Provide power for all automatic door operators as noted in the Appendix 1A Clinical Specifications.

7.6.2.2(56) Install approved fire stopping systems to maintain all fire separations.

7.6.2.2(57) Final location of all receptacles and connections will be determined in user group meetings and as directed by the Authority during the review procedure process.

7.6.2.2(58) Utilize stainless steel cover plates for receptacles and switches. Grouped receptacles and switches will have a single cover plate for the whole group.

7.6.2.2(59) Provide AFCI breakers or AFCI receptacles as required by the Canadian electrical code.

7.6.2.2(60) Provide delayed-vital power circuits for heat traced mechanical piping where required. Provide dedicated circuit for all heat tracing. Coordinate with the mechanical division for power requirements and exact locations.

7.6.2.2(61) Provide a 15A, 125V circuit complete with junction box and low voltage transformer and connect to all mechanical trap primers. Provide at a maximum four (4) trap primer connections per dedicated circuit. Coordinate with the mechanical division for exact locations.

7.6.2.2(62) Not used.

7.6.2.2(63) Not used.

7.6.2.2(64) Provide hospital grade receptacles in Clinical Spaces, patient care areas, testing, observation, and medical / treatment areas, holding areas, stretcher bays and similar usage areas. Receptacles in all other areas, unless otherwise noted, will be specification grade.

7.6.2.2(65) Provide tamper resistant receptacles in public areas. Tamper resistance is resistance to tampering (intentional malfunction or sabotage) by either the normal users of a product, package, or system or others with physical access to it. Tamper resistant receptacles will be equal to the LEVITON 8300-SGW series.

7.6.2.2(66) For each server racks provide two L15-30R-208V (3 phase) receptacles, one on Vital, the other on Conditional power.

7.6.2.2(67) Provide for each data network racks two separate L21-20R 208V (3 phase) receptacles, one on Vital, and the other on Conditional power.

7.6.2.2(68) Provide a 15/20A conditional circuit for an electronic 'Take a Number' dispenser type system at the Registration cubicles area in the Main Entry Services component. Provide a 2-digit electronic 'Take a Number' system with ticket dispenser. 'Take a Number' ticket dispenser will be a wall-mounted 2-digit system with a 9.1 inch LED display complete with power adapter, mounting brackets and hardware. Provide a countertop ticket dispenser with stand-mounting hardware, two (2) hardwired push buttons and wireless infrared remote controller.

7.6.2.2(69) Provide a red emergency push button to the Long Term Care kitchen to isolate the electrical power and also to be used in the event of an emergency for the following appliances:

7.6.2.2(69)a. The stove/range; and

7.6.2.2(69)b. Microwave oven.

7.6.2.2(69)c. The emergency push button shall have the following:

7.6.2.2(69)c.1 key operated reset;

7.6.2.2(69)c.2 cover to prevent accidental operation;

7.6.2.2(69)c.3 large label indicating the purpose of each button.

7.6.2.2(70) All fridges and freezers will be on vital power and all other kitchen equipment will be on conditional power.

7.6.3 Electrical Utilities

7.6.3.1 Basic Requirements

7.6.3.1(1) Coordinate with BC Hydro to service the Facility with a 600V service.

7.6.3.1(2) The new BC Hydro utility 600V pad mount transformer will be located exterior of the building footprint and located at a minimum 6 meters from the building. Final location to be determined in consultation with BC Hydro and the Authority.

7.6.3.1(3) The BC Hydro service to be an underground service. The service entrance and metering will be installed in the main electrical room. The main electrical room will be inside the building. No outdoor style metal enclosed switchgear enclosure is allowed. Switchgear to meet the BC Hydro metering guide for a 600V service.

7.6.3.1(4) Design-Builder to coordinate with the utility provider and pay all associated costs required to extend the BC Hydro high voltage distribution lines feeding the site in order to handle the electrical capacity required for the Facility.

7.6.3.1(5) Design-Builder to coordinate with the utility provider and provide the required civil works and duct banks from the overhead lines to the new utility owned pad mount transformer.

7.6.3.1(6) Design and construct the electrical system with adequate spare capacity to accommodate an increase in site electrical demand by 25%. The service to be sized to carry the maximum anticipated demand load, all additional Authority requirements plus 25% spare capacity will be added to the total calculated load.

7.6.3.1(7) Provide a concrete encased duct bank with 4 x 103 mm spare conduits from the main electrical room and stubbed out of the Facility and terminated in a 1.0mx1.0m BC Hydro approved concrete pullbox. Located on the site to facilitate future extensions. Coordinate the location of the spare duct bank with the Authority.

7.6.3.1(8) Identify the location of existing underground and overhead service lines in the area to avoid interference with proposed routing of new services and future services for known expansions. Use latest techniques (ground penetration radar test) to verify and confirm all existing underground services. Remove or relocate existing site lighting, branch circuit power, underground electrical distribution and communications to accommodate the Facility, BC Hydro. Reconnect all power and controls to electrical power and communication circuits affected by the site preparation work.

7.6.3.1(9) Utilize distribution equipment that are robust, reliable, easily operated, maintained and designed for healthcare facilities.

7.6.4 Raceways

7.6.4.1 Basic Requirements

7.6.4.1(1) Provide raceways for all power and telecommunications, security, and health care systems wiring and cabling to support, protect and organize all wiring and cabling systems.

7.6.4.1(2) Design raceways to provide ease of access and install with 20% capacity for expansion and change, consistent with the requirements of the equipment and systems that they serve.

7.6.4.1(3) Install all raceways in a neat and secure manner in such a way that they are protected from damage, are not in conflict with mechanical or architectural components and allow for future changes and additions.

7.6.4.1(4) Except as noted otherwise, install power wiring in EMT with steel couplings and connectors.

7.6.4.1(5) Install Communications System wiring (unless otherwise required by applicable codes and standards) in EMT with steel couplings and connectors and/or cable trays. Install individual steel backboxes for all Communications System devices. Conduits connecting to cable trays for Communications System wiring will be mechanically connected, completed with grounding bushings.

7.6.4.1(6) EMT is to be surface mounted in service rooms and concealed in ceiling spaces and partition walls. Do not encase EMT in concrete.

7.6.4.1(7) Minimum EMT conduit size for all power, systems and data drops are 27 mm (1”).

7.6.4.1(8) Use flexible conduit for all final connections to vibrating equipment, such as transformers and motors.

7.6.4.1(9) Minimum flexible conduit size is 27 mm (1”). For specific instances where the motor, or other end equipment does not accept termination of a 27 mm (1") conduit, a smaller flexible conduit will be allowed. Maximum length of any flexible conduit run is 1.5 metres.

7.6.4.1(10) Use rigid PVC conduits for the underground portion of services to lighting and power outlets.

7.6.4.1(11) Install individual bonding conductor in each conduit and/or raceway.

7.6.4.1(12) Provide cable trays for installation of selected Communications System wiring. Install cable trays from communication rooms and above all corridors. If cable trays pass through walls with fire resistance ratings, provide a non-removable ULC approved firestopping system (refers to section 7.7 – Communications Division 27).

7.6.4.1(13) Cable tray will be aluminum or steel wire mesh or ladder type with manufactured fittings. Provide continuous #6AWG minimum bare copper bonding wire which is connected by split bolt to each length of the cable tray. Provide bare copper bonding jumper between the cable tray and every associated conduit to ensure continuous bond between tray and low tension raceways.

7.6.4.1(14) Identify all conduits, raceways, pull boxes, and junction boxes using painted colour bands. Colouring scheme will be determined by the Authority at a later date. Provide all power and Communications Systems with unique colours in accordance with the colouring scheme. Major colour to be 100 mm wide and minor colour to be 50 mm wide. Identify raceways with coloured bands (using either spray paint or coloured duct tape) at intervals of 6 m, plus at the point where the raceway enters a wall or floor (i.e. raceway is identified on both sides of a penetration to facilitate tracing of raceway). Colour-code all junction boxes using spray paint on the cover. Neatly identify the relevant system and circuit ID using permanent identification. Identify parallel conduit runs at common locations.

7.6.4.1(15) Indicate the location of conductors encased or embedded in concrete or masonry by conspicuous permanent identifiers set in the walls, floors, or ceilings, which will indicate each point at which buried conductors penetrate a wall every 10 meters and at each change in direction.

7.6.4.2 Performance Criteria

7.6.4.2(1) Construct separate raceways or barriered raceways to isolate systems of different voltages and prevent magnetic interference to low voltage system conductors.

7.6.4.2(2) Design and install raceways without sharp edges or tight bends so that cables can be pulled in or laid in and removed without damage to the cables.

7.6.4.2(3) Provide all cable trays with minimum 20% spare capacity for the installation of future cables.

7.6.4.2(4) Provide a minimum of two (2) spare 103 mm conduits with pull strings from the main electrical room to each sub-distribution room, mechanical room, or similar rooms that house electrical distribution.

7.6.4.2(5) Provide a minimum of three (3) spare 27 mm EMT conduits from all panelboards to terminate in a 154 mm x 154 mm ceiling mounted junction box located in the ceiling space immediately above the panelboard in the above-ceiling service space for future. Install smoke seal and pull string for future.

7.6.4.2(6) Provide a minimum of two (2) spare 53 mm EMT conduits from all CDPs to terminate in a 308 mm x 308 mm ceiling mounted junction box located in the ceiling space immediately above the panelboard in the above-ceiling service space for future. Install smoke seal and pull string for future.

7.6.4.2(7) All control conduit will be provided and installed by the electrical contractor. The electrical contractor will coordinate all low voltage installations with the mechanical contractor and provide all pathways, junctions, pull boxes complete with pull-strings and labelling. Should the controls contractor demonstrate that they can implement the same specification of install as the electrical contractor, the controls contractor may install controls conduit.

7.6.4.2(8) Provide all duct banks with minimum 50% spare capacity for future changes to the Facility.

7.6.4.2(9) Install all conduits in finished areas within finished walls and above finished ceilings.

7.6.4.2(10) Provide pull string and smoke seal all spare and unused conduits. Label accordingly.

7.6.5 Post Disaster Design Criteria

7.6.5.1 Design the electrical rooms to be accessible to authorized personnel only. Provide security measures as required by the Authority including access controls and CCTV for all electrical and communications rooms.

7.6.5.2 Design the electrical systems and equipment to comply with the latest adopted addition of the BCBC requirements for a post-disaster facility.

7.6.5.3 Design the electrical systems and equipment to comply with post-disaster and the following design requirements;

7.6.5.3(1) Provide underground hydro power service.

7.6.5.3(2) All installations to be underground not over-head.

7.6.5.3(3) Electrical rooms to be installed on or above grade.

7.6.5.3(4) Service Rooms to be at least two hour fire rated.

7.6.5.3(5) Provide Emergency power (Generators) with 100% redundancy plus 25% spare capacity for vital and delayed vital loads in the hospital.

7.6.5.3(6) Drains to be installed in electrical and Communication rooms.

7.6.5.3(7) Not used.

7.6.5.3(8) All Automatic Transfer Switches to have double by-pass manual switches.

7.6.5.3(9) Provide at least 72 hour back up fuel for each Emergency generator.

7.6.5.3(10) Ensure site is accessible for refuelling.

7.6.5.3(11) All servers, data switches, Security equipment, Nurse Call System and Fire Alarm System to be on UPS power.

7.6.5.3(12) Design building structure in accordance with best practices as defined in IBC2009, ASCE-7.

7.6.5.3(13) Specify equipment to comply with ICC – ES AC156 for three- dimension shake table (seismic withstand) tests.

7.6.5.3(14) Specify sprinkler-proof equipment and drainage throughout service areas.

7.6.5.3(15) All equipment specified to be specification grade.

7.6.5.3(16) Avoid routing of feeders through non-service areas.

7.6.5.3(17) Ensure adequate separation of power distribution from higher risk mechanical equipment such as boilers.

7.6.5.3(18) Ensure vital feeders are fire rated and segregated from each other, have limited risk from structural failure and from mechanical services (e.g. steam).

7.6.6 Emergency Power

7.6.6.1 Basic Requirements

7.6.6.1(1) Provide a minimum Tier 2 emergency power generating plant comprising a minimum of two diesel powered generators. Tier rating should comply with EPA requirements in place at time of manufacture. Generators will be located at grade level in exterior rated enclosures and will be located on site.

7.6.6.1(2) The generator enclosures will be of the hospital grade maximum sound attenuation complete with hospital grade silencers and to be suitable for -40 Celsius environments.

7.6.6.1(3) Design and construct the electrical system with adequate spare capacity to accommodate an increase electrical demand by 25%. Size the emergency power generators, feeders and 600V and 208V switchgear accordingly.

7.6.6.1(4) 7.6.6.1(4) Exterior generators will be located at grade housed in secure, walk-in, illuminated and heated enclosures. Enclosures will be supervised for unauthorized intrusion. Exterior rated generation system will be located exterior of the building foot print, will comply with all acoustical and exhaust clearance requirements, and will be located at a minimum 24 meters from the building.

7.6.6.1(5) Locate generators to enable routine and emergency maintenance activities to be performed quickly and efficiently. Removal of the generators from the Site will be simple and will not require disassembly of the sites Buildings or systems, nor special lifting equipment.

7.6.6.1(6) Generators will be designed and located where they are protected and are not subject to damage from vandalism, falling objects or debris, road traffic, fire, flood, or adverse weather conditions. Provide a site fence and adequate site lighting.

7.6.6.1(7) The emergency power system to include at a minimum, two (2) prime power rated synchronized diesel generator units of equal capacity capable of supplying power to the Hospital vital loads including 100% of the vital and delayed vital branches, 100% of all cooling, all UPS branch loads and the fire pump. In addition, provide 25% spare capacity for future growth. This additional capacity is to be added to the demand code load after all other loads and requirements are accounted for. This capacity will be in addition to any spare capacity included for the mechanical equipment and all other Authority requirements. The diesel generators in the emergency power system will be able to supply full load power to the Facility, plus the additional 25% spare capacity (on all these systems), when one diesel generator unit is unavailable. Design-Builder will provide the above redundancy and spare capacity requirements and will be demonstrated to the Authority in real time after commissioning of the Facility is complete.

7.6.6.1(8) Mechanical loads will be simulated via the BMS. An Authority provided mobile load bank will be used to simulate all linear and nonlinear demand loads that cannot be simulated by the BMS, plus 25% spare capacity.

7.6.6.1(9) Plug and lighting loads will be in accordance with the energy model calculations, and mechanical equipment not activated by the BMS will be accounted for in demand load.

7.6.6.1(10) Full load rating of the generator will be determined by the generator set name plate rating as referenced in CSA 282-15 Emergency Electrical Power Supply for Buildings section 6.1.1.4.

7.6.6.1(11) Provide an environmental study of the sites prevailing winds and model the sites environmental impact to the site and surrounding areas to determine the location of the emergency generation plant as noted in all relevant Appendices and other sections of Schedule 1 Statement of Requirements.

7.6.6.1(12) Generators will be located, vibration isolated, and muffled so that neither sound nor vibration are perceptible outside of the generator enclosure containing the generators. Provide acoustic panels and silencers at air intake and exhaust to limit the generated noise in compliance with local regulations, sound by-laws and as noted in Appendix 1C Acoustic and Noise Control Measures, all relevant Appendices and other sections of this Schedule.

7.6.6.1(13) Generator and the generator controller will be of the same manufacturer and will be compatible with transfer switches. Manufacturer supplied wiring diagrams for the installation, testing and commissioning of generators will be provided to ensure complete emergency generation system compatibility.

7.6.6.1(14) Breakers in the synchronization board and generators will be of the same manufacturer as the 600V electrical distribution equipment.

7.6.6.1(15) Provide annunciation of alarms for each generator to the BMS. Include ‘run’ and ‘fail to run’ alarms to the BMS.

7.6.6.2 Performance Criteria

7.6.6.2(1) Generators will be supplied by an established supplier of generators to healthcare facilities in British Columbia. The generator supplier will have a full service repair facility within 8 hours travel time (by road) to the Site. Generator spares will be routinely stocked within the British Columbia Lower Mainland and will be available on Site within 24 hours.

7.6.6.2(2) The generators will normally operate in parallel and provide features including bumpless (closed transition) transfer operation, load sharing and base loading. It will be possible to use the Facility load as a base load for annual load testing of the generators.

7.6.6.2(3) The generator plant will be designed to minimize noise emissions. Provide high grade exhaust mufflers and other sound attenuation means, as necessary, to achieve a maximum sound level as noted in Appendix 1C Acoustic and Noise Control Measures , all relevant Appendices and other sections of Schedule 1 Statement of Requirements.

7.6.6.2(4) Provide a generator exhaust system to discharge exhaust fumes in a manner that does not create an objectionable odour or noise issue to the Facility or neighbouring properties.

7.6.6.2(5) Provide a fuel system capable of supplying the maximum capacity of the emergency power plant at 100% load (including spare capacity) for a minimum of 72 hours. Generators will be diesel to ensure a continuous source of fuel supply. The fuel supply will be independent to other building equipment and will be stored on site in permanent storage for the New Facility. Fuel level to be electronically monitored by the BMS system to alarm when fuel supply drops below 24 hours. Fuel system to comprise dedicated belly tanks for each generator.

7.6.6.2(6) Not used.

7.6.6.2(7) Provide a loadbank/generator power connection kiosk complete with cam-lock connectors. The circuit breaker connected to the loadbank connection kiosk will automatically shunt-trip if the load bank is connected upon loss of utility power to the Facility. A disable switch should be provided to disable the shunt-trip function with labeling explaining the function and procedure. The kiosk should be located near the generator.

7.6.6.2(8) The essential electrical systems will include tie breakers from the main conditional distribution to each of the main vital and delayed vital distributions. Conditional power will be derived at 600V by means of automatically operated automatic transfer switch connected between the generator bus and normal power distributions. Provide selector switch for manual or automatic mode of operation, including controls to ensure this transferred load can be supported.

7.6.6.2(9) For redundancy, the conditional power distribution throughout the Facility will include tie-breakers and be sized to provide power simultaneously to both the conditional load plus the larger of the vital or delayed vital loads in that locality.

7.6.6.2(10) Implement redundancy such that if an automatic transfer switch system fails, there is a manual means to restore power to the essential loads in the Facility. All transfer switches will have double sided bypass capability. Transfer switch mechanism will be capable of being withdrawn for servicing while the switch is in bypass mode.

7.6.6.2(11) Transfer switches and will be listed to UL1066 with a minimum 16 cycle withstand rating at maximum available short circuit current.

7.6.6.2(12) Essential power branches will serve essential loads as defined by CSA Z32-15 and as required to meet Appendix 1A Clinical Specifications, including:

7.6.6.2(12)a. Vital branch loads:

- 7.6.6.2(12)a.1 Path of egress lighting,
- 7.6.6.2(12)a.2 Exit signs,
- 7.6.6.2(12)a.3 Stair and ramp lighting,
- 7.6.6.2(12)a.4 Receptacles and lights at service rooms for emergency distribution.
- 7.6.6.2(12)a.5 Medical gas alarm panels.
- 7.6.6.2(12)a.6 Elevator cab and machine room lighting. 7.5.6.2(12)
- 7.6.6.2(12)a.7 Fire alarm system and sprinkler system.
- 7.6.6.2(12)a.8 Smoke venting fans and smoke control fans.
- 7.6.6.2(12)a.9 Communications Systems and network equipment in all IT Communication Rooms.
- 7.6.6.2(12)a.10 80% of lighting, receptacles and all permanently connected equipment in procedure rooms unless otherwise noted.
- 7.6.6.2(12)a.11 50% of receptacles and lights in all patient care rooms.
- 7.6.6.2(12)a.12 50% of lights and outlets in Nursing Station.
- 7.6.6.2(12)a.13 Nurse call system power supplies.
- 7.6.6.2(12)a.14 Medical vacuum pumping systems.
- 7.6.6.2(12)a.15 Diagnostic Imaging Equipment as per Appendix 1B Furniture and Medical Equipment and Appendix 1A Clinical Specifications.
- 7.6.6.2(12)a.16 Pharmacy dispensing areas.
- 7.6.6.2(12)a.17 Medication rooms and other similar dispensing areas,
- 7.6.6.2(12)a.18 Emergency generator related equipment such as ventilation, battery charger or air compressor for starting engine and derangement signals.
- 7.6.6.2(12)a.19 Hands-free sinks with electronic operators.
- 7.6.6.2(12)a.20 Medical air pumping systems.

7.6.6.2(13) Delayed vital branch loads including:

- 7.6.6.2(13)a. Centralized UPS system.
- 7.6.6.2(13)b. Sump pumps and sewage ejector pumps.
- 7.6.6.2(13)c. Fume hoods.
- 7.6.6.2(13)d. Selective operation of one elevator in each elevator bank containing more than one elevator.
- 7.6.6.2(13)e. All individual elevators that are not within an elevator bank.
- 7.6.6.2(13)f. 100% of all heating, ventilation, and plumbing systems.
- 7.6.6.2(13)g. Alarmed freezers and refrigerators.

7.6.6.2(13)h. 100% of all Ventilation and air conditioning/cooling equipment serving the main cross-connect room, on-floor communication riser rooms and 24x7 cooling loads.

7.6.6.2(13)i. 100% of all Ventilation and air-conditioning/cooling equipment serving the main electrical room, electrical riser rooms on each floor and the central UPS room.

7.6.6.2(14) The BMS will monitor and record emergency loads.

7.6.6.2(15) All elevators within the Facility will operate on emergency power.

7.6.6.2(16) Feed a packaged fire pump controller and ATS from the generator paralleling board and from main normal board or from the delayed vital distribution as required by CSA Z32. Confirm your final approach with AHJ.

7.6.7 Uninterruptible Power Supply (UPS) Systems

7.6.7.1 Basic Requirements

7.6.7.1(1) Provide a centralized Uninterruptible Power Supply (UPS) system to serve all areas, equipment and systems that require a continuous and uninterrupted source of power as per the requirements of this Schedule, Appendix 1A Clinical Specifications and for the following additional outlets, equipment and systems:

7.6.7.1(1)a. 25% of lighting, room receptacles, and permanently connected equipment in the Procedure Room.

7.6.7.1(1)b. Provide UPS capacity allowance to add up to 10% of the initial quantity of lights, receptacles and equipment as requested by the Authority during Design Consultation phase.

7.6.7.1(1)c. the Building Management System;

7.6.7.1(1)d. fixed panic system;

7.6.7.1(1)e. electronic access control systems;

7.6.7.1(1)f. intrusion detection system;

7.6.7.1(1)g. surveillance (CCTV) system;

7.6.7.1(1)h. Medical equipment which is deemed Life Safety Equipment; and in accordance with the Authority user groups requirements. Coordinate with Authority representative to confirm exact requirements.

7.6.7.1(1)i. nurse call system;

7.6.7.1(1)j. public address system;

7.6.7.1(1)k. intercom;

7.6.7.1(1)l. patient wandering system;

7.6.7.1(1)m. Vocera system.

7.6.7.1(2) Provide a UPS that in addition to the above loads, meets the requirements specified in telecommunications section of this schedule.

7.6.7.2 Performance Criteria

7.6.7.2(1) The UPS system will be suitable for a post-disaster facility.

7.6.7.2(2) UPS system will have:

7.6.7.2(2)a. external maintenance bypass switch for servicing;

7.6.7.2(2)b. fully rated internal static bypass switch to bypass UPS in the event of UPS failure;

7.6.7.2(2)c. fully redundant UPS bypass breaker arrangement; and

7.6.7.2(2)d. battery string

7.6.7.2(2)e. battery monitoring system or battery health monitoring system.

7.6.7.2(3) UPS loads will be circuited from a UPS distribution panel or branch circuit panel. Circuits and distribution equipment/feeders will be rated for the demand load with appropriate diversity factors applied.

7.6.7.2(4) Connect UPS units to an emergency generator circuit and provide adequate batteries rated for a minimum of 15 minutes at the calculated total load “N” minus 25% spare capacity.

7.6.7.2(5) Where vital functions are connected to a UPS circuit, include an audible warning in the vital function area when capacity of the UPS battery supply has 25% remaining. Provide additional monitoring by the BMS.

7.6.7.2(6) The UPS will be capable of providing adequate fault clearing current for a 100A circuit breaker without operation of the static bypass switch.

7.6.7.2(7) Centralized UPS system:

7.6.7.2(7)a. To have modular architecture with no system-level single-point- of-failure.

7.6.7.2(7)b. To have two (2) or more UPS frame connected in parallel providing N+1 redundancy, to ensure UPS power to support 100% of the initial demand load when one UPS module frame is unavailable. The spare capacity will be calculated by using the demand loads.

7.6.7.2(7)c. To have a dedicated battery string for each UPS frame rated to provide 15 minutes of back up time when the UPS is carrying the calculated total load “N” minus the 25% spare capacity.

7.6.7.2(7)d. To be online, double-isolation type having output power factor of minimum 0.9.

7.6.7.2(7)e. To have input filter at each UPS module to limit the total harmonic current distortion to 5% when the UPS module is carrying the calculated total load “N” minus 25% spare capacity.

7.6.7.2(7)f. To have static bypass to automatically bypass the UPS in the event of UPS failure.

7.6.7.2(7)g. To have external maintenance bypass switching cabinet for servicing the UPS system.

7.6.7.2(7)h. Each UPS module and the static bypass to have a dedicated input feeder connected to the delayed-vital branch.

7.6.7.2(7)i. Will have a network connection for monitoring and will indicated any alarms to the BMS.

7.6.7.2(8) The main distribution panel that is fed from the UPS system output to have an alternate input that can be energized directly from the main delayed vital distribution equipment in the event of a UPS system- failure. Provide interlock controls such that only one feeder can be energized at any one time.

7.6.7.2(9) Provide a UPS system with the capacity such that the addition of future modules in the UPS will not require an upgrade to the electrical equipment infrastructure.

7.6.7.2(10) Size breakers, electrical equipment and conductors feeding the UPS system and the conductors and immediate electrical equipment connected on the load side of the UPS system to the maximum capacity of the modular UPS system such that the addition of future modules in the UPS will not require an upgrade to the electrical equipment infrastructure.

7.6.8 Distribution Equipment – 600 Volts and below

7.6.8.1 Basic Requirements

7.6.8.1(1) The main electrical room will be designed and constructed to facilitate future expansion with minimal disruption to Facility operation and continuity. The Facility will be constructed with all necessary infrastructure including spare capacity, spare circuit breakers, physical expansion space, ducts stubbed out from the building footprint and capped off for easy future extension, pull-pits, sleeves, housekeeping pads, wiring, controls, distribution routes, and ventilation as necessary to accommodate any future system expansion.

7.6.8.1(2) Design and construct the electrical system with adequate spare capacity to accommodate an increase electrical demand by 25%. Size the emergency power generators, main normal power transformers, feeders and 600V and 208V switchgear accordingly.

7.6.8.1(3) Provide electrical distribution from the main sources of supply to meet all requirements of the Facility and Appendix 1A Clinical Specifications. Provide electrical equipment to establish a building distribution voltage of 600V.

7.6.8.1(4) Design the distribution system to provide security of supply and the flexibility to allow concurrent safe maintenance without impacting Hospital operations. Provide tie breakers with key interlocking devices on all main and secondary distribution.

7.6.8.1(5) Provide rackable power circuit breakers for all circuit breakers upstream of the transfer switches in the normal and generator boards. Provide motorized operators on these circuit breakers to reduce the arc flash exposure hazard.

7.6.8.1(6) Provide one spare circuit breaker and two prepared spaces for the main Normal power 600V switchgear. Provide one spare circuit breaker for each of the three main Essential System distribution boards immediately downstream of the main transfer switches. For all distribution panel boards and branch circuit panel boards, provide 25% physical space, after all connected loads have been installed, for future circuit breaker addition.

7.6.8.2 Low Voltage Distribution Protective, Coordination and Short-Circuit Criteria

7.6.8.2(1) Incorporate design features and practices to reduce arc flash hazards on electrical systems such that routine operations such as transfer switch operation, opening and closing distribution breakers, and inspection and maintenance activities will require PPE as defined in CSA Z462-18 Table 3. No activities will expose personnel to arc flash hazards which exceed the protection afforded by PPE carrying an Arc Thermal Performance Value (ATPV) or Energy Breakopen Threshold (EBT) value of 8 cal/cm².

7.6.8.2(2) Utilize zone selective interlocking protection, limiting available fault current from transformer, maintenance mode settings of circuit breakers and remote control of switching and motorized racking devices.

7.6.8.2(3) Prepare and submit to the Authority detailed Protective Device Coordination, and Short Circuit study signed and sealed by a professional engineer registered in British Columbia and provide equipment labelling indicating available energy levels and level of PPE required when servicing the equipment.

7.6.8.2(4) Prepare and submit to the Authority a detailed arc flash study signed and sealed by a professional engineer registered in British Columbia and provide equipment labelling indicating available energy levels and level of PPE required when servicing the equipment.

7.6.8.2(5) Provide a fully selective protection scheme for all the circuit breakers on all essential system distribution equipment immediately downstream of the transfer switches, for both hydro and generator available fault currents. Additionally, all circuit breakers will be of the electronic fully selective type for all circuit breaker sizes 100A and larger.

7.6.8.2(6) Prepare and submit to the Authority a detailed distribution coordination study signed and sealed by a professional engineer registered in British Columbia.

7.6.8.3 Performance Criteria

7.6.8.3(1) Protect the main electrical room from ground water infiltration and separate it from plumbing and mechanical equipment. Provide raised housekeeping pads, drainage, and sump pumps (on vital power) as required in electrical service areas to mitigate the risk of flooding.

7.6.8.3(2) Design the electrical room to be readily accessible, secure, well-ventilated, and free of corrosive or explosive fumes, gases, or any flammable material. Establish routes clear of obstruction to and from the electrical room which facilitate the addition and removal of the largest current and future components located within the room.

7.6.8.3(3) Main normal power 600V Distribution Equipment will be fed from the BC Hydro pad mounted transformer.

7.6.8.3(4) The main normal power 600V Distribution Equipment will directly feed:

- 7.6.8.3(4)a. Automatic Transfer Switches (ATS) for: the vital branch, delayed-vital branch, and conditional branch
- 7.6.8.3(4)b. Surge Protection Device (SPD)
- 7.6.8.3(4)c. Large individual loads. Example: chillers
- 7.6.8.3(4)d. Fire Pump Transfer Switch
- 7.6.8.3(4)e. Automatic power factor correction systems,

7.6.8.3(5) The main Automatic Transfer Switches (ATS) serving vital, delayed-vital and conditional branches to be closed-transition transfer type with integral dual-source bypass and isolation features. These transfer switches to be similar and have identical voltage and short-circuit withstand ratings; the ampacity (current) rating of the ATS serving the delayed-vital and conditional branches are required to be identical, as is the rating of the ATS serving the vital branch. The preferred source input of each of these transfer switches to be directly connected to a separate breaker on the main normal power 600V distribution equipment. The alternate source input of each of these transfer switches to be directly connected to a separate breaker on the generator synchronizing switchboard.

7.6.8.3(6) Configure the distribution downstream of the main ATS such that each one of the main ATS's feed a double-ended 600V distribution panel for emergency power, one ATS feeds a double-ended 600V distribution panel for delayed vital power, and one ATS feeds a double-ended 600V distribution panel for conditional power. Provide two such 600V Distribution Panels for emergency power (vital & delayed-vital). One of these Distribution Panels to be arranged with one main breaker and one tie-breaker and to feed the vital branch plus load breakers. The second emergency 600V distribution panel will be arranged with one main breaker and two tie breakers and to serve the delayed-vital branch loads plus load breakers; the tie breakers to provide redundancy to the vital bus and the conditional bus.

7.6.8.3(7) 600V Switchgear Distribution Panels:

- 7.6.8.3(7)a. Will be designed, factory-assembled and tested in accordance with CSA C22.2 No.31-10 "Switchgear Assemblies";
- 7.6.8.3(7)b. Will be provided with motorized draw-out type power circuit breakers complying with ANSI/IEEE C37.13 at mains, ties, and outgoing feeder breaker positions and labelled to work continuously at 100% rated current. Fuses will not be used;
- 7.6.8.3(7)c. Will have circuit breakers with solid-state trip units with adjustable time and current elements for Long time, Short time, Instantaneous, and Ground fault pickup settings. The trip units to have integral digital metering capable of displaying V, A, kVA and kW parameters and retaining the maximum recorded value of each parameter. The metering function of the circuit breaker trip units to be connected to the overall metering system and the building management system; breakers 100A and larger will be LSI electronic trip fully adjustable selective breakers.
- 7.6.8.3(7)d. Breakers 400A and larger will be LSGI electronic trip fully adjustable selective breakers;
- 7.6.8.3(7)e. Will have circuit breaker auxiliary contacts connected to the building management system to indicate operational status of each breaker;
- 7.6.8.3(7)f. Will have a coloured lamacoid mimic bus single line diagram riveted on the front;
- 7.6.8.3(7)g. Will have coloured engraved lamacoid nameplates for cubicle and circuit identification on front and rear sections;
- 7.6.8.3(7)h. Will be coloured red for Vital, blue for Delayed Vital, yellow for Conditional, and orange for UPS.

7.6.8.3(8) Each double-ended emergency 600V Switchgear Distribution Panel to directly feed:

7.6.8.3(8)a. 600V Centralized Distribution Panels (CDP's). Provide a minimum of one CDP for each of the vital, delayed-vital and conditional branches.

7.6.8.3(8)b. Motor Control Centres

7.6.8.3(8)c. Surge Protection Device

7.6.8.3(8)d. Large individual loads. Example: chillers

7.6.8.3(9) Provide individual dry-type step down 600V - 120/208V transformers in the main electrical room and all secondary electrical rooms for each of the following distribution branches: vital, delayed vital, and conditional. Additional 600V - 120/208V transformers to be located as required by the design.

7.6.8.3(10) The individual step-down transformers will be fed from a 600V Centralized Distribution Panel and located in an electrical room.

7.6.8.3(11) Centralized Distribution Panels located on the same floor will have tie breakers to at least one other system CDP.

7.6.8.3(12) All CDPs to utilize moulded case circuit breakers;

7.6.8.3(13) 600V Centralized Distribution Panels for Vital and Conditional power to feed 120/208V Centralized Distribution Panels in electrical rooms. These 120/208V CDPs to feed panel boards on each floor.

7.6.8.3(14) The 600V Delayed Vital CDP will feed 120/208V CDPs or panelboards in the same location. Additional 120/208V panelboards will be installed throughout the Building as required by the design.

7.6.8.3(15) Provide a minimum of one (1) electrical room per floor and add as required to minimize branch circuit lengths and voltage drops. Vertically stack the electrical rooms on all floors throughout the height of the Building were possible.

7.6.8.3(16) Install 600:120/208V dry type transformers for small equipment loads in electrical rooms on concrete pads or suspend from structure. Install transformers so that removal can be facilitated without removal of any other equipment or conduit serving the room. Utilize sound and vibration mitigation installation methods for all transformers.

7.6.8.3(17) Install 600:277/480V dry type transformers in electrical rooms connected to 480V equipment supplied by the Authority. These transformers will be fed from the 600V Centralized Distribution Panels or the 600V Distribution Panels depending on the size.

7.6.8.3(18) Locate major electrical equipment to minimize run length of feeders and branch circuits and locate within the Facility so as to provide a clean, dry, safe, accessible installation protected from unauthorized access.

7.6.8.3(19) Locate and design electrical equipment for ease of maintenance and with due regard for future expansion and renovation.

7.6.8.3(20) Ground fault protection and selective coordination will be provided at the following:

7.6.8.3(20)a. All breakers within main normal power and emergency power switchgear except fire pump breakers;

7.6.8.3(20)b. All feeder breakers 200A and larger at the 600V distribution excluding tie breakers between CDPs; and

7.6.8.3(20)c. All feeder breakers 400A and larger at the 208V distribution excluding tie breakers between CDPs.

7.6.8.3(21) Install 120/208V dry type transformers for small equipment loads in electrical rooms on concrete pads or suspend from structure. Install transformers so that removal can be facilitated without removal of any other equipment or conduit serving the room, except for luminaires.

7.6.8.3(22) All transformers will have copper windings and be rated minimum K-13. Provide areas with significant non-linear loads with transformers with a higher K-rating.

7.6.8.3(23) Provide dedicated automatic-transfer switches for each elevator bank to allow all elevators to run in the event of an emergency power test.

7.6.8.3(24) Rate all distribution devices to handle available fault duty at line terminals. Perform a computer generated fault study to ensure that all devices are properly rated. All circuit breakers 100A and larger will be fully selective.

7.6.8.3(25) Design and install protection equipment so that the initial electrical installation, future additions and modifications will be fully coordinated to isolate only the faulty portion of the system.

7.6.8.3(26) Select, configure, locate, and install all components of transmission and distribution systems to minimize the transmission of noise, vibration or unwanted heat into other parts of the Facility.

7.6.8.3(27) Provide a networked digital metering system to monitor and record electrical loads and quality of power in the Facility.

7.6.8.3(28) Provide power factor correction equipment within the Building to ensure the Building power factor does not fall below .95 lag. Coordinate capacitors with adjustable frequency drives and other harmonic generating equipment to avoid resonance conditions.

7.6.8.3(29) Provide dedicated transformation equipment for diagnostic imaging equipment as required by the imaging equipment vendors.

7.6.8.3(30) Provide circuit breaker type panelboards fully rated to handle calculated fault current level. Series rating of breakers and panel boards is not acceptable.

7.6.8.3(31) Provide oversize neutral(s) for panel boards and feeders where significant non-linear load(s) are anticipated, such as in open office and other areas with a high density of personal computers.

7.6.8.3(32) Construct flush mounted panel boards with two spare 53 mm conduits stubbed into an accessible location above the panel. Do not feed panelboard from below. All feeders must be routed down from the ceiling for top entry into the panelboard.

7.6.8.3(33) Not used.

7.6.8.3(34) Install vital & conditional panelboards on the same floor as the loads they serve.

7.6.8.3(35) Do not daisy-chain the feeders to panelboard. All panelboard feeders must be dedicated.

7.6.8.3(36) Not used.

7.6.8.3(37) Install CDPs and Panelboards on the same floor as the loads they serve. Where panelboards are located outside of electrical rooms, installation of these panelboards will be in interdepartmental, non-public corridors, provided they are painted to match the adjoining surface for finished appearance. Staff only cross-corridors in inpatient units will also be considered.

7.6.8.3(38) All panelboards to have 25% spare capacity. Provide metered documentation that proves that the 25% spare capacity has been provided once all loads are connected to the panel board. Provide metered documentation submittal to the Authority.

7.6.8.3(39) Components of the electrical distribution systems in any public, clinical, administrative or staff area will have long life expectancy without perceptible deterioration and a good appearance. Design and install so as to permit easy and complete cleaning.

7.6.8.3(40) Provide individual enclosed motor starters for individual motors. Utilize motor control centres for groups of four or more motors that require individual motor starters.

7.6.8.3(41) Motor starters will be combination of magnetic MCP (Motor Circuit Protector) type with integral control power transformers, Hand-Off- Auto (HOA) or start/stop control and at least two auxiliary contacts in addition to seal-in contacts. Provide “power on” and “running” LED type indicators on each motor starter.

7.6.8.3(42) Provide combination starters for all motors 1HP and larger that are not already controlled by adjustable frequency drive or include an integral control package. Utilize motor rated relays for motors smaller than 1Hp. All motors greater than 3 HP will be 600 volt 3 phase.

7.6.8.3(43) Provide voltage transient / surge protection for the main 600V and 120/208V switchgear loads and all other panels serving sensitive electrical loads including diagnostic equipment, lab equipment and adjustable frequency drives.

7.6.8.3(44) All panelboards, CDPs and Switchgear will be coloured red for Vital, blue for Delayed Vital, yellow for Conditional, and orange for UPS.

7.6.8.3(45) All panels and electrical equipment will be identified with (lamacoid) labels.

7.6.8.3(46) Nameplates for panels and equipment (lamacoid):

- 7.6.8.3(46)a. 3 mm (⅛") thick laminated plastic plates,
- 7.6.8.3(46)b. Size to suit number of lines and line heights as identified with minimum 7 mm border on all sides.
- 7.6.8.3(46)c. On front and rear sections for switchboards
- 7.6.8.3(46)d. engraved lettering to be as follows (unless otherwise identified):
  - 7.6.8.3(46)d.1 first line: 11 mm (7/16”) high lettering,
  - 7.6.8.3(46)d.2 second line: 7mm (1/4”) high lettering,
  - 7.6.8.3(46)d.3 third line: 5mm (3/16”) high lettering,
- 7.6.8.3(46)e. colour coded as follows:
  - 7.6.8.3(46)e.1 black lettering on white background for panels and equipment on normal power,
  - 7.6.8.3(46)e.2 white lettering on red background for panels and equipment on vital power,
  - 7.6.8.3(46)e.3 white lettering on blue background for panels and equipment on delayed-vital,

7.6.8.3(46)e.4 white lettering on yellow background for panels and equipment on conditional power

7.6.8.3(46)e.5 white lettering on light blue background for panels and equipment on UPS power,

7.6.8.3(46)f. with bevelled edges,

7.6.8.3(46)g. mechanically attached with self-tapping stainless steel screws or rivets.

7.6.9 Metering

7.6.9.1 Basic Requirements

7.6.9.1(1) Provide networked, digital microprocessor metering to provide detailed information about power quality and power consumption at key points throughout the Building. Key points include:

7.6.9.1(1)a. 600V feeder from the utility;

7.6.9.1(1)b. Distribution breakers in the main 600V distribution;

7.6.9.1(1)c. 600V Centralized Distribution Panels, mains and each panel feeder breaker;

7.6.9.1(1)d. UPS;

7.6.9.1(1)e. IMIT PDUs

7.6.9.1(1)f. Power Panelboards at 600V and 120/208V;

7.6.9.1(1)g. Lighting Panelboards at 600V and 120/208V;

7.6.9.1(1)h. Motor control centres;

7.6.9.1(1)i. Panelboards feeding mechanical equipment and elevators; and

7.6.9.1(1)j. All other requirements of ASHRAE 90.1 and LEED Gold.

7.6.9.1(2) Ensure that metering is provided to record total energy consumed by lighting fixtures and equipment. Integrate information from all meters on a common software platform residing on a dedicated electrical metering server.

7.6.9.1(3) Metering will be provided on all vital, delayed vital, conditional and UPS power branches.

7.6.9.1(4) Ensure that sufficient metering is provided to record the energy consumed by all major mechanical equipment including chillers, steam consumption, fan and pump motors, medical air, and vacuum. Refer to the electrical Section 7.6 of Division 26.

7.6.9.1(5) Implement a networked metering system with terminals for maintenance and plant administration, and data transfer to the Building's BMS. Provide network software, hardware, licensing to provide remote monitoring and third party assistance, re-programming, and troubling-shooting.

7.6.9.1(6) Connect electrical demand and consumption meters to the BMS.

7.6.9.1(7) Include trend logging equipment sensors to comply with and fulfil energy measurement and verification requirements. Logged information will not be overwritten and will be archived.

7.6.9.2 Performance Criteria

7.6.9.2(1) The metering system will provide easily read locally displayed information for all distribution at primary voltage and for each secondary distribution switchboard.

7.6.9.2(2) Metering intervals will be one hour or less.

7.6.9.2(3) Design the metering system network to store historical data and to have the capability to generate user configurable electronic and printed reports on demand.

7.6.9.2(4) Support the metering system by a backup power source(s), which ensures operation when the metered circuit is de-energized. The metering system will not be dependent on power from the metered circuit for its operation.

7.6.9.2(5) The metering system will, at a minimum, provide the following information about each metered circuit: Phase-to-Phase Voltage (all phases), Line-to-Neutral Voltage (all phases), Phase Demand and Peak Current (all phases and neutral), kW (peak and average), kVA (peak and average), Power Factor, kWh, VAR, hours and frequency. The metering system will also provide current and voltage harmonic information at the mains of each CDP.

7.6.9.2(6) Utilize power quality type meters for monitoring harmonics and surges / sags. Provide power quality meters capable of monitoring harmonics on the normal, vital, delayed vital and conditional distribution panels.

7.6.9.2(7) Draw-out circuit breakers on the 600V main normal and emergency Distribution Panels will be provided with trip units with integral 3 phase true RMS digital meter with local LCD display to indicate the phase current for each phase, kW, and kVA.

7.6.10 Energy Management

7.6.10.1 Basic Requirements

7.6.10.1(1) Provide an integrated energy management system to monitor, record, analyze, report on and control energy consumption from all sources that supply energy to the New Facility. This system to be connected to the BMS. Refer to Section 7.6. of Division 26.

7.6.10.1(2) Design the system to provide sufficient information to enable the Authority to make Facility-wide “demand-side management” decisions relating to overall energy demand, with the intent of reducing overall energy consumption and demand throughout the Facility. Incorporate data from the digital meters required by Section 7.6 of Division 26.

7.6.10.1(3) Provide and coordinate with the Authority’s representative to provide IP addresses for energy management monitoring capabilities.

7.6.10.1(4) Provide a system and equipment that is flexible, controllable, and will form an integral part of the Building.

7.6.10.2 Performance Criteria

7.6.10.2(1) Design the energy management system to be accessible from any networked computer using appropriate software.

7.6.10.2(2) Provide a minimum of five site software licenses if licensing is required.

7.6.11 Grounding and Bonding

7.6.11.1 Basic Requirements

7.6.11.1(1) Provide grounding and bonding for all electrical equipment and systems in the Facility for the safety of people and for protection against damage to equipment or property in the case of a fault occurring in any of the equipment or systems. Install grounding and boding as required by all applicable standards.

7.6.11.1(2) Provide supplementary grounding per relevant CSA standards in areas identified as patient care areas.

7.6.11.2 Performance Criteria

7.6.11.2(1) Utilize non-alloyed copper for all conductors and all conducting components of electrical equipment which form part of the grounding and bonding systems in the Facility.

7.6.11.2(2) Provide solid system grounding including conductors and bussing.

7.6.11.2(3) Provide a minimum #12 copper bonding conductor in each and every conduit or raceway. Provide a #6 copper bonding conductor on each communications tray and ensure each section of the tray is securely bonded.

7.6.11.2(4) Provide equipotential grounding systems and equipment for all patient care areas. Provide a #6 AWG copper bond from the panelboard to each room reference ground bus RRGB in each patient care area. RRGB will be located in a flush mounted enclosure, installed below the ceiling on the left hand side of the door upon entering the room, above the headwall or outside of room in accessible ceiling space as directed by the Authority. All branch circuits serving the patient care area will be routed through the RRGB enclosure. Provide a stainless steel cover with gasket over the enclosure with an identification label on it.

7.6.11.2(5) Bond all exposed non-current carrying components of communication, radio, or television equipment in patient care areas to ground using a properly sized equipment bonding conductor. Uniquely identify each bonding conductor at each end.

7.6.11.2(6) Provide a solidly grounded system including conductors and bussing. Provide equipotential grounding systems and equipment for all Clinical Spaces, including a common ground bus for each patient bed location.

7.6.11.2(7) Bond all exposed non-current carrying components of communication, radio, or television equipment in Clinical Spaces to ground using a properly sized equipment bonding conductor.

7.6.11.2(8) Provide a ground bus in each electrical and communication room connected to the central grounding system.

7.6.11.2(9) Provide a copper ground conductor within all raceways for feeders and branch circuit wiring.

7.6.11.2(10) Provide a minimum #6 AWG copper ground conductor to be run to the Telecommunications Main Bus Bar and bond all Communications Systems in accordance with relevant standard requirements.

7.6.11.2(11) Label all grounding and bonding conductors and bus bars consisting of the ‘bonding backbone’ with printed labels.

7.6.11.2(12) Complete a lightning protection study for the Facility, such study to be done by a specialist in lightning protection work and to be signed and sealed by a professional engineer registered in British Columbia.

7.6.11.2(13) Implement a lightning protection study on any risk value of 4 or higher, as defined by relevant CSA standard. Provide a complete lightning protection system for the new Facility if required by study.

7.6.12 Seismic Requirements for Electrical Systems

7.6.12.1 Basic Requirements

7.6.12.1(1) Provide seismic restraint for all electrical equipment and components of electrical systems. Design the electrical systems and its associated equipment to comply with the BC Building Code for a post-disaster facility.

7.6.12.1(2) Provide seismic restraint systems and methods that facilitate ease of maintenance and ease of replacement and reconfiguration of electrical equipment and systems and other equipment and building components.

7.6.12.1(3) Provide seismic restraint systems and methods that coordinate with the Facility's architecture and finishes. Wherever practicable, conceal components of seismic restraints from public view. Where concealment is not practicable, provide systems that complement the Facility's architecture and finishes.

7.6.12.2 Performance Criteria

7.6.12.2(1) Provide seismic support for all electrical equipment and components of electrical systems that have the potential to cause injury or damage during or following a seismic event.

7.6.12.2(2) Use seismic restraint systems that are designed by a professional engineer, registered in British Columbia, or, where an identified pre- designed standard restraint device or system exists for a particular item, that equipment may be used provided that written confirmation of its acceptability for the installation is provided by a professional engineer registered in British Columbia. This Seismic Engineer will cover off all seismic requirements within this schedule. Provide signed and sealed drawings as well as typewritten field reports from a professional seismic engineer, registered in British Columbia. Obtain certification of the main electrical distribution equipment for "seismic withstand capability" and, to maintain the certification, anchor such equipment according to the manufacturer's instructions.

7.6.13 Power Quality

7.6.13.1 Basic Requirements

7.6.13.1(1) Establish and maintain an overall power quality which assures suitable conditions for operation of all electrical and electronic equipment throughout the Facility.

7.6.13.1(2) Provide equipment and systems which assure that electrical equipment and systems will not be harmed or impaired either by external events or conditions, such as lightning and disturbances on the utility service, or by internal events or conditions generated within the Facility.

7.6.13.1(3) Provide harmonic mitigation equipment, as necessary, to ensure that power quality meets the recommendations in IEEE, including relevant standards. For the purposes of measuring the harmonic distortion, the “Point of Common Coupling” will be the main utility breaker. As part of commissioning, confirm compliance to applicable reference tables by field measurements after building occupancy and under normal operating conditions.

7.6.13.1(4) Provide integral surge protective devices (TVSSs) on all 600V Centralized Distribution Panels.

7.6.13.2 Performance Criteria

7.6.13.2(1) Provide equipment, such as filters, SPD (Surge Protective Device), specifically designed to control and remove all adverse power quality conditions that could damage or impair function of sensitive electronic equipment used in the Facility. Adverse power quality conditions include voltage spikes, dips and droops, transients, harmonics, power factor and radio frequency interference.

7.6.13.2(2) Provide the ability to demonstrate to the Authority at any time that there are no potentially harmful power conditions present and that equipment intended to guard against such conditions is in proper working order.

7.6.13.2(3) The voltage phase imbalance will not exceed 3 percent between phases A, B, C anywhere within the power distribution system.

7.6.13.2(4) Provide integral surge protective devices (TVSSs) on all 600V Centralized Distribution Panels, all120/ 208V Centralized Distribution Panels. 120/208V Panel boards supplying power to sensitive electronic equipment will also have integral TVSS and dedicated neutrals for electronic equipment.

7.6.13.2(5) Loss of phase detection/protection is provided as part of all drawout air circuit breakers including the main normal breaker and all VFDs serving mechanical equipment. Loss of phase detection/protection will be provided for all magnetic starters not integral to pre-packaged mechanical equipment. Provide loss of phase detection/protection at all Panels feeding Diagnostic Imaging medical equipment.

7.6.13.2(6) Provide a third party specializing in power quality systems to fully test and commission all power quality systems. Submit the reports with the commissioning documents.

7.6.14 Lighting

7.6.14.1 Basic Requirements

7.6.14.1(1) Design-Builder will utilize LED technology for all lighting. Utilize hospital grade luminaires in all clinical and general hospital areas and specification grade quality luminaires in utility and storage closets. All luminaires to be selected with emphasis on energy efficiency, aesthetics, glare reduction and high colour rendering. Design-Builder will provide healthcare luminaires in all clinic service areas. All lighting will be dimmable and will provide various lighting levels to accommodate individual control and comfort. Healthcare luminaires will be appropriate to the unique requirements of each application, including but not limited to the following:

7.6.14.1(1)a. Examination lighting to provide high powered lighting for patient exams.

7.6.14.1(1)b. Task lighting to support a variety of tasks requiring enhanced illumination as noted in Appendix 1A Clinical Specifications and as determined through Schedule 2 Review Procedure.

7.6.14.1(1)c. Healing lights to soothe the patient during anxiety providing procedures.

7.6.14.1(1)d. Ambient lighting to promote overall patient wellness.

7.6.14.1(1)e. Provide night time lighting near exits of Long-Term Care units to enable people leaving the department to be identified on camera. Exit doors to be alarmed. Coordinate this requirement with Division 27..

7.6.14.1(1)f. Chart lights to support caregiver notations on patient progress as noted in Appendix 1A Clinical Specifications and as determined through Schedule 2 Review Procedure.

7.6.14.1(1)g. Wayfinding – night lights in patient rooms and areas to promote overall patient wellness as noted in Appendix 1A Clinical Specifications and as determined through Schedule 2 Review Procedure. Lighting will provide maximum uniformity.

7.6.14.1(1)h. Provide a low voltage relay based lighting control system with a broad selection of energy-efficient LED luminaires with a low voltage sensor that controls the lighting system in compliance with the latest energy codes and collects valuable data about the building performance and use. Software applications provide granular data into information through energy dashboards and specialized applications (APPs) that make it simple and help optimize the use of building resources. Provide low voltage dual technology occupancy/vacancy and daylight harvesting sensors for all public areas, including general corridors, all department corridors, waiting areas and similar areas. Provide software and integrate into the BMS to provide time of day usage, historical data, and power consumption. Provide sufficient allowance to design and develop a web-based application (APP) to provide an integration portal to access data collection.

7.6.14.1(2) All luminaires in treatment rooms, procedure rooms and rooms that contain a patient care environment will be NSF2 listed or will be provided with a cleanable lens that is manufactured with materials that is resistant to cleaning compounds. These fixtures will also have a minimum ingress protection rating of IP64.

7.6.14.1(3) All treatment rooms, procedure rooms, Patient rooms, patient bays, stretcher bays luminaries will be rated to the TM-30 standard for the elevation of light source colour rendition by quantifying fidelity and gamut of a light source. All other areas will have luminaires rated between CRI 80 and CRI 90.

7.6.14.1(4) Provide aesthetically pleasing, exceptional visual comfort luminaires with dimming and scene setting as detailed in this section.

7.6.14.1(4)a. Provide aesthetically pleasing lighting for all Nursing Stations consisting of recessed fixtures above the Millwork, down lights for general circulation and wall washing down lights for feature walls.

7.6.14.1(5) Luminaries will have the following characteristics:

7.6.14.1(5)a. Interior LEDs to be rated at 3000K to 3500K as directed by the Authority.

7.6.14.1(5)b. Exterior LED fixtures to be rated at 3000K or as directed by the Authority.

7.6.14.1(5)c. Not used.

7.6.14.1(6) Patient room lighting will accommodate the needs of both patient and caregiver. Lighting requirements within the patient rooms differ based on the task being performed, including testing, patient examination, charting, reading and Wayfinding. Additionally, the patient room will optimize patient comfort with a residential inspired design. Provide multi-function lighting, night lighting and, chart lighting.

7.6.14.1(7) In Medical Patient Units, locate lighting fixtures that remain on during the night so that they cannot be seen from bed positions from within the Patient Room.

7.6.14.1(8) Medical in-patient room lighting will consist of a multi-function overbed luminaire to provide ambient and exam lighting. Provide examination and general area lighting above bed or stretcher with 0% - 100% dimming. Provide a dimmable reading lamp in the over bed luminaire design. In addition, provide general overhead room lighting. Provide LED night lights for Wayfinding switched from patient pillow control and at entrance to room. Provide LED charting lights at the charting location to accommodate charting. Provide dimmable down lights for patient visitors area separately switched for convenience. The Design-Builder will also provide a separately switched wall mounted vanity luminaire above all patient washroom sinks, a separately switched dimmable down light above the toilet and a heat lamp on a timer in patient washrooms with a shower.

7.6.14.1(9) Long-Term Care room lighting will consist of specification grade quality, residential appearance luminaires. Provide examination and general area lighting above bed with 1% - 100% dimming. Provide a dimmable reading lamp in the ceiling or wall above the bed head. Provide LED night lights for Wayfinding switched from patient bed and at entrance to room. The Design-Builder will also provide a separately switched wall mounted vanity luminaire above all patient washroom sinks, a separately switched dimmable down light above the toilet and a heat lamp on a timer in patient washrooms with a shower.

7.6.14.1(10) Corridors / Nursing Station and similar area lighting to meet performance requirements as follows:

- 7.6.14.1(10)a. Cleanable for infection control;
- 7.6.14.1(10)b. Appropriately placed lighting for tasks;
- 7.6.14.1(10)c. Wayfinding capabilities;
- 7.6.14.1(10)d. Dependable and effective signage exit and emergency lighting;
- 7.6.14.1(10)e. Provide recessed wall washing down lights for feature walls.
- 7.6.14.1(10)f. Not used.
- 7.6.14.1(10)g. Not used.
- 7.6.14.1(10)h. Corridor lighting primary requirement is the ability to ease transitions to adjacent areas.
- 7.6.14.1(10)i. Provide down lights in alcoves and similar locations to deliver soothing corridor illumination.
- 7.6.14.1(10)j. Provide under cabinet task lighting proposal to support a variety of caregivers' duties as described in Review Procedure.
- 7.6.14.1(10)k. Specification grade.

7.6.14.1(11) Design-Builder will provide patient room, lighting within the medical inpatient department to the performance requirements as follows:

7.6.14.1(11)a. Not used.

7.6.14.1(11)b. UL certified IP64 rated for infection control, NSF2 listed or manufactured with materials that is resistant to cleaning compounds;

7.6.14.1(11)c. Not used.

7.6.14.1(11)d. NSF2 listed or manufactured with materials that is resistant to cleaning compounds.

7.6.14.1(11)e. UL certified IP64 rated for infection control.

7.6.14.1(11)f. Not used.

7.6.14.1(11)g. Multi-function capability;

7.6.14.1(11)h. Aesthetic appeal;

7.6.14.1(11)i. Ease of maintenance and cleanability;

7.6.14.1(11)j. Dimmable lighting.

7.6.14.1(12) Provide luminaires and light sources that enhance safety and allow personnel to circulate throughout spaces and perform required tasks.

7.6.14.1(13) Design lighting with the objective of creating a comfortable working environment and an environment conducive to healing and recovery.

7.6.14.1(14) Unless otherwise noted in other sections of this Statement of Requirements, lighting will comply with all characteristics recommended by the CSA Standard Z317.5-17 Illumination Systems in Health Care Facilities, with the exception of clause 6.1.3, and ANSI/IESNA RP-29-20.

7.6.14.1(15) Whole building area lighting power density levels will be lower than the latest adopted version of the ASHRAE Standard 90.1 by 20% and the lighting installation will meet the requirements of Appendix 1A – Clinical Specifications and ASHREA standard 90.1.

7.6.14.1(16) Provide connections to the BMS and energy management system.

7.6.14.1(17) An electrically powered LED "X-ray In Use" sign will be located outside the trauma room where fixed or mobile x-ray equipment is anticipated to be used. The sign will be connected to an internally illuminated switch inside the room label "X-ray". Internal illumination of the switch will be on only when the “X-ray in Use” sign is illuminated.

7.6.14.2 Performance Criteria

7.6.14.2(1) Provide luminaires that require minimal cleaning and permit practical and easy access and disassembly. All luminaries will be ULC listed, provided with anti-microbial finish, and rated for intended usage.

7.6.14.2(2) Not used.

7.6.14.2(3) Utilize LED lighting. Use wall sconces or down lighting for decorative purposes. Do not use incandescent, fluorescent, compact fluorescent, or HID lighting.

7.6.14.2(4) Light emitting diodes LEDs will be measured to LM79 standards and tested to LM80 and L70 using TM-21 standards.

7.6.14.2(5) Minimize use of battery-operated unit emergency lighting. Battery- operated emergency lighting may be an acceptable alternative as a second level of emergency lighting in areas including, procedure rooms, inpatient areas, electrical rooms, mechanical areas, and other areas determined and directed by any other specification section or reference document, code or standard. Remote heads will utilize LED technology.

7.6.14.2(6) Connect, at a minimum, 10% of the lighting in Clinical Spaces and rooms and areas used by the public to the UPS system. Public washrooms can be excluded from this requirement.

7.6.14.2(7) No occupied areas or rooms will have luminaires circuited from one power source only.

7.6.14.2(8) Circuit the luminaires in all interior and exterior areas from both conditional and vital power so that if one power source is not available emergency light levels are met.

7.6.14.2(9) Utilize recessed volumetric or indirect LED luminaries in offices, reception areas, Nursing Stations, and other areas where computer terminals and similar screens are present. Provide lighting control in accordance with ASHREA 90.1 latest adopted addition. Provide dual technology occupancy sensors with manual on/auto off in offices. Utilize 1% - 100% dimming control or multi-level switching and daylight dimming where appropriate

7.6.14.2(10) Design lighting in conference rooms, meeting rooms and video conferencing facilities to maximize viewing of monitors and screens and provide suitable vertical and horizontal illumination of people being viewed. Provide 0 – 100% dimmable lighting with switching to allow for general and ambient lighting selection. Provide at a minimum 60 foot candles of illumination measured at the work-plane (1 meter above floor) throughout all conference rooms.

7.6.14.2(11) Provide special task lighting designed for the types of procedures conducted for rooms and areas where treatment is provided, including medication rooms, Nursing Stations and rooms and areas where specialized analytical or diagnostic work is carried out, e.g., sterile core, biomed, birthing units, inpatient bedrooms, Triage/Observation, surgical, operating, procedure rooms and similar.

7.6.14.2(12) As architectural features, design lighting in main lobbies, waiting areas, staff lounges and the main entrance will be provided with high quality products aesthetically pleasing to the public and staff. Staff areas and rooms will have multiple switching and dimming controls.

7.6.14.2(13) Where patients are being transferred and/or lying on a stretcher provide volumetric or indirect lighting separately controlled by a master multi-zone low voltage controller located in the Nursing Station and observation alcoves. Areas include stretcher bays, stretcher recover bays in higher acuity, recovery and operating room support areas, interim PARR, and other similar areas.

7.6.14.2(14) Provide LED under cabinet lights on a dedicated switch for below upper cabinets above all usable counter spaces.

7.6.14.2(15) Lighting for hand hygiene sinks will comply with the requirements of CSA Z317.5 as identified in sentence 7.6.14.1(14). The Design Builder will provide is providing ceiling mounted pot lights above hands hygiene sinks to ensure adequate illumination on the sink and hands.

7.6.14.2(16) Where multi-level lighting is required, each luminaire will have multiple levels of lighting. Switching of different luminaires on and off will not constitute multi-level lighting control.

7.6.14.2(17) Utilize daylight dimming for lighting at exterior glazing where required by ASHREA 90.1.

7.6.14.2(18) Controls to be to ASHRAE 90.1 requirements. Occupancy and Vacancy sensors to be dual technology and designed for the application in which they are used.

7.6.14.2(19) Provide luminaires and light sources that enhance safety and allow personnel to circulate throughout spaces and perform required tasks.

7.6.14.2(20) Exterior luminaires to be LED vandal resistant and have full cut off.

7.6.14.2(21) Lighting design will consider the light pollution reduction requirements as outlined in LEED to eliminate light trespass from the building and site, improve night sky access and reduce development impact on nocturnal environment. Fixtures for exterior area will be mounted at a height no more than 7m above ground surface being illuminated.

7.6.14.2(22) Utilize LED type edge lit green pictogram exit signs in finished areas, and steel in unfinished areas. All exit signs will be LED type powered by the vital system. Provide exit signs as required by Code. Additional exit signs will be provided to provide wayfinding to all exit doors and paths of egress from all internal corridors and corridor intersections. Provide direction to two paths of egress from corridors and intersections.

7.6.14.2(23) Procedure Rooms

- 7.6.14.2(23)a. Provide maximum uniformity between zones in all surgical and operating rooms. Provide illumination as recommended by relevant CSA standard. Provide minimal luminance contrast between zones to allow surgical teams to work effectively and in maximum comfort for extended time periods. Provide optical systems design to achieve maximum luminance uniformity between all three zones;
- 7.6.14.2(23)b. Provide IP64 rated UL certified luminaires suitable for a "Clean Room" environment;
- 7.6.14.2(23)c. Luminaires will meet the MIL Standard 461G for EMI and RFI;
- 7.6.14.2(23)d. Connect Surgical Procedure Lights to the UPS branch;
- 7.6.14.2(23)e. Provide infrastructure services (power, raceway, grounding, wiring) for Procedure Room lighting provided by vendors. Design-Builder to supply/install, set-up, test, and commission all Authority supplied equipment. Provide all necessary devices/equipment and provide all connections and installation in accordance with manufacturers requirements;
- 7.6.14.2(23)f. Provide dimmable down lights or 1’ x 4’ recessed luminaires around the perimeter of the room; 0%-100% dimmable
- 7.6.14.2(23)g. Provide, manual dimming control for all zones at a single location as directed by the users during the design consultation process.

7.6.14.2(24) Offices and Workrooms

- 7.6.14.2(24)a. Provide uniformly luminous, recessed mounted volumetric or indirect luminaires;
- 7.6.14.2(24)b. Position ceiling luminaires to avoid direct and reflected glare;

7.6.14.2(24)c. Provide multi-level or dimming lighting controls, dual technology occupancy sensors with manual on/auto off and daylight sensing.

7.6.14.2(24)d. Provide under counter luminaire for above sinks and under upper cabinetry. Provide separate switching for these lights.

7.6.14.2(25) Meeting Rooms (including Multipurpose, Videoconference, Conference rooms)

7.6.14.2(25)a. Provide recessed mounted volumetric or indirect luminaires or linear luminaries mixed with down lights. Provide appropriate luminaires where videoconferencing will take place to illumine faces while minimizing glare;

7.6.14.2(25)b. Position ceiling luminaires to avoid direct and reflected glare;

7.6.14.2(25)c. Provide dimming lighting controls, dual technology occupancy sensors with manual on/auto off and daylight sensing where appropriate;

7.6.14.2(25)d. Provide under counter luminaire above sinks and under upper cabinetry. Provide separate switching for these lights;

7.6.14.2(25)e. Provide minimum of two zones of manual dimmable lighting control in all meeting rooms to provide lighting zones as determined in consultation with the user groups.

7.6.14.2(26) Areas, such as Reception, Waiting, Lobby and Seating

7.6.14.2(26)a. Provide decorative lighting for visual interest, and lighting that illuminates feature wall and specialty signage, design features, and special features of the area;

7.6.14.2(26)b. Provide master dimmable control of all corridors, stretcher bays and general area lighting.

7.6.14.2(26)c. Provide lighting controls for these areas at Nursing Stations and other similar areas not available to the public.

7.6.14.2(27) Nursing Stations, Decentralized Nursing Stations

7.6.14.2(27)a. Provide volumetric or indirect recessed lighting and down lighting;

7.6.14.2(27)b. All lighting to be dimmable;

7.6.14.2(27)c. Provide decorative lighting;

7.6.14.2(27)d. Provide dual technology occupancy sensors with manual on/auto off and daylight sensors where appropriate and required by ASHRAE;

7.6.14.2(27)e. Not used.

7.6.14.2(28) Staff and Public Washrooms

7.6.14.2(28)a. Provide down lighting for general illumination and aesthetically pleasing vanity light above sink.

7.6.14.2(28)b. Provide ceiling mounted dual technology occupancy sensor.

7.6.14.2(29) Public and Non-Public Corridors

7.6.14.2(29)a. In publicly accessible corridors, provide volumetric or indirect recessed lighting and in corridors not accessible by the public provide lensed recessed lighting;

7.6.14.2(29)b. Provide daylight dimming sensors for corridors with exterior glazing. Provide dimming controls of corridors. Lighting in corridors to be reduced to 50% at each fixture during night time.

7.6.14.2(29)c. Corridor lighting to be 10% UPS power, 40% Vital power, 50% conditional power. UPS powered luminaires to be located at corridor intersections and corners.

7.6.14.2(30) Medical Patient Rooms (including Isolation and Bariatric)

7.6.14.2(30)a. Provide two dimmable, asymmetrical, linear lights (flanking the patient bed) with antimicrobial finish. Patient room exam lights will function as exam light and ambient light and be architecturally pleasing.

7.6.14.2(30)b. Provide two amber LED night lights that are switched inside the room at the entrance from the corridor, in the ante-room and through the patient-controlled nurse call pillow speaker or headwall.

7.6.14.2(30)c. Provide a dimmable reading light function as part of the multi-function overbed luminaire.

7.6.14.2(30)d. Provide dimmable down lighting at visitor areas.

7.6.14.2(30)e. Provide separate dimming controls for indicated luminairs at the following locations::

7.6.14.2(30)e.1 inside the room at the entrance from the corridor; Night light, (switched only) Charting Light, Ambient lights;

7.6.14.2(30)e.2 the headwalls and pillow speaker: Ambient Lights, Exam Light and Reading light;

7.6.14.2(30)e.3 not used;

7.6.14.2(30)e.4 the ante-room if required. Night light, (switched only) Charting Light, Ambient lights;

7.6.14.2(30)e.5 the Family Zone : Family zone light(s).

7.6.14.2(30)f. Provide separate controls for the following lights through the patient-controlled nurse call pillow speaker:

7.6.14.2(30)f.1 dimming control of the overbed ambient light(s);

7.6.14.2(30)f.2 dimming control of the overbed reading light(s); and

7.6.14.2(30)f.3 dimming control of over bed exam light.

7.6.14.2(31) Not used.

7.6.14.2(32) Provide task lighting in the respective ante-room and general area recessed lighting.

7.6.14.2(33) Medical Patient Washrooms (including Bariatric and Isolation)

7.6.14.2(33)a. Provide an amber LED night light in each Patient Washroom that is not switched. Provide a dimmable aesthetically pleasing vanity light over the sink and dimmable general area lighting utilizing down lights switch together. Night light to illuminate on photocell only.

7.6.14.2(34) Exam, Consulting and Similar Rooms

7.6.14.2(34)a. Provide dimmable, multi-function (ambient / exam) ceiling mounted recessed lights. The fixtures will dim from 1-100%.

7.6.14.2(34)b. Provide connection and controls for Patient Exam Light. 7.5.15.2

7.6.14.2(34)c. Not used.

7.6.14.2(35) Exterior Lighting

7.6.14.2(35)a. Provide LED fixtures suitable for exterior use with full cut off and vandal resistant. Provide low level lighting, bollards, wall mounted and post top lighting where needed to provide safe, well-lit walkways, parking areas and roads.

7.6.14.2(35)b. The exterior lighting levels should comply to IES RP-20 and RP-8.

7.6.14.2(35)c. Exterior lighting to be connected to the Vital and Conditional power sources. Mix lighting sources so no area is dark with loss of one source of power.

7.6.14.2(35)d. Control exterior lighting to ASHRAE 90.1 requirements.

7.6.14.2(35)e. Comply with LEED requirements for light trespass and light pollution.

7.6.14.2(35)f. Connect Exterior lighting to the BMS system. Exterior lights to be controlled via astronomical time clock and photocell.

7.6.15 Lighting Controls

7.6.15.1 Basic Requirements

7.6.15.1(1) Lighting controls to comprise a significant part both of the energy management of the facilities and of the flexibility required to adjust lighting to suit functions and activities.

7.6.15.1(2) The lighting control system will be a low voltage digital relay-based system using relays, occupancy sensors, vacancy sensors, photo sensors, LED 0-10V dimming drivers, compatible dimmers switches and low voltage switches and switch stations. Lighting control to permit simple and integrated control of lighting; controls will be easily operated and located for each area and function in consultation with the Authority.

7.6.15.1(3) Lighting controls are to meet or exceed ASHRAE 90.1 requirements.

7.6.15.1(4) All of the lighting in a space to be capable of being switched at all entrances to the space.

7.6.15.1(5) Integrate the lighting control system with the Building Management System for remote control of the lighting and energy management.

7.6.15.1(6) Staff and patients to have the ability to control the lighting in their environment. All Clinical Spaces to have staff and patient lighting control. All other rooms to have staff lighting control.

7.6.15.1(7) Patient to have the ability to control the lighting levels in their room or bay directly and easily from their beds

7.6.15.1(8) Dual Technology Occupancy Sensors, Vacancy Sensors and daylight dimming control systems to be utilized to maintain light levels at levels based upon the occupancy of the room and the quantity of daylight.

7.6.15.1(9) On/Off daylight controls are not permitted.

7.6.15.2 Performance Criteria

7.6.15.2(1) Where lighting controls are required to be located in areas accessible to the public, they will be protected from unauthorized operation.

7.6.15.2(2) Corridor lighting controls to be located at the Nursing Stations and reception desks, where applicable. Controls to be multilevel (to provide a lower light level at night) and capable of overriding the BMS night setback control. There will be no night setback in critical care areas.

7.6.15.2(3) Lighting control system to be interfaced to the BMS to permit override '100% on' and night set back control. Lighting program to be established by the Authority and Design-Builder to address different conditions such as power outage and fire alarm.

7.6.15.2(4) All manually operated lighting controls to be of a type, which can be completely cleaned and disinfected without requiring any disassembly. Manually operated controls will not be deteriorated or otherwise adversely affected by frequent cleaning and disinfections.

7.6.15.2(5) Lighting controls in locations where they may be subjected to excessive moisture or to chemicals that might cause deterioration are to be rated specifically for the application.

7.6.15.2(6) Locate all lighting control panels and relay panels within electrical rooms and non-public corridor walls, and not within ceiling spaces. Provide dedicated lighting panels for all lighting. Do not mix lighting loads with power loads.

7.6.15.2(7) Provide lighting control schedules that respond to individual departmental requirements and occupancy/use. Design a schedule of lighting control and include in the design specifications.

7.6.15.2(8) Lighting in open areas and common areas to be zoned and subdivided to permit energy management control and variation of light levels.

7.6.15.2(9) Provide zone control of lighting for all corridor, circulation, waiting and gathering areas. Zoning control will include floor by floor and department by department, as a minimum. Provide master switches to control groups of lighting zones with the capability of direct on/off control or on/flick-then-off control ('flick-then-off' function is that the lights will flick prior to turning completely off). Any master switch which could cause an occupant to be left in the dark will have the 'flick-then- off' warning function.

7.6.15.2(10) Dual Technology Occupancy Sensors in ceilings will be automatic on/off type and will control both room lighting and HVAC systems (via sensor contact interface to BMS).

7.6.15.2(11) Dual technology occupancy sensors on the wall to be manual on/automatic off type and will control both lighting and HVAC systems (via sensor contact interface to BMS).

7.6.15.2(12) Vacancy sensors, a subset of occupancy sensors, manual on/off/dimming, automatic off type.

7.6.15.2(13) Where sufficient wattage is present in the primary side lighted zone or primary and secondary side lighted zone as required by ASHRAE 90.1, daylighting controls to be provided for lighting in primary or primary and secondary side lighted zone as required by ASHRAE 90.1 and to provide dimming to 10% of lamp output. Provide combination daylight harvesting and occupancy control to the rooms exposed to daylight and requiring occupancy sensors.

7.6.15.2(14) Where daylight adaptive controls are required by ASHRAE 90.1, the daylight adaptive controls in the primary side light zone or primary and secondary side lighted zone are to meet the following performance criteria:

7.6.15.2(14)a. The average luminance across a representative portion of the task surface to be at least 30% of the target design level for that space type within 5 meters of the daylight source;

7.6.15.2(14)b. Overhead lights within the space to be dimmed as low as possible (or turned off) while satisfying above criteria (a).

7.6.15.2(15) Occupancy sensors and daylighting controls to be extra-low or line voltage type; and where low voltage will be integrated into the lighting control system and located on ceilings to avoid interference with furniture. Occupancy sensors will typically be dual technology with other types to suit application.

7.6.15.2(16) Exterior lighting to be controlled via BMS and photocell.

7.6.16 Mechanical Equipment Connections

7.6.16.1 Basic Requirements

7.6.16.1(1) Provide electrical power control and monitoring connections to all mechanical equipment as required for proper operation, protection, and maintenance of the equipment. Materials and installation methods will result in safe, reliable, and serviceable mechanical equipment and systems in the Facility.

7.6.16.2 Performance Criteria

7.6.16.2(1) Utilize institutional or industrial quality cables, connectors, conduit systems, fittings and hardware used to make connection to mechanical equipment so as to provide for high levels of reliability, durability, and ease of maintenance of the equipment.

7.6.16.2(2) Design connections made to motors and/or motor driven equipment or equipment with noticeable levels of vibration to accommodate the vibration.

7.6.16.2(3) Design connections to mechanical equipment to easily permit removal and replacement of the equipment.

7.6.16.2(4) Size motor control centres, main feeders to motor control centres, and mechanical distribution centres to accommodate the current mechanical equipment with an additional 20% spare capacity.

7.6.16.2(5) Utilize motor control centres when four 3-phase motors that require a starter are located within 50 m of each other.

7.6.16.2(6) Provide labelling on MCCs to match motors.

7.6.16.2(7) Provide wring diagrams of each starter type.

7.6.16.2(8) Provide full size starters.

7.6.16.2(9) For motors 20 hp. and above, provide reduced current starters. Provide integral harmonic cancellation devices to limit harmonics to 5% current harmonics (iTHD) of the full load fundamental current if solid-state starters are employed.

7.6.16.2(10) Starters and MCCs to be indoor sprinkler-proof, type 2 enclosures. Arc Flash reducing type will be utilized for 600V MCCs.

7.6.16.2(11) Provide individual control transformers for each starter.

7.6.16.2(12) Starters or MCCs connected to emergency and normal power to be coloured to match the corresponding system colour. All interiors to be white.

7.6.16.2(13) Electrical connections and power-paths to mechanical equipment should reflect the redundancy considerations of the corresponding mechanical system or portion of the mechanical system serving an area.

7.6.17 Major Medical Equipment

7.6.17.1 Basic Requirements

7.6.17.1(1) Provide all electrical requirements for connection, operation and monitoring and control of any supplied major medical equipment.

7.6.17.2 Performance Criteria

7.6.17.2(1) Each item of equipment to be installed and electrically connected for proper and full operation.

7.6.17.2(2) Electrical characteristics of this equipment, including voltage, wattage, phase, demand, inrush, frequency, connection method and control and monitoring requirements to be confirmed by the designer and provided for.

7.6.17.2(3) Space, access and ventilation requirements and other operation critical characteristics of this equipment to be provided for and outlets and connection points to be located correctly for installation and so as to permit proper and safe isolation for servicing and disconnection for removal or replacement.

7.6.17.2(4) Any motorized equipment is to be equipped with a local lockable disconnect switch.

7.6.17.2(5) Feed all major medical equipment (imaging, procedure) from a dedicated transformer.

7.6.18 Medical Service Headwall Units Systems

7.6.18.1 Basic Requirements

7.6.18.1(1) Incorporate headwall power, communications, equipment mounting, medical gases, nurse call and lighting control into the medical service units specified under another division. Provide data, power, nurse call and lighting control systems as describe within and as noted in all relevant Appendices and as directed by user group consultation.

7.6.18.1(2) Provide the minimum quantity of power outlets in patient care areas in accordance with relevant CSA standard and the classification of loads and branches in accordance with this standard.

7.6.18.1(3) Provide the minimum quantity of data outlets in accordance with Divisions 27 and 28.

7.6.18.2 Performance Criteria

7.6.18.2(1) Provide horizontal or vertical type medical service headwall units as directed by department representative and identified in Appendix 1A – Clinical Specifications.

7.6.18.2(2) Coordinate and install the required electrical services, including nurse call, conditional, emergency and UPS power, Patient entertainment, patient information, communications outlets, exam light switches, and reading light switches in the medical service units..

7.6.18.2(3) Conceal within walls all the mechanical and electrical services feeding the medical service units.

7.6.18.2(4) Avoid back to back installations between bedrooms that could compromise acoustic rating of such assembly. Where back to back installations are unavoidable, acoustic isolation will be provided.

7.6.18.2(5) Exact medical service unit dimensions and configurations to depend on the room layout and the available space. Generally, the medical service unit length will suit the quantity and location of outlets and all outlets will be clear from the width of the bed.

7.6.18.2(6) Design-Builder will note that if an area behind the bed is free of services that these services be placed on the side of the bed;

7.6.19 Specialty Systems

7.6.19.1 Basic Requirements

7.6.19.1(1) Special electrical and Communications Systems are required in the Facility (as described in this Schedule) and form essential parts of the Building. Provide power supply, specially conditioned power and communication conduits and other electrical operational support equipment to meet all requirements of these special electrical and electronic systems.

7.6.19.2 Performance Criteria

7.6.19.2(1) Utilize institutional or industrial quality cables, connectors, conduit systems, fittings, and hardware to make connection to special equipment and to provide for high levels of reliability, durability, and ease of maintenance of the equipment.

7.6.19.2(2) Provide connections to special equipment that easily permit removal and replacement of the equipment.

7.6.20 Clock System

7.6.20.1 Basic Requirements

7.6.20.1(1) Provide a synchronized wireless clock system to assure accurate, consistent time is available in the Facility. The system will provide automatic correction for daylight savings time and self-correct if power fails.

7.6.20.1(2) Provide master time controllers and all clocks by a recognized industry leader with all components by the same manufacturer.

7.6.20.1(3) All synchronized clocks to be clearly identified as a synchronized clock.

7.6.20.1(4) Provide analogue clocks throughout the Facility in all circulation corridors so that a minimum of one clock is visible at any time.

7.6.20.1(5) Provide clocks in the following area:

7.6.20.1(5)a. Reception;
7.6.20.1(5)b. Waiting Area;
7.6.20.1(5)c. Exam/ Treatment Room;
7.6.20.1(5)d. PFT/ ECG Room;
7.6.20.1(5)e. Group Consultation Room;
7.6.20.1(5)f. Clinician Workroom;
7.6.20.1(5)g. Staff Room;
7.6.20.1(5)h. Meeting Room;
7.6.20.1(5)i. Staff Lounge;
7.6.20.1(5)j. Staff Lockers;
7.6.20.1(5)k. Resuscitation/ Trauma Room;
7.6.20.1(5)l. Procedure Room;
7.6.20.1(5)m. IV Therapy;
7.6.20.1(5)n. Clinical Workstation (Nurse Station);
7.6.20.1(5)o. LDRP;
7.6.20.1(5)p. Tub Room;
7.6.20.1(5)q. Dining Area; and
7.6.20.1(5)r. Activity Room.

7.6.20.2 Performance Criteria

7.6.20.2(1) Install battery-operated analogue type synchronized clocks that will receive correction signals from the master clock. Use batteries rated to last a minimum of 5 years.

7.6.20.2(2) Provide synchronized clocks minimum 300 mm in diameter with stepping second hand and 24-hour numbering. Numbering to include hours 1-12 in large numbers on outer ring and hours 13-24 in smaller numbers on inner ring.

7.6.20.2(3) In the event of a power loss, the control system will continuously maintain proper internal time.

7.6.20.2(4) Provide local satellite transmitters to provide signals to all clocks in the Facility where required.

7.6.20.2(5) The clock system to have an independent wiring system and raceway system to any other building system.

7.6.20.2(6) Sapling clock synchronization system can also be used with related equipment to make it a fully functional system.

7.6.21 Fire Alarm System

7.6.21.1 Basic Requirements

7.6.21.1(1) Provide a new fire alarm system for the Facility and ensure that that system meets or exceeds the requirements in this Section.

7.6.21.1(2) Provide a complete two stage (general and evacuation), supervised, 24 VDC fire detection and alarm system that includes addressable, intelligent, automatic, and manual initiation devices and audio/visual alarm devices with voice evacuation capabilities. Alarm activation will be initiated by manual pull stations, smoke / heat detection, and fire sprinkler water flow devices. Alarm indication to consist of visual and combination visual/audible devices.

7.6.21.1(3) The fire alarm system to comply with all applicable standards, including:

7.6.21.1(3)a. Can/UL S524 Standard for Installation of Fire Alarm Systems;

7.6.21.1(3)b. Can/UL S537 Standard for Verification of Fire Alarm Systems;

7.6.21.1(3)c. Applicable NFPA Codes; and

7.6.21.1(3)d. Elevator Code CSA-B44.

7.6.21.2 Performance Criteria

7.6.21.2(1) Install all fire alarm wiring in conduit. Provide two hour rated cable where required to meet survivability requirements of NFPA 72.

7.6.21.2(2) Provide addressable smoke detectors as required, self-correcting analogue type to maintain consistent sensitivity. The following areas to be provided with smoke detector coverage, in addition to sprinklers, for early detection:

7.6.21.2(2)a. Electrical rooms;

7.6.21.2(2)b. Communication rooms;

7.6.21.2(2)c. Procedure rooms and similar areas;

7.6.21.2(2)d. Corridors;

7.6.21.2(2)e. Patient bays;

7.6.21.2(2)f. Patient bedrooms;

7.6.21.2(2)g. Stretcher bays.

7.6.21.2(3) Provide addressable two stage manual pull stations at all exit doors and entrances to exit stairs as required.

7.6.21.2(4) Connect the sprinkler system to the fire alarm system and provide full annunciation of all alarms and trouble conditions (wet, dry and pre- action).

7.6.21.2(5) Connect the fire alarm to the generator system to annunciate ‘Generator Run’ and ‘Generator Fail-to-Run’ troubles.

7.6.21.2(6) Provide fire alarm speakers throughout the Building as required, separate from the general paging system. Pre-programmed messages will be transmitted over the fire alarm paging system and speakers to annunciate origin of alarm. Any program sources on the general paging system to be muted while alarm messages are transmitted. Paging on the fire alarm system will only be from the fire phones or from the fire alarm panel pre-recorded messaging. In the event of an alarm, pre-recorded messaging manually selected to be broadcast at the Facilities and Maintenance computer workstation or the dedicated fire alarm paging microphone located at the Main Entry Point of Response Fire Alarm annunciator panel.

7.6.21.2(7) Audible alert levels will be 10 dBA above ambient with a minimum of 75 dBA and be audible in every room of the building.

7.6.21.2(8) Alternate fire alarm speakers to be wired to the same circuit with a minimum of two (2) circuits per floor (riser wiring in two separate locations).

7.6.21.2(9) Use combination audible alarm and visual notification devices where applicable, including boiler, conference rooms and mechanical rooms.

7.6.21.2(10) Include control devices and connection to close fire and smoke doors on activation of alarm condition.

7.6.21.2(11) Incorporate smoke control systems with control fans and dampers.

7.6.21.2(12) Provide a minimum of two (2) isolation modules per floor for alarm circuits to isolate wire to wire shorts.

7.6.21.2(13) Provide separate Fire Alarm paging zones for the following areas: Emergency Department, Medical Inpatient Unit, Long Term Care Unit, Primary Care Clinic, Admin/Lab/Diagnostic Imaging area, Lower Level (L0) and L0 Mechanical Plant, Electrical rooms, and the remainder of Level (L0).

7.6.21.2(14) Provide a graphic annunciator complete with LCD display at the main reception area for the New Facility, as required and approved by the local fire department.

7.6.21.2(15) Provide remote annunciators at all Nursing Stations, and as noted and required by relevant code or standard.

7.6.21.2(16) Not used.

7.6.21.2(17) Cross-corridor doors to be equipped with electromagnetic hold-open devices and electric locks, magnetic locks and to be released on first stage fire alarm.

7.6.21.2(18) Recall elevator as required by BC Building Code and CSA B44.

7.6.21.2(19) The fire alarm system to have the capability for remote notification.

7.6.21.2(20) Full automatic smoke detection coverage for major egress corridors will be provided, in addition to the patient sleeping room and inpatient corridors.

7.6.21.2(21) The fire alarm system to monitor fire pumps, heat tracing for sprinkler system and generator equipment.

7.6.21.2(22) The smoke detector in the patient sleeping room will also annunciate at the nurse call dome light located outside of the patient room, and at the nurse call zone light in the corridor and at the nurse call master station and be announced on the fire alarm system annunciator located at all Nursing Stations.

7.6.21.2(23) Provide LED type indicators for remote indication that a heat and/or smoke detector has been activated in an elevator shaft (located at elevator lobby ceiling) or duct sensors that are not readily visible (located on ceiling or at visible location nearest to sensor installation). Provide remote detection (air sampling) for elevator shafts and other inaccessible locations.

7.6.21.2(24) Sprinkler zoning and fire speaker zoning to be compatible with the fire alarm zoning.

7.6.21.2(25) Provide a computer workstation in the maintenance department within the Building.

7.6.21.2(26) The fire alarm control panel (FACP), remote annunciators and printers will indicate general alarm and trouble conditions.

7.6.21.2(27) Provide gel electrolyte type batteries with overcharge protection for FACP and all transponders. Provide solid state battery charger(s) with capacity to recharge entire battery to comply with ULC S527 requirements. Batteries will have enough capacity (with 25 percent spare time) to operate entire system (except magnetic door holders) in accordance with the BC Building Code.

7.6.21.2(28) Train staff on operation of system and incorporate fire plan in training to alert staff to policy and procedures in case of fire alarm, and safe gathering points in case of evacuation.

7.7 Communications (Division 27)

7.7.1 Principles, Guidelines and Assumptions

7.7.1.1 Achieving the "Next Generation" electronic health record (EHR) is the ultimate goal of the Authority when it comes to gathering, storing, and transmitting patient information. The intent of the EHR is to allow health care providers the ability to make more accurate, faster decisions on courses of action for patients, provide efficiencies for staff and patients to reduce costs, and provide better privacy and security of the patient record by controlling where it is stored.

7.7.1.2 It is envisioned that all components of a next generation electronic health record will be developed and will be ready for deployment within the Facility.

7.7.1.3 Most applications will be hosted on servers located at the remote sites. Some applications may be hosted locally within the Facility. Any applications/systems installed therein and the processes for maintenance of said systems are all subject to the Authority's approval and any defined standards/requirements outlined in this Schedule and the appendices.

7.7.1.4 The management of all the Authority's employees' and patients' information is the responsibility of the Authority.

7.7.2 Basic Requirements

7.7.2.1 Design-Builder will ensure that all new technology, systems, and equipment are fully compatible and seamlessly interfaced and/or integrated with the existing systems and equipment used by the Authority.

7.7.2.2 Except as explicitly stated otherwise the Design-Builder will be responsible for designing and providing complete and fully functional IMIT and security systems (Communications Systems) which will include, but are not limited to:

7.7.2.2(1) Telephony (VoIP and Analog);

7.7.2.2(2) Cellular DAS;

7.7.2.2(3) Public Address;

7.7.2.2(4) Wireless Networks (WiFi);

7.7.2.2(5) Not used;

7.7.2.2(6) Intercom;

7.7.2.2(7) Video Conferencing and Telehealth;

7.7.2.2(8) Patient Wandering;

7.7.2.2(9) Patient Entertainment and Education;

7.7.2.2(10) Nurse Call (Includes Staff Duress and Code Blue);

7.7.2.2(11) Access Control;

7.7.2.2(12) Fixed Panic;

7.7.2.2(13) Intrusion Detection;

7.7.2.2(14) Connexall System;

7.7.2.2(15) Asset Tracking System; and

7.7.2.2(16) Surveillance System (CCTV).

7.7.2.3 All applications used in the Facility for clinical purposes will be provided by the Authority. Design-Builder will provide all communication infrastructure necessary to support, interface, and integrate these systems.

7.7.2.4 The Communications Systems will be proven technology for use in healthcare facilities similar to the Facility.

7.7.2.5 All Communications Systems infrastructure and equipment provided by Design-Builder will be the latest version of the equipment at the time of procurement. No end-of-life or discontinued products will be used.

7.7.2.6 A summary of responsibilities for communications and electronic safety and security systems are included in Appendix 1D(I) - Technology Responsibility Matrix.

7.7.2.7 The IMIT and security systems (Communications Systems) will be designed, installed and commissioned in accordance with Northern Health IMIT Communications Infrastructure Standard 1.5.

7.7.3 IMIT Design and Construction Responsibility

7.7.3.1 System Design

7.7.3.1(1) Design-Builder will design all Communications Systems and equipment, integration, interfacing, performance, and quality requirements as described in Schedule 1 – Statement of Requirements and the Appendices to it. In the event of any conflict between standards, Schedule 1 – Statement of Requirements, and the Appendices the more stringent requirement will apply.

7.7.3.2 System Procurement

7.7.3.2(1) If a Communications System procured for use in the Facility represents a new addition to the overall Authority systems inventory, Design-Builder will ensure that any contract it enters into for that system includes provisions for:

7.7.3.2(1)a. permitting assignment of the contract to the Authority on the same terms and conditions as included in the contract between Design-Builder and the system vendor; and

7.7.3.2(1)b. allowing use of the system to be expanded beyond the Facility to other Authority sites provided the associated increase of scope charges are paid.

7.7.3.2(2) Design-Builder will ensure that its contracts for supply of Communications Systems:

7.7.3.2(2)a. Will have a defined service level commitment that supports the Authority service level expectation;

7.7.3.2(2)b. have a privacy protection schedule that aligns with the British Columbia Freedom of Information and Protection of Privacy Act; and

7.7.3.2(2)c. adheres to the Personal Information Protection and Electronic Documents Act legislation as applicable.

7.7.3.2(3) Applications, software modules and any software installed, operated, or used by Design-Builder must not interfere with the operation or performance of, or reduce the security or privacy of, any Authority applications or equipment.

7.7.3.3 System Development/Implementation

7.7.3.3(1) For development and implementation of all systems that will be Integrated with, or that interface with the Authority's systems, Design- Builder will comply with Schedule 2 Review Procedure.

7.7.4 Telecommunications Infrastructure

7.7.4.1 Basic Requirements

7.7.4.1(1) Provide a complete communications infrastructure to ensure all systems and equipment identified in communications (division 27) and electronic safety and security (division 28) are complete and fully functioning to the satisfaction of the Authority.

7.7.4.1(2) Coordinate with the Authority for IP addressing and VLAN separation requirements prior to installation and programming of IP devices and equipment.

7.7.4.1(3) Prior to connecting to any Authority Networks, the Design-Builder will consult with the Authority. Design-Builder will be responsible for any adjustments necessary to equipment at the discretion of the Authority prior to connecting to the Authority's Network.

7.7.4.1(4) Provide Communications Systems which promote operational efficiency and integrate and/or interface systems where this integration and/or interfacing provides efficiency and operational and cost advantages.

7.7.4.1(5) Train the Authority's IMIT specialist(s) on configuration/setup and testing of the Communications Systems equipment in the Facility.

7.7.4.1(6) Design and install equipment and infrastructure to remain operational in the event of an earthquake, flood, or fire. Seismic isolation platforms will be provided for equipment and server racks to mitigate damage to network equipment due to an earthquake.

7.7.4.2 Performance Criteria

7.7.4.2(1) IP Protocol will be used for data, voice, and video network-based equipment.

7.7.4.2(2) All network equipment and protocols will be IPV4 compatible.

7.7.4.2(3) Design-Builder will maintain the manufacturer's best warranties on all Communications Systems and equipment at time of procurement and ensure that the warranties are assignable to the Authority.

7.7.4.2(4) All Communications Systems and equipment provided by Design-Builder will support all applications run by the Authority, which include, but are not limited to Cerner, PACS and Microsoft Office.

7.7.4.2(5) All network equipment provided by Design-Builder intended for integration and/or interfacing with Authority Networks and systems will include any adapters necessary to integrate and/or interface with the Authority's IP based network

7.7.4.2(6) Ground all communications system infrastructure and pathways to the ANSI/TIA-607-C standard.

7.7.4.2(7) Design-Builder will provide and terminate all fibre and copper cables.

7.7.4.3 Quality Requirements

7.7.4.3(1) The Design-Builder will:

7.7.4.3(1)a. use the latest technology for transferring, securing, and storing information available at the date of procurement of the communications system for the Facility;

7.7.4.3(1)b. use equipment and materials that are certified and clearly sealed by CSA or ULC; and

7.7.4.3(1)c. In the event of a conflict between this Schedule and the Appendices, the more stringent standard will apply.

7.7.5 Site Utilities / Service Provider

7.7.5.1 Design-Builder will provide redundant incoming copper (COAX and category cable) and fibre services via physically diverse and redundant pathways. Outside plant cable infrastructure will be continuous and terminate in redundant entrance facility rooms. Design-Builder will perform all work (including providing all necessary parts and components) required to connect the Authority's communications infrastructure to the service provider network. Cable mediums not available at the time of procurement from local service providers are not required, but pathways to support those cable mediums in the future must be installed.

7.7.5.2 Design-Builder will coordinate with Telus to ensure all necessary ISP cabling and infrastructure is provided and installed for connection to the Authority's network. Design-Builder will ensure there will be no project schedule delays due to ISP connectivity.

7.7.5.3 The Communications Systems that will be integrated, interfaced and/or interoperate with Authority systems, will be compatible with the systems of the Authority's service providers on the date of installation, be designed to integrate and interface with the service providers' equipment and, if required by the Authority, utilize the Authority's existing service agreements by extending them to the Facility.

7.7.6 Telecommunication Equipment Rooms

7.7.6.1 Basic Requirements

7.7.6.1(1) Design-Builder will provide telecommunication equipment rooms to accommodate the telecommunications infrastructure and equipment in accordance with Section 2.6 Standards

7.7.6.1(2) "Telecommunication equipment room (TER)" includes the following room types: Telecommunications Room (TR) and Entrance Facility (EF).

7.7.6.1(3) TERs will be located to minimize the possibility of two rooms being adversely impacted simultaneously (including impacts resulting from flood, fire, vandalism, mechanical or structural failure).

7.7.6.1(4) Provide and size telecommunication equipment rooms to accommodate the telecommunications requirements of the Facility, including, but not limited to equipment racks, cabling systems, active and passive network equipment, security equipment and panels, IMIT equipment and panels, and electrical equipment.

7.7.6.1(5) Design-Builder will provide all structured cabling (fibre, copper or other) between all telecommunication equipment rooms.

7.7.6.1(6) Entrance Facility (EF) – an entrance to a building for both public and private service cables including the entrance point of the building and continuing to the entrance room. The Entrance Facility Room accommodates the joining of inter and intra building telecommunications backbone facilities. TR rooms may be utilized as entrance facilities.

7.7.6.1(7) Provide two EFs locations to accommodate the two physically diverse, redundant telecommunications services to the Facility.

7.7.6.1(8) Locate EFs to minimize the possibility of both rooms being adversely impacted simultaneously (including impact resulting from flood, fire, vandalism, mechanical or structural failure).

7.7.6.1(9) Telecommunications Room (TR)

7.7.6.1(9)a. TRs will comprise enclosed architectural spaces throughout the facility to house communications equipment, provide horizontal cross connects and cable terminations.

7.7.6.1(9)b. All horizontal and riser data/voice cabling for a given floor will terminate in a TR on patch panels rated to match the cable category provided (i.e. Category 6a).

7.7.6.1(9)c. TRs will only serve the floor they are located on and will be located to minimize the distances of cable runs. TRs will provide easy access for equipment modifications and working space and will avoid interference with other services and systems.

7.7.6.1(9)d. The TRs will support PoE devices which includes, but is not limited to, Cisco wireless access points (WAP) and VoIP phones. Design-Builder will coordinate with the Authority for WAP and VoIP phone requirements.

7.7.6.1(10) For each GigaBIX cross-connect wall, provide space to accommodate 100% expansion on the same wall. GigaBIX cross connect will only be used for analog phone lines where required, structured cabling will terminate on rack mounted patch panels.

7.7.6.1(11) In main telecommunications rooms (also referred to as the Main Cross Connect and Back-up Cross Connect in the Northern Health Communications Infrastructure Standard) provide two additional empty racks c/w vertical cable management for future expansion. In all other telecommunication rooms, provide one additional empty rack c/w vertical cable management for future expansion.

7.7.6.1(12) Wall space in the TRs will be provided for, but not limited to:

7.7.6.1(12)a. nurse call system;

7.7.6.1(12)b. service provider equipment;

7.7.6.1(12)c. public address system;

7.7.6.1(12)d. patient entertainment and education system;

7.7.6.1(12)e. access control panels and back-up batteries;

7.7.6.1(12)f. cellular DAS system and back-up battery bank;

7.7.6.1(12)g. intrusion detection system and back-up batteries;

7.7.6.1(12)h. electrical panels serving the TR; and

7.7.6.1(12)i. fibre storage loops/rings.

7.7.6.1(13) Equipment Racks

7.7.6.1(13)a. Equipment racks installed in each TR will include, but are not limited to, network racks, server racks, voice gateway racks, and fibre termination racks.

7.7.6.1(13)b. All racks will be provided with floor space as per Section 2.6 Standards.

7.7.6.1(13)c. Voice gateway and fibre termination racks will be two-post types.

7.7.6.1(13)d. Network and server racks will be of the four-post type, 42U in size and 19” wide.

7.7.6.1(13)e. Server racks will have front and rear door locks, 42U in size, width=19”, Depth=39.7 “, Height=78.7”.

7.7.6.1(13)f. All racks, unless otherwise specified, will be mounted on seismic isolation bases.

7.7.6.1(13)g. Voice gateway racks will meet the requirements of NH IMIT Communications Infrastructure Standard 1.5 for power (sections 2.1 & 12.1) and PDU’s (section 12.2), and clause #7.6.9.1(1)e of this Schedule. Coordinate exact PDU receptacle types with the Authority prior to procurement. Each PDU will have a sufficient receptacles to support the equipment within the racks and 20% spare, but not less than 20 receptacles.

7.7.6.1(13)h. Server racks will meet the requirements of NH IMIT Communications Infrastructure Standard 1.5 for power (sections 2.1 & 12.1) and PDU’s (section 12.2), and clause #7.6.9.1(1)e of this Schedule. Coordinate exact PDU receptacle types with the Authority prior to procurement. Each PDU will have a sufficient receptacles to support the equipment within the racks and 20% spare, but not less than 20 receptacles.

7.7.6.1(13)i. Network racks will meet the requirements of NH IMIT Communications Infrastructure Standard 1.5 for power (sections 2.1 & 12.1) and PDU’s (section 12.2), and clause #7.6.9.1(1)e of this Schedule. Coordinate exact PDU receptacle types with the Authority prior to procurement. Each PDU will have a sufficient receptacles to support the equipment within the racks and 20% spare, but not less than 20 receptacles.

7.7.6.1(13)j. The centralized UPS will be sized to support each rack, including all equipment residing within each rack, in the Facility for 15 minutes in the event of a power outage. At minimum the UPS will be sized to allow for 5kW per rack without applied duty factor(s); the final applied duty factor assumption shall be coordinated and approved by the Authority. There will be no differentiation between racks with equipment and rack without equipment.

7.7.6.1(13)k. If there is not rack mounted UPS the bottom eight (8) rack units of each network, equipment or server rack will be reserved for future equipment. If there is a rack mounted UPS eight (8) rack units of spare capacity will be provided above the rack mounted UPS.

7.7.6.1(13)l. 300mm wide full rack height vertical cable managers (c/w hinged doors) will be provided between racks and at the ends of rows of racks. Vertical cable managers will be installed on the font and back of 4-post racks and double-sided cable managers will be installed on 2-post racks.

7.7.7 Structured Cabling:

7.7.7.1 Basic requirements

7.7.7.1(1) All structured cabling will be designed, installed, and tested in accordance with Section 2.6 Standards

7.7.7.1(1)a. Structured cabling standard of acceptance: Belden, Commscope, Panduit or approved equal.

7.7.7.1(2) Horizontal structured cabling will be of the Cat6a type where category cable is required.

7.7.7.1(3) Backbone cabling will be minimum OM5 72-strand, tight-buffered. Backbone fibre cables will run between each TR as to provide full redundancy in the event that one of the incoming fibres is cut. If one TR is lost due to fire or other cause all other TERs will remain fully functional (i.e. no single point of failure).

7.7.7.1(4) Backbone cabling will be run in dedicated conduits with 50% spare capacity for future use.

7.7.7.1(5) Design-builder will terminate all fibre cables in Design-Builder provided fibre enclosures using LC type connectors. Only fusion splicing is permitted.

7.7.7.1(6) The cabling infrastructure will be universal and support all networks, systems, and equipment requiring network connections in the Facility.

7.7.7.1(7) The cabling infrastructure will support all forms of end-use equipment, including, but not limited to: computers, phones, video conferencing equipment, telemetry equipment, printers, fax machines and other digital end-use equipment and systems access.

7.7.7.1(8) Any cabling required by Design-Builder to support its own networks will be provided in addition to that required to support the Authority equipment.

7.7.7.1(9) Design-Builder will cause:

7.7.7.1(9)a. the cabling infrastructure to be designed by an RCDD;

7.7.7.1(9)b. the RCDD to work with the Authority to complete the physical network design; and

7.7.7.1(9)c. the RCDD to provide, as required by the Authority, a network plan which would include the following: all active network devices, non-Authority applications, all connecting end-use equipment and each separate virtual and physical network

7.7.7.1(10) Design-Builder will assist the Authority in the network plan by supplying all necessary information to the Authority about the building network. The building network equipment is to match the network equipment specified by the Authority.

7.7.7.1(11) Design-Builder will provide preliminary conceptual drawings of proposed telecommunications outlet locations to the Authority for review.

7.7.7.1(12) Create, in consultation with the Authority, a plan for cable infrastructure management and resource requirements for maintenance.

7.7.7.1(13) Design-Builder will test all cable infrastructure in consultation with the Authority and as per Section 2.6 Standards

7.7.7.1(14) Provide and install a complete and fully functional structured cabling solution for the Facility.

7.7.7.1(15) Provide separate physical networks, in accordance with equipment vendor specifications and in consultation with the Authority, for the Communications Systems and equipment installed or used in the Facility.

7.7.7.1(16) In consultation with the Authority, design and provide physically diverse and redundant pathways between the telecommunication equipment rooms.

7.7.7.2 Telecommunication Outlets and Data Drops

7.7.7.2(1) In this Schedule and the Appendices to this Schedule, the terms “telecommunication outlet,” “data outlet”, “communications outlet”, and “data drop” are used interchangeably.

7.7.7.2(2) Notwithstanding any standard referenced in this Schedule, all data outlets, data drops, communications outlets or telecommunication outlets included in the Facility will:

7.7.7.2(2)a. Comprise of a complete Category 6A structured cabling connection between an RJ45 outlet jack and network switch port (including CAT6a patch cord);

7.7.7.2(2)b. include a 4-port cover plate for jack terminations, with labelling to match existing Authority facilities and filler plates on unused outlets. Cover plates will always have at least one unused jack termination space;

7.7.7.2(2)c. include all pathways and supports including, but not limited to minimum 27mm EMT conduits and cable tray pathways;

7.7.7.2(2)d. follow all manufacturers recommendations for terminating and installation of data cabling, including bend radius limits; and

7.7.7.2(2)e. comply with Section 2.6 Standards.

7.7.7.2(3) All horizontal cables will be terminated on CAT6a patch panels located in a telecommunications equipment room. Provide harness cabling to support all horizontal cabling plus 15% spare and connect through to the corresponding switch port.

7.7.7.2(3)a. Design-Builder will, in consultation with the Authority, assign each applicable room and space in the Facility a work area data drop density ("High", "Medium" or "Low") in accordance with the ANSI/TIA-1179-A Healthcare Facility Telecommunications Cabling Standard Table 3.

7.7.7.2(4) Design-Builder will provide a minimum quantity of data drops as defined below for each of the three data drop density assignments:

7.7.7.2(4)a. Low Density Work Area – provide 6 data drops;

7.7.7.2(4)b. Medium Density Work Area - provide 8 data drops; and

7.7.7.2(4)c. High Density Work Area - provide 10 data drops.

7.7.7.2(5) Design-Builder will provide additional data drops as required to ensure the following systems are complete and fully functioning to the satisfaction of the Authority, including but not limited to:

7.7.7.2(5)a. support all networks, IMIT and Security Systems (Communications Systems) and their equipment and end use devices to be installed or used in the Facility.

7.7.7.2(5)b. audio-visual, telehealth, and videoconferencing equipment;

7.7.7.2(5)c. fire alarm, integrated automation (Division 25), integrated building management system, and mechanical systems;

7.7.7.2(5)d. support all end-use equipment (e.g. computers, printers, phones, and fax machines;

7.7.7.2(5)e. provide convenience, flexibility, and operational support throughout the Facility; and

7.7.7.2(5)f. all equipment identified in the Appendices of Schedule 1 – Statement of Requirements requiring network connectivity;

7.7.7.2(6) Design-Builder will design each room in the Facility such that data drops are distributed throughout each room as required to support clinical functionality and convenient use of all equipment requiring data drops by Facility users.

7.7.7.2(7) Design builder will co-locate, at each telecommunications outlet location, one duplex receptacle. Additional receptacles will be provided where end-use equipment requires it. See Section 7.6 Electrical (Division 26) for receptacle type requirements. Outlet locations/equipment that are exempt from providing a duplex are as follows:

7.7.7.2(7)a. Stand-alone telephone handsets.

7.7.7.2(7)b. Security Cameras.

7.7.7.2(7)c. Intercom stations.

7.7.7.2(7)d. Wireless Access Points.

7.7.7.2(8) Terminate all cables in TRs in accordance with Section 2.6 Standards

7.7.7.2(9) The Authority will provide the voice gateways, for which Design- Builder will provide racks, UPS, power, cooling, and connectivity.

7.7.7.2(10) All conduits will have spare capacity at as per Section 2.6 Standards. All communications rooms will have physical floor and wall space to accommodate future expansion.

7.7.7.2(11) Ceiling spaces will have telecommunication outlets co-located (within 1m) where required to support wireless access points, information display systems, and other ceiling mounted devices requiring network connectivity and/or PoE power. Telecommunications outlets will be mounted above the ceiling tiles where possible.

7.7.7.2(12) Follow the equipment and cable labelling standards currently utilized in other similar Authority facilities. Confirm details with the Authority prior to labelling.

7.7.7.2(13) Provide recessed floor telecommunications outlets and floor power (by Division 26) for the following systems including, but not limited to floor mounted self-registration systems, meeting / videoconference / telehealth rooms, patient education kiosks and other end-use equipment requiring network connectivity where it is not practical to feed it from a wall or it creates a tripping hazard, as approved by the Authority.

7.7.7.2(14) Provide a data outlet for phones dedicated for public use, minimum 1 per lobby area per department in the Facility, coordinate with the Authority prior to rough-in.

7.7.7.2(15) Run four (4) category 6A network cables in a ring topology between each telecommunications equipment room to accommodate the patient monitoring infrastructure required. The maximum allowable distance each patient monitoring category 6a cable run 500m.

7.7.7.2(16) VoIP phones and computer will not share the same data cable but may share the same data outlet.

7.7.7.2(17) Provide one (1) telecommunications outlet complete with two (2) allocated cat6a drops and one (1) unallocated cat6a drop to support a future workstation in the lab file storage room.

7.7.7.2(18) At minimum one (1) telecommunications outlet complete with two (2) allocated cat6a drops and one (1) unallocated cat6a drop will be provided on both sides of all lab benches.

7.7.7.2(19) Where equipment and/or devices requiring wired connection to the Owner's local area network are located within the same area (e.g., workstation and business center) the Category 6a data drop quantity specified in the NH Communications Infrastructure Standards for each Telecommunications Outlet will be will be increased up to a maximum of three (3) allocated data ports and one (1) unallocated data port in order to serve as much equipment and/or devices as possible from a single Telecommunications Outlet (e.g., workstation with a label, printer and VoIP phone). "allocated data port" and "unallocated data port" are defined as per NH Communications Infrastructure Standard.

7.7.7.2(20) The Category 6a data drops specified in the NH Communications Infrastructure Standard Telecommunications Outlet will be reduced to one (1) allocated data port and one (1) unallocated data port when being provided for single instances of equipment and/or devices requiring wired connection to the Owner's local area network including: medical equipment devices and printers. "allocated data port" and "unallocated data port" are defined as per NH Communications Infrastructure Standard.

7.7.8 Communications Pathways

7.7.8.1 Basic Requirements

7.7.8.1(1) Provide a complete pathway infrastructure system for the cabling required for all systems part of Communications (Division 27) and Electronic Safety and Security (Division 28).

7.7.8.1(2) The term “cabling” in section 7.7.8 Communications Pathways refers to all cabling required for all systems in Communications (Division 27) and Electronic Safety and Security (Division 28)

7.7.8.1(3) See Section 7.5 Integrated Automation for additional pathways and cabling requirements required.

7.7.8.1(4) J-hooks are not permitted.

7.7.8.2 Performance Criteria

7.7.8.2(1) Communications (Division 27) and Electronic Safety and Security (Division 28) cabling will be enclosed in cable tray, rigid electrical metallic tubing, or electrical metallic tubing outside of TRs

7.7.8.2(2) Provide primary and redundant pathways between each TR room. Provide an equal amount of spare (empty) pathways.

7.7.8.2(3) Where cabling is required to penetrate through fire rated walls it will do so without derating the fire rating of the wall and without the requirement of addition equipment and/or materials.

7.7.8.2(4) Provide cable tray in all corridors to support all cabling filled to calculated maximum of 25%.

7.7.8.2(5) Provide cable tray in TR rooms to minimize the cable drop distance from the cable tray to each equipment rack, server racks and wall mounted equipment

7.7.8.2(6) Conduit runs to data outlets will be 27mm minimum.

7.7.8.2(7) Provide a separate dedicated pathway in TR rooms to support fibre optic cabling. Ensure this pathway will be installed to minimize fibre optic cable drop distances.

7.7.8.2(8) Protect and store excess fibre optic cabling inside TR rooms using fibre storage rings or approved equal.

7.7.8.2(9) When cabling transitions in and out of a cable tray, transition devices will be provided (i.e. waterfalls).

7.7.8.2(10) All cable tray will be easily accessible for future cabling installation and away from sources of EMI, hot water pipes and other obstructions.

7.7.8.2(11) Pull boxes will be used only for straight pulls.

7.7.8.2(12) Paint all junction, pull boxes and conduits at regular intervals in consultation with the Authority to easily identify the system they correspond with.

7.7.8.2(13) Ensure all conduits are free of sharp edges that could damage the cabling. All conduits will be provided with bushings.

7.7.8.2(14) Provide grounding bushing as to adhere to ANSI/TIA-607-C

7.7.8.2(15) All cabling pathways will be provided with pull strings for Authority’s future use.

7.7.8.2(16) Cable trays will include barriers to separate Category cabling (supporting Authority voice, data and video), public address cabling, security cabling, and other Facility systems. Separation distance between systems will be such that there is no performance degradation due to interference between systems:

7.7.8.2(16)a. Not used;

7.7.8.2(16)b. Not used;

7.7.8.2(16)c. Not used;

7.7.8.2(16)d. Not used.

7.7.9 Equipment

7.7.9.1 Design-Builder's Equipment

7.7.9.1(1) Provide end-use equipment and communications equipment to provide a fully operational Facility and that Design-Builder may require for its own use for the performance of its obligations.

7.7.9.1(2) Do not connect any of Design-Builder's end-use equipment to the Authority's Network, both wired and wireless, without prior approval from the Authority. Design-Builder is responsible for paying any additional cost incurred by the Authority for Design-Builder's use of Design-Builder's end-use equipment on the Authority's Network.

7.7.9.1(3) Any wireless devices used by Design-Builder will not interfere with the Authority's wireless infrastructure or devices.

7.7.9.1(4) If Design-Builder elects to reside on the Authority's network, Design-Builder will conform to all Authority Network end-use standards.

7.7.9.2 Authority's End-Use Equipment

7.7.9.2(1)a. The Authority will supply its own end-use equipment. Refer to Appendix 1D(I) – Technology Responsibility Matrix.

7.7.9.2(2) Design-Builder will:

7.7.9.2(2)a. include the installation of the Authority supplied end-use equipment as part of the Move-in Schedule;

7.7.9.2(2)b. assist the Authority to define locations for the Authority supplied end-use equipment;

7.7.9.2(2)c. provide adequate space, infrastructure, power, and wired network data outlets for the Authority supplied end-use equipment; and

7.7.9.2(2)d. provide jack number information (on the Authority supplied cable information Excel spreadsheet) to the Authority to facilitate placement of the Authority supplied end-use equipment.

7.7.10 Authority and Facility Networks

7.7.10.1 Basic Requirements

7.7.10.1(1) For the Authority's Network and patient monitoring network, the Authority will:

7.7.10.1(1)a. provide to Design-Builder network switches and routers for installation by Design-Builder;

7.7.10.1(1)b. complete all logical network design (excluding structured cabling, pathways, and infrastructure) and network equipment programming and configuration; and

7.7.10.1(1)c. be responsible for all network management licensing.

7.7.10.1(2) For the Authority's network and patient monitoring network, Design- Builder will:

7.7.10.1(2)a. install all network switches, routers and connect harness cabling; and

7.7.10.1(2)b. complete all physical network design and provide all structured cabling.

7.7.10.1(3) For all other networks required in the Facility, Design-Builder will:

7.7.10.1(3)a. provide all required equipment;

7.7.10.1(3)b. in consultation with the Authority, complete the logical network design and program and configure all equipment;

7.7.10.1(3)c. be responsible for all management licensing; and

7.7.10.1(3)d. locate network equipment and other equipment in TRs.

7.7.10.1(4) For all of the networks described above, Design-Builder will mount and connect all network switches, harness cables, cross connects and test all network equipment and cable infrastructure as per Section 2.6 Standards and in consultation with the Authority.

7.7.10.1(5) Design-Builder will provide 15% spare harness cables.

7.7.10.1(6) Design-Builder will provide fibre and copper patch cords for all network switches for all networks.

7.7.10.1(7) Install all network equipment in accordance with IEEE and as per Section 2.6 Standards, including the 802.1 and 802.3 standards.

7.7.10.1(8) Design-Builder to coordinate with the Authority for firewall, security and IDS/IPS systems requirements for connections to all networks in the Facility.

7.7.10.1(9) Retain a vendor certified network engineer trained on Design-Builder's network equipment.

7.7.10.1(10) Redundancy and security will be incorporated in all network designs.

7.7.11 Authority Servers

7.7.11.1 Basic Requirements

7.7.11.1(1) Servers will be installed in each TR by the Authority.

7.7.11.2 Performance Criteria

7.7.11.2(1) Design-Builder will provide infrastructure and structured cabling to support each server with the required network and power redundancy by means of dual power supplies. Authority servers utilize dual network interface cards installed in each server. Each power supply will be connected to separate redundant rack PDUs and each network card would be connected to separate core routers in the TERs.

7.7.12 Design-Builder Servers

7.7.12.1 Basic Requirements

7.7.12.1(1) All servers must be reviewed by the Authority. This includes aligning to the Authority's existing operating system and hardware patching processes, consult with the Authority to confirm requirements prior to procurement.

7.7.12.1(2) Servers must meet minimum "lights out" requirements where all servers must have remote access cards and data outlets for remote management and support.

7.7.12.1(3) Servers will be the latest technology, as of the date of installation (Intel processor latest model or similar acceptable to the Authority) and will interface to the Ethernet network via a 1000Mb network interface card.

7.7.12.1(4) All servers deployed must align with the Authority's standards for procuring equipment including hardware models, operating systems, software licenses, maintenance, and contract agreements. All agreements must be maintained for the life cycle of the hardware and or application.

7.7.12.1(5) All Servers as well as the applications hosted on those servers must be entered into the Authority's change management database system as configuration items and dependencies identified and linked. All changes, incidents, and problems relating to said servers and applications must be managed, monitored, and tracked conveyed to the Authority.

7.7.12.2 Performance Criteria

7.7.12.2(1) Each server will require network and power redundancy by means of dual power supplies and dual NIC cards installed in each server. Each power supply will be connected to separate redundant rack PDU`S and each network card will be connected in consultation with the Authority.

7.7.12.2(2) All network attached Servers will include the installation and management of Antivirus software that aligns with the Authority's antivirus protocols and procedures. Coordinate with the Authority for antivirus requirements.

7.7.12.2(3) All network attached servers will include the installation and management of enterprise data backup and retention software that aligns with existing Authority equipment.

7.7.12.2(4) Hardware and software configuration of servers provided by Design- Builder will be provided Authority for review. Design-Builder will adjust as required by the Authority.

7.7.12.2(5) Servers for the Communications Systems will be Microsoft compliant (version acceptable to the Authority) and will be from a common manufacturer.

7.7.13 Telephony System

7.7.13.1 Basic Requirements

7.7.13.1(1) VoIP and analog telephony equipment will be provided and installed by the Authority. All cabling, pathways, and infrastructure required to support this system will be provided by the Design-Builder. See Appendix 1D(I) – Technology Systems Responsibility Matrix

7.7.13.1(2) The Design-Builder will coordinate with the Authority's service provider for connection requirements. The Design-Builder will provide all necessary equipment required for interfacing the service provider equipment with the Authority's telephony equipment.

7.7.13.1(3) All telephony equipment will reside in a TR.

7.7.13.1(4) Design-Builder will install Authority supplied phones.

7.7.13.1(5) For the patient telephone system, the Authority will utilize a third-party provider.

7.7.13.1(6) Design-Builder may at its cost use the Authority phone system for its telecommunications needs. If Design-Builder intends to use the Authority phone system, Design-Builder will provide and, in consultation with the Authority, install additional capacity and functionality as required

7.7.13.1(7) Provide CAT6a data drops at each phone location including, but not limited to:

7.7.13.1(7)a. medical inpatient rooms;
7.7.13.1(7)b. reception areas;
7.7.13.1(7)c. offices and work rooms;
7.7.13.1(7)d. Group Consult room;
7.7.13.1(7)e. PFT / ECG room;
7.7.13.1(7)f. workstations;
7.7.13.1(7)g. Telephone Alcoves;
7.7.13.1(7)h. Specimen Collection Stations;
7.7.13.1(7)i. Transfusion Medicine and Blood Bank;
7.7.13.1(7)j. Each haematology workstation and/or desk;
7.7.13.1(7)k. Chemistry;
7.7.13.1(7)l. Reading Station;
7.7.13.1(7)m. registration areas;
7.7.13.1(7)n. public waiting areas;
7.7.13.1(7)o. Resuscitation / Treatment Room;
7.7.13.1(7)p. Exam / Treatment Rooms;
7.7.13.1(7)q. Report Room;
7.7.13.1(7)r. Procedure Room;
7.7.13.1(7)s. Medical Inpatient Rooms;
7.7.13.1(7)t. Business Centres;
7.7.13.1(7)u. Dictation Area;
7.7.13.1(7)v. Medical Records;
7.7.13.1(7)w. Carpentry / Paint Shop/ General Maintenance;
7.7.13.1(7)x. Department Receiving;
7.7.13.1(7)y. Staff lounges;
7.7.13.1(7)z. videoconferencing, meeting, and telehealth rooms; and
7.7.13.1(7)aa. locations identified in consultation with the Authority.

7.7.13.2 Performance Criteria

7.7.13.2(1) VoIP phones will be of the PoE type.

7.7.13.2(2) All phone data drops or outlets will utilize CAT6a cabling regardless if it is an analog or VoIP phone. VoIP phone cabling will terminate on a patch panel and analog phones will terminate on GigaBIX blocks.

7.7.13.2(3) Design-Builder will provide and interface diallers to the systems that require them as per Appendix 1D(II) – Technology Systems Integration Matrix. Coordinate with the Authority for “dial out” requirements.

7.7.14 Wireless Networks

7.7.14.1 Basic Requirements

7.7.14.1(1) In consultation with the Authority, design and install a complete 802.11ac/n wireless network solution for the Facility to support the extension of the Authority wireless network into the Facility. The Authority currently utilizes a single wireless network that extends across all its facilities.

7.7.14.1(2) Design-Builder will not install any other 802.11ac/n wireless network in the Facility.

7.7.14.1(3) The Authority will:

7.7.14.1(3)a. procure, configure, maintain, and refresh wireless LAN controllers (WLC) and mobility service engines (MSE) to support the Authority’s wireless network within the facilities.

7.7.14.1(3)b. procure, program, and configure wireless access points and provide to Design-Builder for installation.

7.7.14.1(4) Design-Builder will:

7.7.14.1(4)a. test all aspects of the wireless network;

7.7.14.1(4)b. provide heat maps for the Facility indicating the channel coverage, signal strength, data rate, capacity, and noise floor for the 802.11ac/n wireless network for approval by the Authority;

7.7.14.1(4)c. install all structured cabling, wireless access points, wireless LAN controllers (WLC), mobility service engines (MSE), and test all cable infrastructure and wireless system devices for the wireless network in consultation with the Authority;

7.7.14.1(4)d. work with the Authority to create an operational plan for the wireless network complete with management strategy, alerts notification, and resource requirements for maintenance;

7.7.14.1(4)e. provide a complete structured cabling and pathway infrastructure that will allow the installation of the complete wireless network, including PoE wireless access points. Design-Builder will install data outlets and access points in consultation with the Authority;

7.7.14.1(4)f. Provide to the Authority by use of a compatible wireless management application that can be imported into their application (ie. Ekahau), facility floor plans including wireless access point locations mapped to a floor plan with RF characteristics defined for structural composition which will include glass, concrete, wood, drywall, metal, and permanently mounted RF obstacles;

7.7.14.1(4)g. retain a RCDD certified wireless network engineer with expertise and experience in working with the Authority approved equipment to design the wireless network;

7.7.14.1(5) Design-Builder will follow the wireless networks manufacturers installation recommendations and guidelines.

7.7.14.2 Performance Criteria

7.7.14.2(1) The wireless network will be designed and installed to provide 100% coverage (signal strength / power) and capacity (throughput / bandwidth) throughout the Facility in 2.4GHz and 5GHz frequencies to support all users and their wireless end-devices in the facility.

7.7.14.2(2) Elevator cabs, mechanical spaces, service areas, facility exterior, stairwells, and Secured exterior courtyards and gardens will be included in the 100% coverage and capacity requirements of the wireless network. The “facility exterior” will include all space within a 10m radius from main entrance and exit locations, complete coverage of ambulance bays, and all areas where staff, patients and residents may gather outside of the facility (e.g., break areas).

7.7.14.2(3) The wireless network will meet all requirements set out by the manufacturers of all equipment that will utilize the network (e.g. Vocera).

7.7.14.2(4) The wireless infrastructure will support wireless access points using the 802.11ax/ac/n standards for the wireless communications, data transfer and access by wireless devices to data/voice/video services within the Facility and across the Authority, via the Authority WAN.

7.7.14.2(5) Each wireless access point will have a two (2) data drops terminated at a telecommunication outlet.

7.7.14.2(6) Design the wireless network away from high RF equipment locations (e.g., microwave ovens) as to mitigate interference beyond the noise floor and signal strength requirements (SNR) of the wireless network.

7.7.15 Staff Communication System

7.7.15.1 Basic Requirements

7.7.15.1(1) Design the wireless network system to support a complete and fully functional wireless staff communication system which will meet or exceed the staff communications system manufacturer’s specifications and recommendations. System testing will be performed prior to and after substantial completion to ensure manufacturer’s recommended parameters are met (e.g., signal to noise ratio).

7.7.15.1(2) The staff communication system will be manufactured by Vocera.

7.7.15.1(3) The staff communication system will allow staff to initiate 2-way voice conversations from their wireless staff communication system device to:

7.7.15.1(3)a. other staff communication system devices (Authority scope);

7.7.15.1(3)b. VoIP telephones (Authority scope);

7.7.15.1(3)c. nurse call consoles (Design-Builder scope);

7.7.15.1(3)d. patient stations (Design-Builder scope);

7.7.15.1(3)e. staff/duty station (Design-Builder scope)s; and

7.7.15.1(3)f. external/internal telephones (Authority scope).

7.7.15.1(4) Not used.

7.7.15.1(5) Not used.

7.7.15.1(6) Provide all Connexall integration, programming and licensing required for communication and alerting between the nurse call system and the staff communications system to meet all requirements of Schedule 1. Staff communication to telephony system integration and programming will be by the Authority.

7.7.15.2 Performance Requirements

7.7.15.2(1) The staff communication system will function throughout 100% of the Facility such that all voice communication is clear and intelligible to all users and there is no loss of communication or information to and from all third-party integrated and/or interfaced equipment.

7.7.15.2(2) Elevator cabs, mechanical spaces, service areas, facility exterior, stairwells, and secured exterior courtyards and gardens will be included as part of the 100% Facility coverage.

7.7.15.2(3) Provide adequate space and vital power outlets for wireless device charging stations inside each department, taking in to account that charging units with multiple devices may cause signal concentrations that impact active unit performance. Sufficient spread of units will be maintained for both charging and storage areas so as not to impact operational performance of active units.

7.7.15.2(4) Not used.

7.7.15.2(5) Not used.

7.7.16 Public Address System

7.7.16.1 Basic Requirements

7.7.16.1(1) Provide cable infrastructure and equipment for a public address system in the Facility. This public address system is intended to be used for general voice paging.

7.7.16.1(2) The public address system will be separate from and act independently of the fire alarm system. Provide interconnects between the systems as required by NFPA and the authority having jurisdiction (AHJ).

7.7.16.1(3) Provide, in consultation with the Authority an interface to the public address system from the telephone system. The public address system integration will facilitate single step dialling from a telephone handset directly to a paging zone. This will accommodate speed-dial functionality.

7.7.16.1(4) Provide a hard-wired backup microphone in a location to be advised by the Authority in the event the phone system fails. This backup microphone must be able to page the entire Facility.

7.7.16.1(5) Generally, voice paging will be on an ‘all-page’ basis. Provide physical zoning of the public address system by department to enable each department to page individually.

7.7.16.1(6) Provide all equipment necessary for a fully operational public address system, including, but not limited to:

7.7.16.1(6)a. paging amplifiers;

7.7.16.1(6)b. flush mount ceiling speakers in finished areas, with adjustable volume levels;

7.7.16.1(6)c. trumpet type speakers in mechanical and other high ambient locations;

7.7.16.1(6)d. microphone(s);

7.7.16.1(6)e. mixers;

7.7.16.1(6)f. telephone system interfaces; and

7.7.16.1(6)g. network system interfaces.

7.7.16.2 Performance Requirements

7.7.16.2(1) Provide complete public address speaker coverage throughout 100% of the Facility so that emergency voice pages can be heard everywhere in the Facility, including, but not limited to, specifically situated speakers within each meeting room, and on-call sleep areas, with high intelligibility (Sound Transmission Index (STI) of 0.6 or greater) and low loss of articulation of consonants (%ALCONS).

7.7.16.2(2) Provide sound levels as follows throughout the Facility:

7.7.16.2(2)a. Normal voice paging: 60 dB minimum.

7.7.16.2(2)b. Voice paging sound levels will be at least 10 dB above ambient noise levels in mechanical rooms and other areas expected to have ambient noise levels above 50 dB.

7.7.16.2(3) Provide telephone access to public address system with a maximum delay of 1 second between accessing system and ability to transmit page.

7.7.16.2(4) Size amplifiers to handle total load plus 20% spare capacity.

7.7.16.2(5) In the event of amplifier failure, redundant or additional amplifiers will be provided so that there will be no loss speaker paging coverage throughout the facility

7.7.16.2(6) Upon loss of power the public address system will remain fully functional via UPS and/or battery back-up for 2-hours and will be connected to vital power outlet.

7.7.16.2(7) Design-Builder will follow the public address system manufacturer installation recommendations and guidelines.

7.7.17 Intercommunication System

7.7.17.1 Basic Requirements

7.7.17.1(1) Provide complete and fully functional video intercom system throughout the facility and locations in consultation with the Authority.

7.7.17.2 Quality Requirements

7.7.17.2(1) The intercom systems will be manufactured by recognized industry leaders in the intercom business.

7.7.17.2(2) Design-Builder will follow the intercommunication system manufacturer installation recommendations and guidelines.

7.7.17.3 Performance Criteria

7.7.17.3(1) Provide a video intercom system at all entrance locations in consultation with the Authority.

7.7.17.3(2) Provide audio only intercom at each department entry doors.

7.7.17.3(3) Provide master stations at each Workstation (Nursing Station) and in registration areas.

7.7.17.3(4) Coordinate the provision of video intercom systems for all other areas with the authority.

7.7.17.3(5) Door stations will be provided as follows:

7.7.17.3(5)a. full colour surveillance camera with ability to pan and tilt. If pan-tilt door station cameras are not available in a SIP enabled system, then a full colour wide angle camera is acceptable;

7.7.17.3(5)b. hands-free full duplex audio capability;

7.7.17.3(5)c. call buttons;

7.7.17.3(5)d. SIP enabled; and

7.7.17.3(5)e. vandal resistant and weatherproof where required.

7.7.17.3(6) Master stations will be provided as follows:

7.7.17.3(6)a. capable of being desk and wall mounted;

7.7.17.3(6)b. full colour display screen with ability to control pan and tilt of door station;

7.7.17.3(6)c. hands-free full duplex audio capability; and

7.7.17.3(6)d. capability to release Secure entry doors.

7.7.17.3(7) Upon loss of power the intercom system will remain fully functional via UPS and/or battery back-up for 2-hours and will be connected to vital power outlet.

7.7.18 Videoconferencing and Telehealth

7.7.18.1 Basic Requirements

7.7.18.1(1) All telehealth and videoconferencing systems will interface with Authority's telehealth and videoconferencing infrastructure and systems.

7.7.18.1(2) Provide all supporting pathways, cabling and infrastructure including, but not limited to: power, telecommunication outlets, audio-video wiring, HDMI to CAT6 convertors, raceways, outlet boxes, structural requirements (backboards) for a complete and fully functioning videoconferencing and telehealth system.

7.7.18.1(3) Retain audio visual professionals with expertise and experience in the application, use and integration of audio/video conferencing systems for the design, configuration and integration of the required telehealth and videoconference rooms and systems

7.7.18.1(4) Install Authority supplied 55" flat screen displays, and Authority supplied flat screen display mounts in:

7.7.18.1(4)a. Gathering Spaces;

7.7.18.1(4)b. waiting areas;

7.7.18.1(4)c. Report Rooms (treatment areas);

7.7.18.1(4)d. Living and Activity Rooms (Long Term Care);

7.7.18.1(4)e. meeting rooms;

7.7.18.1(4)f. Resuscitation / Trauma Bay; and

7.7.18.1(4)g. Staff Lounge and Break Rooms.

7.7.18.1(4)h. Laboratory complete with Design-Builder supplied bright-sign unit.

7.7.18.1(5) Install Authority supplied 65" flat screen displays, and Authority supplied flat screen display mounts in Group Consult Rooms.

7.7.18.1(6) Provide Cisco DX80's at each remote registration area and the Registration Booth.

7.7.18.1(7) Provide one (1) Cisco Room Kit Pro (including P60 camera (c/w mounting arm, Touch 10 and three microphones located in consultation with the Authority). in:

7.7.18.1(7)a. Gather Spaces; and

7.7.18.1(7)b. Resuscitation / Trauma Bay

7.7.18.1(8) In rooms used for telehealth and/or video conferencing and sized for:

7.7.18.1(8)a.1 1-4 persons, provide one (1) Cisco Room Kit Mini;

7.7.18.1(8)a.2 5-7 persons, provide one (1) Cisco Room Kit;

7.7.18.1(8)a.3 8-14 persons, provide one (1) Cisco Room Kit Plus; and

7.7.18.1(8)a.4 >14 persons, provide one (1) Cisco Room Kit Pro (including P60 camera and Touch 10).

7.7.18.1(9) Provide Separate ceiling mounted speakers for rooms over 360 square feet or with more than 6 persons.

7.7.18.1(10) Provide Cisco Telepresence Omnidirectional microphones in each room used tor teleconferencing and/or telehealth.

7.7.18.1(11) In rooms used for telehealth and/or videoconferencing and the floor is capable of being cored. Provide floor boxes with two (2) HDMI cables, one (1) data (CAT6A), microphone cabling and an additional one (1) CAT6A cable for VC control panel. All cables from the floor box will run to a codec mounted behind the flat screen display(s). Provide one floor box for every four seats.

7.7.18.1(12) In rooms used for telehealth and/or videoconferencing and the floor is not capable of being cored. Provide table boxes with two (2) HDMI cables, one (1) data (CAT6A), microphone cabling and an additional one (1) CAT6A cable for VC control panel. All cables from the table box will run to a codec mounted behind the flat screen display(s). Provide one floor box for every four seats

7.7.18.1(13) Provide two (2) CAT6A and duplex power receptacle in each Treatment Room for telehealth cart connectivity.

7.7.18.2 Quality Requirements

7.7.18.2(1) Comply with ANSI/INFOCOMM 1M-2009, ANSI/INFOCOMM 2M-2010 and ANSI/INFOCOMM 3M-2011.

7.7.18.2(2) Design-Builder will follow the audio and video conferencing manufacturer installation recommendations and guidelines.

7.7.18.2(3) Audio quality will be clear and intelligible. Video quality will be high definition (1080p) and synchronized with the audio content. Video conference systems will allow for adjustments of compression and audio and video quality to accommodate for bandwidth management.

7.7.18.3 Performance Criteria

7.7.18.3(1) Design and construct videoconference rooms and locate microphones, video cameras, video monitors, lighting systems and sound attenuation structures/materials to optimize the performance of the video conferencing systems.

7.7.18.3(2) Coordinate with the Authority for network access. Video conferencing systems will be configured in consultation with the Authority as to not negatively impact the Authority's network performance in any way.

7.7.18.3(3) Design-Builder will follow the audio and video conferencing manufacturer installation recommendations and guidelines.

7.7.19 Patient Wandering

7.7.19.1 Basic Requirements

7.7.19.1(1) Provide a complete and fully functional patient wandering system including, but not limited to:

7.7.19.1(1)a. patient tags (quantity 34);
7.7.19.1(1)b. wristband securing tool;
7.7.19.1(1)c. door controllers;
7.7.19.1(1)d. range extending antennas;
7.7.19.1(1)e. keypads; and
7.7.19.1(1)f. hand-held tag detector for tag activation and diagnostics; and
7.7.19.1(1)g. management software with GUI.

7.7.19.1(2) Integrate and interface the patient wandering system with Division 27, Division 28, and Division 8 as required for a complete and fully functioning system.

7.7.19.2 Performance Criteria

7.7.19.2(1) The patient wandering system will not utilize the Authority's 802.11 wireless network.

7.7.19.2(2) The patient wandering system will restrict patients from exit/entering restricted departments (including but not limited to: Long Term Care and Medical Inpatient) areas and to the exterior of the facility, while allowing staff to pass through unrestricted, in consultation with the Authority.

7.7.19.2(3) Design-Builder will provide a PC based application with protected doors overlaid on the Facility floor plan and that will allow the Authority simple remote configuration of the patient wandering system.

7.7.19.2(4) Provide a wireless patient wandering tag test device that audibly and visually indicates on a pass / fail basis the functionality and battery life of the patient wandering tag. The testing device will be a closed loop device/station that allows for full functional testing without activating the Facility's patient wandering alarm system and will provide audit functions.

7.7.19.2(5) Interface the patient wandering system to the access control system so that patient wandering doors will lock when a patient with a restricted wandering tag tries to pass through the door.

7.7.19.2(6) The patient wandering system will interface with the CCTV system such that when an tagged patient exits through a department or Facility perimeter door, all local CCTV cameras associated with the door are displayed at each Workstation (Nursing Station), and an audible/visual alarm is activated at each Workstation (Nursing Station). The event will also be transmitted to the staff communication system.

7.7.19.2(7) The patient wandering system will interface with all elevators that are located within departments utilizing a patient wandering systems (e.g. wanderguard) such that these elevators will not operate when a tagged patient is present in the elevator cab.

7.7.19.2(8) The patient wandering system will be capable of:

7.7.19.2(8)a. initiating a loitering alarm;

7.7.19.2(8)b. displaying the status of all doors;

7.7.19.2(8)c. configuring and saving door templates; and

7.7.19.2(8)d. scheduling door access to each controlled door by the time or day.

7.7.19.2(9) Interface patient wandering system to fire alarm system so that all patients will have free egress through emergency exit doors in the event of a fire.

7.7.19.2(10) Patient wandering system tags will have a barcode label affixed for the purpose of positive patient identification and integration to the Authority's clinical systems

7.7.19.2(11) Upon loss of power the patient wandering system will remain fully functional via UPS and/or battery back-up for 2-hours and will be connected to vital power outlet.

7.7.20 Patient Entertainment System

7.7.20.1 Basic Requirements

7.7.20.1(1) The patient entertainment system will provide patients, visitors, and staff television and limited additional content. The system will be administered after Substantial Completion by a third-party provider under the direction of the Authority.

7.7.20.1(2) Design-Builder will direct and procure services from the third-party provider to supply a complete patient entertainment system.

7.7.20.1(3) The Authority will procure and supply the IP televisions including wall mount brackets to Design-Builder for installation. Backing inside the wall will be provided by the Design-Builder.

7.7.20.1(4) The patient entertainment and education system will both utilize the same display and audio. User controls for these systems will not necessarily be the same.

7.7.20.1(5) The patient entertainment system will operate over a separate VLAN and not the Authority's network.

7.7.20.1(6) Design-Builder will be provided a complete and fully functional patient entertainment/education system including, but not limited to, off-site connections, entrance services, demarcation, pathways, cabling, servers, switches, applications, interfacing and distribution. The Authority will be responsible for the ongoing cost of the TV (cable) service after Substantial Completion.

7.7.20.1(7) Design-builder will provide all physical pathways, interconnections, and interfacing required to support control of the patient entertainment/education system for future smart beds and transmission of audio signals to the smart bed speakers in inpatient and resident rooms. (refer to Appendix 1B(I) -Equipment Responsibility Categories, 1B(II) – Furniture and Medical Equipment.

7.7.20.1(8) Patient entertainment outlets will be installed at:

7.7.20.1(8)a. each patient bed locations overnight stays may be required.

7.7.20.1(9) At patient entertainment locations other than inpatient bed locations Authority staff will control the channels/programming via remote control and will be able to change program channels or television inputs for access to patient entertainment programming.

7.7.20.1(10) At patient bed locations patients will control content including channels, programming, volume via pillow speakers connected to the nurse call system.

7.7.20.1(11) At each patient location in all clinical areas: provide a patient entertainment outlet capable of providing television programming, patient education resources, clinical applications, and internet access.

7.7.20.2 Quality Requirements

7.7.20.2(1) The patient entertainment system will be manufactured by an industry leader and all components will be of that manufacturer.

7.7.20.2(2) Design-Builder will follow the patient entertainment system manufacturer installation recommendations and guidelines.

7.7.20.3 Performance Criteria

7.7.20.3(1) A patient entertainment outlet consists of a quad-plex receptacle, two CAT6a data drops, and one coaxial cable drop. A patient entertainment outlet will serve a patient entertainment display, a patient education display, or a combined patient entertainment/education display. All cabling, servers and equipment will be connected in a TR.

7.7.20.3(2) At each patient entertainment outlet location provide sufficient structural support and backing for a 55” flat screen display.

7.7.21 Patient Education System

7.7.21.1 Basic Requirements

7.7.21.1(1) The Authority intends to provide the application services, programs and electronic educational material that will be displayed via the Authority’s network on televisions, patient entertainment displays, video conferencing equipment, information kiosks, tracking dashboards, and personal computers.

7.7.21.1(2) Provide patient education displays in waiting areas and lounges.

7.7.21.1(3) Design-Builder will be responsible for design and provision of the complete infrastructure, system, cabling and interfaces necessary to support the education system.

7.7.21.1(4) The patient entertainment and education system will both utilize the same display, audio, and control features.

7.7.21.1(5) The Authority will procure the patient education content (software).

7.7.21.1(6) Design-builder will provide a Bright Sign controller behind each patient education TV.

7.7.21.2 Performance Criteria

7.7.21.2(1) At patient education locations other than inpatient bed locations Authority staff will control the channels/programming via remote control and will be able to change program channels or television inputs for access to patient education programming.

7.7.21.2(2) At inpatient bed locations patients will control content and volume via pillow speakers connected to the nurse call system.

7.7.21.2(3) Design-Builder will follow the patient education system manufacturer installation recommendations and guidelines.

7.7.22 Nurse Call Systems

7.7.22.1 Basic Requirements

7.7.22.1(1) The nurse call system will utilize the latest technology and be of the one nurse call manufacturers currently utilized by the Authority in its similar facilities.

7.7.22.1(2) Provide a complete and fully functional nurse call system including, but not limited to, cabling, interfacing, pathways and servers.

7.7.22.1(3) Prior to designing and installing the nurse call system and as required by the Authority, coordinate the technical capabilities of the nurse call system, hardware interface and integration requirements, system layout, and functionality with the Authority and the Authority's clinical staff.

7.7.22.1(4) Installation of the nurse call system will be to the satisfaction of the Authority including programming, configuration, interfacing, testing, and commissioning of the system.

7.7.22.1(5) Train Authority staff on the nurse call system, training schedule to be determined in consultation with the Authority.

7.7.22.1(6) Provide a full feature audio and visual nurse call system with full duplex communications between Master Stations and 1/2 duplex audio half-duplex communications in all patient use and patient care areas/rooms/units of the Facility; and as per Appendix 1D – Technology Narrative.

7.7.22.1(7) The nurse call system will be:

7.7.22.1(7)a. the primary communication device for patients to contact staff in each clinical use and patient care area; and

7.7.22.1(7)b. the primary communication device for Authority staff to alert other staff that they need assistance in a clinical use or patient care area.

7.7.22.2 Quality Requirements

7.7.22.2(1) Comply with UL1069, CSA C22.2 and CSA Z32.

7.7.22.2(2) Design-Builder will follow the nurse call system manufacturer installation recommendations and guidelines.

7.7.22.3 Performance Criteria

7.7.22.3(1) Interface the nurse call system with other systems in a seamless manner to achieve the integrated functional requirements as determined in consultation with the Authority.

7.7.22.3(2) Fully interface with the nurse call system to the Connexall platform to enable bi-directional communications and transfer of all required data.

7.7.22.3(3) Integrate the nurse call system with the Authority's Network and provide sufficient audio channels, in consultation with the Authority, for the requirements of the Facility.

7.7.22.3(4) The nurse call system will provide a full range of software applications as offered by the nurse call vendors most current systems intended for use in a similar care facility. The applications will include system administration and supervision, staff assignment and messaging.

7.7.22.3(5) The nurse call system will reside on separate VLAN coordinate with the Authority for IP address assignments. Provide all equipment for the nurse call system and integrate the nurse call system, in consultation with the Authority, with other Facility networks.

7.7.22.3(6) Utilize the highest standard Category cabling and connecting hardware permissible for use by the nurse call manufacturer and as required for a complete and fully functional system.

7.7.22.3(7) Install nurse call terminal cabinets in telecommunication rooms as approved by the Authority. All nurse call network horizontal runs to connect in a TR and will be terminated in accordance with Section 2.6 Standards.

7.7.22.3(8) The nurse call system will annunciate on the wireless staff communication system (staff communication device, wireless phone devices, PDAs, or phones) for near instant alarm response as a secondary alerting system. The nurse call system will operate seamlessly with the wireless staff communication devices and allow two-way VoIP communication into all patient locations.

7.7.22.3(9) The nurse call system will utilize VoIP communications between all major components including staff consoles, patient stations, staff stations and all telephones and staff communication devices.

7.7.22.3(10) Provide a staff console (master station) in each clinical nursing area including Clinical Workstations (Nursing Station) and in each registration area.

7.7.22.3(11) Staff consoles (master stations) will be colour, touch screen, user configurable, allow multiple screens, soft key enabled, hands-free full duplex capability with handset for private conversations.

7.7.22.3(12) Staff consoles (master stations) will have the capability to redirect all calls to other staff consoles on a manual, automatically scheduled basis, call escalation, or console failure.

7.7.22.3(13) Provide enhanced patient stations at each patient bed location where an overnight stay may be required, Resuscitation / Trauma Bay and Exam / Treatment Room (Emergency Department).

7.7.22.3(14) Enhanced patient stations will be individually programmable to allow multiple call classification and priority levels.

7.7.22.3(15) Enhanced patient stations are defined as and will include: patient station with pillow speaker connection, separate auxiliary call cord connection, separate two (2) programmable call buttons (coordinate with the Authority), and call cancelation button..

7.7.22.3(16) Where future smart beds are planned (inpatient and resident rooms) the nurse call enhanced patient station will fully interface with the full range of smart bed call and audio functions.

7.7.22.3(17) The nurse call system will provide an interface such that the audio from the patient entertainment/education system will be connected and audible through future smart bed speakers.

7.7.22.3(18) The nurse call system will also provide an interface such that the future smart bed is capable of controlling patient headwall lighting and up/down control of the patient room electric blinds (only pathways and pull string required for future electric blinds).

7.7.22.3(19) Provide nurse call cords for each enhanced patient station plus 10% spare. 25% of the call cords will be pillow speaker type, with the remainder being standard call cords.

7.7.22.3(20) Provide emergency pull cord stations at all patient bathrooms, shower rooms, and change room locations complete with audio and staff emergency alarms. Additional cords will be provided near the floor in each area that will be accessible by patients in case of a fall.

7.7.22.3(21) Pull cords will be washable and compliant with the Authority's infection control policies.

7.7.22.3(22) Provide multi-call classification dome light (minimum 4 LEDs) to annunciate staff presence or calls in all rooms with nurse call devices. Locate dome lights in a manner that allow Authority staff the best possible view from the outside of the room where the nurse call device is located. Provide zone lights at all corridor intersections to direct and lead staff from anywhere within or outside the unit to the origin of the call.

7.7.22.3(23) Provide a code blue system as part of the nurse call system with code blue buttons at locations determined in consultation with the Authority including, but not limited to:

- 7.7.22.3(23)a. registration areas;
- 7.7.22.3(23)b. Patient Activation;
- 7.7.22.3(23)c. clinical use areas;
- 7.7.22.3(23)d. patient care areas;
- 7.7.22.3(23)e. each Clinical Workstation (Nursing Station);
- 7.7.22.3(23)f. Patient and Family Lounges;
- 7.7.22.3(23)g. procedure rooms;
- 7.7.22.3(23)h. Exam/Treatment Rooms; and
- 7.7.22.3(23)i. Medical Inpatient and Long-Term resident rooms. (included in Enhanced Patient Station);

7.7.22.3(24) Provide a code blue system that is interfaced with the following systems: access control, Authority Network, staff communication system, elevator controls, public address system.

7.7.22.3(25) All code blue code stations will include an additional push button for staff assist and alarm cancel.

7.7.22.3(26) Provide a code blue system that achieves the following sequence of operation:

7.7.22.3(26)a. Upon a Code Blue button activation, a priority call signal will be announced at the staff console, a pop-up message will also be displayed at each Clinical Workstations (Nursing Stations) that will indicate the precise origin of the code blue call.

7.7.22.3(26)b. Provide dome/zone lights, including but not limited to, all corridor intersections, above the door of the code location and elevator lobbies to direct and lead the code blue response staff from anywhere within or outside the unit to the origin of the code blue call.7.7.22.3(26) d. A code blue signal comprised of a coded message on will announce on the public address system, and a text/alert message will be sent to all staff communication devices indicating the location of the call (exact staff communication devices to be coordinated with the Authority prior to system programming).

7.7.22.3(26)c. A message will be automatically sent to all unit-based staff communication and paging devices as directed and determined by the Authority.

7.7.22.3(26)d. A code blue signal comprised of a coded message will announce on the public address system, and a text/alert message will be sent to all staff communication devices (exact staff communication devices to be coordinated with the Authority prior to system programming.

7.7.22.3(26)e. All elevators will automatically home to the clinical level if the code blue was initiated on another level other than the clinical level. The access control system determines the origin of the code blue call from the nurse call system. The access control system provides the code blue response staff with an unrestricted route to the origin of the code blue call.

7.7.22.3(26)f. Each code blue team member will have the ability to recall any elevator from any elevator lobby by means of an elevator recall keyswitch, the code blue team will assume control of the elevator by means of a code blue keyswitch located inside each elevator cab.

7.7.22.3(26)g. Upon cancellation of the code blue call at the patient station all systems will reset and resume normal operation.

7.7.22.3(27) Provide staff/duty stations as part of the nurse call system to ensure that tones are heard clearly throughout each department. Provide the capability to mute each staff/duty station

7.7.22.3(28) Upon loss of power the nurse call system will remain fully functional via UPS and/or battery back-up for 2-hours and will be connected to vital power outlet.

7.7.22.3(29) Provide a code white system (integrated as part of nurse call system) that achieves the following sequence of operation:

7.7.22.3(29)a. Upon a code white button activation, a priority call signal will be announced at each staff console, a pop-up message will also be displayed at each Clinical Workstation (Nursing Station) that will indicate the precise origin of the code white call. Final display locations to be coordinated with the Authority.

7.7.22.3(29)b. Provide dome/zone lights, including but not limited to, all corridor intersections, above the door of the code location (where applicable), and elevator lobbies to direct and lead the code white team from anywhere within or outside the unit (if the main response team location is located outside the unit) to the origin of the code white call.

7.7.22.3(29)c. A text/alert message will be automatically sent to all unit-based staff communication and paging devices indicating the location of the call. (exact staff communication devices will be coordinated with the Authority prior to system programming).

7.7.22.3(29)d. A code white signal comprised a coded message will announce on the public address system. Coordinate exact paging zones with the Authority prior to programming.

7.7.22.3(29)e. Upon cancellation of the code white call at the patient station all systems will reset and resume normal operation.

7.7.22.3(30) Provide code white buttons in locations determined in consultation with the Authority including, but not limited to each:

7.7.22.3(30)a. exam / treatment room; and

7.7.22.3(30)b. resuscitation and trauma room.

7.7.22.3(31) Provide twenty (20) code blue elevator keys to the Authority.

7.7.23 Cellular DAS System

7.7.23.1 Basic Requirements

7.7.23.1(1) In consultation with the Authority, design and install a complete cellular DAS network solution for the Facility to support the extension of the Authority's service providers cellular wireless network into the Facility.

7.7.23.1(2) Coordinate with the Authority's cellular service provider and provide all cabling, pathways and infrastructure necessary to for a complete and fully functioning cellular DAS system.

7.7.23.1(3) Design-Builder will:

7.7.23.1(3)a. test all aspects of the cellular DAS system;

7.7.23.1(3)b. provide heat maps for the Facility indicating the cellular coverage and signal strength;

7.7.23.1(3)c. install all structured cabling, antennas, head-end units, distribution units, and remote units.

7.7.23.1(3)d. provide a complete structured cabling and pathway infrastructure that will allow the installation of the complete cellular DAS network.

7.7.23.1(4) Design-Builder will follow the cellular DAS manufacturers installation recommendations and guidelines.

7.7.23.2 Performance Criteria

7.7.23.2(1) The wireless network will be designed and installed to provide 100% cellular coverage (signal strength / power) and capacity (throughput / bandwidth) throughout the Facility to support all users and their wireless end-devices in the facility.

7.7.23.2(2) Elevator cabs, mechanical spaces, service areas, main entrance (exterior and interior), stairwells, and Secured exterior courtyards and gardens will be included in the 100% coverage and capacity requirements of the cellular DAS system.

7.7.23.2(3) Each remote antenna unit will receive a COAX cable sized as per manufactures guidelines and computer simulation for attenuation loss.

7.8 Electronic Safety and Security (Division 28)

7.8.1 General

7.8.1.1 Design, provide, and install a complete and fully functional security system in consultation with the Authority's for a healthcare facility environment.

7.8.1.2 Provide fully networked, integrated and interfaced security systems to protect staff, patients, visitors, and property. Security systems include, but are not limited to: a closed-circuit television system to view and record events, an access control system to restrict access to secure areas to authorized personnel only, an intrusion alarm detection system, a fixed panic system, and a staff duress system (integrated into nurse call system).

7.8.1.3 Develop the security design in consultation with the Authority.

7.8.1.4 The Design-Builder will be responsible for the initial programming of proximity cards.

7.8.1.5 The Design-Builder will locate all security devices and provide monitoring and alarm annunciation requirements to the satisfaction of the Authority.

7.8.1.6 The Authority's security system will be monitored from the Shared Office and Meeting Space: FM Staff, at each Clinical Workstation (Nursing Station and in registration areas..

7.8.1.7 All electronic security systems will reside on a dedicated security systems VLAN and will allow the Authority the opportunity to review events and monitor the status of security systems from off-Site locations. The system will be fully accessible through the Authority's Network.

7.8.1.8 Electronic security systems will be scalable to allow for future additions and interconnections of devices and subsystems from different manufacturers.

7.8.1.9 The security system will incorporate commercial off-the–shelf equipment and proven designs from manufacturers regularly engaged in the production of models and types of equipment used in the security industry. Products will be quality control tested and verified for the intended operation prior to installation at site.

7.8.1.10 Electronic security systems will maintain dependability and reliability under all operational environmental conditions at the location they are installed and will be capable of 24 hours per day, seven days per week continuous operation.

7.8.1.11 Interconnect security systems to the fire alarm system and other systems as required by local building codes and NFPA standards.

7.8.1.12 Arrange and attend meetings with the Authority to coordinate system design, interconnections, and programming requirements to integrate and/or interface with the Authority's security systems.

7.8.1.13 Train Authority staff on the use and operation of security systems and location of all security devices. Coordinate and schedule training with the Authority.

7.8.1.14 All electronic security systems will meet BC Freedom of Information and Protection of Privacy Act (FOIPPA) standards for storage and operation of devices. Provide all necessary documentation and completed privacy impact assessment (PIA) required to meet Authority privacy/confidentiality standards.

7.8.1.15 The IMIT and security systems (Communications Systems) will be designed, installed and commissioned in accordance with Northern Health IMIT Communications Infrastructure Standard 1.5.

7.8.2 Access Control

7.8.2.1 Basic Requirements

7.8.2.1(1) Not used.

7.8.2.1(2) The access control system will adhere to NFPA and BC Building Code (latest edition).

7.8.2.1(3) The Authority has standardized on Kantech for its access control systems throughout each of its facilities. The acceptable manufacturer for the access control system for the new Facility is Kantech.

7.8.2.1(4) The access control system will:

7.8.2.1(4)a. lock and unlock doors via time schedule, card readers, keypads and remote push buttons;

7.8.2.1(4)b. utilize proximity field effect technology to grant or restrict access to employees via a programmable classification system with sufficient capacity to handle at minimum 25,000 regional employees down to the field panel level; and

7.8.2.1(4)c. operate over a standard TCP/IP Ethernet network.

7.8.2.1(5) All doors that require card access control will include, but are not limited to:

7.8.2.1(5)a. door position contacts;

7.8.2.1(5)b. request-to-exit sensors;

7.8.2.1(5)c. electrified mortise locksets;

7.8.2.1(5)d. proximity card readers;

7.8.2.1(5)e. piezo sounders (may or may not be included in the request-to-exit device);

7.8.2.1(5)f. fire alarm interface/relays where required by British Columbia Building Code (latest edition) and at door locations utilizing magnetic locks;

7.8.2.1(5)g. Interfaces, relays, and all equipment required for integration to automatic door openers or panic hardware on doors where they are installed; and

7.8.2.1(5)h. power supplies (located in TR rooms, not above doors).

7.8.2.1(6) Design-Builder may use maglocks on doors where an electrified mortise lock cannot accomplish the same door requirements (i.e. double doors with card reader access on either side)

7.8.2.1(7) Locking systems will be fail secure as required by the Authority and in compliance with British Columbia Building Code (latest edition).

7.8.2.1(8) The access control system will interface with the fire alarm system.

7.8.2.1(9) The access control system will interface to an event recorder that provides graphic display of door position status and an operating interface for central locking/unlocking of doors.

7.8.2.1(10) The access control system will permit full control functionality from off- site and on-site workstations.

7.8.2.1(11) The access control system will interface with the CCTV system such that when an alarm is initiated at an access controlled door all local CCTV cameras associated with the door increase their frame rate and are displayed at the Clinical Workstation (Nursing Station), Shared Office and Meeting Space: FM Staff and in registration areas.

7.8.2.1(12) Coordinate with Division 8 Openings contractor provided equipment for a complete and fully functioning access control system. See Section 6.8 Openings (Division 8)

7.8.2.1(13) The access control system will interface with the patient wandering system to prevent unauthorized egress.

7.8.2.1(14) The Authority has standardized on an enterprise level multisite access control solution. Provide all interfacing and integration required between the new access control system and the Authority's existing enterprise level access control hardware and software application for a complete and fully functioning access control system. No local access control servers will be required.

7.8.2.1(15) In consultation with the Authority and the access control system manufacturer provide all professional services required for Microsoft Active Directory Integration Synchronization utilizing Lightweight Directory Access Protocol (LDAP) for the access control system.

7.8.2.2 Performance Criteria

7.8.2.2(1) Not used.

7.8.2.2(2) All electromagnetic lock controlled doors will be able to be manually unsecured by means of a keyswitch which directly interrupts power to the magnetic locking hardware. A key override will be provided on each side of the door(s).

7.8.2.2(3) In the event of a fire alarm power to all magnetic locking hardware will be released providing free egress.

7.8.2.2(4) All doors from stairwells leading into the Facility will be equipped with proximity card access control.

7.8.2.2(5) All access control panels / field controllers will reside in TRs.

7.8.2.2(6) All access control doors will remain fully operational under a loss of power scenario via 2-hour battery back-up (including electrical magnetic locks) and will be connected to vital power.

7.8.2.2(7) Individual power supply units for access control doors will not serve more than 48 doors, or more than 1 department, or multiple floors of the building, or an area greater than 1000m2.

7.8.2.2(8) Card access system will utilize a file server and allow multiple workstations to access this file server for control and alarm annunciation purposes. All alarms will annunciate locally and allowconcurrent remote monitoring capability both on and off-Site.

7.8.2.2(9) Design-Builder will provide a user interface at a local monitoring station located in the Shared Office and Meeting Space: FM Staff that will provide the following functionality:

7.8.2.2(9)a. presentation of access control system alarm locations superimposed on a facility floor plan,

7.8.2.2(9)b. ability to configure and control each door, or monitored point,

7.8.2.2(9)c. alarm handling, and

7.8.2.2(9)d. real-time indication of door/device status.

7.8.2.2(10) The access control system will be integrated with code blue emergency response procedures to provide unrestricted access through designated code blue travel routes. Code blue carts within two metres of a Secure door will cause the Secure door to automatically open. Secure doors will then close and secure once the code blue team is two metres or more beyond the Secure door.

7.8.2.2(11) Each access-controlled door will have the capability to emit an audible tone/alarm signal to annunciate door held open and door forced open alarms. This tone will be adjustable in volume and will have a programmable option allowing the tone to be silenced or removed for door functionality as required on access or egress.

7.8.2.2(12) The access control system will function at the field controller level without connection to a PC Host, gateway, or network connection. All field controllerswill be connected by TCP/IP using the structured cabling.

7.8.2.2(13) The access control system will have the capability to lock down departments or other areas identified by the Authority in the event of an emergency or per an established schedule on a door by door basis or global command. Determine and program final access control system configuration in consultation with the Authority.

7.8.2.2(14) The access control system will use proximity type readers and will be capable of reusing all existing cards presently distributed across the Authority.

7.8.2.2(15) Volume level of the tones emitted by the card reader will be adjustable and will be suitable for quiet environments. Card readers will have silent operation capability.

7.8.2.2(16) The access control system will be compatible with the Authority's existing systems to allow existing Authority cards to work on the system and allow new cards for the Facility to work on systems in the rest of the Authority's region. Provide base programming and coordination with the Authority.

7.8.2.2(17) Provide one hundred (100) blank HID 26-bit proximity cards with smart technology for Authority staff. Consult with the Authority on card numbering sequence and format before ordering cards to ensure compatibility with existing cards and equipment.

7.8.2.2(18) Provide delayed egress operation and alarms at emergency exit doors; alarms to annunciate audibly locally and at each Clinical Workstation (Nursing Station) closest to the emergency exit door.

7.8.2.2(19) Interconnect and interface all electronically controlled doors for remote “lock & unlock” capability through the access control system on a door- by-door or global command basis.

7.8.2.2(20) Provide clear signage indicating entry procedures. Consult with the Authority for appropriate and acceptable wording.

7.8.2.2(21) All security alarms will be logged and archived. Logging system will be capable of external archiving/backup to extend the event info storage duration.

7.8.2.2(22) Access control system will provide canned reports and custom reporting capability as defined during consultation with the Authority.

7.8.2.2(23) Provide access to the control and reporting platform to security workstations located in the Shared Office and Meeting Space: FM Staff.

7.8.2.2(24) Provide a maintenance/administration workstation (MAW) PC complete with operating & application software, monitor, keyboard, mouse, and interconnection to the security system. Locate MAW in a TR, accessible to authorized personnel and Authority staff.

7.8.2.2(25) Determine, in consultation with the Authority the location of access control doors and door alarms within the Facility.

7.8.2.2(26) Provide access control doors and door alarms for rooms, departments and areas including, but not limited to:

- 7.8.2.2(26)a. administration and registration areas (i.e. Registration Booth);
- 7.8.2.2(26)b. perimeter entry doors, not main entry;
- 7.8.2.2(26)c. perimeter entry doors, main entry (provide video intercom and remote release);
- 7.8.2.2(26)d. perimeter entry doors, emergency department (provide video intercom and remote release for emergency department);
- 7.8.2.2(26)e. Isolation Ante Rooms;
- 7.8.2.2(26)f. rooms where medical records are stored;
- 7.8.2.2(26)g. not used;
- 7.8.2.2(26)h. stairwell entries on grade;
- 7.8.2.2(26)i. stairwell exit doors (provide card reader on both sides and delayed egress panic hardware);
- 7.8.2.2(26)j. Diagnostic Imaging;
- 7.8.2.2(26)k. Medical Inpatient, LDRP (Not including individual inpatient room and LDRP patient room doors;
- 7.8.2.2(26)l. doors separating public and staff only or clinical areas;
- 7.8.2.2(26)m. shared public and staff areas (will be access controlled after-hours. Provide card readers on each side of corridor doors.);

7.8.2.2(26)n. departmental entry doors;

7.8.2.2(26)o. not used;

7.8.2.2(26)p. Group Consult Rooms;

7.8.2.2(26)q. staff locker room;

7.8.2.2(26)r. meeting, conference, and telehealth rooms;

7.8.2.2(26)s. service rooms (i.e. electrical, communications and mechanical);

7.8.2.2(26)t. rooms used to store or supply medication;

7.8.2.2(26)u. Lab (including pass through cabinet);

7.8.2.2(26)v. support spaces (i.e facility management areas and offices, housekeeping, clean and soiled utility rooms, supply rooms and storage rooms)

7.8.2.2(26)w. building management rooms (i.e. boiler room);

7.8.2.2(26)x. staff only corridors;

7.8.2.2(26)y. staff lounges;

7.8.2.2(26)z. staff washrooms;

7.8.2.2(26)aa. morgue;

7.8.2.2(26)bb. all elevators (both hall call and inside the cab), with floor by floor control;

7.8.2.2(26)cc. roof access doors;

7.8.2.2(26)dd. areas used for storing blood; and

7.8.2.2(26)ee. The following rooms will be excluded from requiring access control when they reside within spaces and areas that are staff access only and not accessible to the public:

7.8.2.2(26)ee.1 staff washrooms;

7.8.2.2(26)ee.2 storage rooms (excluding general storage located at the basement level and rooms utilized for chemical storage);

7.8.2.2(26)ee.3 Grease Interceptor room;

7.8.2.2(26)ee.4 rooms used for storage of waste products (e.g., biomed, organics and paper);

7.8.2.2(26)ee.5 clean and soiled utility rooms;

7.8.2.2(26)ee.6 housekeeping; and

7.8.2.2(26)ee.7 rooms identified in consultation with the Authority during design development not to require access control.

7.8.2.2(27) Following consultation with the Authority, provide combination pin code/proximity card readers at all access/egress locations to/from all strictly controlled areas identified by the Authority, including, but not limited to:

7.8.2.2(27)a. ambulance entrance(s);

7.8.2.2(27)b. rooms used for supply or storage of medicine;

7.8.2.2(27)c. rooms supplying or storing medicine; and

7.8.2.2(27)d. ambulance patient transport locations

7.8.2.2(28) combination pin code/proximity card readers will be fully integrated into the Facility's access control platform (stand-alone, non-integrated pin pads are not acceptable). Combination pin code/proximity card readers will facilitate access by the following methods:

7.8.2.2(28)a. pin code only;

7.8.2.2(28)b. card read only; and

7.8.2.2(28)c. pin code and card read.

7.8.2.2(29) Provide momentary remote pushbutton operation to entry doors used for after-hours patient entry. when activated by staff from the registration areas and each Clinical Workstation (Nursing Station). Interface the intercom system with the access control system.

7.8.2.2(30) All delayed - egress doors intended for emergency use only will be alarmed locally and at each Clinical Workstation (Nursing Station) and registration areas via the access control system. Alarms will be silenced through use of a key-switch that will be integral to the panic hardware.

7.8.2.2(31) Rooms identified as requiring access control as per 7.8.2.2(26) in which as an outcome of the final Facility design introduces unnecessary access control redundancy and where confirmed by inquiry response by the Authority may be permitted to not be access controlled.

7.8.3 Fixed Panic System

7.8.3.1 Basic Requirements

7.8.3.1(1) The fixed panic system will provide staff with the ability to either discreetly or overtly initiate a call for assistance

7.8.3.1(2) Exterior fixed panic stations will be manufactured by Code Blue Corporation or approved equal.

7.8.3.1(3) Interior wall mounted fixed panic stations will be manufactured by Safety Standard International or approved equal

7.8.3.1(4) “Hold-up” style panic buttons will be manufactured by United Security ot approved equal.

7.8.3.1(5) The Design-Builder will supply, program, and configure all necessary equipment to provide alerts from the fixed panic system to the local RCMP dispatch via dialler and the staff communication devices via the staff communication system,

7.8.3.1(6) The access control system will not be utilized for integrating the fixed panic system.

7.8.3.2 Performance Criteria

7.8.3.2(1) Provide duress stations that are highly visible, illuminated, and accessible. Duress stations upon activation will annunciate locally by means of a minimum 90dBA siren, a xenon strobe, and will be integrated with the CCTV system.

7.8.3.2(2) Provide all areas of parking with fixed duress stations such that no location in the parking is further than 30m from a duress station.

7.8.3.2(3) Fixed panic system buttons will be strategically located in high risk areas, suitably sized, clearly identified, suitable for application, and require key to reset.

7.8.3.2(4) Provide “hold-up” style panic buttons in each Clinical Workstation (Nursing Station) and registration areas in addition to wall mounted panic buttons.

7.8.3.2(5) Provide fixed panic system buttons for staff to initiate emergency assistance calls in areas of the Facility as determined in consultation with the Authority, including but not limited to:

7.8.3.2(5)a. registration areas;
7.8.3.2(5)b. each Clinical Workstation (Nursing Station);
7.8.3.2(5)c. rooms where medication is stored or supplied;
7.8.3.2(5)d. consultation rooms;
7.8.3.2(5)e. imaging exam rooms (including but not limited to general radiology room);
7.8.3.2(5)f. decontamination room;
7.8.3.2(5)g. Resuscitation/trauma room;
7.8.3.2(5)h. parking areas;
7.8.3.2(5)i. emergency department;
7.8.3.2(5)j. ambulatory services;
7.8.3.2(5)k. Morgue;
7.8.3.2(5)l. Locker Room;
7.8.3.2(5)m. store rooms;
7.8.3.2(5)n. medical office assistant rooms;
7.8.3.2(5)o. biomedical rooms; and
7.8.3.2(5)p. workshops.

7.8.3.2(6) Not used.

7.8.3.2(7) The fixed panic system will be hard-wired and supervised such that a trouble/error message will reported to protection services.

7.8.3.2(8) The entire fixed panic system will be supervised for the following:

7.8.3.2(8)a. power loss;
7.8.3.2(8)b. system trouble;
7.8.3.2(8)c. communication loss; and
7.8.3.2(8)d. wiring and button (including short, ground fault, open circuit).

7.8.3.2(9) Provide a fixed panic system that achieves the following sequence of operation:

7.8.3.2(9)a. Upon a fixed panic button activation, a pop-up message will be displayed at the Main Emergency Nursing Station and the Shared Office Meeting Space: FM Staff and the precise origin of the fixed panic call will be displayed on a facility map provided via software application..

7.8.3.2(9)b. A local audible-visual alarm will alert staff at the panic button initiation location (outside room door where applicable), department entry door and each nursing station. Coordinate exact locations and signaling (audio, visual or both) with the Authority prior to rough-in. All siren-strobes will include volume adjustment and muting option.

7.8.3.2(9)c. A fixed panic signal comprised of a coded message will announce on the public address system throughout the Facility or by department. Coordinate exact paging and zoning requirements with the Authority prior to rough-in.

7.8.3.2(9)d. If the fixed panic call is initiated after hours the local RCMP will be contacted via communication dialer which meets or exceeds CAN/ULC-S304 (2018) and CAN/ULC-S302 (Current Edition). The dialer will include two (2) methods of communication (e.g., IP and GSM). Coordinate afterhours time frames and exact dial out requirements with the Owner prior to programming.

7.8.3.2(9)e. Fixed panic calls will be cancelled by resetting the activation button and the system will return to normal operation.

7.8.4 Staff Duress system

7.8.4.1 Basic Requirements

7.8.4.1(1) Provide a complete and fully functional staff duress system as part of the nurse call system.

7.8.4.2 Performance Criteria

7.8.4.2(1) Provide a staff assist system as part of the nurse call system with code buttons at locations determined in consultation with the Authority including, but not limited to: all clinical use areas, patient care areas, Clinical Workstations (Nursing Station), registration locations, patient and family lounges, procedure rooms, exam/treatment rooms, medical inpatient rooms, Long-Term Care resident rooms and Morgue.

7.8.4.2(2) Provide, program and configure the staff assist system to interface with the following systems: access control system, Authority Network, staff communication system, elevator controls, public address system where required to meet the requirements of the Schedule 1 – Statement of Requirements.

7.8.4.2(3) Provide a staff assist system (integrated with the nurse call system) that achieves the following sequence of operation:

7.8.4.2(3)a. Upon a staff assist button activation, a priority call signal will be announced at the staff console, a pop-up message will also be displayed at the Clinical Workstation (Nursing Station) closest to or within the department where the call was activated during normal working hours and each Clinical Workstation (Nursing Station) during afterhours.

7.8.4.2(3)b. Provide dome/zone lights, including but not limited to, all corridor intersections, above the door of the staff assist location and elevator lobbies (where applicable) to direct and lead the local departmental nursing team response staff from anywhere within the department to the origin of the staff assist call location. Coordinate dome/zone light flash rates, colour and tone with the Owner prior to programming.

7.8.4.2(3)c. A staff assist signal comprised of a coded message will announce on the public address system in the department where the call was activated during normal working hours and throughout the entire facility during afterhours. Coordinate exact paging zones with the Authority prior to programming.

7.8.4.2(3)d. A text/alert message will be sent to all staff communication devices (exact staff communication devices to be coordinated with the Authority prior to system programming).

7.8.4.2(3)e. Annunciate on staff/duty stations.

7.8.4.2(3)f. Upon cancellation of the staff assist code call at the staff duress button station all systems will reset and resume normal operations.

7.8.4.2(4) Not used.

7.8.5 Intrusion Detection

7.8.5.1 Basic Requirements

7.8.5.1(1) Provide a complete and fully functional intrusion alarm system.

7.8.5.1(2) Intrusion detection systems will be installed in all areas where protection of physical assets is deemed critical and in consultation with the Authority.

7.8.5.1(3) Provide an intrusion detection system(s) including alarm controllers, local keypads, motion sensors, shock sensors, glass break sensors, door contacts, strobes, sirens, and other alarm initiating devices as needed for a complete and fully operational system.

7.8.5.2 Performance Criteria

7.8.5.2(1) The intrusion detection system(s) will utilize industry proven devices for intrusion alarm detection and reporting capable of 24 hours per day, seven days per week continuous operation.

7.8.5.2(2) Control each intrusion alarm sub-system with keypad(s) located inside the department or area being protected. Install intrusion detection systems in areas including, but not limited to:

7.8.5.2(2)a. All exterior entrances and windows of the Building;

7.8.5.2(2)b. medication room(s);

7.8.5.2(2)c. easily accessible areas located above level 1;

7.8.5.2(2)d. areas designated as high risk by the Authority.

7.8.5.2(3) Locate intrusion alarm devices to minimize false alarms due to sunlight and/or shadows being cast through windows.

7.8.5.2(4) Intrusion alarm system and all associated alarm panels must be compatible and remotely programmable from existing Authority system equipment.

7.8.5.2(5) Upon loss of power the access control system will remain fully functional via UPS and/or battery back-up for 2-hours and will be connected to vital power outlet.

7.8.6 Surveillance System (CCTV)

7.8.6.1 Basic Requirements

7.8.6.1(1) Provide a complete and fully function CCTV and clinical camera system for the Facility.

7.8.6.1(2) Provide CCTV coverage throughout the Facility, and exterior areas for the purpose of viewing and recording video to enhance the level of security and to assist Authority staff in providing a safe environment for patients, staff, visitors and the general public while protecting the physical assets.

7.8.6.1(3) Design-Builder will post signage at the main entrances to the Building. The signage will notify the public that this area is under video surveillance. Consult with the Authority for signage wording and requirements.

7.8.6.1(4) CCTV system will conform and be governed by the Public Surveillance System Privacy Guidelines for the Province of BC as well as the BC Freedom of Information and Protection of Privacy Act.

7.8.6.1(5) The CCTV system must be able to record clear images of individuals, which would allow distinction of gender, ethnicity, and age category.

7.8.6.1(6) The CCTV system will allow web based access to all live recording images and all system programming from remote Authority sites and multiple local workstations.

7.8.6.2 Performance Criteria

7.8.6.2(1) CCTV system will be a dedicated software-based virtual matrix that integrates to the existing Authority CCTV system using the structured cable plant for transmission and recording of images.

7.8.6.2(2) Parking and exterior areas of the facility will be covered by PTZ cameras. Stairwells will be covered by fixed cameras. Coverage will be to a level that will allow facial identification. The term “facial identification” or “facial recognition” means capturing a target’s face with CCTV cameras and providing images of 80 pixels per foot.

7.8.6.2(3) Provide the appropriate encoding/decoding capability to support 2-way (video and control) communications with all CCTV cameras, individually and/or in predetermined clusters via the Authority Network.

7.8.6.2(4) Provide video storage capacity for minimum of 30 days, 30 FPS at main entrance(s) and department entry doors, 15 FPS in all other areas of the Facility, minimum HD (1920 x 1080p) resolution. The CCTV system will have the option of recording each camera at various resolution levels and FPS depending on use and location, as well as by schedule or event. Provide file servers, workstations, and optical storage devices and connect to the Authority Network. The system will have activity detection and incorporate smart search capabilities. Playback speed will be capable at 5x normal rate. During alarm conditions, allow for higher recording rates. Camera digital shutter speed will be adjusted to allow for still image captures at the point of interest without causing blurring while the subject is running or walking..

7.8.6.2(5) The CCTV system will integrate and interface with other systems as identified in the Appendix 1D(II) – Technology Systems Integration Matrix

7.8.6.2(6) CCTV display and review system will be network-based client application allowing for authorized users to remotely view, control and manage all aspects of the CCTV system across the network. System will have network and web access for remote monitoring, using predefined user authentication.

7.8.6.2(7) Display and review for all the cameras will be accessible through single 32” screen workstations located in each Nursing Station and registration area and dual 42” screen workstation Shared Office Meeting Space: FM Staff. Provide CCTV workstations with all required operating and application software, monitors, keyboard, mouse, control with interconnection to security system network..

7.8.6.2(8) Indoor cameras will be fixed type, capable of facial recognition, colour, high-resolution, high sensitivity (day/night), dome type with an auto iris and zoom capability. Mounting will be appropriate for the environment, unobtrusive, matching colour with hidden cabling. Fixed cameras will be vandal resistant wall mounted and / or mounted at protective locations and heights.

7.8.6.2(9) Outdoor cameras will be multisensor c/w four adjustable camera sensors and include adaptive infrared, H.256 compression technology, and wide dynamic range capabilities. Outdoor cameras will mount on poles, parapets and walls located to provide optimum unobstructed viewing of the area under surveillance. Cameras will have the ability to mask portions of view through software and remote programming.

7.8.6.2(10) Outdoor cameras will be complete with weatherproof housing and internal heater as required for suitable operation under varying environmental conditions.

7.8.6.2(11) Cameras will not be set up in private areas such as patient rooms, treatment rooms or clinical areas (unless specifically identified for use by clinical department staff), locker rooms or washrooms.

7.8.6.2(12) CCTV clinical activity monitors will be located out of public view as required to protect privacy.

7.8.6.2(13) Not used.

7.8.6.2(14) Not used.

7.8.6.2(15) Provide virtual matrix controller to allow for full customization of views and view layouts at each monitor utilized for viewing CCTV cameras. Coordinate with the Authority during programming for required CCTV viewing monitor view layout and control.

7.8.6.2(16) All entry and exit points to departments and associated areas require recorded video surveillance. Where required by the Authority, provide video monitors for department staff to monitor local CCTV cameras associated with the department.

7.8.6.2(17) Provide CCTV equipment to monitor and record the identity of all persons entering and exiting the Facility's main entrances, corridor/links and utilizing elevators in strictly controlled high risk departments and associated areas, as identified in consultation with the Authority.

7.8.6.2(18) Provide CCTV cameras at locations determined in consultation with the Authority, including, but not limited to:

7.8.6.2(18)a. main entrances and exits;
7.8.6.2(18)b. corridors;
7.8.6.2(18)c. reception areas;
7.8.6.2(18)d. registration areas;
7.8.6.2(18)e. rooms where medication is stored or supplied;
7.8.6.2(18)f. entrances and exit doors to all departments;
7.8.6.2(18)g. public lobbies and waiting areas;
7.8.6.2(18)h. fixed panic duress stations;
7.8.6.2(18)i. telecommunications rooms;
7.8.6.2(18)j. inside exit stairwells on grade;
7.8.6.2(18)k. areas where cash is exchanged;

7.8.6.2(18)l. areas identified through consultation process;

7.8.6.2(18)m. areas designated as high risk by the Authority; and

7.8.6.2(18)n. Quiet Room.

7.8.6.2(19) Emergency Department will include recorded and non-recorded (clinical) CCTV coverage. Areas in which CCTV is employed will have 100% coverage.

7.8.6.2(20) Upon loss of power the surveillance (CCTV) system will remain fully functional via UPS and/or battery back-up for 2-hours and will be connected to vital power outlet.

7.8.6.2(21) Emergency Department non-recorded CCTV coverage will be monitored locally at each Clinical Workstation (Nursing Station).

7.8.6.2(22) Provide an interface between the CCTV system and the fire alarm system such that when a fire alert or fire alarm is activated, the CCTV cameras in the vicinity of the fire alarm or alert will automatically be displayed in the Nursing Station and Shared Office and Meeting Space: FM Staff.

7.8.7 Asset Tracking System

7.8.7.1 Basic Requirements

7.8.7.1(1) Provide a complete and fully functioning asset tracking system used to log the location and type of all equipment installed by the Design-Builder and other assets in consultation with the Authority and that aligns with the asset tracking systems currently installed in other similar Authority facilities.

7.8.7.1(2) Provide and complete an application (software) based spreadsheet in consultation with the Authority with all equipment installed by the Design-Builder and the equipment location.

7.8.7.1(3) Provide all required infrastructure, pathways, cabling and interfaces to ensure a complete and fully functioning asset tracking system.

7.8.7.2 Performance Criteria

7.8.7.2(1) Asset tracking system will utilize barcode scanners for automatic entry into the Authority's asset tracking data base.

7.8.7.2(2) Coordinate with the Authority and label all equipment requiring asset tracking barcode labels.

7.8.7.2(3) Provide asset tracking readers to support all tagged equipment and inventory plus 25% capacity for future.

7.8.7.2(4) Provide barcode scanners in the following rooms:

7.8.7.2(4)a. Specimen Collection (Clinical Lab);

7.8.7.2(4)b. Workstation (Clinical Lab);

7.8.7.2(4)c. Chemical Analyzer (Chemistry);

7.8.7.2(4)d. Microscope (Hematology);

7.8.7.2(4)e. Manual Hematology & Fluids Workstation (Hematology);

7.8.7.2(4)f. Bio-Safety Cabinet (Hematology);

7.8.7.2(4)g. Coagulation Analyzer (Hematology);

7.8.7.2(4)h. Bulk Storage (Non-clinical) Support;

7.8.7.2(4)i. Medical Records (Health Record Area); and

7.8.7.2(4)j. Workstation (Shipping and Receiving).

PART 8 Site, Infrastructure and Landscape Subgroup Specifications

8.1 Earthwork (Division 31)

8.1.1 General

8.1.1.1 All works will be designed and constructed in accordance with the latest version of the BC Building Code.

8.1.1.2 All works will be designed and constructed in accordance with the District of Fort St. James Subdivision Servicing Bylaw No. 599, 1995.

8.1.1.3 All works will be designed and constructed in accordance with the latest edition of the Master Municipal Construction Documents.

8.1.2 Embankment and Site Grading

8.1.2.1 Basic Requirements

8.1.2.1(1) Design site grading to meet accessibility/barrier-free standards.

8.1.2.1(2) Undertake site grading, which will consist of excavation, filing and grading as required to achieve the Facility design levels, grades and contours allowing for supporting structures and surface treatments as specified.

8.1.2.1(3) Design parking and other paved areas to minimize the negative impacts on surface storm water runoff volume and quality.

8.1.2.1(4) All earthworks are to be constructed in accordance with the Design-Builder's geotechnical report.

8.1.2.1(5) The excavation, trenching and backfill will be constructed in accordance with the Design-Builder's Geotechnical report.

8.1.2.2 Performance Requirements

8.1.2.2(1) All earthworks to be compacted to the densities specified by the Design-Builder's Geotechnical engineer.

8.1.2.2(2) All utility trenches to be compacted to the densities specified by the Design-Builder's Geotechnical engineer.

8.2 Exterior Improvements (Division 32)

8.2.1 General

8.2.1.1 All works will be designed and constructed in accordance with the latest version of the BC Building Code.

8.2.1.2 All works will be designed and constructed in accordance with the District of Fort St. James Subdivision Servicing Bylaw No. 599, 1995.

8.2.1.3 All works will be designed and constructed in accordance with the latest edition of the Master Municipal Construction Documents.

8.2.2 Aggregate Base Courses

8.2.2.1 Basic Requirements

8.2.2.1(1) Utilize granular sub-base for the support and stability of surface treatment through freeze thaw cycles and for its ability to store moisture.

8.2.2.1(2) Place granular sub-base and base only on an underlying subgrade that has been properly compacted and approved by the Design-Builder's Geotechnical engineer.

8.2.2.1(3) The granular sub-base and base course will consist of crushed rock, gravel and sand consisting of hard, clean durable material, free from coatings of silt, clay or other deleterious materials and containing no organic matter. Refer to Design-Builder's Geotechnical report.

8.2.2.2 Performance Criteria

8.2.2.2(1) Design the depths of aggregate base courses to exceed limits defined by regional average freeze thaw cycles averaged over a twenty-year period.

8.2.2.2(2) Design aggregate base courses to meet or exceed the specifications of the pavement structure design for intended loads and climate conditions found on site.

8.2.3 Asphalt Paving

8.2.3.1 Basic Requirements

8.2.3.1(1) Utilize asphalt paving in areas where vehicle traffic and snow clearing equipment require a smooth surface for travel.

8.2.3.1(2) Place hot mix asphalt only on an underlying base course that has been compacted and approved by the Design-Builder's Geotechnical engineer.

8.2.3.1(3) Design asphalt mix for the intended load and climate conditions found on site.

8.2.3.2 Performance Criteria

8.2.3.2(1) Asphalt will meet or exceed the specifications of the pavement structure design and asphalt mix design. Pavement structure thicknesses will be as specified in the Design-Builder's Geotechnical report.

8.2.4 Concrete Curbs

8.2.4.1 Basic Requirements

8.2.4.1(1) Provide concrete curbs with gutter along the perimeter of asphalt surfaces, unless otherwise reviewed by the Authority.

8.2.4.1(2) All concrete works are to meet or exceed requirements for load and climate conditions found on site.

8.2.5 Concrete Sidewalks

8.2.5.1 Basic Requirements

8.2.5.1(1) Provide concrete sidewalk from the entrance to the Site to the entrance of the Facility complete with concrete let-downs as required.

8.2.6 Painted Pavement Markings

8.2.6.1 Basic Requirements

8.2.6.1(1) Provide temporary and permanent painted pavement markings.

8.2.6.1(2) All pavement markings to be in accordance with the latest edition of TAC Manual of Uniform Traffic Control Devices.

8.2.6.2 Performance Criteria

8.2.6.2(1) Taped, Painted and thermoplastic pavement markings to be selected for their suitability and durability or at the discretion of the Authority having jurisdiction.

8.2.7 Prevailing Winds

8.2.7.1 Basic Requirements

8.2.7.1(1) Protect pedestrians at Facility entrances and high activity pedestrian areas from the negative effects of the prevailing winds.

8.2.7.2 Performance Criteria

8.2.7.2(1) Design and install the landscape with trees, shrubs, hedges, fencing, walls, or other elements to protect pedestrians from the western winds in winter and other prevailing winds that would impede operation of doorways or create drafts into the Facility.

8.2.7.2(2) Undertake an environmental wind and snow study.

8.2.8 Landscape Retention and Protection

8.2.8.1 Basic Requirements

8.2.8.1(1) Conduct a predesign assessment of the existing vegetation to identify existing trees and mature plant communities to be retained.

8.2.8.1(2) Retain existing trees and mature vegetation where they do not conflict with Site development or Site grading. Protect trees and mature vegetation that will be retained during construction.

8.2.8.1(3) To reinforce the image of a well-established landscape, retain and incorporate mature trees and landscaping into the Site development. Develop a tree salvage plan that notes trees to be cut down, trees to remain, and trees to be relocated.

8.2.8.1(4) Review the site for plants on the BC Weed Control Act and prepare a strategy to clear the site of problem plants. Notify the Authority prior to executing strategy to clear problem plants.

8.2.8.2 Performance Criteria

8.2.8.2(1) Protect trees and mature vegetation that will be retained during construction with fencing to the Critical Protection Zone as defined herein as the drip line of the canopy or foliage.

8.2.8.2(2) No excavation, storage of materials, parking, vehicular driving, preloading, or filling will occur within the critical protection zone of the landscapes being preserved.

8.2.9 Outdoor Art

8.2.9.1 Basic Requirements

8.2.9.1(1) The Master Site Plan will include areas for outdoor art/sculptures.

8.2.9.2 Performance Criteria

8.2.9.2(1) Provide areas for outdoor art.

8.3 Utilities (Division 33)

8.3.1 Site Water Utility Distribution Piping

8.3.1.1 Basic Requirements

8.3.1.1(1) The watermain system will include pipes, valves, and all other required appurtenances to comply with current MMCD specifications, the BC Building Code, and the District of Fort St. James Subdivision Servicing Bylaw No. 599, 1995.

8.3.1.1(2) Provide a watermain system capable of providing domestic and firefighting capacity for the Facility.

8.3.1.1(3) Provide reduced pressure backflow preventer(s) to protect the municipal system and onsite facilities from contaminants

8.3.1.1(4) Provide adequate fire hydrants around the site in accordance with NFPA-24 and the District of Fort St. James Fire Department requirements.

8.3.2 Site Sanitary Sewer Piping

8.3.2.1 Basic Requirements

8.3.2.1(1) The sanitary sewer system will include the pipes, manholes, quality testing and all other required appurtenances to comply with the current MMCD specifications, the BC Building Code, and the District of Fort St. James Subdivision Servicing Bylaw No. 599, 1995.

8.3.3 Site Storm Sewer Piping

8.3.3.1 Basic Requirements

8.3.3.1(1) The storm sewer system will include the pipes, manholes, and all other required appurtenances to comply with the current MMCD specifications, the BC Building Code, and the District of Fort St. James Subdivision Servicing Bylaw No. 599, 1995.

8.3.3.2 Performance Criteria

8.3.3.2(1) Flooding/ponding are not permitted except in designated stormwater detention facilities.

8.3.3.2(2) Utilize best management practices for stormwater management.

8.3.4 Manholes and Catch Basins

8.3.4.1 Basic Requirements

8.3.4.1(1) Provide monolithic concrete manholes with transition to lid frame, covers, anchorage, and accessories.

8.3.4.1(2) Provide modular precast concrete manhole sections with tongue and groove joints with masonry transition to lid frame, covers, anchorage, and accessories.

8.3.4.2 Performance Criteria

8.3.4.2(1) Locate and size manholes and catch basins in accordance with MMCD and BC Building Code. Avoid situating catch basins in walking areas.

8.3.4.2(2) All joints will be watertight.

8.3.4.2(3) All manholes and catch basin lids, frames, and grates in vehicle traffic areas to be designed for H20 traffic loading.

8.4 Trees, Shrubs, and Groundcover

8.4.1 Basic Requirements

8.4.1.1 Plant material will be nursery grown, conforming to the Canadian Nursery Trades Association Landscape Canada 'Metric Guide Specifications for Nursery Stock,' the 'British Columbia Nursery Trades Standard for Container Grown Plants' and to the 'British Columbia Landscape Standard.'

8.4.1.2 Provide planting to support the landscape design by reinforcing spatial relationships and wayfinding. The plant selection and placement will address micro-climates surrounding the Facility and mitigation of heating and cooling loads. Planting will shade and screen parking lots and provide habitat for birds, pollinators, and other animals.

8.4.1.3 Provide landscape treatments for the complete Lands that contribute to the creation of a liveable, healthy, and responsive community.

8.4.1.4 Provide landscape treatments that provide view corridors and means for engaging the surrounding built and natural landscape.

8.4.1.5 Provide planting that is responsive to views from habitable/staff/patient interior spaces. Planting will provide a positive benefit for individuals equally from the interior and the exterior of the building.

8.4.1.6 Use large calliper deciduous trees and evergreen trees that provide seasonal interest in association with ground covering shrub planting. Use a variety of plant material to reflect seasonal change.

8.4.1.7 Use similar plant species to the local eco-region to create a visual relationship with the surrounding natural character, create recognizable spaces, contribute to site orientation and create a strong sense of place, recognizing that a diversity of tree species may increase the survival ratio of new landscaping.

8.4.1.8 Use of indigenous flora will a priority in terms of minimizing maintenance and expressing the local ecosystem and microclimates.

8.4.1.9 All landscape plantings will be irrigated by a permanent, high efficiency, automatically timed and condition-controlled irrigation system.

8.4.2 Performance Criteria

8.4.2.1 All planting is be suitable for plant hardiness zone 4a or hardier and be grown in a nursery within the same hardiness zone.

8.4.2.2 All planting is to be per CNLA.

8.4.2.3 Imported plant material must be accompanied with necessary permits and import licenses. Transportation of elm trees must comply with Provincial DED regulations.

8.4.2.4 Source any roses from areas free of the pathogen *Phytophthora ramorum*. Roses must be on their own roots and not grafted.

8.4.2.5 Plants must be grown in the container for a minimum of three months or have a well-established root system reaching the sides of the container to maintain a firm ball.

8.4.2.6 Landscape treatment and circulation routes must be in accordance with Section 4.2.

8.4.2.7 For fire safe practices, no medium or large trees are permitted within 10m of the exterior walls of the facility.

8.4.2.8 450mm deep or horizontal root barrier must be provided where trees are proposed within 2m of a sidewalk or other hardscape feature.

8.4.2.8(1) Root barrier will be commercially manufactured for the sole purpose of deflecting roots downward and must be installed per the manufacturer's instructions.

8.4.2.8(2) Root barrier will extend a minimum of 2.5m on each side of tree in a linear application.

8.4.2.9 Provide root barriers above the waterproofing membrane for all roof or deck assemblies or green roofs located over occupied or interior space.

8.4.2.10 Use vegetation with non-penetrating roots for all roof or deck assemblies or green roofs located over occupied or interior space.

8.4.2.11 To ensure safety and security, Sightlines must be provided through any cluster of tall growing vegetation by keeping all understory plants to a maximum of 1.2m in height. All tree canopies are to be no lower than 1.5m in height at the time of installation.

8.4.2.12 Use some flowering and fruiting shrubs to promote natural avian habitat.

8.4.2.13 Group plants to minimize the use of water, chemicals, and fossil fuel use for routine maintenance and to promote a healthy local ecosystem using sustainable measures. Ensure tree spacing and plant variations abide by Fire Smart principles.

8.4.2.14 Do not install any plants listed as poisonous to humans by the Canadian Government's 'Canadian Poisonous Plants Information System.'

8.4.3 Quantity of Trees.

8.4.3.1 Provide a minimum of 24 small and medium specimen trees as part of the overall on site landscape planting.

8.4.3.1(1) Tree planting locations and spacing is to abide by firesmart principles.

8.4.4 Quantity of Shrubs.

8.4.4.1 20% of all on-site soft landscape space will be planting beds consisting of shrubs, ground covers and perennial plants.

8.4.4.1(1)a. Planting beds shall be located at entrances and within therapeutic, patient, and staff garden areas.

8.4.4.1(1)b. Shrub planting to abide by all firesmart principles.

8.4.4.2 Trees to be no smaller than 7 cm cal for deciduous shade trees, 2 m ht or 3 cm cal for ornamental/understory trees, and 2.5 m ht for coniferous trees upon installation.

8.4.4.3 Shrubs will be no smaller than #2 pot size upon installation.

8.4.4.4 100% of the total number of plants on the Site are to be native to British Columbia with the exception of sod.

8.4.4.4(1) The intent of the landscape planting design is to be low maintenance and require minimal maintenance by the Authority after establishment maintenance is complete.

8.4.4.5 Use some flowering and fruiting trees and shrubs to promote natural avian and pollinator habitat.

8.4.4.6 Shrubbery within 2 m of walkways will not exceed 50 cm in height.

8.4.4.7 Shrubbery within 1m of walkways will not be comprised of woody or stiff stemmed plants.

8.4.4.8 Trees planted in narrow planting areas between hard surfaces (e.g. curbs, sidewalks, roads, buildings) will have a continuous volume growing medium available to their roots along the length of the planting area (i.e. no tree pits). Minimum widths of planting areas to be 1.5m, but wider planting areas are encouraged.

8.4.4.9 Trees will be planted in areas that will provide root zone access to a volume of growing medium sufficient to support proper growth. This may include linear tree trenches, structural soil beneath pavement, soil cells, or other means necessary to provide ample growing medium. Provide soil volume per tree as follows:

8.4.4.9(1) 5 cubic metres for small trees;

8.4.4.9(2) 10 cubic metres for a medium-sized tree; and

8.4.4.9(3) 20 cubic metres for a large tree.

8.4.5 Irrigation

8.4.5.1 Trees

8.4.5.1(1) Trees in lawn areas will be irrigated by a drip system. Drip line will have pressure compensating emitters. Each drip zone will have an inline filter, inline pressure regulating valve and air relief valve.

8.4.5.1(2) Tree drip systems will be zoned separately to allow for irrigation under restricted watering conditions when lawn irrigation is not permitted.

8.4.5.1(3) Irrigation of any off-site trees and lawn areas will be provided per City of St. James specifications and the water supply will be independent of the Facilities service.

8.4.5.2 Grass/Lawn and Shrub Beds

8.4.5.2(1) Lawn areas and shrub beds will have a high-efficiency irrigation system which includes, but is not limited to the following features: pressure regulating sprinklers, check valve in sprinklers at low areas, matched precipitation rate nozzles, separate zones based on micro climate and wind resistant nozzles.

8.4.5.2(2) Lawn areas will be zoned separately from shrub beds.

8.4.6 Growing Medium

8.4.6.1 Basic Requirements

8.4.6.1(1) Supply and placement of all growing medium will conform to the BC Landscape Standard and the Canadian Landscape Standard, current editions.

8.4.6.1(2) All proposed topsoil to be reviewed and approved by the Project Landscape Architect and District of St James where work occurs on City property.

8.4.6.2 Performance Requirements

8.4.6.2(1) All growing medium placed over slabs or under cover will conform to Growing medium Type 1L in table T-6.3.5.2 Properties of Growing media for Level 1 ‘Well-Groomed’ Areas, in the *Canadian Landscape Standard*.

8.4.6.2(2) All growing medium placed over native subgrade or fill at planting bed areas will conform to Growing Medium Type 1P in table T-6.3.5.2 Properties of Growing media for Level 1 ‘Well-Groomed’ Areas, in the *Canadian Landscape Standard*.

8.4.6.2(3) Where a portion of a tree’s required soil volume extends below a paved surface the Design-Builder will place structural soil or soil cells below the pavement.

8.4.6.2(4) Where a tree planting occurs in pavement the Design-Builder will install soil cells per the manufacturer’s specifications, including approved growing medium.

8.4.6.2(4)a. Structural soil will consist of an approved blend of 60-75mm clear, clean crushed stone, growing medium, and soil stabilizer.

8.4.6.2(4)b. Soil Cells will be commercial grade and provided from a recognized soil cell manufacturer such as 'Silva Cell' or 'Strata Cell.'

8.4.6.2(5) Provide minimum depths of growing media per Table T-6.3.5.5 Minimum Depth of Growing Media, in the Canadian Landscape Standard.

8.4.7 Mulches

8.4.7.1 Basic Requirements

8.4.7.1(1) Provide mulch to planting beds and tree wells to increase moisture retention and to suppress weed growth.

8.4.7.2 Performance Criteria

8.4.7.2(1) Provide wood mulch that is untreated, locally sourced, composed, and free from deleterious materials and weed sources. Wood mulch must be applied to a depth to retain moisture and reduce weed growth without the use of landscape fabric.

8.4.7.2(1)a. Wood mulches are to be partially composted to align with fire suppression and FireSmart principles. The use of wood mulch is under review by the provincial authority, and its use may be limited or restricted by the authority.

8.4.7.2(2) Rock mulch will be clean washed rock, installed over professional grade landscape fabric. Rock mulch will only be used in areas without perennials, shrubs, needle bearing plants and fruit bearing plants.

8.4.7.2(2)a. Rock mulch may be used in locations as required for fire suppression as part of the local Fire Smart principles.

8.4.7.2(3) Mulch will be tapered to base of tree, shrub or perennial.

8.4.8 Establishment Maintenance

8.4.8.1 The date of Substantial Completion, or the completion of landscape planting (whichever occurs last) will constitute the beginning of the 24 month Establishment Maintenance period.

8.4.8.2 Maintenance during the 24 month period of Establishment Maintenance is essential to ensure the validity of the Design-Builder's guarantee for the same period.

8.4.8.3 Replace for a period of 24 months beginning from the completion of landscape planting, all unsatisfactory plant material and continue to replace such plant material until the replacement is acceptable, at no cost to the Authority.

8.4.8.4 Establishment maintenance procedures apply to all new plants and planting as well as cultivated turf grass, seeded areas, and all trees and shrubs.

8.4.8.5 A logbook will be kept in which maintenance activities are recorded. This will include a record of when and what operations are carried out as well as notations about site conditions which require attention. A copy of this information will be forwarded to the Authority each time a report is written. A minimum of three maintenance reports will be made during each growing season.

8.4.8.6 Work included:

8.4.8.6(1) Maintaining all newly planted areas in a weed-free condition;

8.4.8.6(2) Fertilizing the plating areas and lawn areas;

8.4.8.6(3) Pruning;

8.4.8.6(4) Replacement of dead or diseased plants;

8.4.8.6(5) Watering in sufficient quantities and frequency to maintain optimum soil moisture; and

8.4.8.6(6) Lawn mowing.

8.4.8.7 Protect all pre-existing and new site services, curbs, asphalt, sidewalks, site furniture, fences, and structures against damage throughout the maintenance period. Site elements that are deficient at the end of the maintenance period, or damaged by the Contractor during the maintenance period, will be replaced by the Contractor. Site elements damaged by vandalism or third party will be replaced at agreed rates.

8.4.8.7(1) Protect all pre-existing and new site services, curbs, asphalt, and structures against any damage throughout the maintenance period.

8.4.8.7(2) Protect all pre-existing and newly planted trees, shrubs and other plant material against any damage throughout the establishment maintenance period. This includes damage from rodents, deer, and other animals.

8.4.8.7(3) New deciduous tree plantings are to be provided with trunk protection 1000mm height using temporary PVC arbor guards. Guards are to be removed at the end of the maintenance period.

8.4.8.7(4) Deciduous trees that are attractive to deer shall be protected with 1.8m height page wire fencing supported by 100mm diameter treated log fence posts. Protective fencing is to be removed at the end of the maintenance period.

8.4.8.7(5) Plant material damaged by vandalism and shrubs damaged by rodents (shrubs that cannot be protected) will be replaced at agreed rates

8.4.8.8 Lawn mowing will be carried out at regular intervals to maintain grass at a maximum height of 60mm (2.5”). Edges of sodded areas will be straight and neatly trimmed.

8.4.8.9 In March and June of the first growing season, fertilize all exterior planting areas with the fertilizer recommended by the Landscape Architect. Repeat the fertilizer application in March of the second growing season.

8.4.8.10 The Design-Builder is responsible for all losses due except those related to vandalism.

8.5 Landscape

8.5.1 Outdoor Open Space

8.5.1.1 Basic Requirements

8.5.1.1(1) Main Entrance Area;

8.5.1.1(2) Porch (in the medical Inpatient department)

8.5.1.1(3) Not used;

8.5.1.1(4) Visitor Patio; and

8.5.1.1(5) Two outdoor Staff areas, one general and one ambulatory.

8.5.1.2 Performance Criteria

8.5.1.2(1) Provide outdoor spaces in the Design of the Facility to accommodate activities, including;

8.5.1.2(1)a. Space and hard landscape elements conducive to healing and recovery that may be used as a component of physical and occupational therapy. If furnishings (benches, tables, chairs, waste receptacles) are included, these should be of appropriate design for those with physical challenges and be of appropriate materials conducive to a healthcare environment including vandal resistance and to be surface mounted.

8.5.1.2(1)b. Space which acts as the main entry of the Facility which will be fully accessible to the public with strong connections to the site and the neighbourhood.

8.5.1.2(1)c. Space to accommodate semi-public/private activities; and

8.5.1.2(1)d. Spaces for activities including patient/family visiting, staff breaks/retreats.

8.5.1.2(2) Provide access to the outdoor spaces from the public areas of the hospital.

8.5.1.2(3) All public pathways and sidewalks must be universally accessible and appropriate for those using wheelchairs, scooters, walkers and other mobility aids.

8.5.2 Outdoor patient and resident spaces

8.5.2.1 Basic Requirements

8.5.2.1(1) In addition to general outdoor spaces, provide distinct, separate outdoor space to accommodate programmed and unprogrammed activities, as follows:

8.5.2.1(1)a. A visitor patio, inpatient porch and an Entrance Plaza to be distinctly separate and include recognizable zones for the different uses they provide.

8.5.2.1(1)b. The Authority reserves the right to reject proposed species at any time due to known adverse reactions to patients and staff as well as for maintenance concerns.

8.5.2.2 Performance Criteria

8.5.2.2(1) The general specifications in Section 8.2 will apply to all the outdoor patient and resident areas.

8.5.2.2(2) Project co will design the outdoor spaces:

8.5.2.2(2)a. To provide a sense of control:

8.5.2.2(2)a.1 Provide a variety of spaces from which to choose;

8.5.2.2(2)a.2 Provide fixed furniture;

8.5.2.2(2)a.3 Provide movable furniture in Secured garden space; and

8.5.2.2(2)a.4 Promote a sense of security and safety.

8.5.2.2(2)b. To provide for social support:

8.5.2.2(2)b.1 Provide areas with seating to encourage conversation;

8.5.2.2(2)b.2 Provide areas of refuge from inclement weather, sun, and wind; and

8.5.2.2(2)b.3 Provide areas for independent meditation, contemplation, and reflection.

8.5.2.2(2)c. To provide for physical movement and exercise:

8.5.2.2(2)c.1 Provide a variety of different activities;

8.5.2.2(2)c.2 Provide easy wayfinding;

8.5.2.2(2)c.3 Provide a variety of longer and shorter pathway loops for strolling and exercise;

8.5.2.2(2)c.4 No pathway is to have dead ends;

8.5.2.2(2)c.5 Utilize walkway edging to prevent those using wheelchairs and other medical aids from rolling into planting beds;

8.5.2.2(2)c.6 Walkways will be a minimum 2.0m in width and will have a surface that accommodates patients with intravenous equipment, gurneys, wheelchairs or walkers, and physical support workers.

8.5.2.2(2)c.7 Provide a minimum of one handrail between the entrance to any garden (from the interior of the Facility) and a seat for patients experiencing difficulties with strength or balance;

8.5.2.2(2)c.8 Provide one handrail along the length of the pathway walking loop.

8.5.2.2(2)c.9 Pavement expansion joints to be no more than 1/8” in width to prevent the wheels of IV poles and other aid devices from getting caught and stuck; and

8.5.2.2(2)c.10 Integrate varied tactile surfaces (e.g. river stone pebbles, unit pavers, wood like products, rubber, and concrete) to duplicate real-world surfaces in a safe, observed environment.

8.5.2.2(2)c.11 Walking loops located outside and not physically forming part of or accessed through the long term care or medical in patient units garden, courtyard or enclosed patio are intended for daytime use only and do not required pathway lighting.

8.5.2.2(2)d. To provide opportunities for Gross Motor Development, Rehabilitation and Physical Fitness

8.5.2.2(2)d.1 To provide access to nature and positive distractions

8.5.2.2(2)d.2 Gardens are to be incorporated as an integral extension of the hospital interiors, linking its internal spaces to view vistas of the exterior greenspace;

8.5.2.2(2)d.3 Gardens are to be visible from at least one well-used interior area;

8.5.2.2(2)d.4 Incorporate visibility and visual interest both into and out of the garden;

8.5.2.2(2)d.5 Provide adequate signage within the Facility to alert people of the gardens;

8.5.2.2(2)d.6 Gardens are to be fully accessible with automatic doors and low entry lips to facilitate wheelchair and patient bed access;

8.5.2.2(2)d.7 Gardens are to be unlocked during daytime hours (as determined by hospital administration);

8.5.2.2(2)d.8 Provide space for artwork (refer to section 8.2.9);

8.5.2.2(2)d.9 Provide plant material that attract birds, pollinators and provides seasonal interest;

8.5.2.2(2)d.10 Provide visual relief and interest in vertical and horizontal dimensions;

8.5.2.2(2)d.11 Provide bright colours;

8.5.2.2(2)d.12 Provide visual vistas of nature/landscape elements viewable to patients who are confined to their rooms; and

8.5.2.2(2)d.13 Provide a dedicated gardening space with available sunlight which includes raised and fully accessible planters for those in wheelchairs.

8.5.2.2(2)e. To minimize intrusive stimuli:

8.5.2.2(2)e.1 Gardens must have sheltered locations from the wind;

8.5.2.2(2)e.2 Provide some gathering/seating areas that are sheltered from the sun and rain;

8.5.2.2(2)e.3 Surfaces must reduce glare (e.g. integral coloured/stained/tinted concrete);

8.5.2.2(2)e.4 Seating which encourages interaction with the space.

8.5.2.2(2)e.5 Take measures to reduce or cover up loud or repetitive man-made sounds;

8.5.2.2(2)e.6 Locate gardens to avoid odours and smoke;

8.5.2.2(2)e.7 Avoid bright lights;

8.5.2.2(2)e.8 All selected plant material will not cause serious harm to humans if ingested (e.g. Red Baneberry, Actaea rubra);

8.5.2.2(2)e.9 All selected plant material will take into consideration the plant location in relation to potential issues of contact dermatitis, rash or skin inflammation if handled or brushed against (e.g. junipers, Juniperus spp., roses, Rosa spp.);

8.5.2.2(2)e.10 Species that create high levels of pollen dust may not be used;

8.5.2.2(2)e.11 Any plant which is listed as hazardous on the Government of Canada's 'Canadian Poisonous Plants Information System' may not be used;

8.5.2.2(2)f. To minimize ambiguity:

8.5.2.2(2)f.1 Provide a well-defined and inviting garden entrance;

8.5.2.2(2)f.2 Provide a design that is easy to interpret by the majority of people; and

8.5.2.2(3) To supplement the general specifications identified above, the clinical specifications set out specific requirements for each of the outdoor spaces of the Facility.

8.5.2.2(4) Provide at least one hose bib in each outdoor space regardless of whether an automatic irrigation system is supplied as part of the design.

8.5.3 Staff Patios

8.5.3.1 Design the outdoor staff space so that it:

8.5.3.1(1) Provides staff outdoor resting areas in close proximity to the Building;

8.5.3.1(2) Provides visual privacy from public and patient care areas so staff does not have to mingle with patients on their breaks;

8.5.3.1(3) Has moveable furniture; and

8.5.3.1(4) Includes tables, chairs, and benches with seating for at least ten (10) people.

8.5.4 Porch or Patio – inpatient

8.5.4.1 Design the porch or patio to be accessible from the palliative care lounge. The porch or patio will;

8.5.4.1(1) be roofed over the entire area;

8.5.4.1(2) Accommodate a hospital bed;

8.5.4.1(3) Have glazing to provide daylight to spaces or circulation zones adjacent to the Porch or Patio;

8.5.4.1(4) Include moveable tables and chairs (with backs and armrests), with seating for at least six (6) people;

8.5.4.1(5) Respect First Nations culture as follows;

8.5.4.1(5)a. Consult with First Nations representatives, as designated by the Authority, during the design phase, the installation phase, and the maintenance phase of the general therapeutic garden;

8.5.4.1(5)b. Incorporate cultural elements such as rock sculpture and wood poles and indigenous plants used for traditional healing; and

8.5.4.1(5)c. Provide a plaque acknowledging traditional First Nations territory.

8.5.5 Long Term Care Courtyard

8.5.5.1 Design the Long Term Care Courtyard to be located in a location accessible to the long term care residents of the hospital. Each will;

8.5.5.1(1) Be highly visible from a nursing station as well as well-populated areas of the facility;

8.5.5.1(2) Have glazing to provide daylight to spaces or circulation zones adjacent to the garden.

8.5.5.1(3) Include tables and chairs (with backs and armrests), with seating for at least 12 people;

8.5.5.1(4) Incorporate a walking loop and changes in texture to encourage outdoor physical rehabilitation; and

8.5.5.1(5) Provide three (3) raised accessible planters for horticultural therapy.

8.5.6 Building Entrance Area

8.5.6.1 Design the Building Entrance Area to include;

8.5.6.1(1) Fixed seating for six (6) people;

8.5.6.1(2) Consistent hard surface, with a pattern distinguishable by those with visual impairments to find their own way to the primary entrance; and

8.5.6.1(3) Partial cover from the elements for the seating.

8.5.7 Site Slopes and Retaining Walls

8.5.7.1 Basic Requirements

8.5.7.1(1) Site grading to provide positive drainage throughout the Lands, except where required for storm water detention/retention.

8.5.7.1(2) Site grading is to avoid over-steepened slopes on the lands that cannot hold growing medium and plants.

8.5.7.1(3) Steeper slopes (i.e. 3:1 up to 2:1) are permitted provided that the slope meets all geotechnical requirements.

8.5.7.2 Performance Criteria

8.5.7.2(1) Steep slopes are to be no steeper than 4:1 where there is a requirement for pedestrian accessibility. Slopes exceeding 4:1 are to be finished with growing medium and plant material. Do not use riprap on slopes.

8.5.7.2(2) Structural architecturally finished retaining walls (cast-in-place concrete or precast concrete block) will be used where required to retain soil structure. Wall material is to be consistent throughout the project. Gabion basket systems are not permitted.

8.5.7.2(3) Retaining walls greater than 1.5m in height are to be architecturally finished with patterns or other element to prevent long expanses of continuous bare concrete. Terracing with planting between segments, cast in patterns, or mounted features will all be considered.

8.5.8 Outdoor Furniture

8.5.8.1 Basic Requirements

8.5.8.1(1) Unify the exterior ground plane treatment through the use of common paving materials, tree grates, lighting, and other landscape furniture items.

8.5.8.1(2) Provide and coordinate design for street furniture, including benches provided at regular intervals for ease of use particularly for the infirm.

8.5.8.1(3) Ensure accessibility to persons with disabilities at grade changes through sloped walkways and ramps and avoid the use of stairs.

8.5.8.1(4) Seating in public areas must be ergonomically designed for a variety of people; be designed to allow a wheelchair to sit alongside fixed seating or, where tabled are provided, to allow a wheelchair to pull up to each table; have a minimum 50% with backrests; a minimum 50% with armrests; and shed rain water.

8.5.8.1(5) Seating material to be constructed to be:

8.5.8.1(5)a. A smooth, warm, comfortable material to the touch;

8.5.8.1(5)b. Finished to repel bodily fluids, oils, water, bacterial growth, mould, and mildew;

8.5.8.1(5)c. Constructed to prevent swelling and shrinking, rusting or corrosion and shed water;

8.5.8.1(5)d. Constructed to prevent damage from freeze-thaw cycles;

8.5.8.1(5)e. Constructed to prevent splintering, chipping, and cracking or disintegration;

8.5.8.1(5)f. Resistant to vandalism; and

8.5.8.1(5)g. designed to accommodate the mobility challenged and include back and arm rests.

8.5.8.1(6) All outdoor lighting in therapeutic and staff gardens must be decorative and low level lighting features where gardens are visible from public indoor or private rooms.

8.5.8.2 Performance Criteria

8.5.8.2(1) Unify the ground plane treatment through the use of common paving materials, tree grates, lighting, and other landscape furniture items.

8.5.8.2(2) Seating areas with benches will be located no more than 50m apart from each other. Select product on the basis of safety, comfort, design, and materials that relate to the Facility architecture and landscape design, durability, and related maintenance.

8.5.8.2(3) Provide exterior bear-proof trash receptacles at the main entrance area. Place receptacle near the building entrance.

8.5.8.2(4) Provide exterior, covered trash receptacles at the staff patio and public patio. Ensure receptacle can be operated by those with limited mobility or strength. Place receptacle near the building entrance.

8.5.8.2(5) Select products for their suitability and durability in the climatic conditions found at the Facility.

8.5.8.2(6) Utilize a variety of scales, locations and orientations of seating areas and site furnishings to cater to varied outdoor activities and varied experiences of the staff and visitors.

APPENDIX 1A

CLINICAL SPECIFICATIONS

Index

1A.0 GENERAL BUILDING CLINICAL REQUIREMENT

This specification outlines the functional, operational, and physical requirements for all areas and departments within the Building.

1A.0.1 FUNCTIONAL DESCRIPTION

1A.0.1.1 Scope of Services

1A.0.1.1(1) Scope of Education Functions

1A.0.1.1(1)(a) Staff will receive cultural sensitivity training and other training as required within the Building.

1A.0.1.1(1)(b) Staff will participate in regular in-service training that will occur in the shared meeting rooms.

1A.0.1.1(1)(c) Students will receive practical skills training through internships and co-op programs. All teaching and supervision functions will be accommodated in the general work areas and will not require specialized or dedicated areas in the Building.

1A.0.1.1(1)(d) Staff and students will, from time-to-time, be engaged in research. The nature and extent of research functions will be accommodated in the general work areas and will not require specialized or dedicated areas in the Building.

1A.0.1.2 Support Activities

1A.0.1.2(1) Allied Health Services

1A.0.1.2(1)(a) Access to allied health services (e.g. social work, Rehabilitation, etc.) will be provided in the Facility. Allied health Staff will require temporary access to the clinical Workstations, as required.

1A.0.1.2(1)(b) Allied health Patient consultations will occur either in-person or virtually via Telehealth in the Exam / Treatment Rooms, interview rooms, or Inpatient rooms.

1A.0.1.2(2) Biomedical Engineering

1A.0.1.2(2)(a) Biomedical equipment requiring service will be transported to the Building Biomedical Engineering department or transported off-site.

1A.0.1.2(3) Facilities Management (FM)

1A.0.1.2(3)(a) FM will provide scheduled and on-call maintenance services for all systems and equipment for all Building Components, including Ambulatory Services.

1A.0.1.2(4) Housekeeping

1A.0.1.2(4)(a) Housekeeping Staff will be responsible for the daily cleaning of all areas and removal of soiled supplies, recycling, biological, and chemical waste for all Building Components, including Ambulatory Services.

1A.0.1.2(5) Information Management and Information Technology (IMIT)

1A.0.1.2(5)(a) Refer to Schedule 1 section 7.7 - Communications

1A.0.1.2(6) Laundry and Linen

1A.0.1.2(6)(a) Laundry and Linen (clean and soiled) will be executed through an exchange cart process. Carts will be exchanged by the Laundry and Linen Staff.

1A.0.1.2(7) Medications / Pharmacy

1A.0.1.2(7)(a) Medication will be stored in the Medication Room shared between Emergency and medical Inpatient and the Medical Office Assistant Room in Ambulatory Services.

1A.0.1.2(7)(b) Clinical pharmacy services will be provided on the unit as required.

1A.0.1.2(8) Supply Management

1A.0.1.2(8)(a) The Supply Chain Staff will electronically order and purchase supplies.

1A.0.1.2(8)(b) Supply shipments will be delivered to the supply chain department where they received by the supply chain Staff. Supplies will be distributed to a Clean Utility / Supply Room and departments, using carts, by the Supply Chain Staff.

1A.0.2 DESIGN CRITERIA

1A.0.2.1 Building Design Criteria

1A.0.2.1(1) Components listed on the following table will be located above a basement or above a 1.8 metre crawl space:

Stuart Lake Hospital - Program Component	Location Requirements	Direct/Integrated	Adjacencies - Controlled Circulation	Adjacencies - General Circulation
Diagnostic Services				
Laboratory	Facility Entry Level	-	Emergency Department	Lobby / Entrance Area, Registration (Waiting Area)
Emergency Services				
Emergency Department	Facility Entry Level	Medical Inpatient	-	-
Inpatient Services				
Medical Inpatient	Facility Entry Level	Emergency Department	Clinical Laboratory, Diagnostic Imaging, Long-Term Care	-

1A.0.2.2 Internal Design Criteria

1A.0.2.2(1) Within the Schedule of Accommodation, references to the Canadian Standards Association (CSA) space planning standards are provided.

1A.0.2.2(2) Design considerations are based on Patient demographic, the model of care, resource capacity and allocation, clinical service program requirements, mission, and vision.

1A.0.2.2(3) Acoustic Performance

1A.0.2.2(3)(a) Refer to Appendix 1C: Acoustic and Noise Control Measures.

1A.0.2.2(3)(b) Acoustic requirements in the Quiet Room (Emergency department) and the Spiritual Room will incorporate calming effects designed to reduce anxiety and stress.

1A.0.2.2(4) Daylighting

1A.0.2.2(4)(a) On the Building entry level, 55% of the floorplate will be within 4.5 metres of the inside face of the perimeter wall, and/or an overhead clerestory if provided.

1A.0.2.2(4)(b) All occupiable spaces on the perimeter wall will have windows to the outside regardless of their function.

1A.0.2.2(4)(c) The fenestration pattern will support the functions of internal spaces and flexibility in the interior layout.

1A.0.2.2(4)(d) Individual windows will have a minimum width of Glazing of 915mm.

1A.0.2.2(4)(e) Operable windows will be key-lockable by Staff. Locked windows will be identified as locked.

1A.0.2.2(4)(f) All operable windows will open to the inside and be provided with bug screens

1A.0.2.2(4)(g) Daylight will be provided to spaces as noted on the following table:

: Space Type	Daylighting Requirement	Minimum percentage of Perimeter Wall fenestrated between 900mm above finished floor and finished ceiling	Operability
Patient Care Rooms			
Inpatient Rooms	All rooms required. Where these rooms are located on building corners, fenestration to match standard typical rooms	35	No
Inpatient Washroom if on Perimeter Wall	All such rooms required	20	No
ED Exam / Treatment Rooms	All rooms Optional	-	No
ED Trauma Rooms	All rooms Optional	-	No
Other Exam / Treatment Rooms	75% of rooms required	40	No

: Space Type	Daylighting Requirement	Minimum percentage of Perimeter Wall fenestrated between 900mm above finished floor and finished ceiling	Operability
Group Consultation Rooms	Op All rooms Optional	-	No
LTC Resident Rooms	All rooms required. Where these rooms are located on building corners, fenestration to match standard typical rooms.	35	Yes
Resident Washroom if on Perimeter Wall	All such rooms required	20	No
LTC Dining Room	Required, may be borrowed	70	Yes
LTC Patient Lounge	Required	70	Yes
LTC Activity Room	Required, may be borrowed	40	Yes
LTC Tub/Shower Room	Required	40	Yes
Workrooms			
Private Office if on Perimeter Wall	All such rooms	35	No
Shared Clinician & Staff Workrooms if on Perimeter Wall	All such rooms	40	No
Meeting Rooms if on Perimeter Wall	All such rooms	40	No
Laboratory if on Perimeter Wall	All such rooms	40	No
Staff Support			
Staff Lounge Breakroom	Required	70	No
Cafeteria (Staff Only)	Required	70	No
Patient and Family Support			
Primary Care Waiting	Required	70	No
IPU Family Lounge/Family Meeting Room	Not required	40	No
Gathering Space	Required	70	No
Non-Denominational Spiritual Room	Required	70	No

1A.0.2.2(5) Interior Fenestration

1A.0.2.2(5)(a) Interior fenestration will be required to spaces as noted on the following:

Clinical Specification Space Number	Spaces / Space Types requiring interior Glazing	Views to:	Clinical Specification Space Number
Patient Care Spaces			
1.1.01	Reception	Waiting Area	1.1.04
4.2.08	Workstation Tech	Waiting Area	10.1.04
5.1.01	Triage / Registration Station	Adjacent corridors, Public Waiting	5.1.01
5.2.15(a-c) 5.2.17	Clinical Workstation; Resident Student Workstation	• Resuscitation Trauma • Exam / Treatment Room • Procedure Room • IV Therapy	• 5.2.01 • 1.3.10(a, b) • 5.2.08 • 5.2.09
6.1.06(a,b)	Charting Area	Patient Room Access Corridors	Unassigned

Clinical Specification Space Number	Spaces / Space Types requiring interior Glazing	Views to:	Clinical Specification Space Number
7.1.11(a,b) 7.1.12	Clinical Workstations; Physician Workstation	• Patient Lounge • Dining • Resident Room Access Corridors	• 7.1.08 • 7.1.09 • Unassigned
7.1.10	Activity Room	All adjacent Resident Room Access Corridors	Unassigned
Non-Patient Care Workspaces (7.1.11(a,b); 7.1.12)			
1.1.01	Reception	Waiting Area	10.1.04
10.1.01	Registration Booth	• Waiting Area • Adjacent General Circulation Corridors	10.1.04
All such Rooms	Interior Group Work Spaces	Adjacent Controlled Circulation Corridors	Unassigned
Non-Patient Care Spaces			
14.2	Food Production Area	Dining	7.1.09
Patient and Family Support			
2.1.06	Gathering Space	Adjacent General Circulation Corridors	Unassigned
Circulation Spaces			
Corridor	Laboratory Specimen Collection Area	Waiting Area	10.1.04

1A.0.2.2(5)(b) Workstations in Patient care areas will be optimally located to provide views to Patients in care within glass fronted Patient care spaces and to Patient care space access corridors for non-glass fronted Patient care spaces.

1A.0.2.2(5)(c) Workstation Glazing required in Patient care areas will eliminate the obstruction of view by segments of opaque wall and minimize the obstruction of view by mullions, including at Glazing corners.

1A.0.2.2(5)(d) Doors accessing Workstations requiring interior fenestration will also be maximally glazed.

1A.0.2.2(6) Entrances and Access

1A.0.2.2(6)(a) Building entrances will include and be limited to:

1A.0.2.2(6)(a)(i) Main Entrance will be on the main clinical level.

1A.0.2.2(6)(a)(ii) Staff Entrance will be on main clinical level.

1A.0.2.2(6)(a)(iii) Secondary Staff Entrance will be adjacent to the loading dock.

1A.0.2.2(6)(a)(iv) Drive-through ambulance bay entrance with direct entrance to the ED will be on the main clinical level.

1A.0.2.2(6)(a)(v) Secondary Staff Entrance/Emergency Department Self-Arrival Entry by the Emergency Department Waiting Area.

1A.0.2.2(6)(b) All services will be accessible from General Circulation.

1A.0.2.2(6)(c) All service entrances from General Circulation will be securable and controllable.

1A.0.2.2(6)(d) All services that receive Patients and their families (other than the Morgue) will be located on the Building entry level, as noted in clause.

1A.0.2.2(6)(e) Other services may be located on a level below the entry level.

1A.0.2.2(6)(f) Proximal relationships between services will be of the following types:

1A.0.2.2(6)(f)(i) Direct / integrated

1A.0.2.2(6)(f)(ii) Adjacent by Controlled Circulation

1A.0.2.2(6)(f)(iii) Adjacent by General Circulation

1A.0.2.2(6)(g) Relationship types between services are identified on the following table:

Stuart Lake Hospital - Program Component	Location Requirements	Direct / Integrated	Adjacencies - Controlled Circulation	Adjacencies - General Circulation
Ambulatory Services				
Ambulatory Services	Building Entry Level	HIMS and Registration	-	-
Concierge Services				
Auxiliary Services	Building Entry Level	-	-	
Lobby / Entrance Area	Building Entry Level	-	-	• Registration • Laboratory • Diagnostic Imaging • Spiritual Services
Spiritual Services	Building Entry Level	-	-	Lobby / Entrance Area, Emergency Department and the entrances to the Medical Inpatient Unit and LTC
Diagnostic Services				
Laboratory	Building Entry Level	-	Emergency Department	• Lobby / Entrance Area • Registration (Waiting Area)
Diagnostic Imaging	Building Entry Level	-	Emergency Department	• Lobby / Entrance Area • Registration (Waiting Area)
Emergency Services				
Ambulance Bay	Building Entry Level	Emergency Department	-	-
Emergency Department	Building Entry Level	Medical Inpatient	-	-
Inpatient Services				
Long-Term Care	Building Entry Level	-	Medical Inpatient, Food and Nutrition Services	Medical Inpatient
Medical Inpatient	Building Entry Level	Emergency Department	Laboratory, Diagnostic Imaging, Long-Term Care	Long Term Care

Stuart Lake Hospital - Program Component	Location Requirements	Direct / Integrated	Adjacencies - Controlled Circulation	Adjacencies - General Circulation
Patient and Administrative Services				
HIMS	-	Registration, Ambulatory Services	-	-
IMIT	-		-	-
Registration	Building Entry Level	Lobby / Entrance Area, HIMS, Ambulatory Services	-	-
Site Administration	Building Entry Level	-	-	
Shared Support Services				
Biomedical Engineering	-	-	-	-
Facilities Maintenance	-	-	-	-
Food and Nutrition Services	Building Entry Level	Long-Term Care	-	-
Housekeeping Services	-	-	-	-
Laundry and Linen	-	-	-	-
Morgue	-	-	-	-
Staff Facilities	Distributed Between Entry Level and Logistics Level/Area (10 Lockers, 2 washrooms and 1 Change Room/Shower only)	-	-	-
Supply Chain	-	-	-	-

1A.0.2.2(7) Component Boundary Integrity

1A.0.2.2(7)(a) Certain Components require all Component spaces to be accessed from internal Component circulation within a Secure boundary; other Components require certain spaces to be located outside their primary boundary accessed by general circulation; while yet other Components do not require a Secure boundary, allowing all spaces to be accessed by General Circulation. Components will have boundaries that vary as per the following table:

Stuart Lake Hospital - Program Component	Boundary Integrity	Spaces to be outside Boundary
Ambulatory Services		
Ambulatory Services	All spaces within boundary	-
Concierge Services		
Auxiliary Services	-	-
Lobby / Entrance Area	-	-
Spiritual Services	-	-
Diagnostic Services		
Laboratory	-	-
Diagnostic Imaging	-	-
Emergency Services		
Ambulance Bay	-	-
Emergency Department	Incomplete Boundary	5.1.05 Public Waiting

Stuart Lake Hospital - Program Component	Boundary Integrity	Spaces to be outside Boundary
Inpatient Services		
Long-Term Care	All spaces within boundary	-
Medical Inpatient	Incomplete Boundary	• 6.1.07 Family Lounge/Family Meeting Room • 6.1.15 Patient Activation Area
Patient and Administrative Services		
HIMS	-	-
IMIT	-	-
Registration	-	-
Site Administration	All spaces within boundary	-
Shared Support Services		
Biomedical Engineering	All spaces within boundary	-
Facilities Maintenance	-	-
Food and Nutrition Services	All spaces within boundary	-
Housekeeping Services	Boundary not Required	-
Laundry and Linen	-	-
Morgue	-	-
Staff Facilities	Main Floor Locker Area and Staff Lounge	• Shared Meeting Rooms • Basement Locker and Change Area
Supply Chain	-	-

1A.0.2.2(8) Corridor Minimum Widths

1A.0.2.2(8)(a) Corridor widths will vary within and between Components as per the following table:

Stuart Lake Hospital - Program Component	Corridor Type	Minimum Width (mm)
Ambulatory Services		
Ambulatory Services	• Patient accessible corridors • Staff-only corridors	• 1980 • 1525
Concierge Services		
Auxiliary Services	• General corridors	• 1525
Lobby / Entrance Area	• See General Circulation requirements	-
Spiritual Services	• See General Circulation requirements	-
Diagnostic Services		
Laboratory	• Patient circulation corridors • Circulation between Workstations • Circulation between a Workstation and counter end • Circulation between counter ends	• 1980 • 2135 • 1830 • 1525
Diagnostic Imaging	• Patient circulation corridors	• 1980

Stuart Lake Hospital - Program Component	Corridor Type	Minimum Width (mm)
Emergency Services		
Ambulance Bay	• Ambulance Bay Width	• 7000
Emergency Department	• Care space access corridors • Service corridors for Patient transfer to DI from IPU • Staff corridors without Patient transfer	• 2440 • 1980 • 1830
Inpatient Services		
Long-Term Care	• Resident room access corridors • Other corridors used by Patients	• 2440 • 1980
Medical Inpatient	• Care space access corridors • Service corridors for Patient transfer to DI • Staff corridors without Patient transfer	• 2440 • 1980 • 1830
Patient and Administrative Services		
HIMS	• See General Circulation requirements	-
IMIT	• Corridors accessing Data Rooms	• 1830
Registration	• General corridors	• 1370
Site Administration	• General corridors	• 1525
Shared Support Services		
Biomedical Engineering	• See General Circulation requirements	-
Facilities Maintenance		-
Food and Nutrition Services		-
Housekeeping Services		-
Laundry and Linen		-
Morgue	• Corridor accessing Stretcher Entrance • Corridor accessing Family Entrance	• 2440 • 1980
Staff Facilities	• Corridor accessing 18.2.02 Meeting Room • Corridor accessing Staff • Lounge/Breakroom • Corridors facing lockers on one side • Corridors between lockers • Other corridors	• 2440 • 1980 • 1830 • 2235 • 1525
Supply Chain	-	-
General Circulation		
-	• Clinical Service Patient entrance access corridors	• 2440
	• Non-clinical service Patient access corridors	• 1830
	• Corridors accessing Shared Support Services	• 2440
	• Corridor segments facing elevators	• 3300

1A.0.2.2(8)(b) Corridor widths are determined by the distance between the inside finished surface of opposing walls, measured above wall base protection.

1A.0.2.2(9) Information Management Information Technology

1A.0.2.2(9)(a) Refer to Schedule 1 section 7.7 – Communications.

1A.0.2.2(10) Lighting

1A.0.2.2(10)(a) Not used.

1A.0.2.2(11) Safety

1A.0.2.2(11)(a) Staff in the Building will be provided the means of leaving their Workstation for immediate access to a safe place when their personal safety is jeopardized. Panic alarms will be installed at all appropriate spaces.

1A.0.2.3 External Design Criteria

1A.0.2.3(1) Required Exterior Spaces

1A.0.2.3(1)(a) All required exterior spaces will be wheelchair accessible from all Building entrances.

1A.0.2.3(1)(b) Required exterior spaces may require multiple points of access, including from Building General Circulation, Component dedicated circulation and specific department spaces.

1A.0.2.3(1)(c) Required exterior spaces will have a minimum area, a minimum area of wheelchair navigable surface, and a minimum area of covered wheelchair navigable surface.

1A.0.2.3(1)(d) All entrances to required exterior spaces will be directly into the required area of covered wheelchair navigable surface.

1A.0.2.3(1)(e) All entrances to required exterior spaces will have door sills that are flush, or very nearly flush, with the interior finished floor and the exterior wheelchair navigable surface.

1A.0.2.3(1)(f) In addition to their minimum area of wheelchair navigable surface, specific required exterior spaces will have a wheelchair navigable circulation loop of a minimum length that may include the length of a direct path of travel through their minimum area of wheelchair navigable surface. The minimum width of any segment of a wheelchair navigable circulation loop will be 1.2m, with areas where wheelchairs can pass no further apart than 9.0m.

1A.0.2.3(1)(g) Minimum requirements for required exterior spaces are as per the following table:

Outdoor Space	Accessible From	Minimum Area	Minimum Area of Wheelchair Accessible Surface	Minimum Area of Covered Wheelchair Accessible Surface
Staff Patio	1.4.01 Staff Lounge	30sqm	20sqm	12sqm
Staff Patio	14.4 Staff Cafeteria	30sqm	20sqm	12sqm

Outdoor Space	Accessible From	Minimum Area	Minimum Area of Wheelchair Accessible Surface	Minimum Area of Covered Wheelchair Accessible Surface
Visitor Patio	• General Circulation • 2.1.06 Gathering Space • 2.5.01 Non-Denominational Spiritual Room	90sqm	50sqm	18sqm
Long-Term Care Courtyard	Long-Term Care Internal Circulation (Minimum 2 locations)	250sqm	100sqm	80sqm
Patio or Porch	6.1.12 Palliative Care Lounge	12sqm	12sqm	12sqm

1A.0.3 SPACE SUMMARY (NSM ONLY)

Stuart Lake Hospital: Area Requirements Summary		
Chapter	**Service Area / Department**	**NSM**
Ambulatory Services		
1A.1	Interprofessional Services – Home & Community Care, Mental Health and Addictions, Public Health	530.4
	Primary Care Clinic	
	Shared Support Services	
	Sub-Total - Ambulatory Services	**530.4**
Concierge Services		
1A.2	Auxiliary Services	15.0
	Foundation	0.0
	Lobby / Entrance Area	105.7
	Spiritual Services	18.0
	Volunteer	0.0
	Sub-Total - Concierge Services	**138.7**
Diagnostic Services		
1A.3	Laboratory	160.7
1A.4	Diagnostic Imaging	79.9
	Sub-Total - Diagnostic and Treatment Services	**240.6**
Emergency Services		
1A.5	Emergency Department	303.1
	Sub-Total - Emergency Services	**303.1**
Inpatient Services		
1A.6	Medical Inpatient	381.8
1A.7	Long-Term Care	700.1
	Sub-Total - Inpatient Services	**1081.9**
Patient and Administrative Services		
1A.8	HIMS	57.2
1A.9	IMIT	0.0
1A.10	Registration	42.6
1A.11	Site Administration	50.2
	Sub-Total - Patient Support Services	**150.0**

Stuart Lake Hospital: Area Requirements Summary		
Chapter	**Service Area / Department**	**NSM**
Shared Support Services		
1A.12	Biomedical Engineering	31.0
1A.13	Facilities Maintenance	84.6
1A.14	Food and Nutrition Services	124.7
1A.15	Housekeeping Services	35.9
1A.16	Laundry and Linen	23.0
1A.17	Morgue	44.2
1A.18	Staff Facilities	163.4
1A.19	Supply Chain	166.0
Sub-Total - Shared Support Services		**672.8**
Total - Area Requirements Summary		**3117.5**
Exterior Building Area Requirements		
1A.5.6	Ambulance Bay	89.0
Total - Exterior Building Area Requirements		**89.0**
Exterior Courtyard / Patio Area Requirements		
1.6.01	Staff Patio	30.0
2.6.01	Visitor Patio	90.0
6.4.01	Porch	12.0
7.4.01	Not used	-
14.5.01	Staff Patio	30.0
Total - Exterior Courtyard / Patio Area Requirements Area Requirements		**162.0**

1A.1 AMBULATORY SERVICES

This specification outlines the functional, operational, and physical requirements for the interprofessional services and primary care clinic, known as Ambulatory services (AS).

1A.1.1 FUNCTIONAL DESCRIPTION

1A.1.1.1 Statement of Purpose

1A.1.1.1(1) The Authority has a vision to create an effective and efficient healthcare network based on the primary care model. This model will be supported at the Building by developing an integrated approach that co-locates the primary care clinics (operated by the Stuart Lake Primary Care Society) and the interprofessional services team (home and community care, mental health and addictions, and public health) in proximity to acute care, Emergency Department (ED), Diagnostic Imaging (DI), and the Laboratory.

1A.1.1.1(2) Clinical service delivery and operations within close proximity will reduce the distance for Patient and Staff movement in acute situations, augment overall communication, and expedite access with DI.

1A.1.1.1(3) This approach will foster close collaboration, partnership, and help to ensure service comprehensiveness and continuity after-hours, thereby supporting the Authority's commitment to quality improvement in their primary care practices.

1A.1.1.2 Scope of Services

1A.1.1.2(1) Functional Content

1A.1.1.2(1)(a) The Building is rare as it combines public health, mental health and addictions, home community care, and general practitioner practices within the same location, despite different governance structures. The integrated interprofessional services team represents the best practice options for Patient-centric care, resource efficiency, and effectiveness.

1A.1.1.2(2) Functional Components in the AS include:

1A.1.1.2(2)(a) Interprofessional services team.

1A.1.1.2(2)(a)(i) Home and community care.

1A.1.1.2(2)(a)(ii) Mental health and addictions.

1A.1.1.2(2)(a)(iii) Public health.

1A.1.1.2(2)(b) Primary care clinics / medical clinics.

1A.1.1.2(2)(c) Functions conducted in AS include, but are not limited to:

1A.1.1.2(2)(c)(i) Centralized waiting spaces.

1A.1.1.2(2)(c)(ii) Administrative services, including Patient records management.

1A.1.1.2(2)(c)(iii) Medical diagnosis and treatment.

1A.1.1.2(2)(c)(iv) Specimen collection.

1A.1.1.2(2)(c)(v) Clinical diagnostics including echocardiograms and pulmonary function testing.

1A.1.1.2(2)(c)(vi) Training and education of Patients and Staff.

1A.1.1.2(2)(c)(vii) Team meetings and interprofessional collaboration.

1A.1.1.2(3) Planning Assumptions

1A.1.1.2(3)(a) It is assumed that all scheduled visits and follow-ups, therapies, and echocardiograms currently managed in the ED and DI will be redistributed to AS. This also includes providing care for Patients who present at the ED, are triaged as a CTAS 4 or 5, and are directed to AS by visual cues, signage, and wayfinding for an unscheduled appointment (during typical daytime hours).

1A.1.1.2(4) Excluded

1A.1.1.2(4)(a) Minor procedures and scope-based procedures (e.g. minor plastic surgery, cataract removal, bronchoscopy, cystoscopy, and colposcopy).

1A.1.2 OPERATIONAL DESCRIPTION

1A.1.2.1 Hours of Operation

1A.1.2.1(1) AS will be available Monday to Friday, from 0800-1600.

1A.1.2.2 Organization & Management

1A.1.2.2(1) AS will be managed by the Primary Care Society.

1A.1.2.3 Workflow

1A.1.2.3(1) Scheduled and Unscheduled Patients

1A.1.2.3(1)(a) Patients will arrive at the Building through the Main Entrance. From the Lobby / Entrance Area, Patients will be directed by visual cues, signage, and wayfinding to AS.

1A.1.2.3(1)(b) Patients will arrive in AS and will register at the reception Workstations and be treated as required per their condition.

1A.1.2.3(1)(b)(i) If the Patient requires a short wait prior to being seen, the Patient will wait in the AS Waiting Area located adjacent to the Reception area.

1A.1.2.3(1)(c) If the Patient requires an x-ray and/or specimen collection, they will walk to registration to be registered and wait in the shared acute care waiting area. There will be clear and obvious physical cues and signage to direct the Patient.

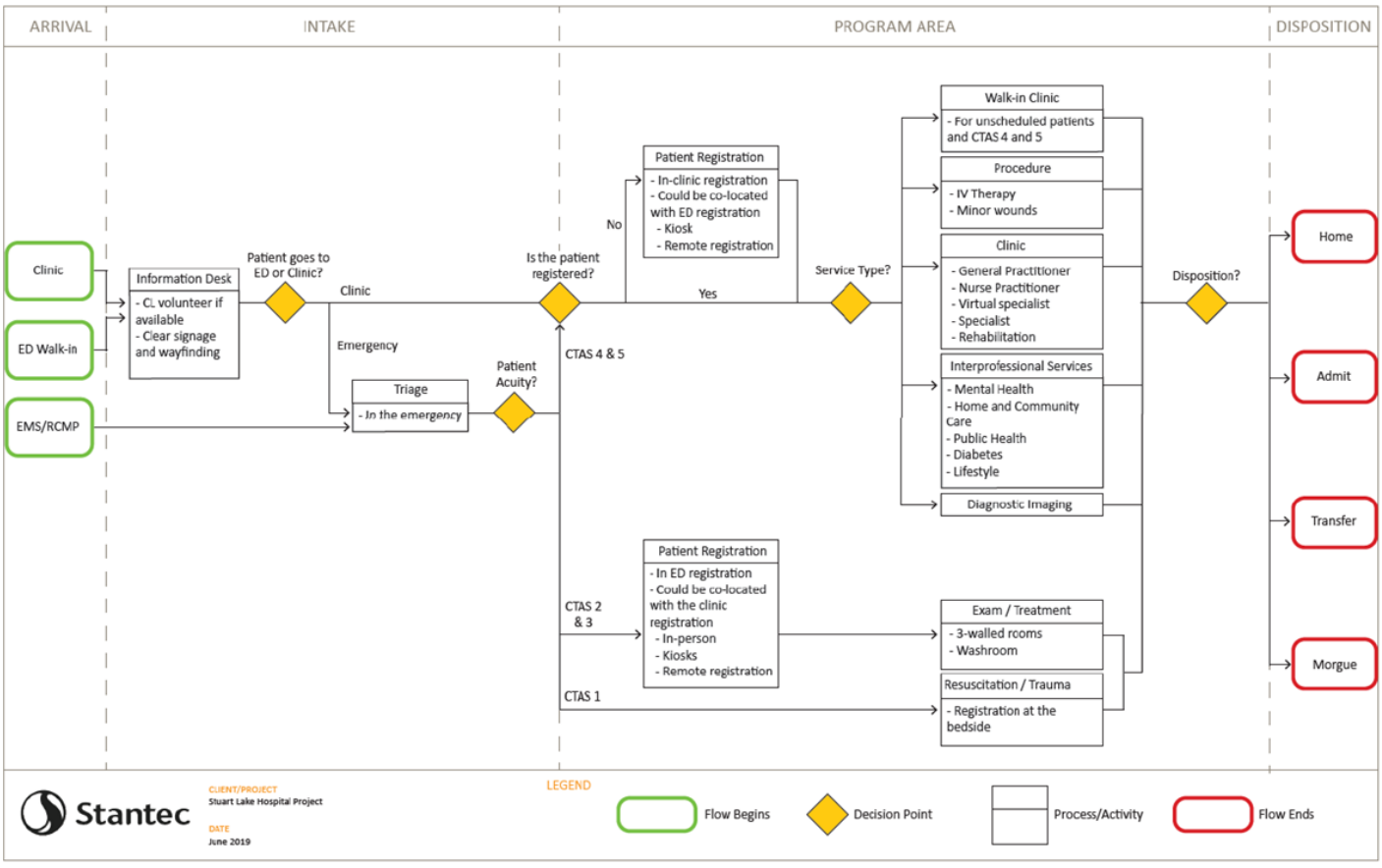
1A.1.2.3(1)(c)(i) Upon completion of the x-ray or specimen collection, Patients will return to AS (if they have to see a care provider) or leave the Building.

1A.1.2.3(2) CTAS 4 and 5 (Daytime Hours)

1A.1.2.3(2)(a) Patients will arrive at the Building through the Main Entrance and proceed to triage area of the ED. If the Patient is categorized as a CTAS 4 or 5, that Patient will be verbally directed to AS for an unscheduled appointment. They will then follow the process for scheduled or unscheduled Patients as described in Section 1A.1.2.3(1).

1A.1.2.3(3) The future state flow map below describes the key flows for the future model of care for the integrated Building Patient flow. This informs the operational processes that will enhance Patient flow, create efficiencies, and support the Staff in the future delivery model.

Stuart Lake Hospital Project - Functional Program - INTEGRATED FACILITY PATIENT FLOW (DAYTIME 08:00 - 16:00) - Future State Flow Map



1A.1.2.4 Support Activities

1A.1.2.4(1) Laboratory

1A.1.2.4(1)(a) STAT specimens will be collected in the Exam / Treatment Room by lab technicians and taken by lab technicians to the Building Lab for processing.

1A.1.2.4(1)(b) Non-urgent specimens will be collected by lab technicians in the specimen collection area in the acute care area.

1A.1.2.4(2) Diagnostic Imaging

1A.1.2.4(2)(a) Patients requiring an x-ray will be either transported to the DI Department by AS and/or DI Staff or will receive an x-ray via portable equipment in an Exam / Treatment Room.

1A.1.2.4(2)(b) The portable x-ray equipment will be stored in either the ED or the Diagnostic Imaging department and be located near the Radiology Room.

1A.1.3 STAFFING

1A.1.3.1 Estimated future Staffing for this component is summarized below. The information is for space planning purposes only and does not represent a commitment for hiring.

Ambulatory Services: Projected Staffing	
Staff / Position	**Projected FTE 2040/41**
Primary Care Clinic	
Reception	1.0
Medical Office Assistant	3.0
Physicians	9.0
Interprofessional Services	
Public Health	4.0
Home & Community Care	3.0
Mental Health and Addictions	3.0
Administrative and Clinic Staff	
Public Health	4.0
Home & Community Care	3.0
Clinic Manager	1.0
Interprofessional Team Lead	1.0
Executive Director	1.0
Data Entry	2.0
Scheduler	1.0
Biller	1.0
PSP	1.0

Ambulatory Services: Projected Staffing	
Staff / Position	Projected FTE
	2040/41
Total Ambulatory Services Staffing	38.0

1A.1.4 DESIGN CRITERIA

1A.1.4.1 External Relationships

1A.1.4.1(1) AS will be adjacent by General Circulation to the Main Entrance.

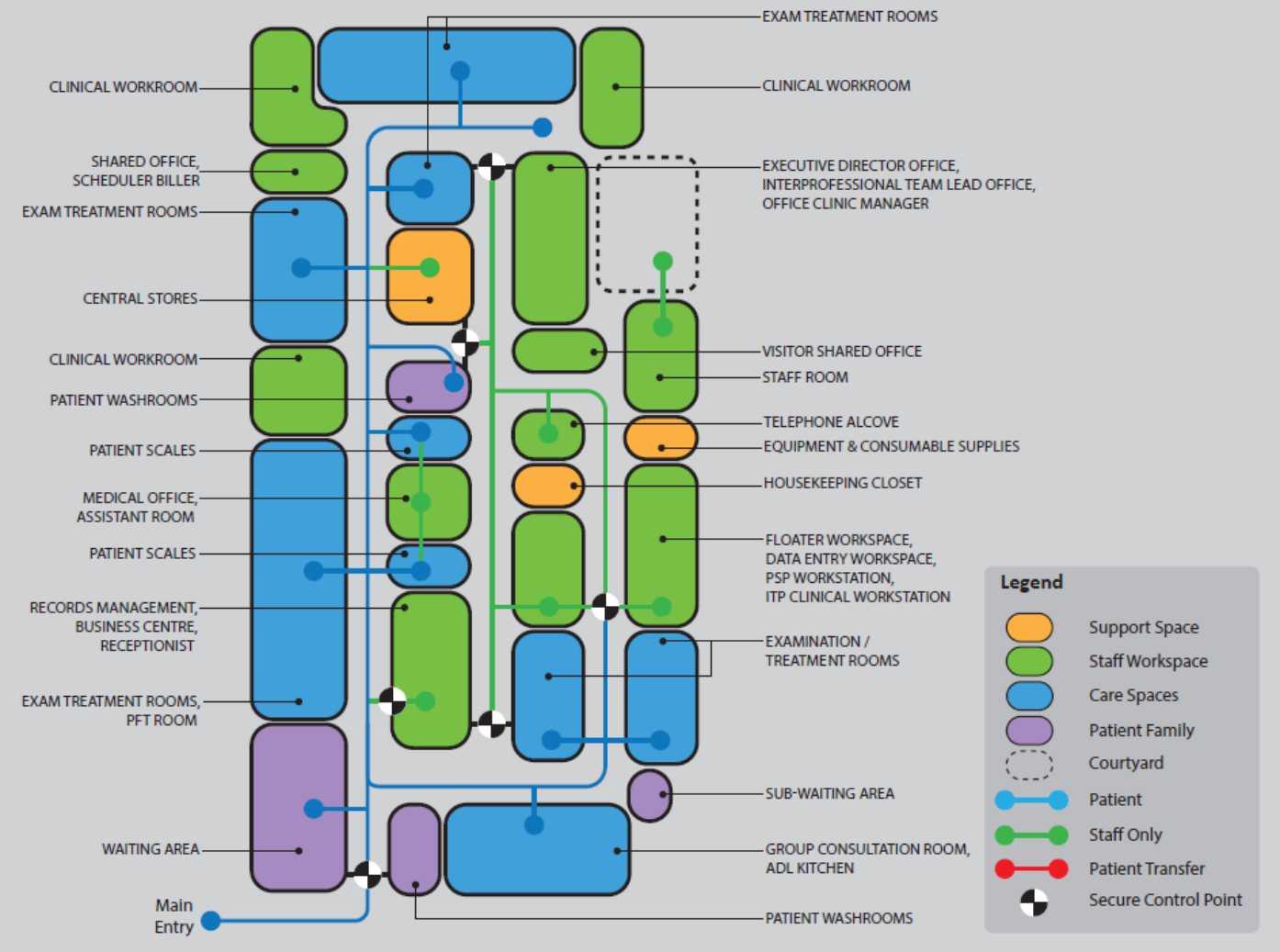
1A.1.4.1(2) AS will be adjacent by General Circulation to the ED.

1A.1.4.1(3) AS will be adjacent by General Circulation to DI.

1A.1.4.1(4) AS will be adjacent by General Circulation to the Lab.

1A.1.4.2 Functional Relationship Diagram

1A.1.4.2(1) Functional relationships between key areas will be generally as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.1.4.3 Internal Design Criteria

1A.1.4.3(1) For a description of General Planning Concepts applicable to AS, see Section 1A.0. These two sections must be read together.

1A.1.4.3(2) Space Considerations

1A.1.4.3(2)(a) Spaces will be culturally sensitive and as flexible as possible.

1A.1.4.3(2)(b) On-stage / off-stage areas will be designed to support interprofessional collaboration and team-based care.

1A.1.4.3(2)(c) Hallways where Patients will be accommodated will be provided as required by Table 1A.0.2.2(8)(a) and accommodate simultaneous passage of 2 motorized scooters / chair.

1A.1.4.3(3) Reception Area

1A.1.4.3(3)(a) Reception area will have 3 Workstations.

1A.1.4.3(3)(b) Each reception Workstation will accommodate a standing intake process and will be designed to have a lowered counter area designed to be accessible by those in wheelchairs and/or with compromised mobility.

1A.1.4.3(3)(c) The Secured records management area and business centre will be adjacent to the Reception area.

1A.1.4.3(4) Waiting Area

1A.1.4.3(4)(a) The Waiting Area will be located adjacent to reception Workstations.

1A.1.4.3(4)(b) The waiting area will accommodate 25 people including those with mobility aids and wheelchairs with an adjacent 3-piece, accessible washroom.

1A.1.4.3(5) Medical Office Assistant (MOA) Room

1A.1.4.3(5)(a) The MOA room will have 4 Workstations.

1A.1.4.3(5)(b) The washrooms will be adjacent to the MOA.

1A.1.4.3(5)(c) Pass-through cabinets from the washrooms to the MOA Room will be provided. The pass-through cabinets will open into the MOA room with a sink and counter space directly below it.

1A.1.4.3(5)(d) Four (4) floor scales will be placed to create an efficient flow of Patients through the MOA scope of services.

1A.1.4.3(5)(e) The medication cabinet will open to each side of the hallway.

1A.1.4.3(6) Medication Room

1A.1.4.3(6)(a) Be equipped with a card reader (swipe card) for ease of access of authorized staff.

1A.1.4.3(6)(b) Be provided with doors into medication room that have automatic closure and locking to ensure they are closed and locked when not in use.

1A.1.4.3(6)(c) Be provided with adequate space and lighting to prepare medications for dispensing, update records, store medications and file documents.

1A.1.4.3(6)(d) Be provided with adequate storage space to separate the following:

1A.1.4.3(6)(d)(i) Look-alike/sound-alike medications.

1A.1.4.3(6)(d)(ii) Different concentrations of the same medication.

1A.1.4.3(6)(d)(iii) High-alert medications.

1A.1.4.3(6)(d)(iv) Expired, damaged and contaminated medications pending removal.

1A.1.4.3(6)(e) Be provided with a medication disposal area.

1A.1.4.3(6)(f) Be provided with a hand hygiene sink.

1A.1.4.3(6)(g) Be provided with adequate space for storage of reference materials.

1A.1.4.3(6)(h) Be provided with adequate ventilation and temperature control to avoid overheating of the electronic systems (e.g. fridge, ADC, computer), and to maintain proper storage temperature for medications.

1A.1.4.3(6)(i) Be provided with temperature control that will keep the temperature between 15° C to 25° C, which is the recommended range to maintain potency of most medications stored at room temperature.

1A.1.4.3(6)(j) Be provided with upper and lower millwork, shelving for cooler storage

1A.1.4.3(6)(k) Be provided with an upright lab grade fridge capable of storing COVID vaccines. Must be at least the same cu.ft. as the existing chest freezers, and an under counter pharmacy grade fridge for medication storage.

1A.1.4.3(6)(l) Be provided with one (1) domestic, upright fridge freezer (storage of cooler packs, consumables for medication administration).

1A.1.4.3(7) Community Health Services

1A.1.4.3(7)(a) Co-locate all Interprofessional Services to facilitate Staff sharing.

1A.1.4.3(8) Wayfinding

1A.1.4.3(8)(a) AS will be easily accessible and identifiable from the Building's Main Entrance. It must be visually obvious to anyone entering through the Building's main doors with wayfinding and signage providing direction.

1A.1.4.3(9) Flexibility

1A.1.4.3(9)(a) As programs and services evolve, the spaces they occupy will need to adapt. The use of open plans and modular Workstations will facilitate changes.

1A.1.4.3(9)(b) Standardized room sizes and configurations will be used except when there are specific clinical indications warranting an exception.

1A.1.4.3(10) Furniture and Finishes

1A.1.4.3(10)(a) Furniture used throughout will be modular and/or mobile to allow fast and efficient conversation to evolving service delivery requirements. Meeting and interview rooms will include smaller tables that can be either combined or used separately depending on the number of people and type of activity.

1A.1.4.3(11) Exam / Treatment Room Doors

1A.1.4.3(11)(a) Swing doors at Exam and Exam / Treatment Rooms will be configured to swing into the room and provide visual privacy for patients that may be on the exam bed.

1A.1.5 SCHEDULE OF ACCOMMODATION

1A.1.5.1 Space requirements for this component are identified on the following pages in Net Square Metres (nsm). Space identified is assumed to meet 2040/41 needs.

1A.1 Ambulatory Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
1.1	**Reception and Waiting Area**					
1.1.01	Reception	3	4.6	13.8	- Reception area; high counter; privacy for Patient information	-
1.1.02	Records Management	1	8.0	8.0	- Secure room	-
1.1.03	Business Centre	1	7.0	7.0	- MFD supplies; photocopier/fax, clerical supplies; cupboard space and mail slots (millwork)	-
1.1.04	Waiting Area	1	33.0	33.0	- 25 persons; display area;	-
1.1.05	Public Washroom	1	4.6	4.6	- 2-piece accessible washroom (toilet, sink)	- Adjacent to Waiting Area
1.1.06	Wheelchair Alcove	1	2.0	2.0	- Storage for clean wheelchairs	- Adjacent to Reception

1A.1 AMBULATORY SERVICES

1A.1 Ambulatory Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
Ambulatory Services: Reception and Waiting				**Total NSM**		
				68.4		
1.2	**Primary Care Clinic**					
1.2.01	Medical Office Assistant Room	1	25.5	25.5	- 4 Workstations; 2 washrooms with hot water shutoffs; urine passthrough cabinets from both washrooms with sink and counter space; Millwork desks with storage	-
1.2.01.01	Medication Room	1	9.5	9.5	- 4 Workstations; 2 washrooms with hot water shutoffs; urine passthrough cabinets from both washrooms with sink and counter space; Millwork desks with storage	-
771.2.02	Exam / Treatment Room	2	13.5	27.0	- Enclosed room with swing door; call and Emergency buttons; small Workstation; data and electrical requirements; PACS viewing; exam bed; cardiac monitor; 2 guest chairs; IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light	-
1.2.02.01	Exam Room, Typical	7	11.0	77	- Enclosed room with swing door; call and Emergency buttons; small Workstation; data and electrical requirements; PACS viewing; exam bed; cardiac monitor; 2 guest chairs; IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light; Wall mount television	
1.2.02.02	Exam Room, Small	4	8.5	34.0	- Enclosed room with swing door; call and Emergency buttons; small Workstation; data and electrical requirements; PACS viewing; exam bed; cardiac monitor; 1	

1A.1 Ambulatory Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
					guest chair; IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light; Wall mount television The Authority recognizes these rooms are too small to be accessible without the aid of an assistant to assist patients at all times in using these rooms	
1.2.02.03	Exam Room, Inboard	1	10.0	10.0	- Enclosed room with swing door; call and Emergency buttons; small Workstation; data and electrical requirements; PACS viewing; exam bed; cardiac monitor; 2 guest chairs; IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light; Wall mount television	
1.2.03	Alcove: Procedure Cart	1	2.0	2.0	- Cart storage for suture cart; exam light	-
1.2.04	Hand Hygiene Sink	3	1.0	3.0	- Hands free	-
1.2.05	Patient Washroom	2	4.6	9.2	- Accessible 2-piece washroom (sink, toilet)	-
1.2.06	Item 1.2.06 relocated to Diagnostic Imaging (Section 1A.4.5 Schedule of Accommodation section 4.2)					
1.2.07	Group Consultation Room	1	15.0	15.0	- Accommodates tables and chairs for 6 - 8 people; includes Telehealth; multimedia capable	- Adjacent to a clinical exam room
1.2.08	Clinician Workroom	3	17.8	53.4	- 4 Workstations; each Workstation with chair, computer, data, phone, cabinet	-
1.2.09	Staff Washroom	2	4.6	9.2	- Accessible 2-piece washroom (sink, toilet)	-
Ambulatory Services: Primary Care Clinic				**Total NSM**		
				274.8		

1A.1 Ambulatory Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
1.3	**Interprofessional Services (ITP)**					
1.3.01	ITP Clinician Workstation	10	3.4	34.0	- Each Workstation with chair, computer, data, phone, cabinet	-
1.3.02	Telephone Alcove	0	0	0	- Include data and electrical requirements	-
1.3.03	IPT Consultation Room	2	11.0	22	- Enclosed room with swing door; call and Emergency buttons; small Workstation; data and electrical requirements; PACS viewing; exam bed; cardiac monitor; 2 guest chairs; IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light	-
1.3.03.01	IPT Consultation Room	1	11.0	11.0	- Enclosed room with swing door; call and Emergency buttons; small Workstation; data and electrical requirements; PACS viewing; exam bed; cardiac monitor; 1 guest chairs; IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light	-
1.3.05	Office: Nurse Manager	1	10.0	10.0	- Private office with desk, chair, cabinets, computer, phone, data, 2 visitor chairs	- Adjacent to meeting rooms
1.3.06	Alcove: equipment and consumable supplies	1	3.4	3.4	- Storage for supply carts; include electrical requirements	-
Ambulatory Services: Interprofessional Services				**Total NSM**		
				80.4		
1.4	**Common Space**					
1.4.01	Staff Room	1	18.0	18.0	- Seating for 6 Staff; Kitchenette with fridge, microwave, dishwasher, counter space, tables, chairs, PC station, TV	-
1.4.02	Central Stores	1	15.0	15.0	- Secure storage	-

1A.1 Ambulatory Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
1.4.03	Housekeeping Closet	1	7.0	7.0	- Include electrical requirements, cart storage, floor sink, water source, hand sink, shelving for storage of supplies (germicidal solution, general purpose cleaner, non-acid crème cleaner, toilet bowl cleaner, spot cleaner, furniture polish); toilet bowl swab and caddy; putty knife; safety googles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE; disposables; paper supplies; garbage bags; gloves; soaps; cleaning cloths; tool; power equipment	-
Ambulatory Services: Common Space				**Total NSM**		
				40.0		
1.5	**Administrative Space**					
1.5.01	Private Office: Clinic Manager	1	10.0	10.0	- Private office with desk, chair, cabinets, computer, phone, data	-
1.5.02	Private Office: Interprofessional Team Lead	1	10.0	10.0	- Private office with desk, chair, cabinets, computer, phone, data	-
1.5.03	Private Office: Executive Director	1	10.0	10.0	- Private office with desk, chair, cabinets, computer, phone, data	-
1.5.04	Shared Workspace: Floater, Data Entry	1	10.0	10.0	- 2 Workstations; each Workstation with chair, computer, data, phone, cabinet	-
1.5.05	Shared Workspace: Scheduler, Biller	2	7.2	14.4	- 2 Workstations each (4 total) with chair, computer, data, phone, cabinet	-
1.5.06	Workstation: PSP	1	3.4	3.4	- Chair, computer, data, phone, cabinet	-
1.5.07	Shared Office: Visitors / Unassigned	1	9.0	9.0	- 3 unassigned Workstations; each Workstation with chair, computer, data, phone, cabinet	-

1A.1 AMBULATORY SERVICES

1A.1 Ambulatory Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
Ambulatory Services: Administrative Space				**Total NSM**		
				66.8		
Total Ambulatory Services Area				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				530.4	**1.43**	**758.5**
1.6	**Exterior Space**					
1.6.01	Staff Patio	1	30.0	30.0	- Outdoor space accessible from 1.4.01 Staff Room in Ambulatory Services; 20sqm of the area will be a wheelchair accessible surface; 12sqm of this area will be covered and wheelchair accessible	-
Ambulatory Services: Exterior Space				**Total SQM**	**-**	**Total SQM**
				30.0	**-**	**30.0**

1A.2 CONCIERGE SERVICES (AUXILIARY SERVICES, LOBBY / ENTRANCE AREA, AND SPIRITUAL SERVICES)

This specification outlines the functional, operational, and physical requirements for Auxiliary Services, the Lobby / Entrance Area (the Lobby), and Spiritual Services.

1A.2.1 FUNCTIONAL DESCRIPTION

1A.2.1.1 Statement of Purpose

1A.2.1.1(1) Auxiliary Services will provide convenience food, novelty items, gifts, and other miscellaneous retail services from carts that are transported from a Secured room throughout Patient care areas.

1A.2.1.1(2) Auxiliary Services will encompass the “front of house” service that can enhance Patient and family experiences. The Auxiliary Services is a part of an encompassing group of services – Concierge Services – that are essential in supporting clinical and non-clinical programs and services.

1A.2.1.1(3) The Lobby will be the focal point of the Building. As such, it will function as the centre from which all activity will be directed and will be the main point of entry and first contact for visitors, Patients, and Staff.

1A.2.1.1(4) The Lobby will encompass the “front of house” service that will enhance Patient and family experiences. The Lobby is a part of an encompassing group of services – Concierge Services – that are essential in supporting clinical and non-clinical programs and services.

1A.2.1.1(5) Spiritual services will assist in the total care of patients, families, and Staff in the areas of spiritual and religious support, liturgy, education, community, spiritual triage, and crisis care.

1A.2.1.1(6) Spiritual Services encompass the “front of house” service that can enhance Patient and family experiences. The Spiritual Services is a part of an encompassing group of services – Concierge Services – that are essential in supporting clinical and non-clinical programs and services.

1A.2.1.2 Scope of Services

1A.2.1.2(1) Functional Content

1A.2.1.2(1)(a) Auxiliary Services

1A.2.1.2(1)(a)(i) A donor and display wall will house a record of donations as well as samples of retail items available from the volunteer carts.

1A.2.1.2(1)(a)(ii) The following list specifies the minimum set of functions that will be accommodated within the spaces:

1A.2.1.2(1)(a)(ii)A Displays of contributions and legacies promoting the Building as a community resource with strong ties to indigenous culture.

1A.2.1.2(1)(a)(ii)B Meetings and coordinating activities of volunteers.

1A.2.1.2(1)(a)(ii)C Retail sales of gifts, flowers, beverages, and confectionary by the Hospital Auxiliary.

1A.2.1.2(1)(b) Lobby / Entrance Area

1A.2.1.2(1)(b)(i) The Lobby serves as the front door of the Building and is typically where non-Emergency Patients, visitors, and Staff will enter the Building. (There will be a strategically located Staff-only entrance.)

1A.2.1.2(1)(b)(ii) Also included in this area will be the Gathering Space — a large open area where gatherings of family, community members, and education services can meet and support one another.

1A.2.1.2(1)(b)(iii) It will orientate users regarding the full scope of services provided in the Building, a service's location(s) and its hours of operation.

1A.2.1.2(1)(c) Spiritual Services

1A.2.1.2(1)(c)(i) Spiritual Services are an integral part of the healthcare team, providing spiritual care to Patients, families, and Staff of all faith and spiritual denominations. It affirms the inherent dignity and value of all persons and respects different spiritual perspectives and practices — which may or may not be rooted in a religious tradition, such as the following:

1A.2.1.2(1)(c)(i)A To (re)discover meaning and significance in times of illness, crisis, and loss.

1A.2.1.2(1)(c)(i)B Through mindful and heart-felt listening.

1A.2.1.2(1)(c)(i)C By assisting to identify and access inner resources for coping.

1A.2.1.2(1)(c)(i)D By providing end-of-life and bereavement support.

1A.2.1.2(1)(c)(i)E By providing guidance and support through challenging ethical and moral decision-making processes.

1A.2.1.2(1)(c)(i)F By facilitating connections between Patients, families, Staff, and spiritual leaders from diverse religious communities.

1A.2.1.2(1)(c)(i)G Through mediation support in situations of conflict.

1A.2.1.2(1)(c)(i)H By leading and facilitating ceremonies, rites of passage, religious rituals, meditation, and prayer.

1A.2.1.2(1)(c)(ii) The following list specifies the minimum set of functions that will be accommodated within the spaces:

1A.2.1.2(1)(c)(ii)A Displays of contributions and legacies promoting the Building as a community resource with strong ties to indigenous culture.

1A.2.1.2(1)(c)(ii)B Large group gatherings for spiritual ceremonies practiced by any culture.

1A.2.1.2(1)(c)(iii) Spiritual Services will be offered, as requested, by local caregivers in the community. Multi-faith sacred space will be available to Patients, families and visitors, and Staff, to gather, to pray, and to conduct services, ceremonies, and private rituals.

1A.2.1.2(1)(c)(iv) To accommodate these requirements, a non-denominational spiritual room, with a dedicated storage room will be planned.

1A.2.1.2(2) Planning Assumptions

1A.2.1.2(2)(a) Auxiliary Services

1A.2.1.2(2)(a)(i) Auxiliary Services will be accommodated on-site and will provide dedicated space to support the Building's services.

1A.2.1.2(2)(b) Lobby / Entrance Area

1A.2.1.2(2)(b)(i) The Lobby will accommodate a welcoming and public-friendly Building.

1A.2.1.2(2)(b)(ii) The design of the Lobby will characterize the spirit and cultural uniqueness of the region to provide a comfortable, and familiar setting for Patients, families and visitors.

1A.2.1.2(2)(b)(iii) The Lobby will be designed to be warm, welcoming, and provide clear cues to other Lobby features and to other parts of the Building.

1A.2.1.2(2)(b)(iv) The area will be open and have natural light.

1A.2.1.2(2)(b)(v) The Lobby will be a space that can be used as a "destination". Building news, events and displays will be updated and changed regularly to ensure the Lobby is an engaging destination.

1A.2.1.2(2)(b)(vi) The Lobby will serve as an attraction away from other areas for Patients, families and Staff (e.g. to provide a positive diversion for family members who are awaiting a Patient receiving treatment or to give respite to visitors who are spending lengthy amounts of time at the bedside).

1A.2.1.2(2)(c) Spiritual Services

1A.2.1.2(2)(c)(i) A non-denominational spiritual service area will provide Spiritual Services for those at the Building and those visiting family at the Building.

1A.2.1.2(2)(c)(ii) The provision of a large group sacred space, appointed with indigenous imagery and natural light, will acknowledge these important aspects of local cultural practice. Other cultural groups also have unique practices such as smudging, which will use the same space.

1A.2.2 OPERATIONAL DESCRIPTION

1A.2.2.1 Hours of Operation

1A.2.2.1(1) Auxiliary Services will be open during daytime as auxiliary volunteers are available.

1A.2.2.1(2) The Lobby will be open from 0730 to 1900, Monday to Friday.

1A.2.2.1(3) Spiritual Services will be open 24 hours, 7 days per week.

1A.2.2.2 Organization & Management

1A.2.2.2(1) Auxiliary Services will be managed by the site administration department.

1A.2.2.2(2) The Lobby will be managed by the head nurse.

1A.2.2.2(3) Spiritual Services will be managed by the head nurse.

1A.2.2.3 Workflow

1A.2.2.3(1) Auxiliary Volunteers

1A.2.2.3(1)(a) The auxiliary cart service will typically be staffed by one volunteer at a time. Auxiliary Services volunteers will report to the auxiliary support area prior to their shift.

1A.2.2.3(1)(b) The auxiliary cart will be transported through the Clinical Areas by the Auxiliary Services volunteer Staff.

1A.2.2.3(1)(c) Requests for volunteers by various departments will be coordinated with the assistance of site administration, who will also coordinate the recruiting of volunteers, interviewing/screening potential volunteers, identifying roles and developing service descriptions for volunteers in conjunction with specific departments, and educating Staff about volunteer roles.

1A.2.2.3(2) Lobby / Entrance Area

1A.2.2.3(2)(a) The Lobby – Patients, Visitors, and Family

1A.2.2.3(2)(a)(i) Patients, visitors, and family will access the Lobby through the Main Entrance of the Building. From there, clear and direct signage, wayfinding, and cues will direct the person to their destination.

1A.2.2.3(2)(b) Gathering Space – Visitors and Family

1A.2.2.3(2)(b)(i) Visitors and family with a loved one in the Building who require access to the gathering space will coordinate with the clinical and/or administrative Staff.

1A.2.2.3(2)(b)(ii) Those with access to the gathering space will have access 24 hours a day, as needed. However, if Building access becomes restricted, the

gathering space will not provide access to the rest of the Building other than the lLbby area.

1A.2.2.3(3) Spiritual Services

1A.2.2.3(3)(a) Staff

1A.2.2.3(3)(a)(i) All members of the interdisciplinary teams, Patients, or family and friends may refer to the services of community spiritual care providers who will be available on-site as needed.

1A.2.2.3(3)(a)(ii) Staff may also seek advice or counselling from the visiting spiritual representatives, both on a formal or an informal basis.

1A.2.2.3(3)(b) Patients and Families

1A.2.2.3(3)(b)(i) Patients and families will have access to the non-denominational spiritual room 24 hours per day.

1A.2.2.3(3)(b)(ii) If traditional healing practices are requested, the Building Staff will accommodate these requirements and coordinate with the Patients and/or family.

1A.2.3 STAFFING

1A.2.3.1 There are no dedicated Auxiliary Services, Lobby / Entrance Area, and Spiritual Services Staff in the Building, however, this service is staffed by volunteers.

1A.2.4 DESIGN CRITERIA

1A.2.4.1 External Relationships

1A.2.4.1(1) Auxiliary Services

1A.2.4.1(1)(a) Auxiliary Services will be located close to the Main Entrance and adjacent to the Lobby / Entrance Area.

1A.2.4.1(2) Lobby / Entrance Area

1A.2.4.1(2)(a) The Lobby will have a direct visual connection with Registration.

1A.2.4.1(2)(b) The Gathering Space will be located adjacent to the main Waiting Area while also remaining accessible from the palliative care area.

1A.2.4.1(3) Spiritual Services

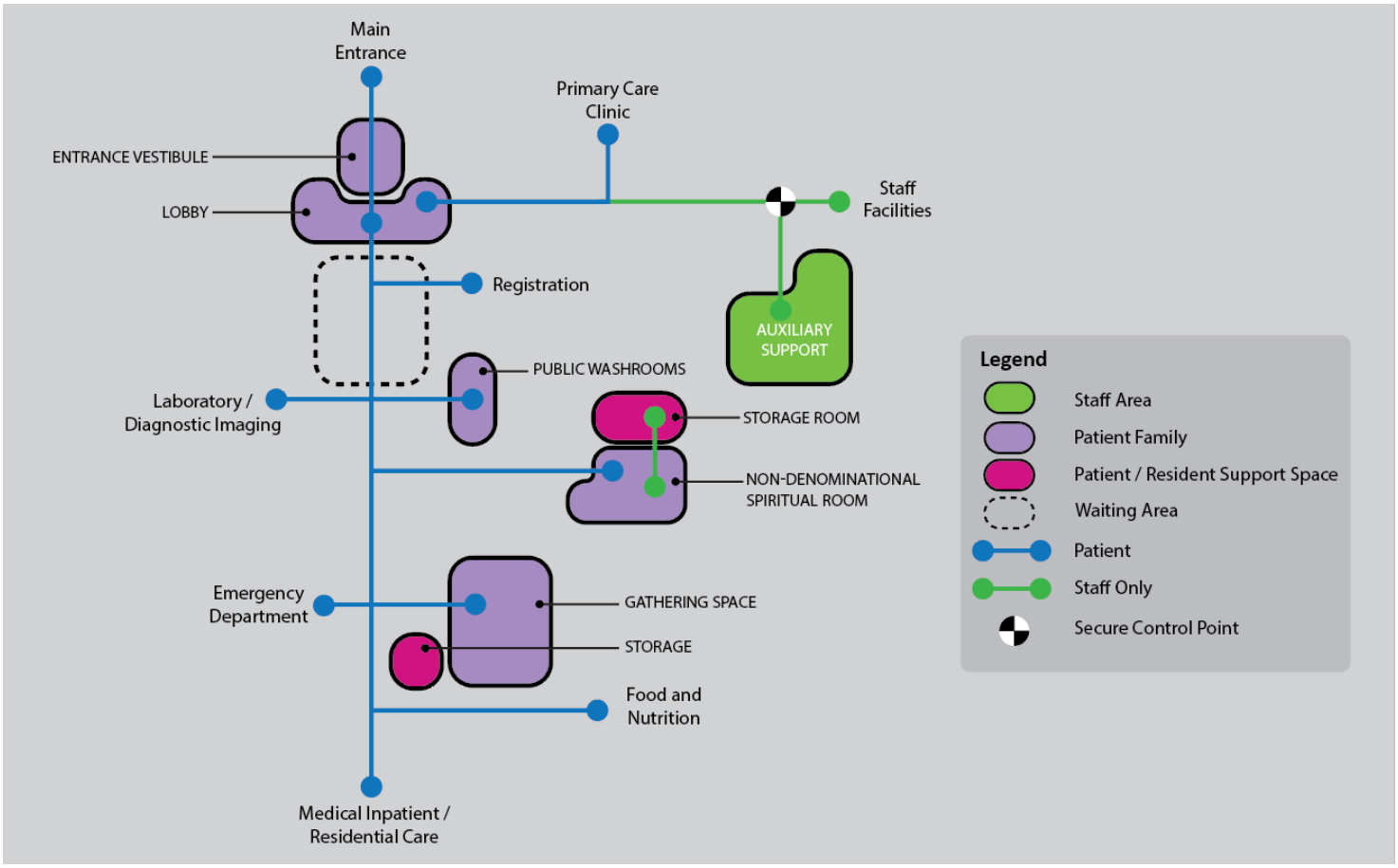
1A.2.4.1(3)(a) Spiritual Services will be accessible from General Circulation on the entry level and in close proximity to the Emergency Department and the entrances to the Inpatient Unit and LTC.

1A.2.4.1(3)(b) Spiritual Services will be accessible via General Circulation for all Patients, family members, and visitors in the Building.

1A.2.4.1(3)(c) Spiritual Services will be separated from the Gathering Space by an intervening space(s) such as their associated storage rooms.

1A.2.4.2 Functional Relationship Diagram

1A.2.4.2(1) Functional relationships between key areas will be generally as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.2.4.3 Internal Design Criteria

1A.2.4.3(1) For a description of General Planning Concepts applicable to Spiritual Services, see Section 1A.0. These two sections must be read together.

1A.2.4.3(2) Auxiliary Services

1A.2.4.3(2)(a) Auxiliary Support Area Design Considerations

1A.2.4.3(2)(a)(i) Provide a Secure storage room, accessible by key card access, for supplies, stocked items, and a cart to take around the Building.

1A.2.4.3(2)(a)(ii) This area will have a fridge, wire rack shelving, and day lockers for volunteer Staff.

1A.2.4.3(2)(b) Furniture and Finishes

1A.2.4.3(2)(b)(i) Flooring will consist of smooth, non-porous, anti-skid and anti-static material that is resilient to high traffic, dropped objects and repeated exposure to cleaning chemicals.

1A.2.4.3(2)(b)(ii) Furniture used throughout the area will be modular and mobile to allow fast and efficient conversions to different floor plans. All furniture will be comfortable and easy to clean.

1A.2.4.3(3) Lobby / Entrance Area

1A.2.4.3(3)(a) Lobby Design Considerations

1A.2.4.3(3)(a)(i) The Lobby will have an open, high ceiling with large amounts of natural light and will reflect the culture and environment of the area.

1A.2.4.3(3)(a)(ii) Ensure that washrooms will not open directly onto the Lobby or Waiting Areas.

1A.2.4.3(3)(b) This area will be welcoming with the following:

1A.2.4.3(3)(b)(i) Wall and floor colours and materials will create a non-institutional feel.

1A.2.4.3(3)(b)(ii) Windows will be provided with electronic blinds and/or window coverings.

1A.2.4.3(3)(b)(iii) Acoustical dampening furnishing and finishes will be provided to reduce ambient noise.

1A.2.4.3(3)(b)(iv) Strong wayfinding and signage that clearly directs Patients, visitors, and Staff to their desired location will be provided.

1A.2.4.3(3)(b)(v) A donor wall / display area to recognize donors and key Building and community personnel will be accommodated.

1A.2.4.3(3)(b)(vi) Interior design features that incorporate indigenous cultures (e.g. art) will be provided.

1A.2.4.3(3)(c) Gathering Space

1A.2.4.3(3)(c)(i) This space will be used as a congregation area for large groups and families who have a family member at the Building. It will also be used for education space.

1A.2.4.3(3)(c)(ii) All tables, chairs, and other furniture will be lightweight and mobile.

1A.2.4.3(3)(c)(iii) Due to the education requirements, this room will be fully multimedia and Telehealth capable.

1A.2.4.3(3)(c)(iv) It will be located close to the Main Entrance and will be available 24 hours per day (with access granted by clinical or administrative Staff).

1A.2.4.3(3)(c)(v) It will be Secured with key card access.

1A.2.4.3(3)(c)(vi) Two public washrooms, shared with the Lobby, will be located in close proximity so that when the gathering space is being used, they will be accessible.

1A.2.4.3(3)(d) Finishes

1A.2.4.3(3)(d)(i) Door frames will be supplied with guards to prevent chipping and denting caused by mobility aids and cleaning machines.

1A.2.4.3(3)(d)(ii) Flooring will consist of smooth, non-porous, anti-skid and anti-static material that is resilient to high traffic, dropped objects and repeated exposure to cleaning chemicals.

1A.2.4.3(4) Spiritual Services

1A.2.4.3(4)(a) Non-Denominational Spiritual Room Design Considerations

1A.2.4.3(4)(a)(i) It will incorporate a quiet and reflective space.

1A.2.4.3(4)(a)(ii) It will enable the ability to deliver multiple religious services (multiple denominations).

1A.2.4.3(4)(a)(iii) It will provide the ability to accommodate smudging.

1A.2.4.3(4)(a)(iii)A The healing / smudging will be accommodated through heating, ventilation, and air conditioning (HVAC), as well as fire suppression systems that enable contained fires/smoke generation within an enclosed space.

1A.2.4.3(4)(a)(iv) A non-denominational spiritual room will have seating, soft lighting, and acoustical considerations. It will also be able to accommodate smudging.

1A.2.4.3(4)(a)(v) It will have a window to the exterior.

1A.2.4.3(4)(a)(vi) A Secure storage room will be located adjacent to the space with wire rack shelving and charging capabilities.

1A.2.4.3(4)(b) Furniture

1A.2.4.3(4)(b)(i) Furniture used will be modular and mobile to allow fast and efficient conversions to different floor plans.

1A.2.4.3(4)(b)(ii) All furniture will be comfortable and easy to clean.

1A.2.4.3(4)(c) Respect for and Display of Indigenous Culture

1A.2.4.3(4)(c)(i) Attracting users from among the indigenous community will be a key goal of this Building. First impressions upon entry will be crucial in establishing perceptions of welcoming, inviting, and supportive of the spiritual health of all people.

1A.2.4.3(4)(c)(ii) Indigenous artefacts and art will be displayed prominently in the spiritual care area as well as throughout the Building. Displays will include a blend of permanent features that will be part of the Building's design/structure and of temporary showings depicting a featured artist's work or a major celebration or event.

1A.2.4.3(4)(c)(ii)A Provide artwork lighting and any security or display accessories necessary for the artwork, artwork to be provided by the Authority.

1A.2.5 SCHEDULE OF ACCOMMODATION

1A.2.5.1 Space requirements for this department are identified as follows. Space identified is assumed to meet 2040/41 needs.

1A.2 Concierge: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
2.1	**Auxiliary / Volunteer Services**					
2.1.01	Auxiliary Support	1	15.0	15.0	- Secure storage room; fridge; cart storage; shelving; day lockers for Staff; include charging and plumbing requirements	-
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Concierge: Auxiliary Services				**Total NSM**		
				15.0		

1A.2 CONCIERGE SERVICES

1A.2 Concierge: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
2.2	**Foundation**					
-	No dedicated foundation space is planned.					
Concierge: Foundation				**Total NSM**		
				0.0		
2.3	**Lobby / Entrance Area**					
2.3.01	Entrance Vestibule	1	16.0	16.0		-
2.3.02	Lobby	1	20.5	20.5	- Open and welcoming area into the facility	-
2.3.03	Public Washroom	2	4.6	9.2	- Accessible 2-piece washroom (sink, toilet)	-
2.3.04	Gathering Space	1	50.0	50.0	- Accommodation for 25 people; tables and chairs; multimedia capable; closed space; could be used for education; Secured	- Adjacent to Lobby; after hours access
2.3.05	Storage	1	10.0	10.0	- Storage for gathering space items (e.g., chairs, tables, etc.)	-
Concierge: Lobby / Entrance Area				**NSM**		
				105.7		
2.4	**Spiritual Services**					
2.4.01	Non-Denominational Spiritual Room	1	18.0	18.0	- A round/oval shaped room; open area with seating; ability to accommodate smudging; quiet and reflective space (finishes, acoustics, etc.), ability to accommodate a stretcher	- Adjacent to gathering space; opens into this space
2.4.02	Non-Denominational Spiritual Storage Room	-	-	-	- No nsm assigned to this function because it is to be accommodated, when needed, within the Gathering Space storage (2.3.05 Storage)	-
Concierge: Spiritual Services				**Total NSM**		
				18.0		
2.5	**Volunteer Space**					
-	No dedicated volunteer space is planned.					
Concierge: Volunteer Space				**Total NSM**		
				0.0		
Total Concierge Area				**Total NSM**		
				138.7		

1A.2 CONCIERGE SERVICES

1A.2 Concierge: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
2.6	**Exterior Space**					
2.6.01	Visitor Patio	1	90.0	90.0	- Outdoor space accessible from the 2.1.06 gathering space, General Circulation, and 2.5.01 non-denominational spiritual room; 50sqm of the area will be a wheelchair accessible surface; 18 sqm of this area will be covered and wheelchair accessible	-
Concierge: Exterior Space				**Total SQM**	**-**	**Total SQM**
				90.0	**-**	**90.0**

1A.3 LABORATORY

This specification outlines the functional, operational, and physical requirements for the Laboratory (lab).

1A.3.1 FUNCTIONAL DESCRIPTION

1A.3.1.1 Statement of Purpose

1A.3.1.1(1) The lab will offer specimen collection, accessioning and send out, transfusion medicine and blood bank, hematology, and chemistry services. All other specialty testing will be sent to other facilities for analysis. The lab also prepares specimens for transfer to another healthcare facility.

1A.3.1.1(2) The lab will provide specimen collection services in the lab (scheduled and unscheduled), in the ED, medical Inpatient unit, and Ambulatory Services phlebotomy draws will be done by nursing Staff and/or supported by lab Staff. A cart system will be used for movement of supplies to any space within the Building.

1A.3.1.2 Scope of Services

1A.3.1.2(1) Functional Content

1A.3.1.2(1)(a) The lab will be influenced by demand of service (Patient demographic) and capacity of Staff, availability and allocation of equipment and supplies, and the number and type of tests being ordered.

1A.3.1.2(1)(b) Specimen collection – including Inpatient and outPatient clinic specimen collections.

1A.3.1.2(1)(c) Accessioning – pre-analytical functions, specimen receiving, specimen send-out, collections reconciliation, data entry, and distribution of specimens across all disciplines.

1A.3.1.2(1)(d) Transfusion medicine – pre-transfusion testing to provide serologically compatible blood products to Patients based on currently accepted practice and serological testing for diagnosis of immune disorders. Blood grouping, antibody screening, cross matching and plasma/blood products storage.

1A.3.1.2(1)(e) Hematology – cell counts and morphological assessment in peripheral blood and body fluids to aid in identification, diagnosis, treatment and follow-up of haematological disorders, leukemia, and other cancers: coagulation testing to aid in the diagnosis of coagulation deficiencies and thrombotic conditions, as well as to monitor anticoagulated Patients.

1A.3.1.2(1)(f) Chemistry – routine chemistry evaluation of electrolytes, enzymes, immunoproteins and hormone levels used in diagnosing the diseases of organs and interactive organ systems: urinalysis as a check on kidney function and disease states: therapeutic drug level testing to evaluate the efficacy of treatment in attaining steady-state therapeutic levels, drugs of abuse testing to identify overdose scenarios and affect suitable course of treatment.

1A.3.1.2(1)(g) Storage of Documents, specimens (room temperature, refrigerated and frozen), chemicals/reagents and dry ice.

1A.3.1.2(1)(h) Prepare samples for couriers.

1A.3.1.2(2) Planning Assumptions

1A.3.1.2(2)(a) Best practices and trends include:

1A.3.1.2(2)(a)(i) Provide blood bank access at the point-of-care for emergencies.

1A.3.1.2(2)(a)(ii) Provide a portable (cart system) point-of-care testing in the clinic and Inpatient service areas.

1A.3.1.2(2)(a)(iii) Provide a separate entrance to specimen collection and to lab accessioning.

1A.3.1.2(2)(a)(iv) Waiting Area will be shared with Diagnostic Imaging (DI).

1A.3.1.2(3) Excluded

1A.3.1.2(3)(a) Echocardiograms (ECGs) and Holter monitoring will be provided in the Ambulatory Services and the Emergency Department.

1A.3.1.2(3)(b) Microbiology: Identification of pathogenic organisms, antimicrobial susceptibility testing, rapid antigen testing, clostridium difficile toxin detection, microscopy, and serology.

1A.3.1.2(3)(c) Pathology: surgical pathology and cytology services including routine surgical tissue processing, embedding, microtomy, slide staining, special staining including immunochemistry processing and staining of gynaecological and non-gynaecological cytology specimens.

1A.3.1.2(3)(d) Scheduling and booking of specimen collection services will not be performed by lab Staff.

1A.3.2 OPERATIONAL DESCRIPTION

1A.3.2.1 Hours of Operation

1A.3.2.1(1) The lab will be available Monday to Friday, from 0800-1600 with on-call services available as required.

1A.3.2.2 Organization & Management

1A.3.2.2(1) The lab will be managed by the Laboratory technician.

1A.3.2.3 Workflow

1A.3.2.3(1) Specimen Collection

1A.3.2.3(1)(a) Specimen collection and testing will be ordered by a physician. The order will be 'stat' or routine, and lab Staff will execute the specimen collection process.

1A.3.2.3(1)(b) Outpatients will be registered prior to arriving at the specimen collection area and will bring the paper requisition to the specimen collection area of the lab. In the future, the requisitions will be electronically ordered.

1A.3.2.3(1)(c) For the registration process, please refer to the registration workflow.

1A.3.2.3(1)(d) While waiting to be seen, Patients will wait in the shared Waiting Area.

1A.3.2.3(2) Accessioning and Send-Out

1A.3.2.3(2)(a) Specimens from the Emergency Department, medical Inpatient Unit, and Ambulatory Services will be collected by lab or nursing Staff. All specimens will be delivered to the accessioning area in the lab and will be received and sorted according to urgency, the need for pre-processing, and where the testing will occur.

1A.3.2.3(2)(b) Blood specimens and other samples that do not require preparatory centrifugation will be passed directly to the appropriate testing station. Other specimens will be spun, divided into aliquots if necessary, labelled, and delivered to the test area.

1A.3.2.3(2)(c) Specimens that will be sent out to another location will be prepared, packaged, and held (refrigerated, frozen or room temperature) by lab Staff and held for courier pick up.

1A.3.2.3(3) In-Laboratory Sample Flow

1A.3.2.3(3)(a) Specimens that will be tested at the Building will be passed to the appropriate testing station which will have all analyzers, supplies, and storage requirements.

1A.3.2.3(4) Reporting

1A.3.2.3(4)(a) Results will be reported and released by the technologist Staff for electronic reporting. Stats will be automatically broadcast to the appropriate location upon release. All results will continue to be reported electronically using appropriate security protocols.

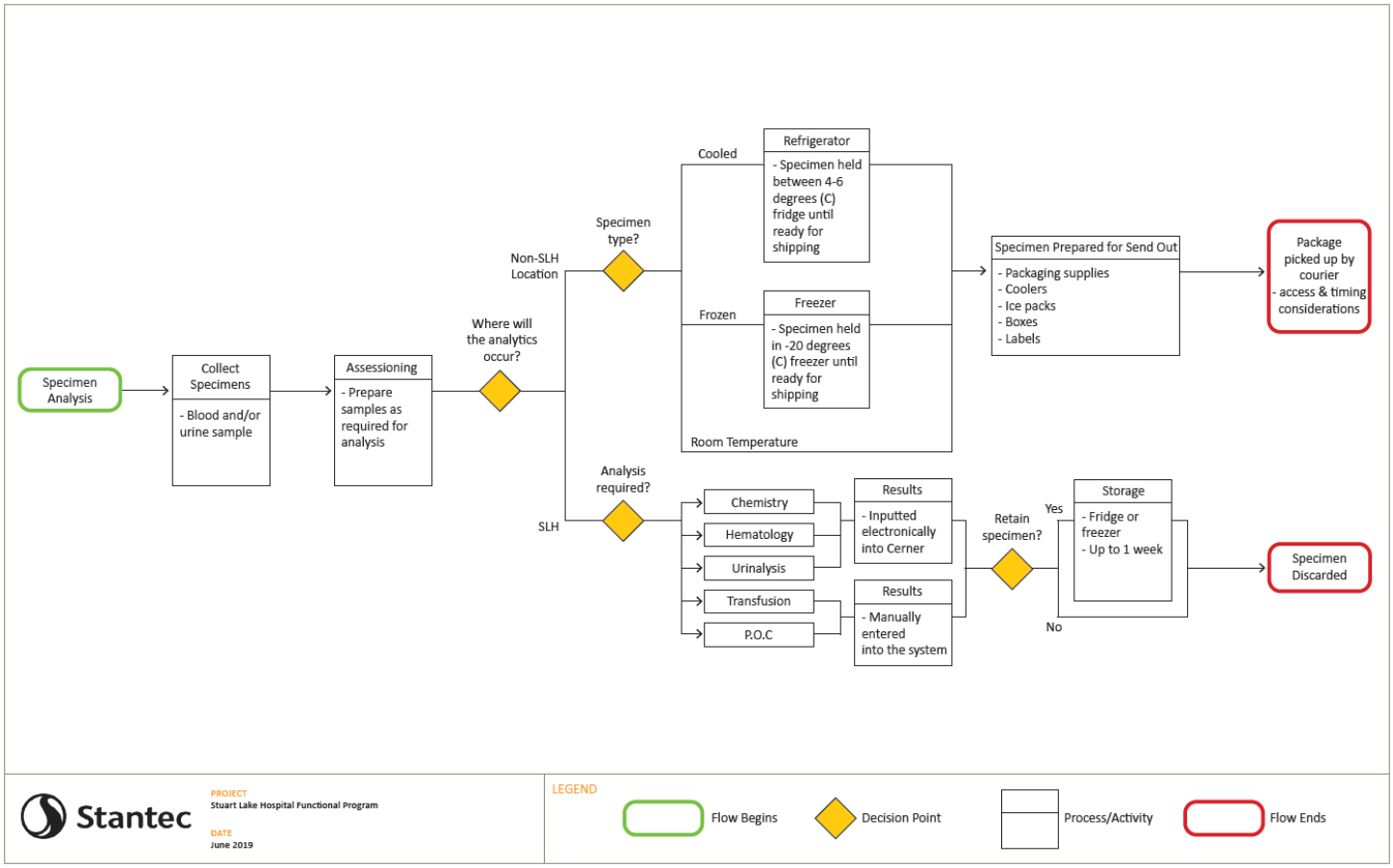
1A.3.2.3(5) Point-of-Care Testing

1A.3.2.3(5)(a) Point-of-care (PoC) testing will be performed by both nursing and lab Staff depending on location.

1A.3 LABORATORY

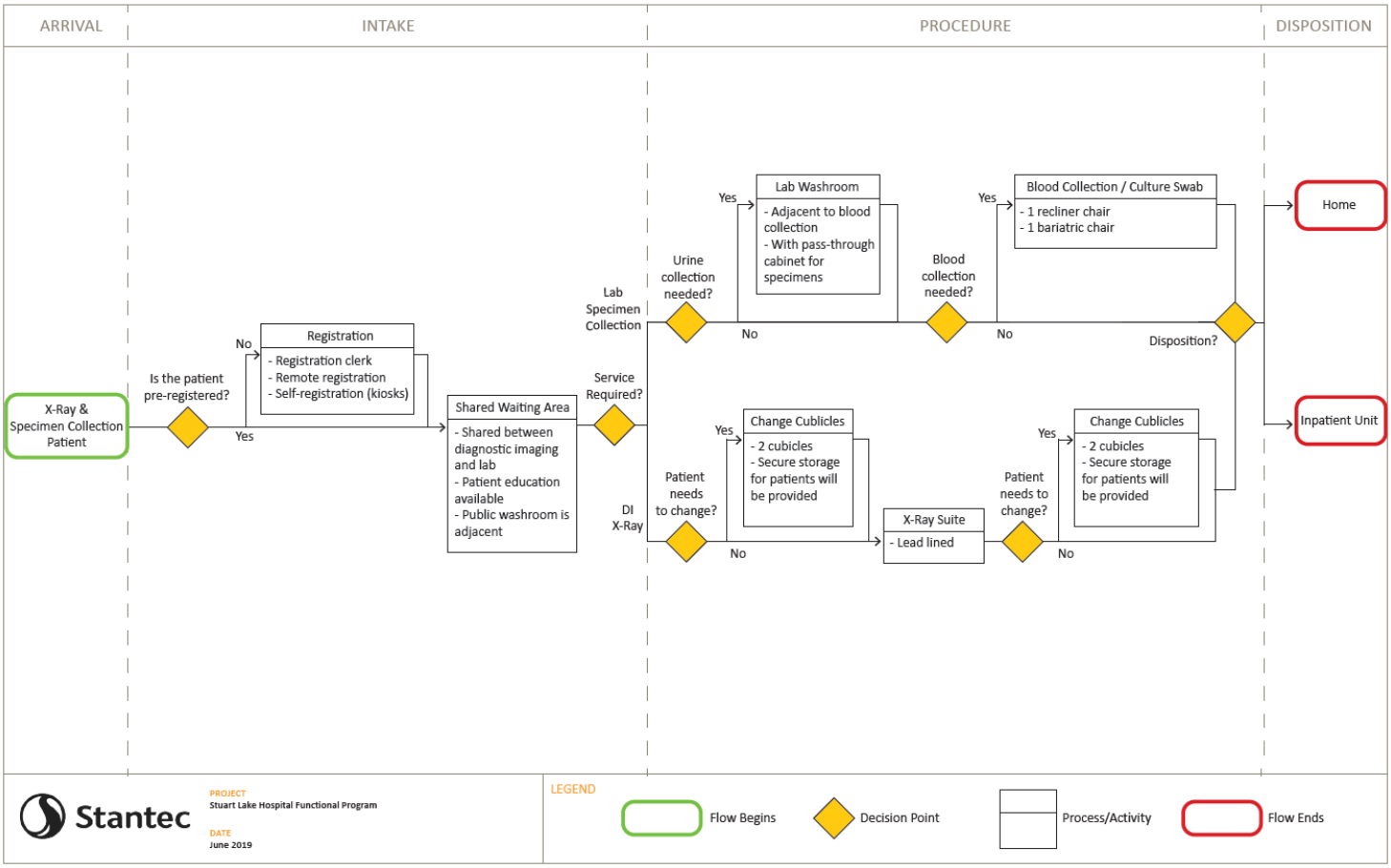
1A.3.2.3(6) The future state flow map breaks down the key elements of the future model of care for the lab. This will inform the enhance Patient flow, create efficiencies, and support the future delivery model.

Stuart Lake Hospital Functional Program - Laboratory - Analysis - Future State Flow Map



1A.3 LABORATORY

Stuart Lake Hospital Functional Program - DIAGNOSTIC IMAGING AND LAB SPECIMEN COLLECTION - Future State Flow Map



1A.3.3 STAFFING

1A.3.3.1 Estimated future staffing for the lab is summarized below.

Clinical Laboratory: Projected Staffing	
Position	**Projected FTE**
	2040/41
Laboratory Technician	2.0

1A.3.4 DESIGN CRITERIA

1A.3.4.1 Key Relationships

1A.3.4.1(1) The following key adjacencies will be provided during the design:

1A.3.4.1(1)(a) The specimen collection area will be direct adjacent to the shared Waiting Area.

1A.3.4.1(1)(b) Provide access to the General Circulation from the Main Entrance to the accessioning area for couriers and send out processes, and for Patients who are dropping off samples.

1A.3.4.1(1)(c) Patients who are dropping off samples must have a Secure drop-off that is accessible from a public area.

1A.3.4.1(1)(d) Chemistry and hematology will be co-located, and both be visible from the microscope at the same time.

1A.3.4.1(1)(e) File storage room will be accessible from inside the lab area.

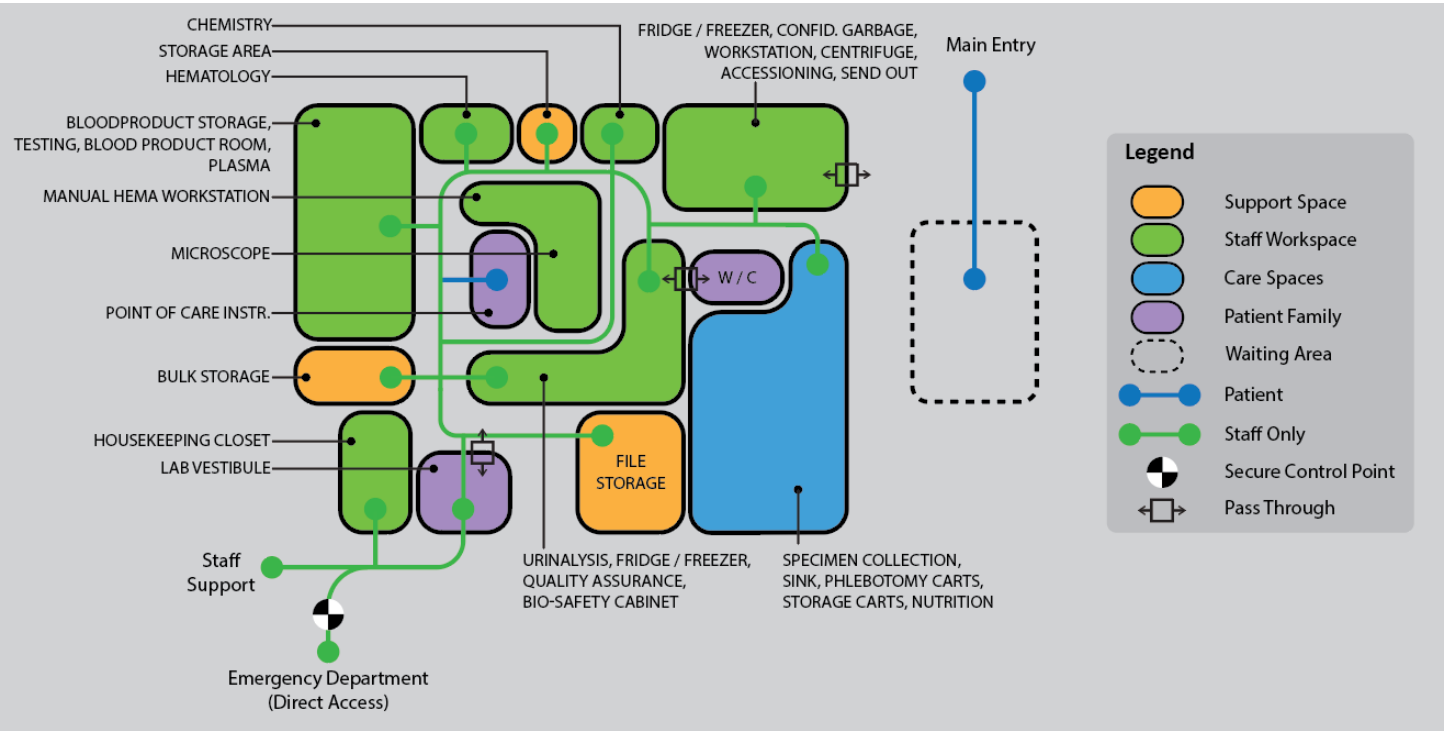
1A.3.4.1(1)(f) Reverse osmosis water will be available in the lab, directly to the chemistry area.

1A.3.4.1(1)(g) The eyewash shower will be in a central location within the lab.

1A.3.4.1(1)(h) The specimen collection cabinet in the washroom will open adjacent to the beginning of the urinalysis area.

1A.3.4.2 Functional Relationship Diagram

1A.3.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.3.4.3 Internal Design Criteria

1A.3.4.3(1) For a description of General Planning Concepts applicable to the lab, see Section 1A.0. These two sections must be read together.

1A.3.4.3(2) Specimen Collection Station

1A.3.4.3(2)(a) Each station will be in a 3-walled bay room with 180-degree hinged doors. One will be suitable for a regular collection chair and one Bariatric.

1A.3.4.3(2)(b) Each station room will have counter space with a computer Workstation, label printer and coat hooks, hand hygiene sink, and phlebotomy storage cart will be provided. Proximity to a hand hygiene sink and phlebotomy storage cart nearby will be provided to these rooms.

1A.3.4.3(2)(c) An accessible 2-piece washroom with a pass-through cabinet for specimen holding adjacent to the specimen collection stations will be provided.

1A.3.4.3(2)(c)(i) The pass-through cabinet will be accessible from both inside the washroom and from the beginning of the urinalysis area.

1A.3.4.3(3) Open Plan and General Design Concepts

1A.3.4.3(3)(a) Open plan labs support modular growth and scalability enabling the addition of new automated analyzers or replacement of existing ones. They will include the following:

1A.3.4.3(3)(a)(i) The lab will be as open as possible and limit partitions to administrative areas and specimen collection, support spaces like washrooms, housekeeping, and storage areas.

1A.3.4.3(3)(a)(ii) Power and data connections will be mounted overhead rather than provided through the floor or walls.

1A.3.4.3(3)(a)(iii) Modular casework will be provided, which is often equipped with lockable wheels for easy relocation. No millwork will be accepted.

1A.3.4.3(3)(a)(iv) An ergonomic design will be provided throughout the lab (e.g., pass-through height, benching, etc.) with adjustable height tables/benches.

1A.3.4.3(3)(a)(v) Floor drains will be installed at intervals of not more than 2.5 linear metres throughout all technical work areas.

1A.3.4.3(3)(a)(vi) Drains will be installed in a regular grid formation, to be capped or uncapped as needed. This arrangement is especially useful with analyzers that require a deionized water feed and need access to a nearby drain to discharge wastewater.

1A.3.4.3(3)(a)(vii) Refrigerators and freezers will be connected to a monitored alarm system (i.e. additional to the local equipment alarm).

1A.3.4.3(3)(a)(viii) Fume hoods will contain the following: variable air, compressed air, cup sink, electrical outlets, low velocity alarm, gooseneck water faucet, vacuum, “monkey bar” mounting system.

1A.3.4.3(3)(a)(ix) All necessary flammable chemical storage will be provided as required by lab chemical use and chemical generation operations. Precise chemical and flammable chemical quantities and storage locations will be directed by lab operations and Staff.

1A.3.4.3(3)(a)(x) All lab sinks will be resistant to chemical products and staining. Sink dimensions will be suitable for efficient lab usage and task requirements. Provide pivoting gooseneck spout.

1A.3.4.3(3)(a)(xi) The lab water system will be designed and installed to ensure the satisfactory operation of all tasks, equipment, and systems in the Laboratory.

1A.3.4.3(3)(a)(xii) Local reverse osmosis purified water flow systems will be provided and will operate in a continuous production process. Storage tanks are not acceptable.

1A.3.4.3(4) Expansion and Flexibility

1A.3.4.3(4)(a) Workbenches will be planned to be similar in size and layout, thereby creating significant flexibility through all specialities in the lab.

1A.3.4.3(4)(b) Workbenches will have electrical receptacles and CAT6A data drops, counter space for processing specimens, and an open area for visual and oral communication amongst Staff. Refer to Schedule 1 Section 7.6 – Electrical and 7.7 - Communications

1A.3.4.3(5) Furniture and Finishes

1A.3.4.3(5)(a) Walls in circulation corridors will be supplied with guards that will double as handrails. Door frames will be supplied with guards to prevent chipping and denting caused by mobility aids, delivery carts, stretchers, and cleaning machines.

1A.3.4.3(5)(b) Flooring will consist of smooth, non-porous, anti-skid and anti-static material that is resilient to high traffic, dropped objects and repeated exposure to cleaning chemicals.

1A.3.4.3(5)(c) All furniture will be comfortable and easy to clean.

1A.3.4.3(6) Reference Manual Storage

1A.3.4.3(6)(a) Three areas for reference manual storage will be provided. Each of the following areas will have a wall-mounted, 1 lineal metre shelf: hematology/chemistry (shared), urinalysis, and blood bank.

1A.3.4.3(7) Accessioning

1A.3.4.3(7)(a) Accessioning area will require separation between clean activities (clerical, data entry, and administrative) and specimen handling.

1A.3.4.3(7)(b) Secure courier access will be provided to pick up and drop off specimens.

1A.3.4.3(7)(c) Secure bin for Patients to drop-off specimens brought to the Building. This must be accessible from a public area.

1A.3.4.3(7)(d) A wall-mounted cupboard (1 metre wide) will be provided for send-out material.

1A.3.4.3(8) Lines of Sight

1A.3.4.3(8)(a) Staff working in each of the disciplines will be conducting different tests at different Workstations simultaneously therefore sight lines between Workstations will be unobstructed allowing for visual monitoring.

1A.3.4.3(9) Biocontainment

1A.3.4.3(9)(a) Will provide level 2 containment for all technical areas processing specimens.

1A.3.4.3(9)(b) Will provide non-porous finishes for work surfaces.

1A.3.4.3(9)(c) Will provide the ability for walls and floors to add vacuum separation to plumbing and vacuum lines.

1A.3.4.3(9)(d) Will seal wall penetrations in case of loss of pressurization.

1A.3.4.3(9)(e) Will have the ability to add chemical or steam sterilization for waste.

1A.3.4.3(9)(f) Will provide biocontainment support for molecular testing.

1A.3.4.3(10) Water Quality

1A.3.4.3(10)(a) Ensuring water quality is important for the lab and will require type 1 (referred to as CLRW) (ultrapure).

1A.3.4.3(10)(b) Type 1 (3 stage ASTM D1193-6) water will be provided for chemistry analyzers at point of use.

1A.3.4.3(11) Uninterrupted Power Supply (UPS)

1A.3.4.3(11)(a) All critical equipment will require connection to a UPS system. This will be provided on an equipment by equipment basis.

1A.3.4.3(11)(b) Refrigeration is critical and will be on Emergency power.

1A.3.4.3(12) Building Monitoring System (BMS)

1A.3.4.3(12)(a) All critical equipment including refrigerators and freezers will require continuous monitoring via the BMS and third-party monitoring.

1A.3.4.3(13) Infection Prevention and Control

1A.3.4.3(13)(a) Availability and appropriate placement of spill kits, eye wash station, and deluge shower will be provided.

1A.3.5 SCHEDULE OF ACCOMMODATION

1A.3.5.1 Space requirements for the lab are identified in Net Square Metres (NSM). Space identified is assumed to meet 2040/41 needs.

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
3.1	**Registration and Waiting Area**					
-	Registration	- Accommodated in the Registration SOA; shared with Diagnostic Imaging				
-	General Waiting Area	- Accommodated in the Registration SOA; shared with Diagnostic Imaging				
Clinical Laboratory: Registration and Waiting Area				**Total NSM**		

1A.3 LABORATORY

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
				0.0		
3.2	**Specimen Collection**					
3.2.01	Specimen Collection Station	1	7.5	7.5	- Preparation and collection desk with cabinets; baby bassinet; collection chair; Workstation (computer, monitor, label scanner, 1016mm zebra); collection chair; hand hygiene sink	-
3.2.02	Specimen Collection Station	1	7.5	7.5	- Preparation and collection desk with cabinets; baby bassinet; collection chair; Workstation (computer, monitor, label scanner, 1016mm zebra); shelving; collection chair; hand hygiene sink	-
3.2.03	Specimen Collection Washroom	1	4.6	4.6	- Accessible 2-piece washroom (toilet, sink); cabinet for specimen holding; call bells	-
3.2.04	Storage Cart	1	2.0	2.0	- Phlebotomy supplies on a cart	-
3.2.05	Nutrition Station	1	1.0	1.0	- Bar fridge for glucose drinks	-
3.2.06	Hand Hygiene Sink	1	1.0	1.0	- hands free; splash proof; non-porous	-
Clinical Laboratory: Specimen Collection				**Total NSM**		
				23.6		

1A.3 LABORATORY

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
3.3	**Accessioning and Send Out**					
3.3.01	Specimen and Courier Drop Off	1	1.0	1.0	- Secure pass through window; counter space; specimen collection bin; bell to call Lab tech	-
3.3.02	Pass-Through Cabinet	1	1.0	1.0	- refrigerated passthrough cabinet adjacent to ED	-
3.3.03	Workstation	1	4.6	4.6	- Ergonomic Workstation (computer, dual monitor; label scanner; printer; 2x 20.32mm zebra printer; laser printer x 1; smart board; wall mounted bookshelf (1 lineal metre)	- Adjacent to drop off and pass through cabinet (for access to tech when required); for managing ordering and send outs
3.3.04	Freezer and Fridge Area	1	3.0	3.0	- For consolidating specimen receiving; full size (1 door) fridge; undercounter freezer (-20)	-
3.3.05	Centrifugation and Specimen Pour Off	1	4.0	4.0	- Countertop centrifuges; undercounter acid cabinet; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; monitor	Adjacent to send out area
3.3.06	Send Out	1	6.0	6.0	- Secure; 1 large door to exterior for courier access; specimen transport boxes; dry ice storage container; courier supplies; pick up area; secure drop-off for Medical Clinic samples	- Adjacent to blood bank receiving area
3.3.07	Accessioning Storage	1	2.5	2.5	- Storage of consumables; dry supplies; venipuncture supplies; spill kit; kanban 2-bin system	-
-	Business Centre	Shared with Diagnostic Imaging; space accommodated in DI SOA				
3.3.08	Confidential Garbage	1	1.5	1.5	- 1 large bin	Centrifugation & Specimen Process, and Phlebotomy Cart Area
3.3.09	Phlebotomy cart area	1	2.0	2.0	- Space with supply shelves and restocking area; 1 phlebotomy cart parking; 3 wall hooks for lab coats	- Adjacent to lab entrance and clean supplies station/accession storage - Adjacent to internal circulation for access to Inpatient are and ED

1A.3 LABORATORY

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
-	Hand Hygiene Sink	Accommodated in Lab Safety Vestibule				
-	Eye wash Emergency shower / drench hose	Accommodated in Lab Safety Vestibule				
Clinical Laboratory: Accessioning and Send Out				**Total NSM**		
				25.6		
3.4	**Transfusion Medicine and Blood Bank**					
3.4.01	Blood Products Storage	1	5.0	5.0	- 1 single door freezer; 1 single door fridge (blood); 1 single door fridge (specimen); storage; electronic temperature monitoring; Secured/alarmed	- Requires adjacency to the ED
3.4.02	Tag Printer	1	0.5	0.5	- Printer (tags); counter space; ; wall mounted bookshelf (1 lineal metre)	-
3.4.03	Blood Products Room Temperature Storage	1	4.5	4.5	- Supply storage (room temperature); ergonomic Workstation (PC, Monitor, barcode scanner, height adjustable);	-
3.4.04	Testing Area	1	3.5	3.5	- 1 cell washer; 1 serofuge; sink	- 1 centrifuge shared by all lab area
3.4.05	Microscope	1	4.5	4.5	- Countertop inverted microscope without camera; ensure 910mm – 1230mm of counter space is adjacent to microscope; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; monitor	- Adjacent to testing area
3.4.06	Plasma Thawer / Incubator	1	4.5	4.5	- 1 plasma thawer and 1 platelet incubator; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; monitor	- Could be combined or separated
-	Hand Hygiene Sink	Accommodated in Lab Safety Vestibule				
-	Eye wash Emergency shower / drench hose	Accommodated in Lab Safety Vestibule				
Clinical Laboratory: Transfusion Medicine and Blood Bank				**Total NSM**		
				22.5		

1A.3 LABORATORY

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
3.5	**Hematology**					
3.5.01	Hematology Analyzer	1	7.5	7.5	- 1 CBC analyzers, Floor drains; Water System; disposal system for Methanol (stainer); 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; 2 monitors; barcode scanner; wall mounted bookshelf (1 lineal metre)	-
3.5.02	Microscope	1	4.5	4.5	- 1 microscope; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; 2 monitors; barcode scanner; supply storage	-
3.5.03	Manual Hematology & Fluids Workstation	1	4.5	4.5	- ESR Analyzer x1; Cytospin x1; sink; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; monitor; barcode scanner; supply storage	- Centrally located for all specialties (shared with chemistry and hematology)
3.5.04	Bio-Safety Cabinet	1	2.0	2.0		-
3.5.05	Coagulation Analyzer	1	4.5	4.5	-1 coagulation analyzer; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); PC; monitor; barcode scanner; supply storage; wall mounted bookshelf (1 lineal metre)	-
3.5.06	Storage Area	1	7.5	7.5	- 2 bin kanban; room temperature storage; carts; 1 upright freezer (coagulation); 1 double door fridge (hematology & coagulation)	- storage could be undercounter if possible
-	Hand Hygiene Sink	Accommodated in Lab Safety Vestibule				
-	Eye wash Emergency shower / drench hose	Accommodated in Lab Safety Vestibule				
Clinical Laboratory: Hematology				**Total NSM**		
				30.5		

1A.3 LABORATORY

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
3.6	**Chemistry**					
3.6.01	Urinalysis Area	2	3.0	6.0	-Ventilation requirements for odor control; 1 analyzer; microscope; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610– 910mm); drug kits; pregnancy tests; wall mounted bookshelf (1 lineal metre), Sink and related piping to accommodate specimen drainage in accordance with the requirements of SOR Section 2.6.3.27 by following the Government of Canada's publication, Canadian Biosafety Standard	- Workstation used for all results
3.6.02	Point-of-Care Instruments	1	6.0	6.0	- Fetal Fibronectin analyzer; Cardiac Reader (Coboss 232); Blood Gas Analyzer (Istat); 1 centrifuge (countertop, non-refrigerated)	-
3.6.03	Chemistry Analyzer	1	4.5	4.5	- 1 chemistry analyzer; floor drain; CLRW water system; 1 lab Workstation (adjustable height lab work table; chemical resistant surface; accommodates work surfaces 910mm – 1830mm W, and 610mm – 910mm); undercounter RO system	Front end adjacent to specimen accessioning; Allow space for swap out
3.6.04	Storage Area (Fridge / Freezer)	1	4.5	4.5	- 1 upright freezer (-70 freezer); 1 double door fridge (reagents, Patient samples)	-
3.6.05	Quality Assurance Area	1	2.0	2.0	- Workstation, phone, supply storage, PC, data; glucometer	Adjacent to testing for results comparison
-	Hand Hygiene Sink	Accommodated in Lab Safety Vestibule				
-	Eye wash Emergency shower / Drench hose	Accommodated in Lab Safety Vestibule				
Clinical Laboratory: Chemistry				**Total NSM**		
				23.0		

1A.3 LABORATORY

1A.3 Clinical Laboratory: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
3.7	**Non-Clinical Support**					
3.7.01	Lab Safety Vestibule	1	6.0	6.0	- Hand hygiene sink; eye wash Emergency shower / drench hose; clean linen supply on a cart; PPE; spill kit; dirty linen hamper; closet for lab coats; coat hooks outside the vestibule	At Staff entrance to the lab
3.7.02	Bulk Storage	1	7.5	7.5	- Kan ban shelving for storage of supplies; open floor area for 1 pallet	Central location
3.7.03	File Storage	1	12.0	12.0	- Storage for paper requisitions; quality control records	- Must keep 3 years of records; could be located in administration or health records
3.7.04	Housekeeping Closet	1	7.0	7.0	- Include electrical requirements, cart storage, floor sink, water source, hand sink, shelving for storage of supplies (germicidal solution, general purpose cleaner, non-acid crème cleaner, toilet bowl cleaner, spot cleaner, furniture polish); toilet bowl swab and caddy; putty knife; safety googles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE; disposables; paper supplies; garbage bags; gloves; soaps; cleaning cloths; tool; power equipment	- Shared with DI
Clinical Laboratory: Non-Clinical Support				**Total NSM**		
				32.5		
3.8	**Staff Support**					
3.8.01	Workstation: Touchdown	1	3.0	3.0	- Chair, computer, data, phone, cabinet	-
-	Staff Washroom	- Shared with adjacent departments				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
Clinical Laboratory: Staff Support				**Total NSM**		
				3.0		
Total Clinical Laboratory Area				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				160.7	**1.35**	**216.9**

1A.4 DIAGNOSTIC IMAGING

This specification outlines the functional, operational, and physical requirements for the diagnostic imaging (DI) department.

1A.4.1 FUNCTIONAL DESCRIPTION

1A.4.1.1 Statement of Purpose

1A.4.1.1(1) DI will provide both fixed and mobile x-ray services for Inpatients and Outpatients.

1A.4.1.2 Scope of Services

1A.4.1.2(1) Functional Content

1A.4.1.2(1)(a) DI design will accommodate fixed x-ray modality with access to a portable x-ray stored in the ED.

1A.4.1.2(1)(b) X-rays will be reviewed remotely by pathology services in another facility.

1A.4.1.2(2) Planning Assumptions

1A.4.1.2(2)(a) Echocardiograms and pulmonary function testing will be performed in Ambulatory services.

1A.4.1.2(3) Excluded

1A.4.1.2(3)(a) No other modalities will be accommodated in the Building.

1A.4.2 OPERATIONAL DESCRIPTION

1A.4.2.1 Hours of Operation

1A.4.2.1(1) DI will be available Monday to Friday, from 0800-1600 with after hours call-backs as required.

1A.4.2.2 Organization & Management

1A.4.2.2(1) DI will be managed by the medical radiographer.

1A.4.2.3 Workflow

1A.4.2.3(1) Inpatients and Emergency Patients

1A.4.2.3(1)(a) If the Inpatient or ED Patient is required to wait (either before or after the test), a stretcher alcove will be provided that will be in view of the tech Workstation or the ED Nurse Station.

1A.4.2.3(1)(b) Following the test, the Patient will be transported back to the appropriate location by nursing and/or DI Staff.

1A.4.2.3(2) Outpatients

1A.4.2.3(2)(a) Patients arriving to the Building's main entrance will be directed by graphic cues and signage to the registration booth and follow the flow described in the registration section 1A.10.

1A.4.2.3(2)(b) After being called by the DI technician, Patients will enter the DI area for the x-ray. Patients may require access to the change cubicles prior to and following the x-ray.

1A.4.2.3(3) Procedure Completion and Quality Assurance

1A.4.2.3(3)(a) All x-rays will be digital, and images will be captured electronically. Technologists will be able to review images for adequacy at a tech Workstation. As necessary, radiologists will review images before the Patient is discharged. In most cases, this will be done remotely.

1A.4.2.3(4) Reporting and Image Management

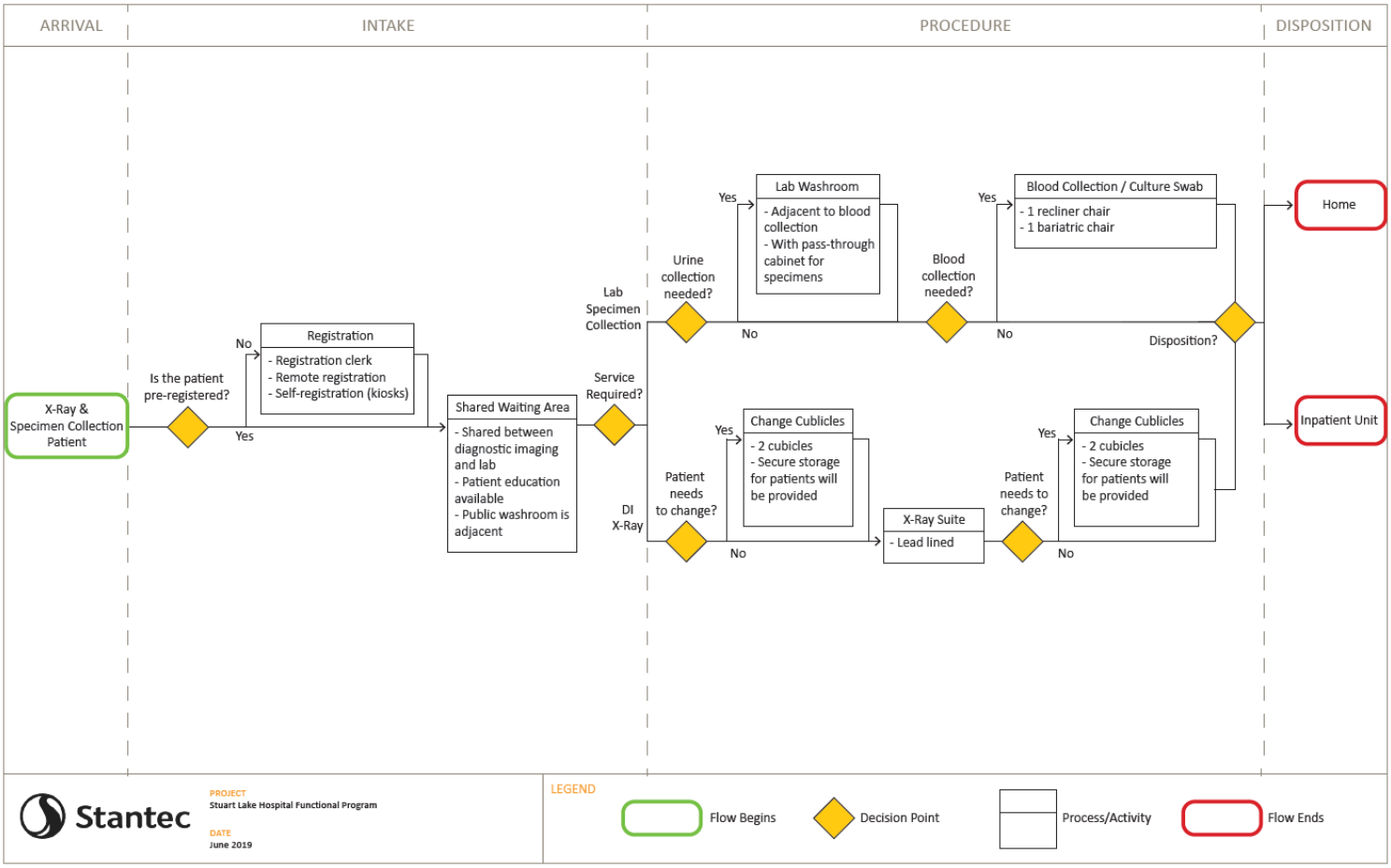
1A.4.2.3(4)(a) All images will be captured digitally and will be available on PACS reading stations.

1A.4.2.3(4)(b) Image review Workstations with PACS system capability will be available in Patient care areas.

1A.4.2.3(5) Future State Flow Map

1A.4.2.3(5)(a) The future state flow map below describes the key flows for the future model of care for the DI. This informs the operational processes that will enhance Patient flow, create efficiencies, and support the Staff in the future delivery model.

Stuart Lake Hospital Functional Program - DIAGNOSTIC IMAGING AND LAB SPECIMEN COLLECTION - Future State Flow Map



1A.4.3 STAFFING

1A.4.3.1 Estimated future Staffing for DI is summarized below.

Diagnostic Imaging: Projected Staffing	
Staff / Position	**Projected FTE**
	2040/41
Radiographer	1.0

1A.4.4 DESIGN CRITERIA

1A.4.4.1 External and Internal Relationships

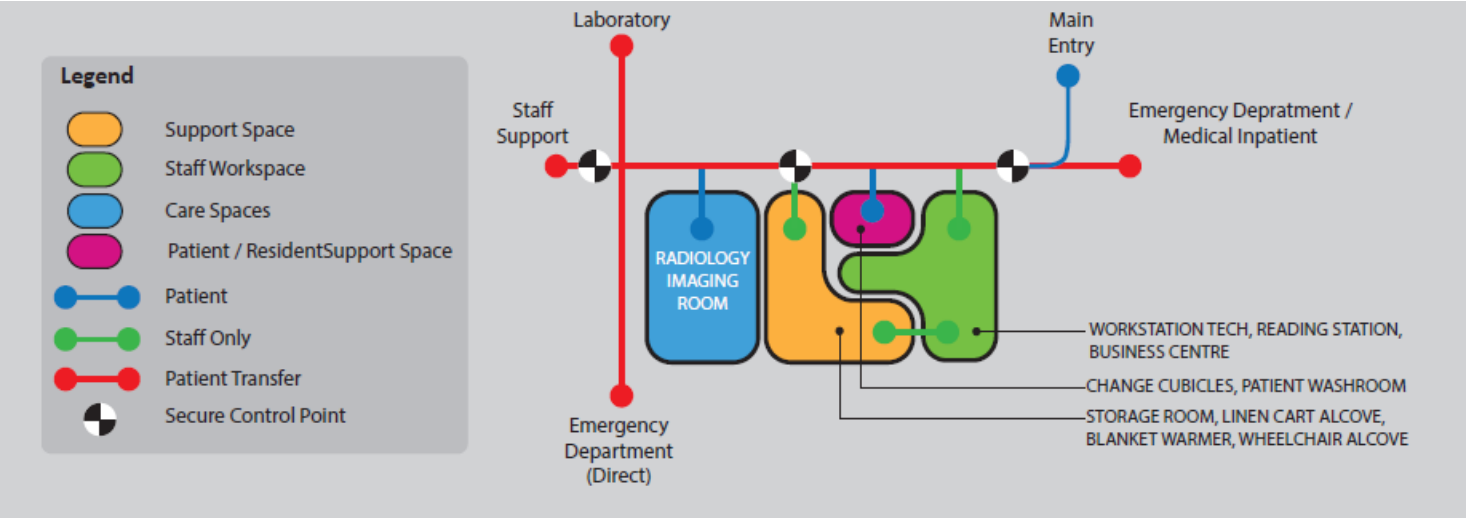
1A.4.4.1(1) DI will be in close proximity to General Circulation, Registration, and the Waiting Area.

1A.4.4.1(2) DI will be adjacent to the ED via controlled circulation.

1A.4.4.1(3) DI will be accessible by General Circulation to/from Ambulatory Services.

1A.4.4.2 Functional Relationship Diagram

1A.4.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. The diagram is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.



1A.4.4.3 Internal Design Criteria

1A.4.4.3(1) For a description of General Planning Concepts applicable to DI, see Section 1A.0. These two sections must be read together.

1A.4.4.3(2) Entrances and Access

1A.4.4.3(2)(a) Two separate entrances will be provided into the DI area, one from the main corridor and one from the ED.

1A.4.4.3(2)(b) The majority of users will be Ambulatory Outpatients. This entrance will be directly accessible and provided with visible wayfinding from Registration.

1A.4.4.3(2)(c) A second entrance will be used for arriving and departing Emergency Patients, ambulance transported Patients, and Inpatients. Cases arriving from the ED can be unsettling to the public and physical, visual, and acoustic isolation from the more public parts of the department will be provided. ED Patients will not pass through the Waiting Area.

1A.4.4.3(2)(d) The stretcher holding area for the Patients arriving from the ED or Inpatient areas will be equipped with medical gases and a Patient call system. This area will not be visible from Waiting Areas and will be curtained to maintain privacy.

1A.4.4.3(3) Radiology Imaging Room

1A.4.4.3(3)(a) Access (door swings, hallways) to the radiology imaging room will have minimal turns to allow for stretcher access.

1A.4.4.3(3)(b) Floor load capability and all corridors leading to radiology imaging room will meet minimum requirements as suggested by equipment manufacturers.

1A.4.4.3(3)(c) A minimum door width of 1.2 m wide will be required for the radiology imaging room.

1A.4.4.3(3)(d) A dedicated power source and UPS will be required for the radiology imaging room.

1A.4.4.3(3)(e) Radiation protection including lead shielding will meet all Health Canada, B.C. Building Code, and industry standards.

1A.4.4.3(3)(f) The design will provide for all structural limitations, ceiling height, and the ability of the structure to accommodate any ceiling-mounted equipment, as well as a wall-mounted buckey requiring supports as required in the equipment list.

1A.4.4.3(4) Mobile Equipment

1A.4.4.3(4)(a) Portable x-ray storage will be provided in the ED or the Diagnostic Imaging department and be located near the Radiology Room.

1A.4.4.3(5) Picture Archiving Communications (PACS) System

1A.4.4.3(5)(a) Images will be read by a radiologist, either on- or off-site, with an electronic report sent to the referring physician.

1A.4.4.3(5)(b) Tech Workstation with PACS monitor will be adjacent to radiology imaging room.

1A.4.4.3(5)(c) High-definition screens will be provided for x-ray viewing in DI, ED, and Ambulatory Services.

1A.4.4.3(6) Lighting

1A.4.4.3(6)(a) All imaging and reading areas will have dimmable lighting.

1A.4.4.3(6)(b) Reading area:

1A.4.4.3(6)(b)(i) Will be provided with high resolution (five megapixels) video technology and the environment to support this function.

1A.4.4.3(6)(b)(ii) Will be back lit, capable of accommodating at least three monitors, and be height adjustable.

1A.4.4.3(6)(b)(iii) Will provide for a variety of lighting levels ranging to black-out conditions as some lighting conditions can degrade the on-screen appearance of images.

1A.4.4.3(6)(b)(iv) Will be located away from the general Patient flow.

1A.4.5 SCHEDULE OF ACCOMMODATION

1A.4.5.1 Space requirements to meet the 2040/41 DI needs are identified in Net Square Metres (NSM).

1A.4 Diagnostic Imaging: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
4.1	**Reception and Waiting Area**					
-	Registration Desk	- Accommodated in the Registration SOA; shared with Clinical Laboratory				
-	General Waiting Area	- Accommodated in the Registration SOA; shared with Clinical Laboratory				
Diagnostic Imaging: Reception and Waiting Area				**Total NSM**		
				0.0		
4.2	**Imaging and Technical Support Area**					
4.2.01	Radiology Imaging Room	1	29.0	29.0	- Lead lining, glass window between control room and radiology; Patient lift; stack; lead shield; oxygen; suction; code blue button; assist button	-
4.2.02	Change Cubicle	2	4.0	8.0	- Enclosed area separated by walls and/or curtains; accessible change cubicles; 2x 1/2 lockers for storage of Patient valuables (can be outside of the change cubicle)	-
4.2.03	Patient Washroom	1	4.6	4.6	- Accessible; 2-piece washroom (toilet/sink)	-
4.2.04	Wheelchair Alcove	1	0.6	0.6	- Open, accessible space	-
4.2.05	Stretcher Alcove	1	2.0	2.0	- Open, accessible space in view from tech Workstation	-
4.2.06	Blanket Warmer	1	1.0	1.0	- Undercounter half-sized warmer	-
4.2.07	Workstation: Tech	1	4.6	4.6	open Workstation environment; shared with Reading Station	-
4.2.08	Reading Station	1	4.6	4.6	- PACS monitors; ensure confidentiality/privacy; Workstation (phone, clerical storage, PC, Data);	-

1A.4 DIAGNOSTIC IMAGING

1A.4 Diagnostic Imaging: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
4.2.08.01	ECG/PFT Room	1	14.0	14.0		
Diagnostic Imaging: Imaging and Technical Support Area				**Total NSM**		
				68.4		
4.3	**Staff Support**					
4.3.01	Business Centre	1	2.0	2.0	- Photocopier, fax, paper supply and storage; cupboard space and mail slots (millwork)	-
4.3.02	Storage Room	1	7.5	7.5	- Storage for general departmental item	-
4.3.03	Linen Cart Alcove	1	2.0	2.0	- Storage for linen carts	-
-	Storage Alcove: Portable X-Ray	- Stored in the Emergency Department				
-	File Storage	- Films will be boxed and stored in the Medical Records File Storage				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Diagnostic Imaging: Staff Support				**Total NSM**		
				11.5		
Total Diagnostic Imaging Area				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				79.9	**1.60**	**127.8**

1A.5 EMERGENCY DEPARTMENT

This specification outlines the functional, operational, and physical requirements for the Emergency Department (ED).

1A.5.1 FUNCTIONAL DESCRIPTION

1A.5.1.1 Statement of Purpose

1A.5.1.1(1) The ED will accommodate the unscheduled arrival of Patients presenting with suspected or confirmed illnesses or injuries.

1A.5.1.2 Scope of Services

1A.5.1.2(1) Functional Content

1A.5.1.2(1)(a) All Patients arriving during the evenings, nights, and weekends will be assessed and treated in the ED.

1A.5.1.2(1)(b) During daytime hours, Patients triaged as a CTAS 4 or 5 will be referred to the Ambulatory Services (AS) for a same day appointment.

1A.5.1.2(1)(c) Patients requiring IV therapy or minor procedure will be treated in the ED.

1A.5.1.2(1)(d) Patients' conditions will either be resolved in ED or be referred elsewhere for treatment. Patients may be discharged to home, a Medical Inpatient Unit, or to another health care facility.

1A.5.1.2(1)(e) No Secure room is planned for the Building. Accommodations for Patients presenting with mental health distress will be evaluated by the ED Staff to determine the most appropriate action. Depending on the severity and type of distress, these Patients may be placed in a typical Exam / Treatment room, the Quiet Room, admitted to the Building, or transferred to another facility.

1A.5.1.2(2) Planning Assumptions

1A.5.1.2(2)(a) All Patients will be received through the Emergency entrance via the Main Entrance and Lobby, the Emergency Department Self-Arrival Entry or the ambulance entrance with British Columbia Emergency management system (BCEMS).

1A.5.1.2(2)(b) The triage area will be used for quick screening and defining Patient acuity.

1A.5.1.2(2)(c) The ED may have Patients who present with potential contagious diseases and will be brought to the isolation-capable Exam / Treatment Room.

1A.5.1.2(2)(d) The ED will operate with a shared service approach with a team model of care and will include the coverage of the Medical Inpatient Unit and Long-Term Care.

1A.5.1.2(3) Excluded

1A.5.1.2(3)(a) Scheduled Patient visits will be accommodated in Ambulatory Services (AS) (not including IV therapy).

1A.5.1.2(3)(b) DI of body structures beyond those that can be captured using a portable x-ray.

1A.5.1.2(3)(c) Treatment of Patient requiring the services of a designated trauma centre beyond initial stabilization awaiting transport.

1A.5.1.2(3)(d) Dedicated mental health Secure room and treatment of Patients requiring dedicated mental health services beyond de-escalation.

1A.5.1.2(3)(e) Dedicated paediatric services and dedicated paediatric spaces.

1A.5.2 OPERATIONAL DESCRIPTION

1A.5.2.1 Hours of Operation

1A.5.2.1(1) The ED will operate 24 hours per day, 7 days per week.

1A.5.2.2 Organization & Management

1A.5.2.2(1) The ED will be managed by the head nurse with a designated physician leader.

1A.5.2.3 Workflow

1A.5.2.3(1) Walk-In Patients and IV Therapy Patients

1A.5.2.3(1)(a) Patients will arrive at the Main Entrance of the Building or the Emergency Department Self-Arrival Entry and be directed by visual cues, signage, and wayfinding to the ED triage / registration station .

1A.5.2.3(1)(a)(i) Patients arriving by private vehicle will park in designated short-term Emergency parking near the Emergency Department Self-Arrival Entry and enter the Building through this entrance.

1A.5.2.3(1)(b) During Daytime Hours

1A.5.2.3(1)(b)(i) Patients will be triaged by a nurse in the triage / registration station. A nurse may not always be present at triage; therefore, a notification system must be in place (e.g. call bell).

1A.5.2.3(1)(b)(ii) Triage will be executed by a nurse and registration will occur by a nurse or registration clerk concurrent with triage.

1A.5.2.3(1)(b)(ii)A If the Patient is triaged, is in a medical Emergency, and registration cannot occur at this time, the nurse will register the Patient by phone at the bedside when possible.

1A.5.2.3(1)(b)(ii)A1 If the Patient is triaged as a CTAS 4 or 5, they will be directed to AS for an unscheduled appointment.

1A.5.2.3(1)(b)(ii)A2 If the Patient is triaged and it is determined that they will be seen in the ED, the Patient will either be directed by the nurse, registration clerk, or clear signage, to the waiting area to be called by ED Staff, or they will be accompanied into the ED by the nurse to the appropriate treatment space.

1A.5.2.3(1)(c) After Hours and Weekend

1A.5.2.3(1)(c)(i) Patients will be triaged by a nurse in the triage / registration station. A nurse may not always be present at triage; therefore, a notification system must be in place (e.g. call bell).

1A.5.2.3(1)(c)(ii) Triage and registration will occur in the triage and registration station by a nurse**.**

1A.5.2.3(1)(c)(ii)A If the nurse is not able to register the Patient, the Patient will be directed by the nurse to the remote registration room. From the remote registration room, the Patient will then be directed to the Waiting Area by clear signage and wayfinding.

1A.5.2.3(1)(c)(ii)B If the Patient is triaged, is in a medical Emergency, and registration cannot occur at this time, the nurse will register the Patient by phone at the bedside when possible.

1A.5.2.3(1)(c)(iii) If the Patient is triaged and registered, and is able to be seen immediately, the nurse will accompany the Patient into the ED to the appropriate treatment space.

1A.5.2.3(1)(c)(iv) If the Patient is triaged and registered but can or must wait, the Patient will be directed by the nurse or by clear signage, to the Waiting Area to wait to be escorted into the unit by ED Staff .

1A.5.2.3(2) Patients Arriving by Ambulance

1A.5.2.3(2)(a) All trauma/resuscitation Patients will be initially triaged en route to the Building and will be transported directly into the Trauma / Resuscitation Bay. A nurse will meet the ambulance and escort the Patient.

1A.5.2.3(2)(b) Non-critical Patients arriving by ambulance but who remain on a stretcher or in a wheelchair will be triaged by a nurse who will assign them to the appropriate space in the department. Ambulance personnel will assist the triage nurse by providing relevant information and, if necessary, will stay with the Patient until nursing Staff are able to assume care.

1A.5.2.3(2)(b)(i) If the Patient is ambulant, they will be directed to the triage / registration room and will follow the same path as a walk-in Patient.

1A.5.2.3(3) Aggressive Patients, Patients Escorted by Police, or Potential Mental Health Presentations

1A.5.2.3(3)(a) Patients who are acting aggressively will be placed in an Exam / Treatment Room or the Quiet Room for triage, de-escalation, and treatment. If they were not escorted by the RCMP, the RCMP will be called for support.

1A.5.2.3(3)(b) If a Patient with a mental health presentation is not aggressive, they will follow the walk-in Patient process described in clause 1A.5.2.2(2)(a).

1A.5.2.3(3)(c) If the Patient requires more thorough mental health services, the Building Staff will de-escalate and stabilize the Patient as much as possible while awaiting transfer to a more suitable facility.

1A.5.2.3(3)(d) The RCMP will remain with the Patient as long as necessary, potentially including the Patient transfer, to ensure the safety of the Staff, other Patients, and the Patient themselves. The RCMP will determine the length of their involvement on a case-by-case basis.

1A.5.2.3(4) Decontamination, Disaster

1A.5.2.3(4)(a) In the event of a communicable disease outbreak, provincial protocols will be put into effect with the use of the ambulance bay as the triage/screening location before a Patient or visitor can enter the Building.

1A.5.2.3(4)(b) Decontamination of toxic substances from Patients will be performed in decontamination room accessed directly from the ambulance bay. There will be a door from the ambulance bay into the decontamination room and a second door from the decontamination room into the ED.

1A.5.2.3(4)(b)(i) If the Patient requiring decontamination arrives via ambulance, they will access the decontamination room before the Patient is brought into the department.

1A.5.2.3(4)(b)(ii) If the Patient requiring decontamination arrives via the Main Entrance of the Building, they will either be escorted through the ED by ED Staff to the decontamination room or directed by ED Staff, and with clear wayfinding and signage, to the ambulance garage.

1A.5.2.3(5) Patient Discharge

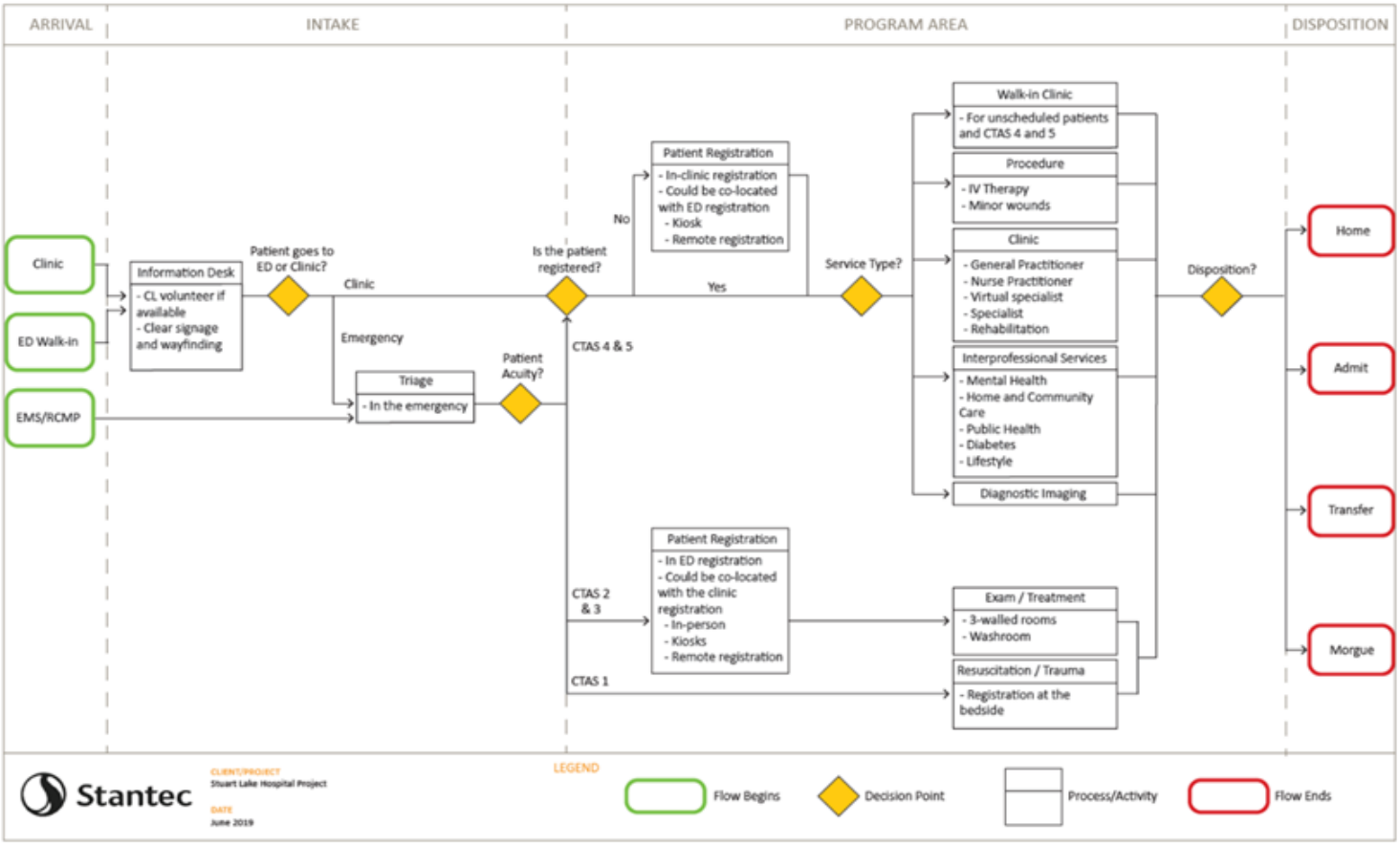
1A.5.2.3(5)(a) Patient discharge from the ED will occur in one of four ways: discharge home following treatment, admission to an Inpatient bed within the Building, death/transfer to the Morgue, or transfer to another facility.

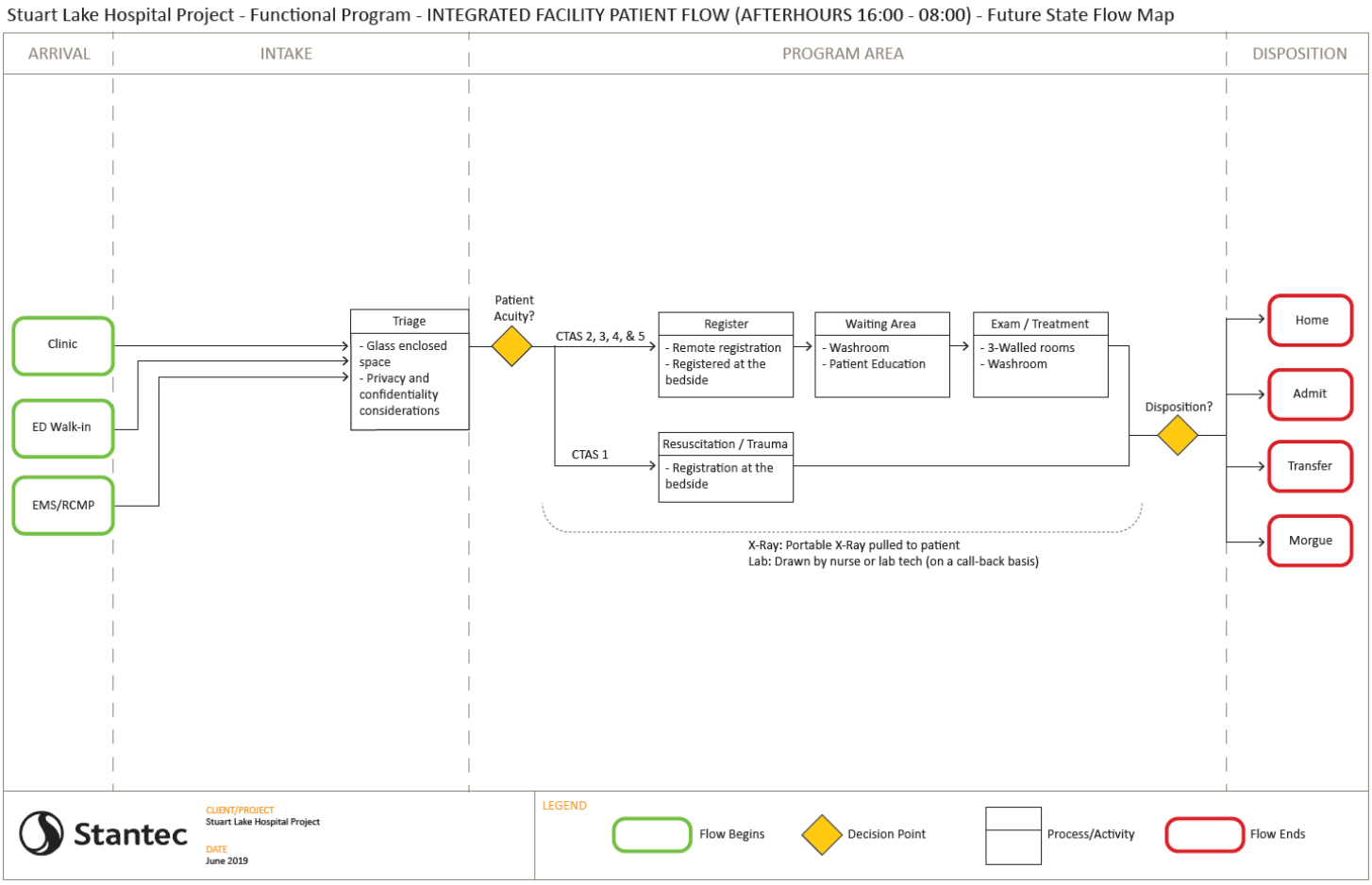
1A.5.2.3(5)(b) The decision to discharge will be the responsibility of the ED physician.

1A.5.2.3(6) Future State Flow

1A.5.2.3(6)(a) The future state flow map below describes the key flows for the future model of care for the ED within the integrated Building Patient flow. This informs the operational processes that will enhance Patient flow, create efficiencies, and support the Staff in the future delivery model.

Stuart Lake Hospital Project - Functional Program - INTEGRATED FACILITY PATIENT FLOW (DAYTIME 08:00 - 16:00) - Future State Flow Map





1A.5.2.4 Support Activities

1A.5.2.4(1) Cardiology Tech

1A.5.2.4(1)(a) Electrocardiograms (ECGs) will be performed in Exam / Treatment Rooms.

1A.5.2.4(2) Laboratory and Specimen Collection

1A.5.2.4(2)(a) Specimens will be collected either in the department or in the specimen collection area of the lab.

1A.5.2.4(2)(a)(i) STAT and non-urgent specimens will be collected in the exam / treatment rooms by lab technicians and transported by lab Staff the Building lab for processing.

1A.5.2.4(2)(b) Limited point-of-care testing (urine and glucose) will be performed by nursing Staff.

1A.5.2.4(2)(c) Afterhours laboratory support will be available through call back.

1A.5.2.4(3) Diagnostic Imaging

1A.5.2.4(3)(a) Patients requiring an x-ray will be transported either to the DI department by nursing and/or DI Staff through a controlled access corridor or will receive an x-ray via portable equipment in the exam / treatment rooms.

1A.5.2.4(3)(b) The portable x-ray equipment will be stored in the ED.

1A.5.2.4(4) Food and Nutrition Services

1A.5.2.4(4)(a) No meals will be prepared for ED Patients.

1A.5.2.4(4)(b) A Patient nutrition station will be located adjacent to the nursing station and will be shared with the Medical Inpatient Unit.

1A.5.3 STAFFING

1A.5.3.1 ED Staffing is shared with Medical Inpatient Unit as identified in Section 1A.6.3.

1A.5.4 DESIGN CRITERIA

1A.5.4.1 External and Internal Relationships

1A.5.4.1(1) The following external and internal relationships for the ED will be achieved:

1A.5.4.1(1)(a) Adjacent by controlled circulation for movement of critically ill Patients from the ambulance garage to the Trauma / Resuscitation Room.

1A.5.4.1(1)(b) Adjacent by General Circulation for the movement of Patients, families, and visitors arriving at the Main Entrance to the ED.

1A.5.4.1(1)(c) Adjacent by Controlled Circulation on the same level for movement of ED Patients to the Medical Inpatient Unit.

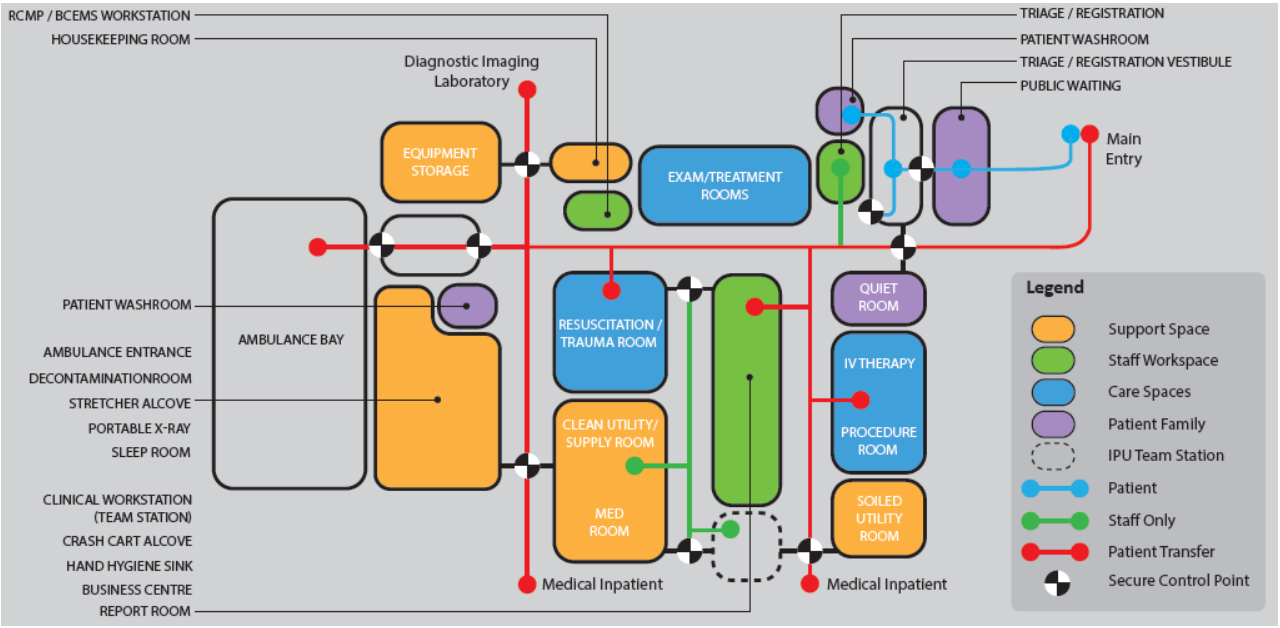
1A.5.4.1(1)(d) Adjacent by Controlled Circulation on the same level for movement of Patients from the ED to Diagnostic Imaging.

1A.5.4.1(1)(e) Adjacent by Controlled Circulation on the same level for movement of Patients from the ED to the lab specimen collection.

1A.5.4.1(2) The following list identifies hierarchy of spaces that require an adjacency and visual connection to the Nursing Station: Trauma / Resuscitation Rooms, Exam / Treatment Rooms, and IV therapy.

1A.5.4.2 Functional Relationship Diagram

1A.5.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. The diagram is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.



1A.5.4.3 Internal Design Criteria

1A.5.4.3(1) For a description of General Planning Concepts applicable to the ED, see Section 1A.0. These two sections must be read together.

1A.5.4.3(2) Creating an Environment of Healing

1A.5.4.3(2)(a) Creating an environment conducive to Patient healing and comfort will take precedence in the design, configuration, and operation of the ED.

1A.5.4.3(2)(b) The ED will incorporate simple and intuitive signage and wayfinding.

1A.5.4.3(2)(c) Furniture, features, and finishes will be non-institutional, comfortable, non-technical, possibly with music and/or television as a diversion (particularly in waiting areas). Design Waiting Areas into clusters for those watching TV, for reading and quiet waiting, and for child play. Natural light exposure, high ceilings, and access to fresh air will be maximized to support Patient and Staff well-being and orientation.

1A.5.4.3(2)(d) Alcoves will be distributed throughout the ED to keep equipment and supplies out of the direct view of Patients (see the Schedule of Accommodation for details).

1A.5.4.3(2)(e) Patient, Staff, and visitor use areas will be designed to allow easy access by those Persons with Physical or Cognitive Disabilities.

1A.5.4.3(2)(f) All Patient occupied spaces, including corridors, are designed for those with compromised mobility.

1A.5.4.3(2)(g) Corridors and washrooms will be provided with handrails.

1A.5.4.3(3) Entrances and Drop-Off

1A.5.4.3(3)(a) Walk-In Entrance

1A.5.4.3(3)(a)(i) The ED walk-in entrance will be the Emergency Department Self-Arrival of the hospital.

1A.5.4.3(3)(a)(ii) The walk-in entrance will have designated short-term Emergency parking only area to be located in close proximity to the drop-off area.

1A.5.4.3(3)(a)(iii) A covered walkway providing cover over the sidewalk from the short-term emergency parking spaces to the Emergency Self-Arrivals Entrance drop-off will be provided.

1A.5.4.3(3)(a)(iv) After Hours Building Entrance

1A.5.4.3(3)(a)(iv)A After hours, access to the rest of the Building will be Securely restricted except for the Main Entrance, Lobby, and Gathering Space to allow access to the ED.

1A.5.4.3(3)(b) Ambulance Access

1A.5.4.3(3)(b)(i) Unloading of ambulances and some private vehicles will occur within an enclosed ambulance garage (no backing in / backing up of ambulances to the ambulance bay and Emergency entrance doors). This separation will ensure that critically ill Patients can be transferred directly to the Trauma / Resuscitation Room.

1A.5.4.3(3)(b)(ii) The space behind the ambulance (the Patient unloading or loading area) will be directly adjacent to the ambulance entrance vestibule leading into the ED. The preferred clear space behind the ambulance for unloading stretchers is 3658 mm however the minimum allowable clear space behind the ambulance for unloading stretchers will be 3048 mm.

1A.5.4.3(3)(b)(iii) Ambulance garage doors will be automatic.

1A.5.4.3(3)(b)(iv) Entrance into the ED from the ambulance garage will be through automated doors with open holds.

1A.5.4.3(3)(b)(iv)A Circulation will allow for Patients arriving by ambulance but who are not destined for the ED to discreetly bypass interior portions of the ED and access the rest of the Building.

1A.5.4.3(3)(c) The ambulance entrance will provide Direct Access into the decontamination area.

1A.5.4.3(3)(c)(i) Patients accessing these spaces will do so prior to triage.

1A.5.4.3(3)(d) The flow from the ambulance and walk-in entrances will not cross. However, while providing the above degree of separation, both entrances will be visible to Staff.

1A.5.4.3(3)(e) Draft and Exhaust-Free Entrances

1A.5.4.3(3)(e)(i) Waiting and Triage Areas located close to the walk-in entrance must not be exposed to drafts and transient temperature changes with the opening and closing of doors.

1A.5.4.3(3)(e)(ii) Exhaust fumes from ambulances and private vehicles must not be allowed to enter the Building.

1A.5.4.3(4) Decontamination Room

1A.5.4.3(4)(a) The Decontamination Room will accommodate full isolation when containment protocols are in effect. The degree of connection and the risks attached to contamination of adjacent ED areas will require careful consideration.

1A.5.4.3(4)(b) Direct Access from the ambulance garage to the Decontamination Room will be required. Containment receptacles will be located here for Secure storage of contaminated items. Access from the Decontamination Room into the ED department without returning to the ambulance entrance will be provided.

1A.5.4.3(4)(c) Radiation containment will not be required. A catchment sump under the shower drainage and ambulance garage wash down area will be provided with clearly defined disposal requirements.

1A.5.4.3(4)(d) The room will be lined with a disposable polythene liner. Storage for PPE and decontamination supplies will be required.

1A.5.4.3(4)(e) Medical gas outlets will be provided in the Decontamination Areas and will be concealed.

1A.5.4.3(5) Wayfinding

1A.5.4.3(5)(a) The ED triage / registration room will be easily accessible and identifiable from the Building's main public entrance. It must be visually obvious to anyone entering through the Building's main doors.

1A.5.4.3(6) Triage, Registration, and Waiting Area

1A.5.4.3(6)(a) Triage / Registration Room

1A.5.4.3(6)(a)(i) This room will be a 3-walled room with visual and audible privacy.

1A.5.4.3(6)(a)(ii) It will accommodate those Patients with compromised mobility with room for two chairs side-by-side for Patients, family, and support persons.

1A.5.4.3(6)(a)(iii) It will be designed to be accessible by those in wheelchairs and/or with compromised mobility.

1A.5.4.3(6)(b) Waiting Area

1A.5.4.3(6)(b)(i) The Waiting Area will be located in close proximity to the triage / registration room, the remote registration room, and the entrance into the ED.

1A.5.4.3(6)(b)(ii) The Waiting Area will accommodate 10 people including those with mobility aids, wheelchairs, and 2 Bariatric chairs.

1A.5.4.3(6)(b)(iii) The Waiting Area will provide opportunities for Patients to view and access educational materials on the tv and through the Building's wireless network.

1A.5.4.3(7) Trauma / Resuscitation Room

1A.5.4.3(7)(a) The doors from the corridor into the Trauma / Resuscitation Bay will be 3 panel glass doors, providing an opening that will accommodate movement of Patients, team members, and required equipment in and out of the trauma bay requiring minimal turns of the Patient stretcher to access the room. The doors will include a breakaway function. The glass doors will have frosting to provide privacy.

1A.5.4.3(7)(b) The door opening will be large enough to provide unobstructed movement of equipment such as portable x-ray and mobile Emergency equipment.

1A.5.4.3(7)(c) The Trauma / Resuscitation Bay will not always in use. Provide the ability to Secure items by providing Secure storage in the room to allow the for it to be used as a typical Exam / Treatment Room, if needed. However, all items in the bay must be readily available when a trauma / resuscitation Patient presents at the ED.

1A.5.4.3(8) Quiet Room

1A.5.4.3(8)(a) This room will be in close proximity to the Trauma / Resuscitation Area with the function to provide a temporary refuge for distressed family/friends. It must be acoustically and visually private with adjustable lighting.

1A.5.4.3(8)(b) This room is to be considered for Patients presenting with mental health distress and a quiet place. As no Secure room is planned at the Building, this room will serve as a potential location for those Patients.

1A.5.4.3(8)(c) If this room is fitted with Glazing, it should be shatter-proof.

1A.5.4.3(9) Treatment Spaces

1A.5.4.3(9)(a) Exam / Treatment Rooms

1A.5.4.3(9)(a)(i) Each room will be a 3-walled with a door with e-glass to provide Patient privacy.

1A.5.4.3(9)(a)(ii) Each room will have standardized equipment including but not limited to headwall, medical gases, suction, ceiling lift, PACS viewing, IV poles and pumps, portable diagnostic set, overhead surgical light, and hand wash sinks.

1A.5.4.3(9)(a)(iii) Headwalls must be symmetrical and like-designed in all treatment areas.

1A.5.4.3(9)(a)(iv) One Exam / Treatment Room will have an adjacent isolation ante-room and washroom to accommodate Patients suspected to have an airborne illness.

1A.5.4.3(9)(b) Procedure Room

1A.5.4.3(9)(b)(i) The Procedure Room will accommodate minor procedures and will be equipped with an exam light, exam bed, medical gases, suction, ceiling lifts, and supplies for various procedures stored on carts in the ED.

1A.5.4.3(9)(c) IV Therapy

1A.5.4.3(9)(c)(i) IV Therapy Room will accommodate two recliner / infusion chairs separated by a curtain, with some mobile storage for point-of-use supplies, and a hand hygiene sink.

1A.5.4.3(9)(c)(ii) Headwalls with a full set of medical gases and suction will be provided.

1A.5.4.3(9)(c)(iii) This room will be in view of the clinical Workstations.

1A.5.4.3(10) Medication Room

1A.5.4.3(10)(a) Medication Room will be equipped with a card reader (swipe cards will be connected to the central security system and will not be stand alone) for ease of access of authorized Staff. Door of a Medication Room must be closed and locked when not in use.

1A.5.4.3(10)(b) Adequate space and lighting to prepare medications for dispensing, update records, store medications, and file Documents will be provided.

1A.5.4.3(10)(c) Adequate storage space to separate look-alike, sound-alike medications, different concentrations of the same medication, high-alert medications, and expired, damaged, and contaminated medications pending removal will be provided.

1A.5.4.3(10)(d) A medication disposal area will be provided.

1A.5.4.3(10)(e) Adequate reference materials including, but not limited to, medication monographs and medication interaction information will be provided.

1A.5.4.3(10)(f) Adequate ventilation and temperature control to avoid overheating of the electronic systems and to maintain proper storage temperature for medications will be provided.

1A.5.4.3(10)(g) Temperature will be kept between 15° C to 25° C, which is the recommended range to maintain potency of most medications stored at room temperature.

1A.5.4.3(10)(h) A dedicated medication refrigerator will be provided.

1A.5.4.3(10)(i) Secure narcotics storage will be provided.

1A.5.5 SCHEDULE OF ACCOMMODATION

1A.5.5.1 Space requirements for the ED are identified in the table below in terms of Net Square Metres (NSM). Space identified is assumed to meet 2040/41 needs.

1A.5 Emergency: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
5.1	**Triage and Waiting Area**					
5.1.01	Triage / Registration Station	1	12.0	12.0	- 3-walled room; chair, guest chair, Workstation (phone, clerical storage, PC, Data); printer; Patient chair; provide visual and Acoustical Privacy, security, and mobility requirements; PPE storage; vital sign monitor; scale; neonate scale; violence prevention egress; Emergency bell; systems furniture workstation	-
5.1.02	Hand Hygiene Sink	1	1.0	1.0	- Non-porous material; splash free	- Adjacent to triage
5.1.03	Wheelchair Alcove	1	0.6	0.6	- Storage for clean wheelchairs	
5.1.04	Stretcher Alcove	1	2.0	2.0	- Storage for clean stretchers	- Adjacent to triage
5.1.05	Public Waiting	1	23.5	23.5	- Accommodates 10 people (sub-waiting available for triage); accommodate various Patient types (typical, Bariatric, wheelchair); ability to create zones to separate infectious persons; TV	- Visually accessible from the triage/reception stations
5.1.06	Public Washroom	1	4.6	4.6	- Accessible 2-piece washroom (toilet, sink); baby change area	- Adjacent to Waiting Area
Emergency: Triage and Waiting Area				**Total NSM**		
				43.7		

1A.5 Emergency: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
5.2	**Treatment Area**					
5.2.01	Trauma / Resuscitation Room	1	28.0	28.0	- All medical gases, call and Emergency buttons; stretcher, ;counter, exam light; Patient lift; ability to accommodate Telehealth; accommodates mobile radiology; warming cabinet; exam lights (ceiling mounted); cardiac monitor; IV poles; 2 IV pumps; full size blanket warmer; ceiling mounted booms (gases, electrical); transport ventilator; blood warmer; forced air warming unit (bair hugger); cart storage for all point-of-use supplies (nothing fixed to the floor); PACS; provide utility cart (millwork)	- located near Quiet Room
5.2.02	Scrub Sink	1	0.8	0.8	- Scrub sink & scrub supplies (foot controlled)	-
-	Charting Area	Charting accommodated at the Nursing Station				
5.2.03	Crash Cart Alcove	1	1.5	1.5	- Include charging requirements; unimpeded access for Staff	- stored in the Trauma / Resuscitation Bay
5.2.04	Quiet Room	1	11.0	11.0	- soft lighting; CCTV	- located near Trauma / Resuscitation Room; could be used for mental health Patients (non-combative); - requires view from Nursing Station
5.2.05	Exam / Treatment Room	2	13.0	26.0	- Enclosed room with glass door; headwall with all medical gases; call and Emergency buttons; small Workstation; provide data and electrical requirements; PACS viewing; stretchers; cardiac monitor; ceiling lift; guest chair (1); IV pole & pump; otoscope; ophthalmoscope; hand hygiene sink; ceiling mounted exam light; 1 Exam / Treatment Room will have a sink with plaster trap	
5.2.06	Isolation Ante Room	1	5.0	5.0	- Hand hygiene sink, shelving for gowns, gloves, masks, biohazard collection, soiled linen hamper	-
5.2.07	Isolation Room Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	- dedicated & within Isolation Ante Room

1A.5 Emergency: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
5.2.08	Procedure Room	1	15.0	15.0	- Exam light; exam bed; for lumps and bumps; headwall with medical gases and suction	
5.2.09	IV Therapy	1	11.0	11.0	- 2 recliner / infusion chairs separated by curtain; each with medical gases and suction; hand hygiene sink	- requires view from Nursing Station
5.2.10	Patient Washroom	1	4.6	4.6	- Accessible 2-piece washroom (toilet, sink)	- Shared by Exam / Treatment Rooms
5.2.11	Blanket Warmer	2	0.6	1.2	- Include charging requirements	
5.2.12	Cart Alcove	8	0.8	6.4	- Gyne cart; suture; chest tube & central line; maternity cart; paediatric; ECG machine; shelving; charging requirements	- Could be centralized
5.2.13	Storage Alcove: Portable X-Ray	1	2.0	2.0	- Portable x-ray, etc.	- Shared between IPU and ED
5.2.14	Hand Hygiene Sink	1	1.0	1.0	- Hands free; splash proof; non-porous	- Adjacent to entrance/exit
5.2.15	Clinical Workstation (Nursing Station)	2	3.0	6.0	- Chair, workspace, data, phone, cabinet, video surveillance, PACS, label printer, call bell hub; central huddle area with status board and small table	- grouped together with Physician Workstations to create the Nursing Station; shared between IPU and ED
5.2.16	Physician Workstation	1	3.0	3.0	- Chair, workspace, data connection, phone, cabinet; consider sliding door to create privacy for dictation	- grouped together with Clinical Workstations to create the Nursing Station; shared between IPU and ED
5.2.17	Medical Student / Resident Workstation	1	3.0	3.0	- Chair, workspace, data connection, phone, cabinet	- grouped together with Clinical Workstations to create the Nursing Station; shared between IPU and ED
5.2.18	Business Centre	1	7.0	7.0	- Photocopier/fax; clerical supplies; mail slots; consider 2 walled room if the location is appropriate; cupboard space and mail slots (millwork)	-

1A.5 Emergency: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
5.2.19	Report Room	1	10.0	10.0	- PACS; table and chairs; 4-6 people	- for report rooms and family meeting space; visible to IPU and ED
5.2.20	Patient Nutrition Station	1	4.0	4.0	- Sink, fridge, counter space, cabinets, ice / water machine, microwave	-
5.2.21	Linen Alcove	2	2.0	4.0	- Storage area for clean and soiled carts; cannot be located underneath an electrical panel	-
5.2.22	Staff Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	-
Emergency: Trauma/Resuscitation/Treatment Area				**Total NSM**		
				159.7		
5.3 Clinical and Non-Clinical Support						
Medication / Pharmacy						
5.3.01	Medication Room	1	16.5	16.5	- Refrigerator/freezer; multi-cart storage; Secured; hand hygiene sink; computer; automated medication dispensing including fridge; Secured	- Shared between IPU and ED
Supplies and Equipment Storage						
5.3.02	Clean Utility / Supply Room	1	16.8	16.8	- Storage of clean and sterile supplies; 2-bin system; cart storage	- Shared between IPU and ED
5.3.03	Equipment Storage	1	20.0	20.0	- Include shelving and charging requirements; portable light; IV poles (~5); pressure cuff; mobile lift; 2 bipap machines; bladder machine; doppler; elevated outlets	- Shared between IPU and ED
Environmental Services						
5.3.04	Soiled Utility Room	1	12.0	12.0	- Temporary storage of waste, supplies, and equipment; seamless flooring and countertops (non-porous); floor drain; storage of carts; general waste; medical/hazardous waste; recycling; macerator; hand hygiene sink; utility sink; rimmed sinks	- Shared between IPU and ED
5.3.05	Housekeeping Closet	1	7.0	7.0	- Include electrical requirements, cart storage, floor sink, water source, hand sink, shelving for storage of supplies (germicidal solution, general purpose cleaner, non-acid crème cleaner, toilet bowl cleaner, spot cleaner, furniture polish); toilet bowl swab and caddy; putty knife; safety goggles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE; disposables; paper supplies; garbage bags; gloves; soaps; cleaning cloths; tool; power equipment	- Shared between IPU and ED

1A.5 Emergency: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
Biomedical Engineering						
-	Biomedical Workroom	Accommodated in the biomedical engineering SOA				
Emergency: Patient Support				**Total NSM**		
				72.3		
5.4	**Decontamination and RCMP / EMS Workroom**					
5.4.01	Decontamination Room	1	16.0	16.0	- Cleanable surface, hose bib floor drain, (7.5 NSM of open floor space); shower; venting; configuration to accommodate a stretcher; linear hot and cold zoning	
5.4.02	RCMP / BCEMS Workstation	1	3.4	3.4	- Chair, workspace, data connection, phone, cabinet	- Adjacent to Ambulance Bay
Emergency: Decontamination and RCMP / EMS Workroom				**Total NSM**		
				19.4		
5.5	**Staff Support**					
5.5.01	Sleep Room	1	8.0	8.0	- Bed, night table, reading lamp; closet space; Secured	- Shared between IPU and ED
-	Office: Nurse Manager	- Included in Inpatient Unit SOA				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
Emergency: Staff Support				**Total NSM**		
				8.0		
Total Emergency Area				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				303.1	**1.57**	**475.9**
5.6	**Ambulance Bay**					
5.6.01	Ambulance Bay	1	78.0	78.0	- Enclosed; heated; 1-way drive through; wall storage; shelving; straight access into the bay (ensure turning radius is met); provide Direct Access from the bay to the ED; automated door openers (from exterior and into the ED) - O2 tanks will be provided. - Provide First Responder access to Ambulance Bay via man door, and provide staff access to ambulance holding spaces via man door.	-

1A.5 Emergency: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
5.6.02	Ambulance Entrance	1	11.0	11.0	- Easy visible connection to triage, bypass to trauma/resuscitation	-
Emergency: Ambulance Bay				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				89.0	**1.10**	**97.9**

1A.6 MEDICAL INPATIENT

This specification outlines the functional, operational, and physical requirements for the Medical Inpatient department.

1A.6.1 FUNCTIONAL DESCRIPTION

1A.6.1.1 Statement of Purpose

1A.6.1.1(1) The Building will provide Inpatient services for Medical Inpatients, palliative care, labour and delivery, and, on occasion, short-term holding of adolescents, children, neonates, and severely acute Patients until they can be transferred to another facility.

1A.6.1.1(2) Mental health patients (child, adolescent, and adult), while not planned to be accommodated with specific infrastructure requirements, may occasionally require short-term Inpatient Care at the Building until transferred to another facility.

1A.6.1.2 Scope of Services

1A.6.1.2(1) Functional Content

1A.6.1.2(1)(a) The following list specifies the minimum set of functions that will be accommodated within the Medical Inpatient department:

1A.6.1.2(1)(a)(i) Treatment and interventions will be provided primarily at bedside.

1A.6.1.2(1)(a)(ii) Patients requiring Diagnostic Imaging (DI) or minor procedures will be transported to and from those areas. Some diagnostic procedures may be performed in the Inpatient room using portable imaging equipment.

1A.6.1.2(1)(a)(iii) Patients requiring airborne isolation will be accommodated in the airborne isolation room.

1A.6.1.2(1)(a)(iv) Thoughtful and compassionate end of life care for patients and their families will be provided.

1A.6.1.2(1)(a)(v) Create a safe and family-centred labour, delivery, recovery, and post-partum environment for families and newborns.

1A.6.1.2(2) Planning Assumptions

1A.6.1.2(2)(a) The following planning principles will drive the design and operations of the Medical Inpatient department:

1A.6.1.2(2)(a)(i) Medical Inpatients (Adults) will include the following:

1A.6.1.2(2)(a)(i)A One airborne isolation room.

1A.6.1.2(2)(a)(i)B One Medical Inpatient room with Bariatric requirements.

1A.6.1.2(2)(a)(ii) Palliative Care

1A.6.1.2(2)(a)(ii)A A dedicated palliative care family lounge will be provided adjacent to adjoining access to the palliative room.

1A.6.1.2(2)(a)(iii) Labour, Delivery, Recovery, and post-partum (LDRP)

1A.6.1.2(2)(a)(iii)A Newborns will be housed in the LDRP

1A.6.1.2(2)(a)(iv) Mental Health

1A.6.1.2(2)(a)(iv)A Mental health patients (child, adolescent, and adult) may arrive at the Building and will be temporarily admitted until they are transferred to another facility.

1A.6.1.2(2)(a)(iv)B No specific space or equipment accommodations will be provided for these Patient types.

1A.6.1.2(2)(a)(v) Paediatrics

1A.6.1.2(2)(a)(v)A Paediatric patients will be temporarily held on the unit until being transferred to another facility.

1A.6.1.2(2)(a)(v)B Paediatric equipment will be stored in the equipment storage room.

1A.6.1.2(2)(b) A Patient activation area will be shared between Medical Inpatient and Long-Term Care. This will accommodate Patient activation and Rehabilitation activities to enhance Patient activation and recovery.

1A.6.2 OPERATIONAL DESCRIPTION

1A.6.2.1 Hours of Operation

1A.6.2.1(1) Medical Inpatient services will function 24 hours a day, 7 days per week, with visiting hours from 0800 to 2000, 7 days per week.

1A.6.2.1(2) Palliative care visitors will have access to this area 24 hours a day, 7 days per week.

1A.6.2.1(3) Access to the Medical Inpatient department will be controlled by the Building Staff at all times.

1A.6.2.2 Organization & Management

1A.6.2.2(1) Medical Inpatient services will be managed by the head nurse. There will be a designated physician leader.

1A.6.2.3 Workflow

1A.6.2.3(1) Medical Inpatients (All Patient Types)

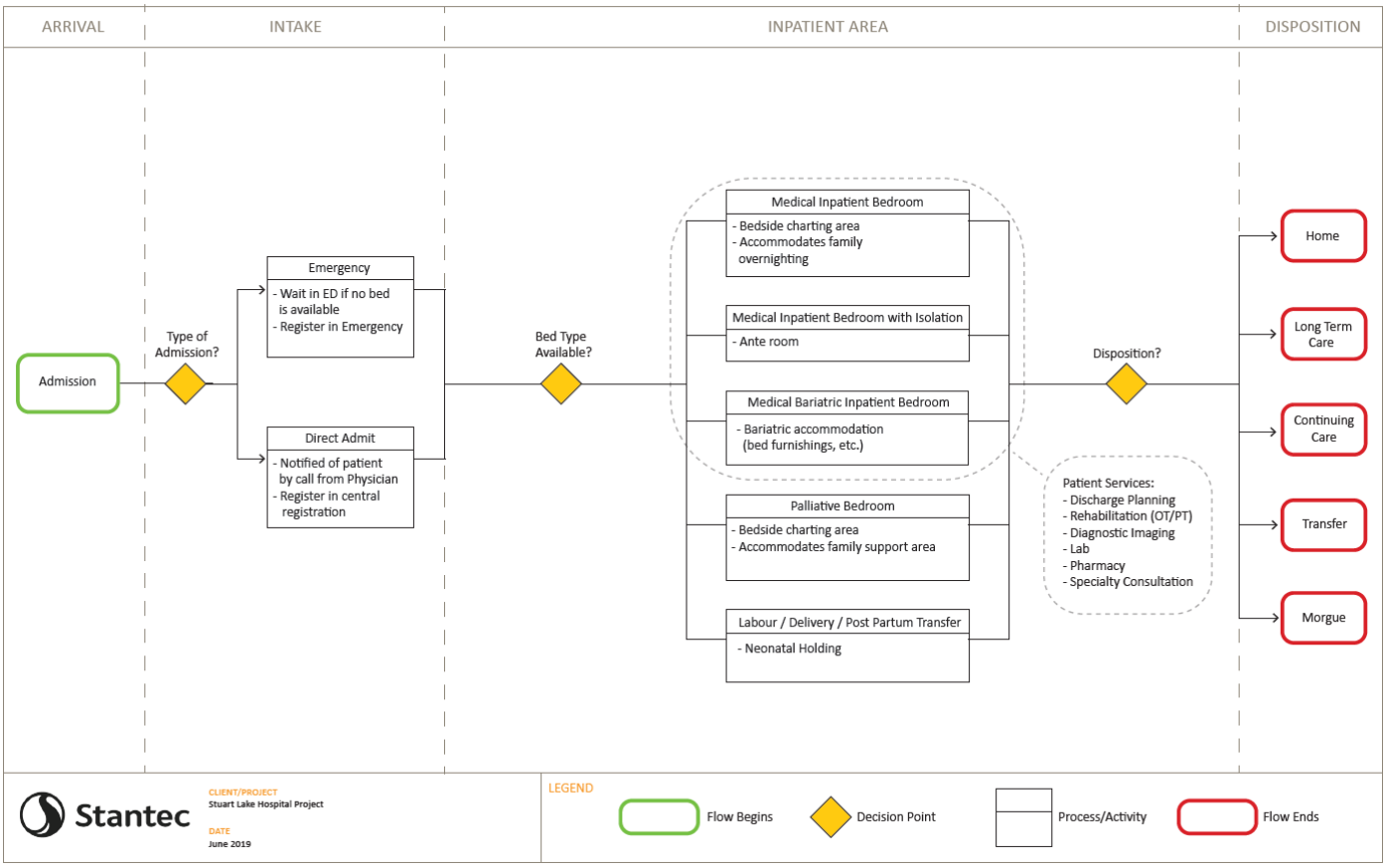
1A.6.2.3(1)(a) Medical Inpatients will be admitted either through the ED or directly by a physician to the appropriate bed type (Medical Inpatient, Palliative care, LDRP, Bariatric, or airborne isolation).

1A.6.2.3(1)(b) Palliative care services will be provided through following established screening criteria.

1A.6.2.3(1)(c) Discharge planning will start at the time of admission and will be a critical Component of the care process.

1A.6.2.3(1)(d) The future state flow map below describes the key flows for the future model of care for the Medical Inpatient area. This informs the operational processes that will enhance Patient flow, create efficiencies, and support the Staff in a future delivery model.

Stuart Lake Hospital Project - Functional Program - MEDICAL / LDRP / PALLIATIVE INPATIENT - Future State Flow Map



1A.6.2.4 Support Activities

1A.6.2.4(1) Cardiology Technician

1A.6.2.4(1)(a) Electrocardiograms (ECGs) will be performed in a Patient room.

1A.6.2.4(2) Laboratory and Specimen Collection

1A.6.2.4(2)(a) Specimens will be collected either in the department or in the specimen collection area of the lab.

1A.6.2.4(2)(a)(i) STAT and urgent specimens will be collected in the Patient Rooms by lab technicians and transported by lab technicians to the Building lab for processing.

1A.6.2.4(2)(b) Limited point-of-care testing (urine and glucose) will be performed by nursing Staff.

1A.6.2.4(2)(c) After-hours laboratory support will be available through call-back.

1A.6.2.4(3) Diagnostic Imaging

1A.6.2.4(3)(a) Patients requiring an x-ray will be transported to the DI department by nursing and/or DI Staff.

1A.6.2.4(4) Food and Nutrition Services

1A.6.2.4(4)(a) Meals will be assembled in the central Food and Nutrition Services area and will be distributed using insulated tray covers to each Medical Inpatient room by Food and Nutrition Services Staff.

1A.6.2.4(4)(b) Following each meal service, all carts, trays, and service ware will be returned to the central Food and Nutrition Services area for ware washing and sanitation by Food and Nutrition Services Staff.

1A.6.2.4(4)(c) A Patient nutrition station will be located adjacent to the Nursing Station and shared between the Medical Inpatient and Emergency Departments.

1A.6.2.4(5) Laundry and Linen

1A.6.2.4(5)(a) The linen alcoves will be shared with the Emergency Department and will be located in a centrally accessible area for both departments.

1A.6.3 STAFFING

1A.6.3.1 Estimated future Staffing for the Medical Inpatient department is summarized below. Staffing is shared between Medical Inpatient services, Long-Term Care, and the Emergency Department.

Medical Inpatient: Projected Staffing	
Position	**Projected FTE**
	2040/41
Direct Care Nurse	13.0
Care Aide	8.0
Nursing Assistant / Clerk	1.0
Total Medical Inpatient Staffing	**22.0**

1A.6.4 DESIGN CRITERIA

1A.6.4.1 External and Internal Relationships

1A.6.4.1(1) The following external relationships for the Medical Inpatient department will be provided:

1A.6.4.1(1)(a) Adjacent by controlled circulation for movement of Patients from DI and ED.

1A.6.4.1(1)(b) Adjacent by General Circulation on the same level for movement of specimens to the lab.

1A.6.4.1(1)(c) Palliative care room will be adjacent by General Circulation to the Gathering Space.

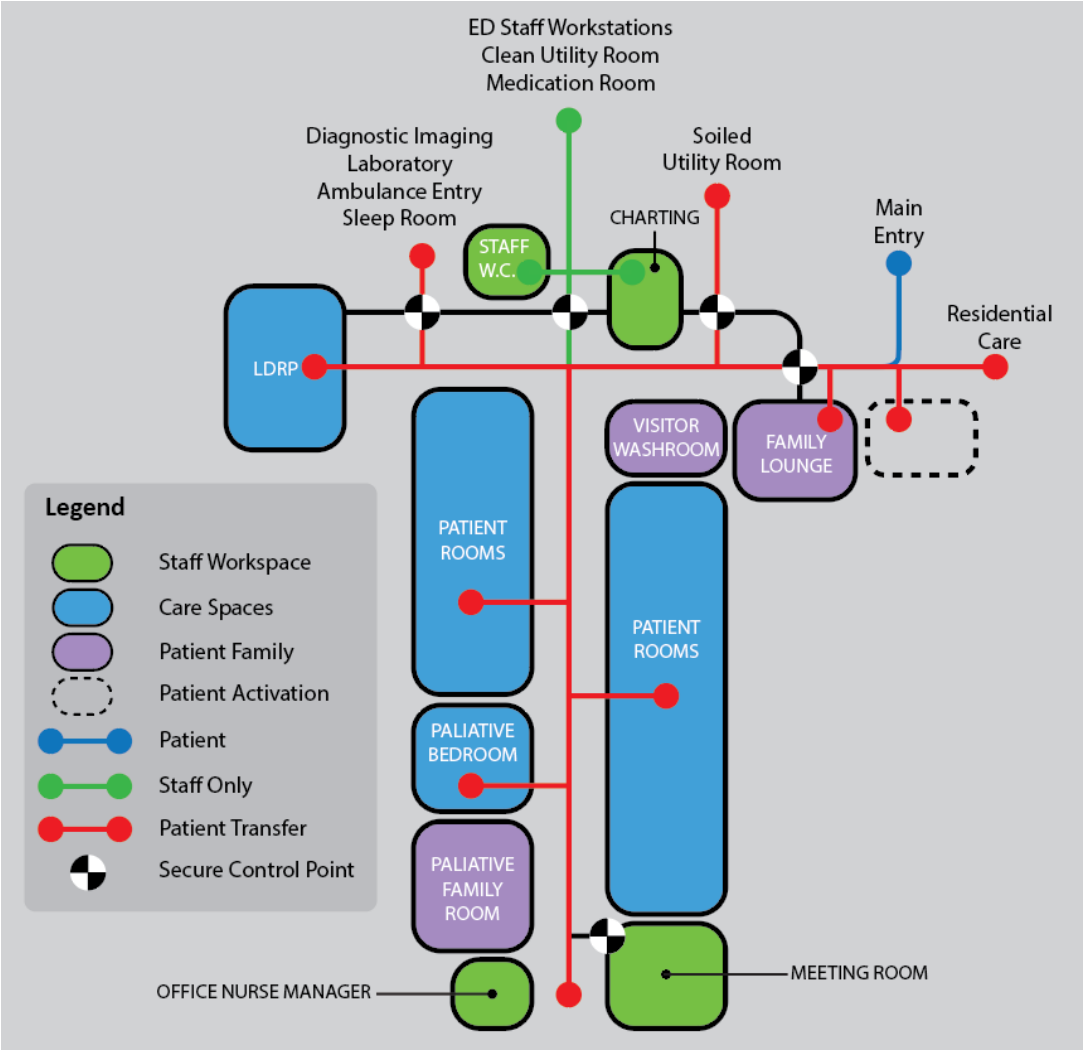
1A.6.4.1(1)(d) Adjacent by General Circulation through public circulation for visitors of Medical Inpatients.

1A.6.4.1(1)(e) Patient activation space will be in close proximity to both Medical Inpatient and Long-Term Care. (Space is shared between the programs.)

1A.6.4.1(1)(f) Family lounge space will be in close proximity to both Medical Inpatient and Long-Term Care. (Space is shared between the programs.)

1A.6.4.2 Functional Relationship Diagram

1A.6.4.2(1) Functional relationships between key areas will be generally as illustrated in the following diagram. The diagram is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.



1A.6.4.3 Internal Design Criteria

1A.6.4.3(1) For a description of General Planning Concepts applicable to the Medical Inpatient department, see Section 1A.0. These two sections must be read together.

1A.6.4.3(2) Inpatient Unit Organization

1A.6.4.3(2)(a) The unit clerk will be located at the entry to the unit as well as at the nurse station.

1A.6.4.3(2)(b) The clinical support areas (clinical Workstation / nursing station, physician Workstation, Business Centre, Patient nutrition station, Medication Room, linen alcove, Clean Utility / Supply Room, storage room, Soiled Utility Room, and Housekeeping rooms) will be shared with the ED and close adjacencies will be required.

1A.6.4.3(2)(c) Staff support areas including locker space and lounge will be shared with all Staff in the central locker and lounge areas.

1A.6.4.3(2)(d) The design of the unit will minimize Staff travel distances, maximize line of sight observation of patients, and accommodate reduced Staffing levels during nighttime shifts.

1A.6.4.3(2)(e) Design will enable Patient confidentiality through all phases of Patient flow including Reception, electronic charting, care team collaboration, and treatment.

1A.6.4.3(2)(f) Wayfinding signage will clearly identify the “public” point of access / egress and the preferred route for visitors to access the Inpatient bedrooms.

1A.6.4.3(2)(g) Wander protection (e.g. WanderGuard systems) will be incorporated into each access / egress point to prevent Patient wandering and ensuring Patients remain within the departmental limits.

1A.6.4.3(2)(h) Artificial lighting throughout the Medical Inpatient department will follow a general standard of providing “non-direct” lighting. This implies fixtures that reflect light upwards, away from direct eye contact, and especially in those areas where patients will be either in bed or transported on stretchers.

1A.6.4.3(2)(i) Artificial lighting in the administrative and support areas will be variable to accommodate different levels of ambient lighting commensurate with the functions ongoing at any one time in that space. Individual Workstations will be provided with task lighting.

1A.6.4.3(2)(j) Design will be “elderly friendly” by incorporating features for patients with compromised mobility and/or cognitive functioning. These features can include, but are not limited to:

1A.6.4.3(2)(j)(i) Lights will be off-centre relative to circulation corridors.

1A.6.4.3(2)(j)(ii) Design will minimize blind corners where the cognitively impaired can become confused and distressed.

1A.6.4.3(2)(j)(iii) Features will be incorporated that diminish the visual identification of exit doorways assisting patients to remain within their designated Inpatient area. Accentuate the Inpatient rooms from the exits.

1A.6.4.3(2)(j)(i) Wall and floor colours will enhance Patient safety by maximizing sensory stimulation.

1A.6.4.3(3) Medical Inpatient Rooms

1A.6.4.3(3)(a) All Medical Inpatient rooms will be single Patient Rooms with dedicated, accessible, 3-piece (shower, sink, toilet) washrooms.

1A.6.4.3(3)(b) All Medical Inpatient rooms will have a standardized layout that includes an inboard washroom design and Inpatient rooms will be mirrored.

1A.6.4.3(3)(c) All Inpatient beds will be universally designed to incorporate as much flexibility as possible. All Patient Rooms will be similarly equipped and with headwall and medical gases in the same position relative to the head of the Patient.

1A.6.4.3(3)(d) Motorized, x/y gantry, Patient ceiling lifts will be provided in all Medical Inpatient rooms and connected to a single monorail to washrooms for toileting.

1A.6.4.3(3)(e) Handrails will be installed around the perimeter of each Medical Inpatient room and within the washroom to provide grab support during movement within the room from the door, bed, and toilet.

1A.6.4.3(3)(f) Headwalls will be symmetrical and like-designed in all Medical Inpatient rooms.

1A.6.4.3(3)(g) Line of sight will be provided from the hallways of the unit to the head of the Patient by providing windows in the door or beside the door for Patient observation but not to disrupt the Patient (i.e., when the Patient is sleeping). No blind or curtains will be provided.

1A.6.4.3(3)(g)(i) The Inpatient room dedicated for airborne isolation capability will require a window.

1A.6.4.3(3)(h) All Inpatient beds will be monitored with the screens located at the clinical Workstation area (i.e. nursing station).

1A.6.4.3(3)(i) A pullout loveseat will be provided within all Medical Inpatient rooms in the family zone, allowing a family member to sleep in the Patient bedroom.

1A.6.4.3(3)(j) A lockable drawer will be provided to store some small belongings.

1A.6.4.3(3)(k) A hand hygiene sink will be provided.

1A.6.4.3(3)(l) Patient Room Lighting

1A.6.4.3(3)(l)(i) All Medical Inpatient rooms will have a window for Direct Natural Light and views to the outside.

1A.6.4.3(3)(l)(ii) All Medical Inpatient rooms will have an exam light.

1A.6.4.3(3)(l)(iii) Artificial lighting in each Medical Inpatient room will be provided for different levels of Patient-controlled lighting (including dimmers) to give the Patient the ability to read while in bed.

1A.6.4.3(3)(l)(iv) Lighting will be provided in the Medical Inpatient room to accommodate the Staff's ability to monitor the Patient during the night without affecting the Patient's ability to sleep.

1A.6.4.3(3)(l)(v) The family zone within each Medical Inpatient room will require a reading light with controls.

1A.6.4.3(4) Inducements for Patient Ambulation

1A.6.4.3(4)(a) To induce Medical Inpatient ambulation, handrails will be included on both sides in all corridors typically accessed by Medical Inpatients.

1A.6.4.3(5) Specialized Care Rooms

1A.6.4.3(5)(a) One Medical Inpatient room will be dedicated for Bariatric patients. It will accommodate all of the previously identified Medical Inpatient room requirements along with the following:

1A.6.4.3(5)(a)(i) Doorways and circulation spaces will be a minimum of 1500 mm to accommodate Bariatric wheelchairs, scooters, and beds.

1A.6.4.3(5)(a)(ii) The Patient Bariatric cyber gantry lift system will allow Patient pick-up from all areas of the room with a single track to the bathroom for toileting.

1A.6.4.3(5)(b) One Medical Inpatient room (not the one dedicated to Bariatric requirements) will be accommodated with a negative pressure airborne isolation room (AIR).

1A.6.4.3(5)(b)(i) Airborne isolation-capable room will require two separate points of access / exit; one from the main circulation corridor in the Patient care area which will have the ability to be locked down when isolation is required and a second access / egress point directly to/from the ante room.

1A.6.4.3(5)(b)(ii) The ante room will be located to the side of each Patient bedroom, not in front of the Patient bedroom, and will not form a vestibule in front of the Patient bedroom.

1A.6.4.3(5)(b)(iii) The Patient entrance to the airborne isolation room will be directly onto the corridor. There will be a window from the ante room into the Medical Inpatient room dedicated to isolation.

1A.6.4.3(5)(c) One Medical Inpatient room, not the Bariatric Inpatient room, will be dedicated to palliative care. It will accommodate all of the previously identified Medical Inpatient room requirements along with the following:

1A.6.4.3(5)(c)(i) Provide built-in cabinetry that conceals the headwall, medical gases, monitors, and equipment on both sides of the Patient bed with foldaway doors.

1A.6.4.3(5)(c)(ii) Family support space will be provided including a kitchen for meal preparation and storage, overnight accommodation for two family members, and a family lounge. The support space requires two doors: one into the Patient room and the other into the hallway.

1A.6.4.3(5)(c)(iii) Larger groups will be accommodated in the gathering space which will be accessible from the palliative care area from 0800 to 2000, 7 days-a-week.

1A.6.4.3(5)(c)(iv) Access to the spiritual room will also be provided twenty-four hours-a-day, 7 days-a-week.

1A.6.4.3(6) Labour, Delivery, Recovery, and Post-Partum Room (LDRP)

1A.6.4.3(6)(a) The LDRP will accommodate all of the previously identified Medical Inpatient room requirements along with the following:

1A.6.4.3(6)(a)(i) A nursing zone located next to the Patient bedside along the headwall. This zone requires cabinetry and space to support the nursing functions, including monitors, a charting Workstation, space to accommodate paper and electronic documentation, and immediately accessible supplies.

1A.6.4.3(6)(a)(ii) A Patient zone that includes built-in cabinetry concealing the headwall, medical gases, monitors, and equipment on both sides of the Patient bed with foldaway doors.

1A.6.4.3(6)(a)(iii) An infant zone with a fold-down infant isolette and warmer incorporated into cabinetry at the footwall of the LDRP. The isolette area will have lighting, headwall with medical gases, rocker chair, privacy curtain, and equipment storage, and space for charting.

1A.6.4.3(6)(a)(iv) A lockable full height Patient belongings storage cabinetry.

1A.6.4.3(6)(a)(v) Birthing lights at the foot of the bed.

1A.6.4.3(6)(a)(vi) A minimum of 1900 mm between the foot of the Patient bed and the footwall. The 1900 mm does not include, space needed to allow for a Patient bed to pass by the infant bassinet and warmer when it is folded down.

1A.6.4.3(6)(a)(vii) A family zone, large enough for a full-sized sleeper sofa or recliner chair and storage for a few family belongings, including a reading light.

1A.6.4.3(6)(a)(viii) Motorized cyber gantry ceiling-mounted Patient lift in the LDRP with a single track to the bathroom for toileting.

1A.6.4.3(6)(a)(ix) Headwalls will be symmetrical and like-designed to Medical Inpatient rooms.

1A.6.4.3(6)(a)(x) For the isolette bay, provide lighting and controls, medical gases and a headwall, rocker, privacy curtain, and equipment storage.

1A.6.4.3(7) Patient Activation

1A.6.4.3(7)(a) The Patient activation space is shared between Medical Inpatients and Long-Term Care Residents.

1A.6.4.3(7)(b) It includes a treadmill, parallel bars, plinth, and stairs to promote Patient activation and Rehabilitation.

1A.6.4.3(7)(c) This space should be accessible from both departments without being required to enter into either department (access from a general corridor).

1A.6.4.3(7)(d) The space should be oriented to ensure privacy and with CCTV for observation by Staff.

1A.6.5 SCHEDULE OF ACCOMMODATION

1A.6.5.1 Space requirements for the Medical Inpatient department are identified in the table below in Net Square Metres (NSM).

1A.6 Medical Inpatient: Schedule of Accommodation (Detailed Space List)							
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**	**Reference**
6.1	**Inpatient Areas**						
	Medical Inpatient						
6.1.01	Medical Inpatient Bedroom	6	21.4	128.4	- Includes bed area, area immediately inside the entry to the room, family zone, Staff zone, supply alcove; single Patient room; bed, headwall, motorized cyber gantry ceiling lift, Patient locker, family zone, whiteboard, media capability (TV, Telehealth, education); vital sign monitor; bedside table; Patient chair; IV poles; otoscope; ophthalmoscope; thermometer, manual blood pressure cuffs	- 7 Medical Inpatient beds in this area (6 regular and 1 Bariatric)	CSA Z8000-18 11.1 (24b)
6.1.02	Medical Inpatient Washroom	6	6.0	36.0	- Accessible 3-piece (toilet, sink, shower) washroom; double-assist toilet; monorail Patient ceiling lift track for toileting included in washroom; call bell	- Private washroom with each Inpatient room	CSA Z8000-18 11.1 (25b)
6.1.03	Isolation Ante Room	1	7.5	7.5	- Sink, gowning, soiled linen hamper, garbage	-	CSA Z8000-18 11.1 (26)
6.1.04	Medical Inpatient Bedroom (Bariatric)	1	31.4	31.4	- Includes bed area, area immediately inside the entry to the room, family zone, Staff zone, supply alcove; single Patient room; bed, headwall, motorized cyber gantry Bariatric lift, Patient locker, family zone, whiteboard, supply alcove, media capability (TV, Telehealth, education); Bariatric furnishings	-	CSA Z8000-18 11.1 (24b)
6.1.05	Medical Inpatient Washroom (Bariatric)	1	7.0	7.0	- Accessible 3-piece (toilet, sink, shower) washroom; double-assist toilet, monorail Patient ceiling lift track for toileting.	-	CSA Z8000-18 11.1 (25b)

1A.6 Medical Inpatient: Schedule of Accommodation (Detailed Space List)							
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**	**Reference**
6.1.06	Charting Area	2	1.8	3.6	- Chair, shelving, counter space, data, label printer	- Shared between all Inpatient rooms	CSA Z8000-18 11.1 (5)
-	Clinical Workstation (Nursing Station)	Shared Nursing Station with ED; space accommodated in the ED SOA					
-	Physician Workstation	Shared Nursing Station with ED; space accommodated in the ED SOA					
-	Business Centre	Located adjacent to Nursing Station that is shared with ED; space accommodated in the ED SOA					
-	Patient Nutrition Station	Located adjacent to Nursing Station that is shared with ED; space accommodated in the ED SOA					
6.1.07	Family Lounge	1	15.0	15.0	- Accommodates 6 people; soft seating; could used Patient activation	-	-
6.1.08	Staff Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	-	CSA Z8000-18 11.1 (48)
	Palliative Care						
6.1.09	Palliative Care Bedroom	1	21.4	21.4	- Includes bed area, area immediately inside the entry to the room, family zone, Staff zone, supply alcove; single Patient room; bed, headwall, motorized cyber gantry ceiling lift, Patient locker, family zone, whiteboard, media capability (TV, Telehealth, education); vital sign monitor; bedside table; Patient chair; IV poles; otoscope; ophthalmoscope; thermometer, manual blood pressure cuffs		CSA Z8000-18 11.1 (24b)
6.1.10	Palliative Care Washroom	1	6.0	6.0	- Accessible 3-piece (toilet, sink, shower) washroom; double-assist toilet; monorail Patient ceiling lift track for toileting included in washroom; call bell	- Private washroom with each Inpatient room	CSA Z8000-18 11.1 (25b)
6.1.11	Palliative Care Family Lounge	1	28.0	28.0	Family room space; pullout couch; recliner; table; kitchen table; 6 chairs; tv; coffee table; kitchenette (microwave, fridge, sinks, cabinets, toaster, counter space); 2-piece washroom	- adjacent with internal door to palliative care bedroom	n/a
	Maternity Area						

1A.6 Medical Inpatient: Schedule of Accommodation (Detailed Space List)							
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**	**Reference**
6.1.12	LDRP	1	32.0	32.0	- Bed area, Staff zone, family zone, supply storage, and infant area; - Includes: bed, recliner/sleeper, delivery cart, baby warmer with scale, hand wash sink, hampers, bedside table, overbed table, clothing storage, TV, headwall, motorized cyber gantry Patient ceiling lift, bar fridge (in closet area), whiteboard; supply alcove; Patient lifts; 1 room requires double headwalls for surge capacity; isolette; medical gases (oxygen, vacuum, medical air, nitrous oxide; step stool; counter space; blackout blinds; supply cart (1 per 2 rooms); rocker chair for mother; personal storage with hangers and 2 shelves); bassinette; Patient control of lighting (dimmers) and temperature	-	CSA Z8000-18 8.3 (3)
6.1.13	LDRP Washroom (shower)	1	6.0	6.0	- 3-piece accessible private washroom (shower, toilet, sink); seating for mother and support person; accessible from all 3 sides; monorail Patient ceiling lift track for toileting	-	CSA Z8000-18 8.3 (3)
6.1.14	Storage	1	8.0	8.0	- Storage for radiant warming unit (1.0 NSM), birthing bed (2.5 NSM), physiologic fetal monitor (0.5 NSM), incubator (2.5 NSM), breast aspirator (0.5 NSM), instrument table (0.75 NSM), bassinnette (0.75 NSM), infant scale: 0.5 NSM; portable crib; pediatric blood pressure monitor; pediatric syringe pump; pediatric cart with IV pole	-	-
	Patient Activation						
6.1.15	Patient Activation Area	1	26.5	26.5	- 1 treadmill; parallel bars; stairs; plinth; open floor space; small touchdown Workstation; CCTV	- Located adjacent to long-term care for rehab	n/a

1A.6 Medical Inpatient: Schedule of Accommodation (Detailed Space List)							
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**	**Reference**
Medical Inpatient: Inpatient Areas				**Total NSM**			
				361.4			
6.2 Clinical Support							
Medication / Pharmacy							
-	Medication Room	Shared with the Emergency Department; space is accommodated in the Emergency Department SOA					
Supplies and Equipment Storage							
-	Clean Utility / Supply Room	Shared with the Emergency Department; space is accommodated in the Emergency Department SOA					
-	Linen Alcove	Shared with the Emergency Department; space is accommodated in the Emergency Department SOA					
-	Storage Room	Shared with the Emergency Department; space is accommodated in the Emergency Department SOA					
6.2.01	Blanket Warmer	1	2.0	2.0	- Include data and charging requirements	-	n/a
6.2.02	Cart / Storage Alcoves	2	1.5	3.0	- Storage for pediatric and others; include data and charging requirements	-	CSA Z8000-18 11.1 (27)
Environmental Services							
-	Soiled Utility Room	Shared with the Emergency Department; space is accommodated in the Emergency Department SOA					
-	Housekeeping Closet	Shared with the Emergency Department; space is accommodated in the Emergency Department SOA					
Biomedical Engineering							
-	Biomedical Workroom	Accommodated in the biomedical engineering SOA					
Medical Inpatient: Clinical Support				**Total NSM**			
				5.0			
6.3 Staff Support							
6.3.01	Family Washroom	1	12.0	12.0	Provide clear manoeuvering space inside the room 2000 x 1800. Provide one (1) height-adjustable washbasin with accessible vertical grab bars, and one (1) toilet with accessible grab bars and space on both sides. Provide floor drain.		

1A.6 Medical Inpatient: Schedule of Accommodation (Detailed Space List)							
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**	**Reference**
					Provide the following accessories: • Horizontal rail • Full-length mirror • Wide Paper roll dispenser • Wall-mounted height-adjustable fold-down changing bench • Nurse call • Shelf for colostomy bags • Alarm reset button • Large sanitary napkin disposal unit (recessed if possible) • Paper towel dispenser • General waste bin (recessed if possible) • Nurse call close to the wash basin • Coat hooks		
6.3.02	Workstation: Unit Clerk	1	3.4	3.4	- Chair, computer station, phone, data	-	CSA Z8000-18 11.1 (49)
-	Meeting Room	- Accommodated in the Staff Facilities					
-	Staff Lockers	- Accommodated in the Staff Facilities					
-	Staff Lounge	- Accommodated in the Staff Facilities					
Medical Inpatient: Staff Support				**Total NSM** **15.4**			
Total Medical Inpatient Area				**Total NSM** **381.8**	**Minimum Required CGF** **1.50**	**Minimum Required CGSM** **572.7**	
6.4	**Exterior Space**						
6.4.01	Porch	1	12.0	12.0	- Outdoor space accessible from palliative care family lounge; 12sqm of the area will be a wheelchair accessible surface; 12sqm of this area will be covered and wheelchair accessible	-	n/a
Medical Inpatient: Exterior Space				**Total SQM** **12.0**	**-** **-**	**Total SQM** **12.0**	

1A.7 LONG-TERM CARE

This specification outlines the functional, operational, and physical requirements for long-term care (LTC).

1A.7.1 FUNCTIONAL DESCRIPTION

1A.7.1.1 Statement of Purpose

1A.7.1.1(1) LTC will provide services to Residents from many different backgrounds, enriching each Resident's life and health through teamwork and continuous quality improvement. By creating an atmosphere of responsiveness, support, respect, the LTC area will be designed to promote optimum health, independence, and improved quality of life for our Residents in a culturally sensitive manner. LTC will support Residents with a wide range of needs, including chronic care, dementia care, and assisted care needs.

1A.7.1.2 Scope of Services

1A.7.1.2(1) **Functional Content**

1A.7.1.2(1)(a) Accommodation of eighteen single Resident rooms with private washrooms, including two Bariatric rooms.

1A.7.1.2(1)(b) Delivery of services in a home-like and respectful manner including but not limited to the living room, dining area, activity space, and outdoor space.

1A.7.1.2(1)(c) Provide Rehabilitation services with the Patient activation space shared with the medical Inpatient unit.

1A.7.2 OPERATIONAL DESCRIPTION

1A.7.2.1 Hours of Operation

1A.7.2.1(1) LTC will operate 24 hours per day, 7 days per week.

1A.7.2.2 Organization & Management

1A.7.2.2(1) LTC will be managed by the head nurse. There will be a designated physician leader.

1A.7.2.3 Workflow

1A.7.2.3(1) **Residents**

1A.7.2.3(1)(a) Residents will be admitted to the LTC area and be designated a private Resident bedroom.

1A.7.2.3(1)(b) Resident dining will occur in the dining area. Activities, lounging, and other services will be provided throughout the area. Chronic care Residents unable to leave their beds will have food delivered to their beds.

1A.7 LONG-TERM CARE

1A.7.2.3(1)(c) The future state flow map describes the key flows for the future model of care for LTC. This informs the operational processes that will enhance Resident flow, create efficiencies, and support the Staff in a future delivery model.

1A.7.2.3(1)(d) The following list describes daily activities that will be accommodated for Residents in LTC:

1A.7.2.3(1)(d)(i) Living room activities including watching television, reading, and interacting with fellow Residents.

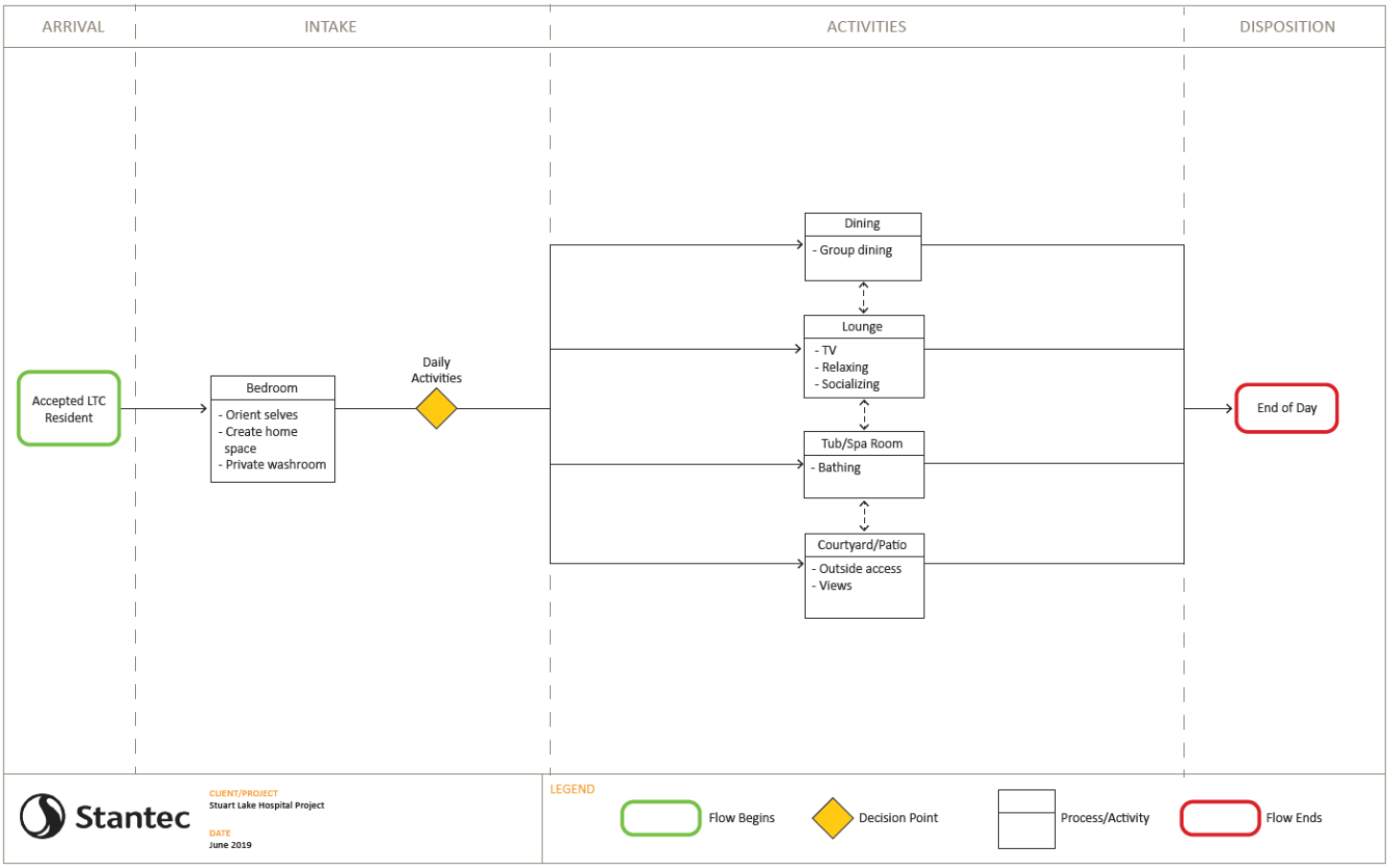
1A.7.2.3(1)(d)(ii) Dining area with kitchen to observe and, potentially, assist with meal preparations.

1A.7.2.3(1)(d)(iii) Activity room for individual and/or group activities such as painting, drawing, drama, games, etc.

1A.7.2.3(1)(d)(iv) Hair salon for personal grooming.

1A.7.2.3(1)(d)(v) Patient activation space for Residents to remain active and participate in Rehabilitation activities.

Stuart Lake Hospital Project - Functional Program - LONG TERM CARE - Future State Flow Map



1A.7.2.4 Support Activities

1A.7.2.4(1) Clinical Laboratory and Specimen Collection

1A.7.2.4(1)(a) STAT and non-urgent specimens will be collected in the Resident rooms by lab technicians and transported by nursing Staff and/or lab technicians to the Building lab for processing.

1A.7.2.4(1)(b) Limited point-of-care testing (urine and glucose) will be performed by nursing Staff.

1A.7.2.4(1)(c) Afterhours laboratory support will be available through call back.

1A.7.2.4(2) Diagnostic Imaging (DI)

1A.7.2.4(2)(a) Residents requiring an x-ray will be transported to the DI by nursing and/or DI Staff.

1A.7.2.4(3) Food & Nutrition Services

1A.7.2.4(3)(a) Meals will be assembled in the central food and nutrition services area and will be distributed using insulated tray covers to LTC by food and nutrition services Staff.

1A.7.2.4(3)(b) LTC Residents will eat all meals in the dining area with bulk food delivered by a food services cart. Some Residents will be unable to travel to the dining area and will need to take meals in their beds.

1A.7.2.4(3)(c) Following each meal service, all carts, trays, and service ware will be returned to the central food and nutrition services area for ware washing and sanitation by food and nutrition services Staff.

1A.7.3 STAFFING

1A.7.3.1 Estimated future Staffing for LTC is included in medical Inpatient Staffing.

1A.7.4 DESIGN CRITERIA

1A.7.4.1 External and Internal Relationships

1A.7.4.1(1) LTC will be accessible by General Circulation from the Main Entrance for Residents, families, and visitors.

1A.7.4.1(2) Patient activation room will be directly adjacent to both the LTC and medical Inpatient departments.

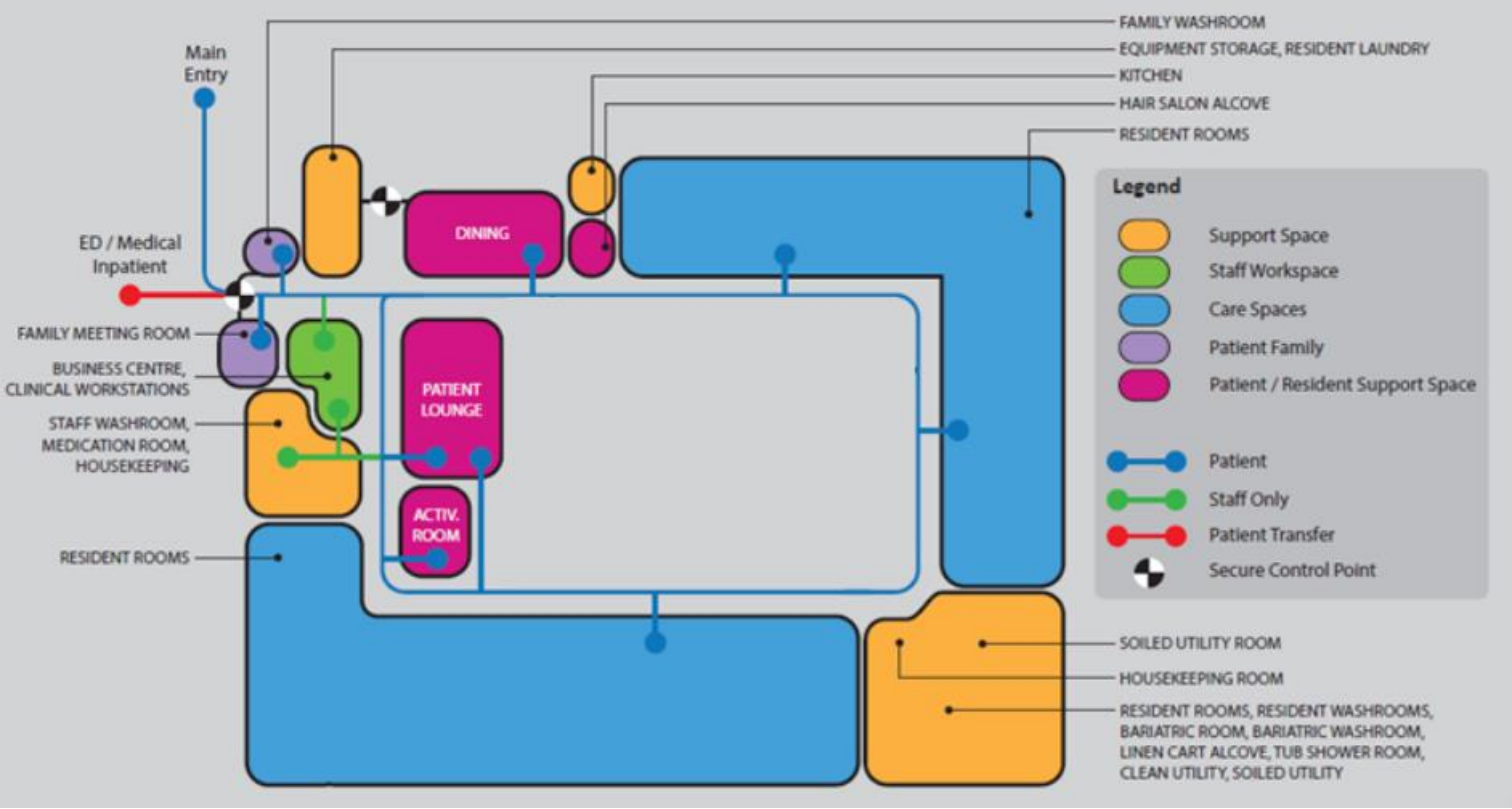
1A.7.4.1(3) LTC will have direct access to an exterior landscaped area.

1A.7.4.1(4) LTC will be accessible by General Circulation to the gathering space.

1A.7.4.1(5) LTC will be accessible by General Circulation for movement of specimens to the lab on the same floor.

1A.7.4.2 Functional Relationship Diagram

1A.7.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. The diagram is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.



1A.7.4.3 Internal Design Criteria

1A.7.4.3(1) For a description of General Planning Concepts applicable to LTC, see Section 1A.0. These two sections must be read together.

1A.7.4.3(2) Homelike Environment

1A.7.4.3(2)(a) The LTC area is a grouping of spaces and activities is intended to create a homelike environment that is the home base for Residents. It includes a group of Resident rooms plus a range of spaces that accommodate activities such as meals, reading, and socializing. The door to the house is associated with the family spaces so that visitors enter into the shared common area rather than into the private room area. This door is the "address" of the Resident's home.

1A.7.4.3(3) Resident Rooms and Bathrooms

1A.7.4.3(3)(a) Resident rooms will be private rooms with a dedicated, accessible three-piece washroom (shower, sink, and toilet). Washrooms will be designed as inboard washrooms and Resident rooms will be mirrored.

1A.7.4.3(3)(b) Three (3) resident rooms will be equipped with medical inpatient headwalls to provide additional/surge medical inpatient capacity when required. These headwalls will be hidden by a cover or panel when not required by the Patient/Resident.

1A.7.4.3(3)(c) Resident rooms will be a home-like environment (including considerations of the building plan, interior design, smells, sound, and sights) as this will likely be home for the remainder of the Resident's life.

1A.7.4.3(3)(d) Resident Bed

1A.7.4.3(3)(d)(i) Resident beds will be at a height which allows ease of standing for the Resident (i.e. height adjustable; the Resident's feet will be in contact with the ground before standing).

1A.7.4.3(3)(d)(ii) Seating will result in a 90-degree hip and knee angle, and the Resident's feet will be in contact with the ground.

1A.7.4.3(3)(d)(iii) Nurse call system (silent) will be provided and be within the Resident's reach when in bed.

1A.7.4.3(3)(e) Lighting and Daylighting

1A.7.4.3(3)(e)(i) Residents can begin their morning activities if they can have enough light to ambulate safely.

1A.7.4.3(3)(e)(ii) An operable window to the outside will be provided in each Resident room. Windows will have security features to limit the distance a window can open and to interlock with the HVAC systems. A Resident should be able to look at the view outside from their bed.

1A.7.4.3(3)(e)(iii) Variable lighting levels will be required at different times of day and night, and due to the vision needs of Residents (e.g. use of night lights).

1A.7.4.3(3)(e)(iv) Lamps and other less institutional lighting sources will be provided to enhance autonomy for the Resident.

1A.7.4.3(3)(e)(v) Illumination levels will be higher than standards.

1A.7.4.3(3)(e)(vi) Light switch will be provided within reach of the Resident without requiring the Resident to stretcher or sit up to access it.

1A.7.4.3(3)(f) Wall and Flooring Colours

1A.7.4.3(3)(f)(i) Wall and flooring colours will enhance Resident safety by maximizing sensory stimulation and independence of the Residents.

1A.7.4.3(3)(g) Flooring

1A.7.4.3(3)(g)(i) Flooring will be non-stick, non-slip, non-speckled, seamless, and with appropriate mouldings.

1A.7.4.3(3)(h) Ceilings

1A.7.4.3(3)(h)(i) The ceilings will be flat.

1A.7.4.3(3)(h)(ii) The ceilings will have the structural capacity to accommodate mechanical ceiling lifts, including their load, and at the appropriate height for ease of use.

1A.7.4.3(3)(i) Motorized Ceiling Lifts

1A.7.4.3(3)(i)(i) A motorized x/y gantry Patient ceiling lift will be installed in nine of the eighteen Resident rooms (including Bariatric ceiling lifts in both Bariatric rooms) with single track to the washroom for toileting.

1A.7.4.3(3)(i)(ii) Motorized lifts will maximize coverage to the room to allow for Resident pick-up and care functions (e.g. wheelchair to bed, lateral transfers, repositioning (turning, boosting), supporting / holding limbs, and pick up from the floor) including the Resident bedroom, and tub room.

1A.7.4.3(3)(i)(iii) Rails and all necessary accessories (e.g. transfer mechanisms) for standard patient lifts will be equipped to handle up to 600 lbs (272.2 kgs).

1A.7.4.3(3)(i)(iv) Rails and all necessary accessories (e.g. transfer mechanisms) for bariatric patient lifts will be equipped to handle up to 825 lbs (374.2 kgs).

1A.7.4.3(3)(j) Railings

1A.7.4.3(3)(j)(i) Handrails will be provided from the bed to the toilet in each Resident room and the door.

1A.7.4.3(3)(k) Doorways

1A.7.4.3(3)(k)(i) Doorways will be a minimum of 1,220 mm wide.

1A.7.4.3(3)(l) Temperature Controls

1A.7.4.3(3)(l)(i) Air conditioning will be provided in the corridors but not in the Resident rooms.

1A.7.4.3(3)(l)(ii) Ceiling fans will not be acceptable due to infection control concerns. Interlocks will be provided which will switch off HVAC when the Resident window is in the open position.

1A.7.4.3(3)(m) Furnishings and Storage

1A.7.4.3(3)(m)(i) Storage shelves and alcoves for personal items, mobility aids, and medical equipment will be provided.

1A.7.4.3(3)(m)(ii) A Resident will be allowed to hang items on the walls. To accommodate this, provide one or both of the following:

1A.7.4.3(3)(m)(ii)A1 Plate rails and picture hanging systems will be installed that do not involve nailing directly into the wall surface. Plate rails also allow the personal items to be kept out of the way of wandering Residents.

1A.7.4.3(3)(m)(ii)A2 Locked display cases will be incorporated in the hallway by the bedroom door. Display cases with personally meaningful items outside rooms will provide better orientation for Residents with dementia.

1A.7.4.3(3)(m)(iii) Sufficient space will be provided so walkers and other mobility aids can be placed in reach of the bed and can be positioned so that both handles can be grasped by a Resident leaving their bed.

1A.7.4.3(3)(m)(iv) Wardrobes or closets will be designed to make it easy to find and access clothing and will be at least 915mm wide.

1A.7.4.3(3)(n) Hand Hygiene Sinks

1A.7.4.3(3)(n)(i) The sink will protect and control over-flow, direct flow of water from faucet into drain, splash risk from shallow bowl, temperature control (hot tap control), faucet operation, flow rate, and ease of cleaning taps.

1A.7.4.3(3)(o) Room Configuration

1A.7.4.3(3)(o)(i) Visual observation by Staff will be provided into the Resident rooms while maintaining privacy for Residents.

1A.7.4.3(3)(o)(ii) Direct visual relationship between the bed and toilet will be provided to maximize independent continence

1A.7.4.3(3)(o)(iii) Provide a minimum of 1,200mm on the non-transfer side (wall) and to fixed surface from the side of the bed.

1A.7.4.3(3)(p) Toilet

1A.7.4.3(3)(p)(i) Toilet will be positioned to accommodate a minimum of 1,525 mm space in front for maximal swing and use of equipment.

1A.7.4.3(3)(p)(ii) Toilet will be placed a minimum of 610 mm away from the side wall between the wall and the centerline of the toilet) to allow for more room for assisted transfers.

1A.7.4.3(3)(p)(iii) Toilet paper dispensers will be mounted higher on the wall (i.e. up to a minimum of 610mm) for caregiver access or will be incorporated at the end of a grab bar to avoid a fall when reaching for the paper.

1A.7.4.3(3)(p)(iv) Toilet paper dispensers will be placed in direct line with the doorway or at minimum, a 45° angle to the midline of the toilet.

1A.7.4.3(3)(q) Grab Bars

1A.7.4.3(3)(q)(i) Swing up grab bars will be located on either side of the toilet.

1A.7.4.3(3)(q)(ii) Grab bars will be powder-coated rather than stainless steel.

1A.7.4.3(3)(r) Colours and Contrasts

1A.7.4.3(3)(r)(i) High color contrast toilet rooms will be provided to help Residents identify fixtures and increase use as low contrast toilet rooms (e.g. those in which all fixtures, walls, and flooring are white) are confusing to Residents).

1A.7.4.3(3)(s) Bariatric Considerations

1A.7.4.3(3)(s)(i) Two Resident rooms, including private washrooms, will be larger in size to accommodate Bariatric requirements.

1A.7.4.3(3)(s)(ii) Bariatric ceiling lift (cyber gantry lift) will be rated to carry 825 lbs (374.2 kg).

1A.7.4.3(3)(s)(iii) The following room configurations will be provided: A minimum of 991mm on 1 side of the bed for caregiver to bend; 2,438mm on the other side of bed to turn equipment 360 degrees and for a stretcher if needed, 1,830mm of space at the foot of the bed to allow for egress space for at least 2 nurses and a wheelchair.

1A.7.4.3(3)(s)(iv) Doorways will be 1,500mm wide for Resident rooms and washrooms.

1A.7.4.3(3)(s)(v) A clear space of at least 1,500mm will be provided on 3 sides of the bed.

1A.7.4.3(3)(t) Bariatric Washrooms

1A.7.4.3(3)(t)(i) A minimum of 1,143mm clear space will be provided on 1 side of the toilet for transfer use.

1A.7.4.3(3)(t)(ii) A minimum of 1,830mm turning radius will be provided directly in front of the toilet for safe use of equipment.

1A.7.4.3(3)(u) Infectious Residents

1A.7.4.3(3)(u)(i) Airborne isolation capability will not be planned. A Resident with a communicable disease (e.g. respiratory infection) will be accommodated in their private room and/or transferred to the medical Inpatient unit.

1A.7.4.3(3)(v) Considerations for Couples

1A.7.4.3(3)(v)(i) No dedicated double occupancy rooms will be provided.

1A.7.4.3(3)(v)(ii) Provide a vestibule at the entrance between 2 resident rooms to allow the pair of rooms to be used as an interconnected suite. The vestibule will be sized and configured to allow for proper door swings and clearances whether used as 2 individual single resident rooms or as a paired couples suite.

1A.7.4.3(3)(w) Resident Private Bathroom

1A.7.4.3(3)(w)(i) A three-piece washroom with shower (combination handheld and fixed shower), sink, and toilet, with an interlocking mechanism for privacy will be provided.

1A.7.4.3(3)(w)(ii) Necessary swing space for wheelchair maneuvering inside the bathroom for up to 2 Staff members and a Resident will be provided.

1A.7.4.3(3)(w)(iii) Doors will open outwards from the washroom to avoid a Resident being trapped or difficult to reach after a fall.

1A.7.4.3(3)(w)(iv) Resident washrooms will have a floor drain and an appropriate slope that will not inhibit movement of wheeled equipment.

1A.7.4.3(4) Tub Room

1A.7.4.3(4)(a) The Tub Room will include a tub and a sink.

1A.7.4.3(4)(b) Privacy, temperature regulation, space for undressing and dressing, Convenient Access to the toilet, separation from other bathers, and space for supplies will be provided.

1A.7.4.3(4)(c) Tub room will be designed to meet the space and equipment requirements to care for Bariatric Residents.

1A.7.4.3(4)(d) Front entry tub will be provided with minimal space of 3,048 mm W and 3,302 L based on front entry of bathing chair to tub from doorway: or

1A.7.4.3(4)(e) Recumbent tub requires a minimum space 2,750mm W and 3,759mm L which allows for equal access on both sides of the tub. The tub will be 970mm W and 2,520mm L and have at least 1,524mm clearance at the end of the tub; or

1A.7.4.3(4)(f) Side entry tub requires a minimum clearance of 2,400mm W by 2,700mm L which will allow for a minimum of 1,070mm W clearance on the door side of the tub. Minimum Tub size is 1,800mm overall L by 864mm W.

1A.7.4.3(4)(g) Will accommodate a towel and blanket warmer.

1A.7.4.3(4)(h) Bariatric ceiling track lift will be provided.

1A.7.4.3(4)(i) Room Design

1A.7.4.3(4)(i)(i) Flooring will be non-slip.

1A.7.4.3(4)(i)(ii) Will be wheelchair accessible.

1A.7.4.3(4)(i)(iii) Will contain a hand hygiene sink.

1A.7.4.3(4)(i)(iv) Will Include a Bariatric ceiling track lift.

1A.7.4.3(4)(i)(v) Will resemble a spa-like feel and include a towel warmer with no florescent lighting.

1A.7.4.3(5) Living Room

1A.7.4.3(5)(a) Concealed storage for exercise equipment including stairs and parallel bars will be provided.

1A.7.4.3(5)(b) Furnishings and Amenities

1A.7.4.3(5)(b)(i) Space will be furnished with comfortable seating but allow for the maneuverability of wheelchairs within the space.

1A.7.4.3(5)(b)(ii) Provide a TV that is wall mounted with speakers.

1A.7.4.3(5)(b)(iii) Provide a Resident tablet and the ability to recharge the device.

1A.7.4.3(5)(b)(iv) Provide storage capabilities for Resident games or movies.

1A.7.4.3(5)(c) Layout

1A.7.4.3(5)(c)(i) Design will promote wayfinding by facing a wall with lighting and artwork / treatments, which will make the location distinctive and recognizable to Residents.

1A.7.4.3(5)(d) Location and Adjacencies

1A.7.4.3(5)(d)(i) Social and common spaces will be placed near Resident bedrooms and centrally within the care community to promote social interaction, variety, and physical activity.

1A.7.4.3(5)(d)(ii) Residents may experience a higher quality of life and engage in more active behavior as the layout will provide public, semiprivate, and private spaces.

1A.7.4.3(5)(e) Design will provide a distinctive boundary between public (e.g. living room) and private spaces (e.g. Resident bedrooms) may contribute to Residents feeling that the environment is homelike.

1A.7.4.3(6) Kitchen

1A.7.4.3(6)(a) Kitchen will be a source of light snacks and to encourage Residents to participate in the meal preparation.

1A.7.4.3(6)(b) Kitchen will be accessible to LTC clients but also have the ability to be Secured to prevent Residents from turning on appliances (e.g., the stove) when Staff are not present.

1A.7.4.3(6)(c) Cabinets

1A.7.4.3(6)(c)(i) Upper cabinets will be lowered to accommodate the decreased range of motion associated with typical aging.

1A.7.4.3(6)(c)(ii) Adjustments in shelf heights will be planned to a maximum 1,702mm for standing and 1,295mm for people in wheelchairs.

1A.7.4.3(6)(c)(iii) Locking cabinets will be provided to protect Residents from dangerous items.

1A.7.4.3(6)(c)(iv) See-through panel will be provided on the cabinet door to allow the Resident to see what is in the cabinet and rummaging behavior may be reduced.

1A.7.4.3(6)(c)(v) Drawer pulls will be provided rather than knobs because they are easier to grasp and manipulate.

1A.7.4.3(6)(c)(vi) Pullout drawers in base cabinets will be provided.

1A.7.4.3(6)(d) Appliances

1A.7.4.3(6)(d)(i) Appliances are central to the theme of kitchen and will be selected for both safety and usability.

1A.7.4.3(6)(d)(ii) Refrigerators and freezers with side-by-side doors will be provided so that Residents in wheelchairs can access both sides.

1A.7.4.3(6)(d)(iii) Faucets will have water temperature controls to prevent scalding.

1A.7.4.3(6)(d)(iv) Master power switches for the stove will be made inaccessible by placing them inside cabinets.

1A.7.4.3(6)(d)(v) Small appliances will be stored in adjacent locked pantries.

1A.7.4.3(6)(e) Lighting

1A.7.4.3(6)(e)(i) The kitchen area will have consistent, even lighting.

1A.7.4.3(6)(e)(ii) High light levels, ranging from 50 to 75 foot-candles at work surfaces will be consistent and even.

1A.7.4.3(6)(e)(iii) Natural daylight can provide ambient lighting, but some additional lights will be provided to increase the light level for work surfaces.

1A.7.4.3(6)(e)(iv) Recessed down lights will not be provided as they can create glare.

1A.7.4.3(7) Dining Area

1A.7.4.3(7)(a) Dining area will be sized to accommodate 15 Patients in wheelchairs and larger geriatric chairs.

1A.7.4.3(7)(b) Seating will accommodate a mix of dining chairs, wheelchairs, and larger geriatric chairs, with a flexible arrangement of tables.

1A.7.4.3(7)(c) Layout that enables eating assistance space for Staff to sit next to Residents during mealtimes will be provided.

1A.7.4.3(7)(d) Residential and home-like features will be provided.

1A.7.4.3(7)(e) Access to the Courtyard from the dining area will be provided to enable options for eating outdoors and maximizing the availability of natural light. This will require the Courtyard to have some small outdoor tables and chairs that are appropriate for eating.

1A.7.4.3(7)(f) Storage space will be provided for is required for activity supplies, the AED, and suction machine.

1A.7.4.3(7)(g) Hand hygiene sink will be provided.

1A.7.4.3(8) Clean Utility

1A.7.4.3(8)(a) Storage of clean and sterile supplies, counter space, mobile shelving, and cart storage will be centrally located.

1A.7.4.3(8)(b) Storage will be provided for the more frequently used bulk supplies (e.g. incontinence pads, wound care) and cart that nursing Staff use for transportation of supplies to Resident rooms.

1A.7.4.3(9) Environmental Services

1A.7.4.3(9)(a) Soiled Utility

1A.7.4.3(9)(a)(i) Will be centrally located so the movement of soiled material will not pass through food preparation areas, Resident social spaces, or other clean areas. It will include:

1A.7.4.3(9)(a)(i)A Enclosed flusher / disinfector.

1A.7.4.3(9)(a)(i)B At least 762mm wide and 762mm deep for a human waste disposal system with the necessary plumbing and electrical requirements.

1A.7.4.3(9)(a)(i)C A utility sink, hand hygiene sink (adjacent to clean exit), floor drain, garbage bins, hazardous waste, sharps waste, holding space for contaminated equipment, shelving, and counter space.

1A.7.4.3(9)(b) Housekeeping Closet will include floor drain, hand hygiene sink, eye wash sink, cleaning materials and supply storage (e.g. toilet paper, paper towels, cleaning agents, etc.), mop and bucket, shelving, and storage with electrical capacity to recharge portable equipment.

1A.7.4.3(10) Orientation

1A.7.4.3(10)(a) The design and layout will support ease of access and orientation to various internal destinations for a population whose cognitive skills may be compromised.

1A.7.4.3(10)(b) Clear circulation patterns punctuated by obvious destinations and reception points, short corridors between Residential rooms and house amenities to encourage independent travel, and minimum 2400mm corridor width in Resident spaces will be provided.

1A.7.4.3(10)(c) Corridors will not be used to store equipment or consumables.

1A.7.4.3(10)(d) Travel routes that are dead-ends and do contribute to confusion will not be provided.

1A.7.4.3(10)(e) Travel routes leading to meaningful destinations will be provided, allowing wandering and exploring, and contain loops that direct Residents back to their starting point without re-traversing the route initially taken.

1A.7.4.3(11) Exterior Site Planning and Safety

1A.7.4.3(11)(a) Outdoor space

1A.7.4.3(11)(a)(i) Provide easy-to-open doors help to make outdoor spaces accessible and may increase independent use.

1A.7.4.3(11)(a)(ii)	Provide flat surfaces at the entry to an outdoor space as even slight grade changes can discourage Residents from using the space.
1A.7.4.3(11)(a)(iii)	Provide automatic doors improve access, but it is important to avoid solid doors because once closed, they can block views of the outdoor space.
1A.7.4.3(11)(a)(iv)	Railings and opportunities for seating to increase the accessibility of outdoor spaces will be provided.
1A.7.4.3(11)(b)	Pathways
1A.7.4.3(11)(b)(i)	Stable paving materials that will minimize the potential for slips and falls will be provided.
1A.7.4.3(11)(b)(ii)	Smooth and leveled pathways without steps or significant changes in elevation will be provided.
1A.7.4.3(11)(b)(iii)	Paving material of a medium or darker color for reducing glare will be provided.
1A.7.4.3(11)(b)(iv)	Paths with a minimum width of 1.5 metres – enough for 2 people to walk side-by-side and accommodating wheelchairs will be provided.
1A.7.4.3(11)(b)(v)	Slightly contoured edges of the pathway causing minimal drop-off will provide a contrast between the paved surface and its surroundings, which will improve visibility and the ease of walking.
1A.7.4.3(11)(c)	Outdoor Furniture
1A.7.4.3(11)(c)(i)	Tables will accommodate wheelchairs and geri-chairs, with no gaps, cracks, or glass tops in the design.
1A.7.4.3(11)(c)(ii)	Chairs and benches will have high backs and arm rests.
1A.7.4.3(11)(d)	Lighting
1A.7.4.3(11)(d)(i)	Appropriate lighting for the entire Outdoor space and walkways that can be either manually controlled or sensor activated will be provided.
1A.7.4.3(11)(e)	Site and Perimeter Barrier
1A.7.4.3(11)(e)(i)	Way finding and orientation along all interior and exterior routes will be designed for seniors.
1A.7.4.3(11)(e)(ii)	A Secured, enclosed perimeter barrier to address risk of elopement and climbing will be provided.

1A.7.5 SCHEDULE OF ACCOMMODATION

1A.7.5.1 Space requirements for LTC are identified on the following pages in Net Square Metres (NSM). Space identified is assumed to meet 2040/41 needs.

1A.7 Long-Term Care: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
7.1	**Resident Bedroom and Support**					
7.1.01	Single Resident Room	16	18.0	288.0	- Bed, resident storage, supply alcove, media capability (TV, education), motorized x/y gantry ceiling lifts (8 rooms to have lifts and 8 rooms to be equipped to accommodate lifts in the future); 3 resident rooms will be equipped with full medical inpatient headwalls and data requirements	18 total beds: - 16 single rooms - 2 Bariatric rooms
7.1.01a	Couples Vestibule	1	6.7	6.7	- vestibule at the entrance between 2 resident rooms to allow the pair of rooms to be used as an interconnected suite	-
7.1.02	Resident Washroom	16	5.6	89.6	- Accessible 3-piece (toilet, sink, shower) washroom; double-assist toilet; monorail Patient Lift track for toileting; call bell; ability to use shower with a Staff member	- Private washroom with each resident room
7.1.03	Single Bariatric Resident Room	2	22.0	44.0	- Bed, resident storage, supply alcove, media capability (TV, education), motorized x/y gantry ceiling lifts, family rooming-in (recliner)	
7.1.04	Bariatric Resident Washroom	2	7.5	15.0	- Accessible 3-piece (toilet, sink, shower) washroom; double-assist toilet, monorail Patient Lift track for toileting; ability to use shower with a Staff member	-
7.1.05	Hand Hygiene Sink	3	1.0	3.0	- Non-porous, splash-proof	- 1 sink shared between 6 resident rooms
7.1.06	Charting Alcoves	2	1.4	2.8	- Counter space with Workstation or portable charting	- 1 per 8 resident rooms
7.1.07	Tub Room	1	16.0	16.0	- Century tub (hydro); include Patient lift, storage for towels, shampoo, and bathing supplies	-
7.1.08	Living Room	1	45.0	45.0	- TV/entertainment centre, multimedia capable, resident computer, open area	- accommodates therapy

1A.7 Long-Term Care: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
7.1.09	Dining Area	1	44.0	44.0	- Accommodates 15 residents in wheelchairs and 4 additional family members, volunteers, paid companions, etc.; includes small buffet area	-
7.1.10	Activity Room	1	16.0	16.0	- Multipurpose space; art room; 6-8 people, storage cabinet for games and art supplies	-
7.1.11	Hair Salon Alcove	1	8.0	8.0	- provide salon accessories cart with storage, additional millwork storage, 3-panel mirror with wings	
7.1.12	Kitchen	1	10.0	10.0	- Counter space, cupboards, dry storage, dishwashers, stove, sinks, fridges, microwave	-
7.1.13	Storage	1	10.0	10.0	- Physio storage	-
7.1.14	Resident Laundry	1	11.0	11.0	- Home-style washer, dryer, counter space, ironing area	-
7.1.15	Clinical Workstations (Nursing Station)	2	3.4	6.8	- Chair, workspace, data connection, phone - Accommodates short stay/touchdown space	- grouped together with physician Workstation to create the Nursing Station
7.1.16	Physician Workstation	1	3.4	3.4	- Chair, workspace, data connection, phone, cabinet; consider sliding door to create privacy for dictation	- grouped together with clinical Workstations to create the Nursing Station
7.1.17	Business Centre	1	7.0	7.0	- Photocopier, fax, paper supplies, clerical storage; cupboard space and mail slots (millwork)	- adjacent to Nursing Station
7.1.18	Staff Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	
7.1.19	Patient Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	
Long-Term Care Area: Resident Bedroom and Support				**Total NSM**		
				635.5		
7.2	**Clinical and Non-Clinical Support**					
Family Support						
7.2.01	Family Meeting Room	- Shared with the Medical Inpatient Family Lounge (6.1.07)				
7.2.02	Public Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	
Medication / Pharmacy						
7.2.03	Medication Room	1	9.0	9.0	- Refrigerator/freezer; multi-cart storage; Secured; hand hygiene sink; computer	
Supplies and Equipment Storage						

1A.7 Long-Term Care: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
7.2.04	Clean Utility / Supply Room	1	11.0	11.0	- Provide shelving and charging requirements	
7.2.05	Equipment Storage	1	12.0	12.0	- Storage for equipment and general item; include electrical and charging requirements	
7.2.06	Linen Cart Alcove	1	5.0	5.0	- Storage for linen carts	
Environmental Services						
7.2.07.01	Soiled Utility Room	1	9.0	9.0	- Temporary storage of waste, supplies, and equipment; seamless flooring and counter tops (non-porous); floor drain; storage of carts; general waste; medical/hazardous waste; recycling; macerator; hand hygiene sink; utility sink; rimmed sinks	
7.2.07.02	Soiled Utility Room	1	7.0	7.0	- Temporary storage of waste, supplies, and equipment; seamless flooring and counter tops (non-porous); floor drain; storage of carts; general waste; medical/hazardous waste; recycling; macerator; hand hygiene sink; utility sink; rimmed sinks	
7.2.08	Housekeeping Closet	1	7.0	7.0	- Include electrical requirements, cart storage, floor sink, water source, hand sink, shelving for storage of supplies (germicidal solution, general purpose cleaner, non-acid crème cleaner, toilet bowl cleaner, spot cleaner, furniture polish); toilet bowl swab and caddy; putty knife; safety googles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE; disposables; paper supplies; garbage bags; gloves; soaps; cleaning cloths; tool; power equipment	
Long-Term Care Area: Patient Support				**Total NSM**		
				64.6		
7.3	**Staff Support**					
-	Office: Nurse Manager	- Accommodated in the ED SOA				
-	Workstation: Unit Clerk	- Accommodated in the ED SOA				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				

1A.7 LONG-TERM CARE

1A.7 Long-Term Care: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
Long-Term Care Area: Staff Support				**Total NSM**		
				0.0		
Total Long-Term Care Area Requirements				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				700.1	**1.45**	**1015.2**

7.4	**Exterior Space**				
7.4.01	Long-Term Care Courtyard	Shared with Healing Garden		- Outdoor space accessible from the LTC internal circulation; 80 sqm of this area will be covered and wheelchair accessible	-
Long-Term Care: Exterior Space			**Total SQM**	**-**	**Total SQM**
			0	**-**	**0**

1A.8 HIMS

This specification outlines the functional, operational, and physical requirements for the Health Information Management System (HIMS) department.

1A.8.1 FUNCTIONAL DESCRIPTION

1A.8.1.1 Statement of Purpose

1A.8.1.1(1) The Building will open with a paper medical record system. It is assumed that this will evolve into an Electronic Medical Record (EMR) within a few years of opening day, but this timeline has not been confirmed. To manage these assumptions, the Project's design will include space for paper records (e.g. storage) and the Authority plans to redevelop that space once it is no longer required.

1A.8.1.1(2) An eventual move to a full EMR system will change the processes and protocols of the HIMS department area; however, the date of full EMR implementation is not confirmed and will not be accommodated at this time.

1A.8.1.1(3) While this eventual change will impact how the HIMS department will be planned and managed, the following services are anticipated:

1A.8.1.1(3)(a) Health record administration including establishing formatting and content standards, checking for completion, notifying physicians of outstanding / incomplete medical records, conducting retrospective audits, and scanning of paper records for insertion into the EMR.

1A.8.1.1(3)(b) Administration of the release of information practices, providing Patients and authorized representatives with access to EMR contents, and in some cases, with hard or electronic copies of EMR extracts.

1A.8.1.2 Scope of Services

1A.8.1.2(1) Functional Content

1A.8.1.2(1)(a) Patient information, regardless of which service generates it, will become integrated into a common source for future retrieval.

1A.8.1.2(1)(b) The HIMS department will include the preparation and coding of all Patient charts.

1A.8.1.2(1)(c) Patients are becoming advocates for their own health and require access to their records.

1A.8.1.2(1)(d) Physicians will be provided with realistic opportunities to dictate and complete charts.

1A.8.1.2(2) Planning Assumptions

1A.8.1.2(2)(a) An electronic health record system, along with centralized scheduling, will be assumed for the Building in the long term. In the short term (i.e. upon opening the Building), the Building will rely on a paper-based system.

1A.8.1.2(2)(b) While some file storage and administrative spaces will be planned to accommodate a hybrid system as it moves from a hard file to an electronic system, these spaces will be planned so that they are easily renovated and redistributed into clinical and/or support services areas once no longer required.

1A.8.2 OPERATIONAL DESCRIPTION

1A.8.2.1 Hours of Operation

1A.8.2.1(1) The HIMS department will be available Monday to Friday, from 0745-1545.

1A.8.2.2 Organization & Management

1A.8.2.2(1) The HIMS department will be managed by the medical records clerk.

1A.8.2.3 Workflow

1A.8.2.3(1) Staff and Physicians

1A.8.2.3(1)(a) Staff will arrive to the HIMS department by entering the Building through the Main Entrance or the Staff Entrance.

1A.8.2.3(1)(b) Physicians will access the dictation / chart completion area to update and / or complete any unfinished charts.

1A.8.2.3(2) Patients

1A.8.2.3(2)(a) Patients requesting their Patient medical record will request this information from the registration clerk and will review it in the dictation / chart completion area.

1A.8.3 STAFFING

1A.8.3.1 Estimated future Staffing for the HIMS department is summarized below. The information is for space planning purposes only and does not represent a commitment for hiring.

HIMS: Projected Staffing	
Position	**Projected FTE**
	2040/41
Medical Records Clerk	2.0

1A.8.4 DESIGN CRITERIA

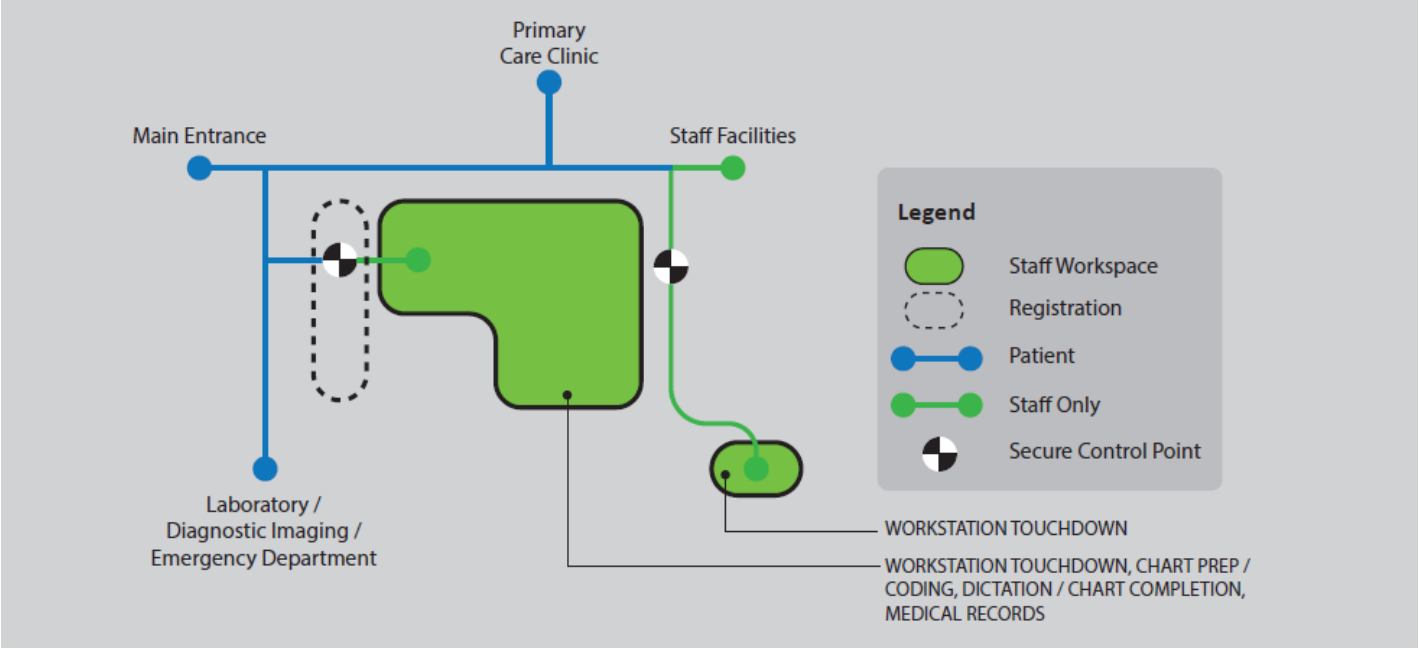
1A.8.4.1 External Relationships

1A.8.4.1(1) The HIMS department will be co-located with Registration and Site Administration as there are space and Staff sharing requirements.

1A.8.4.1(2) The HIMS department will be accessible from the Main Entrance via General Circulation for Patients requesting their medical records.

1A.8.4.2 Functional Relationship Diagram

1A.8.4.2(1) Functional relationships between key areas will be generally as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.8.4.3 Internal Design Criteria

1A.8.4.3(1) For a description of General Planning Concepts applicable to the HIMS department, see Section 1A.0. These two sections must be read together.

1A.8.4.3(2) Medical Records Storage

1A.8.4.3(2)(a) The medical records storage area will be comprised of high-density shelving with appropriate heights.

1A.8.4.3(2)(b) This room will be Secure and out of the public view.

1A.8.4.3(2)(c) Entry will be controlled by the health records Staff from the dictation / chart completion area.

1A.8.4.3(2)(d) In the long-term, this space will be minimized with an EMR and will create an opportunity for it to be redeveloped into a Clinical Space such as an ultrasound room or treatment space in the future.

1A.8.4.3(3) Workstations

1A.8.4.3(3)(a) Workstations will be developed using systems furniture.

1A.8.4.3(3)(b) Ensure that privacy is maintained by the layout and configuration of the Workstations.

1A.8.4.3(4) Dictation / Chart Completion Area

1A.8.4.3(4)(a) This area will be accessed by physicians, health records Staff, and the public.

1A.8.4.3(4)(b) Access to this space will be controlled by swipe card reader.

1A.8.5 SCHEDULE OF ACCOMMODATION

1A.8.5.1 Space requirements for the HIMS department are identified in the table below in terms of Net Square Metres (NSM). Space identified is assumed to meet 2040/41 needs.

1A.8 HIMS: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
8.1	**Health Records Area**					
8.1.01	Medical Records	1	28.0	28.0	- Secure storage of Patient files until full electronic system is implemented and Workstation; L-shape desk for scanning; scanner; dual monitors; 3-5 banks of high density shelving; diagnostic imaging films (in boxes); multiple provisions for data;	- Consider co-location to a clinical area (DI or ED) for long-term expansion of those services
8.1.02	Workstation: Chart Preparation/Coding	2	4.6	9.2	- Chair, computer, dual monitors, data (4), phone, cabinet	-
8.1.03	Workstation: Touchdown	1	3.0	3.0	- Chair, computer, dual monitors, data (4), phone, cabinet	-
8.1.04	Business Centre	1	7.0	7.0	- Clerical supplies; mail slots; shred bin; printer; counter space; cupboard space and mail slots (millwork)	-
8.1.05	Dictation / Chart Completion Area	1	10.0	10.0	- 1 table with 4 chairs for meetings with the public; 1 dictation Workstation with chair, computer, dual monitors, data (4), phone, shelving for charts; ensure a Staff only door leads into the Medical Record area	- Located adjacent to Medical Records Storage
HIMS: Health Records Area				**NSM**		
				57.2		

1A.8 HIMS: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
8.2	**Staff Support**					
-	General Storage Room	- Shared with Registration and Site Administration				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
HIMS: Staff Support				**NSM**		
				0.0		
Total HIMS Area				**Total NSM**		
				57.2		

1A.9 IMIT

This specification outlines the functional, operational, and physical requirements for the Information Management / Information Technology (IMIT) department.

1A.9.1 FUNCTIONAL DESCRIPTION

1A.9.1.1 Statement of Purpose

1A.9.1.1(1) The IMIT department will accommodate the Building's telecommunications rooms and technical personnel required to support the Building's Information Management and Communications Systems.

1A.9.1.2 Scope of Services

1A.9.1.2(1) Functional Content

1A.9.1.2(1)(a) The IMIT department will not have a dedicated Staff member on-site but will be responsible for:

1A.9.1.2(1)(a)(i) Deploy and manage IMIT department infrastructure including local and wide-area networks (wired and wireless), file servers, voice systems, archiving, back-up IMIT department systems and the telecommunications rooms.

1A.9.1.2(1)(a)(ii) Coordinate, implement, and support for existing and new end-user devices, systems, and applications.

1A.9.1.2(1)(a)(iii) Develop and monitor disaster recovery plans and coordination of back-ups and storage of archived data for all standalone systems throughout the Building.

1A.9.1.2(1)(a)(iv) Maintain and support interfaces to various systems and applications requiring integration including digital signage (video display) in key Patient areas throughout the Building.

1A.9.1.2(1)(a)(v) Maintain on-site centralized data management and Communication Systems, and in accordance with policies established by the Authority for corporate computing and communication services.

1A.9.1.2(1)(a)(vi) Receive and stage personal computers, printers, and wireless devices prior to delivery to the user.

1A.9.1.2(1)(a)(vii) Monitor and provide user support for clinical and administrative systems including internet access and firewall.

1A.9.1.2(1)(a)(viii) Perform preventative and demand technology maintenance, as well as upgrading and capacity monitoring.

1A.9.1.2(1)(a)(ix) Ensuring all clinical, administrative, and financial information is recorded in the Authority's computerized information system.

1A.9.1.2(1)(a)(x) Ensure that systems are properly designed to capture, store, and distribute data to authorized users with valid requirements, while maintaining confidentiality.

1A.9.1.2(1)(a)(xi) Provide development, maintenance, and support for all computer systems and network related items in the Building.

1A.9.1.2(1)(b) It is anticipated that electronic technology will be used to manage more aspects of each Patient's care. This management function will involve more integration of different information systems. Patient care, for example will require supplies, room / procedure bookings, medications, and Staff. Each Patient's experience in the Building, therefore, will trigger a set of scheduling functions which will require full integration to ensure resources are in place at the appropriate time.

1A.9.1.2(1)(c) Access to the information system infrastructure will be possible anywhere inside the Building using a combination of wireless and hard wire connections to networks.

1A.9.1.2(2) Planning Assumptions

1A.9.1.2(2)(a) The Building will be planned to accommodate an interactive and technologically capable environment. This includes provision for including real time virtual visits (Telehealth / remote presence technology), remote Patient monitoring, asynchronous store and forward (access to specialists), and full audio/visual capabilities.

1A.9.1.2(2)(b) Providing development, maintenance and support for all computer systems and network related items in the Building and for a number of distributed services.

1A.9.1.2(2)(c) All conference rooms will be wired for technology formats.

1A.9.1.2(3) Anticipated Trends in Service Delivery

1A.9.1.2(3)(a) The following list are trends expected within the planning horizon of this project, and that are expected to affect the nature and/or extent of functions accommodated within the IMIT department. Effects of these trends will be reflected in the design of the IMIT department.

1A.9.1.2(3)(a)(i) The Building will open with a paper medical record system. It is assumed that this will evolve into an Electronic Medical Record (EMR) within a few years of opening day, but this timeline has not been confirmed.

1A.9.1.2(3)(a)(ii) With very few exceptions, operating systems used throughout the Building will be supported by electronic information management and communication technology (e.g. inventory tracking / ordering, equipment tracking, Patient data). Staff working in all areas will require initial and recurrent training on systems applicable to their functions.

1A.9.1.2(3)(a)(iii) Data and information related to the Building's operation, including clinical and non-clinical support services, will continue becoming more

integrated. This will require more standardization in the way information is captured, displayed, and utilized. It will also require that Staff cross-train so that they become familiar with information / data requirements outside of their (current) immediate area of responsibility.

1A.9.2 OPERATIONAL DESCRIPTION

1A.9.2.1 Hours of Operation

1A.9.2.1(1) The IMIT department will be available remotely Monday to Friday, from 0800-1600 and on-site as needed.

1A.9.2.2 Organization & Management

1A.9.2.2(1) The IMIT department will be managed by IMIT Services in Prince George, BC.

1A.9.2.3 Workflow

1A.9.2.3(1) Staff

1A.9.2.3(1)(a) The IMIT department Staff, once onsite, will access the IMIT space – adjacent via General Circulation from the Main or Staff Entrance.

1A.9.3 STAFFING

1A.9.3.1 No dedicated IMIT department Staff will be located in the Building.

1A.9.4 DESIGN CRITERIA

1A.9.4.1 External Relationships

1A.9.4.1(1) The following adjacencies will be provided:

1A.9.4.1(1)(a) The IMIT department will be accessible via General Circulation from the Main Entrance.

1A.9.4.2 Internal Design Criteria

1A.9.4.2(1) For a description of General Planning Concepts applicable to the IMIT department, see Section 1A.0. These two sections must be read together.

1A.9.4.2(2) Telecommunications Rooms

1A.9.4.2(2)(a) The telecommunications rooms will have raised flooring and server racks.

1A.9.4.2(2)(b) Significant heat will be generated and will be managed by the HVAC system.

1A.9.4.2(3) Electrical Power and Data Requirements

1A.9.4.2(3)(a) For information management information technology requirements and details, refer to Schedule 1 section 7.7 – Communications.

1A.9.5 SCHEDULE OF ACCOMODATION

1A.9.5.1 Space requirements for the IMIT department are identified in the table below in terms of Net Square Metres (NSM). Space identified is assumed to meet 2040/41 needs.

1A.9 IMIT: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
9.1	**IT Department**					
9.1.01	Main Telecommunication Room (Main Cross Connect and Back-up Cross Connect)	2	- space accounted for in the building gross-up		See SOR #7.7.6 and SOR #7.7.2.7	-
-	Entrance Facility	2	- space accounted for in the building gross-up		See SOR #7.7.6 and SOR #7.7.2.7	-
-	Telecommunications Room	- space accounted for in the building gross-up			See SOR #7.7.6 and SOR #7.7.2.7	-
IMIT: IT Department				**Total NSM**		
				0.0		
9.2	**Staff Support**					
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
IMIT: Staff Support				**Total NSM**		
				0.0		
Total IMIT Area				**Total NSM**		
				0.0		

1A.10 REGISTRATION

This specification outlines the functional, operational, and physical requirements for the Registration.

1A.10.1 FUNCTIONAL DESCRIPTION

1A.10.1.1 Statement of Purpose

1A.10.1.1(1) Registration is a centralized Patient registration operation that will process Patients continuously and seamlessly without the need for Patients to revisit Registration multiple times and will be adjacent to Diagnostic Imaging and specimen collection service area.

1A.10.1.1(2) Registration is the act of entering a Patient's health card number into the electronic Patient record system and confirming demographics (name, birthdate, and health card number). Registration will be the initial contributor to the health system and will be the "front door" to the Facility's clinical resources.

1A.10.1.2 Scope of Services

1A.10.1.2(1) Functional Content

1A.10.1.2(1)(a) All Patients will register seamlessly including Emergency Department (ED) Patients, scheduled appointments, x-ray, and Lab specimen collection services.

1A.10.1.2(1)(b) In addition to the Registration Booth, a Registration Kiosk will be provided for those Patients who are comfortable to self-register and a confidential remote registration room will be provided for ED Patients, after hours, or when the registration clerk is not available.

1A.10.1.2(1)(c) Registration clerk will also provide switchboard duties and assist with medical records charting tasks.

1A.10.1.2(2) Planning Assumptions

1A.10.1.2(2)(a) Planning assumes that the Building will include a fully integrated booking and scheduling system in which all services participate.

1A.10.1.2(2)(b) An integrated booking and scheduling system will allow Patients to move between multiple same-day appointments, with few delays, and without revisiting Registration.

1A.10.1.2(3) Exclusions

1A.10.1.2(3)(a) Patients scheduled for appointments in Ambulatory Services will be registered by Ambulatory Services Staff.

1A.10.2 OPERATIONAL DESCRIPTION

1A.10.2.1(1) Hours of Operation

1A.10.2.1(1)(a) A Registration Booth will be available Monday to Friday, 0745-1545.

1A.10.2.1(1)(b) The remote registration is available between weekdays between 1545 and 0745, and on weekends.

1A.10.2.1(1)(c) The Registration Kiosk and bedside registration will be available 24 hours a day, 7 days per week.

1A.10.2.2 Organization & Management

1A.10.2.2(1) Registration will be managed by a registration clerk.

1A.10.2.3 Workflow

1A.10.2.3(1) Diagnostic Imaging and Lab Specimen Collection Patients

1A.10.2.3(1)(a) Patients arriving to the Building's Main Entrance will be directed by graphic cues and signage to the Registration Booth and will be registered by the registration clerk.

1A.10.2.3(1)(a)(i) If the registration clerk is present, they will register the Patient.

1A.10.2.3(1)(a)(ii) If the registration clerk is not available, graphic cues and signage will direct the Patient to wait in line for the registration clerk or proceed to the Registration Kiosk.

1A.10.2.3(1)(a)(iii) Once registered, the Patient will receive a number (either by paper or electronically) generated by the registration clerk or the Registration Kiosk to ensure Patients are seen in chronological order.

1A.10.2.3(1)(a)(iii)A The numbering / queue generator will have an electronic display that is visible from the Waiting Area and shows which Patient is being seen.

1A.10.2.3(2) Emergency Patients

1A.10.2.3(2)(a) If the Patient is an ED Patient, they will be directed by signage to the ED triage area where registration will be performed concurrently with triage by the triage nurse.

1A.10.2.3(2)(b) If a Patient presents in a condition that requires immediate medical attention, beside registration will be executed by the care provider, by phone.

1A.10.3 STAFFING

1A.10.3.1 Estimated future staffing for the Registration is summarized below.

Registration: Projected Staffing	
Position	**Projected FTE**
	2040/41
Registration Clerk	1.0

1A.10.4 DESIGN CRITERIA

1A.10.4.1 Internal Relationships

1A.10.4.1(1) The following internal relationships will be provided:

1A.10.4.1(1)(a) Registration Booth will be adjacent by General Circulation to the Main Entrance, Lobby, and Waiting Area of the Building.

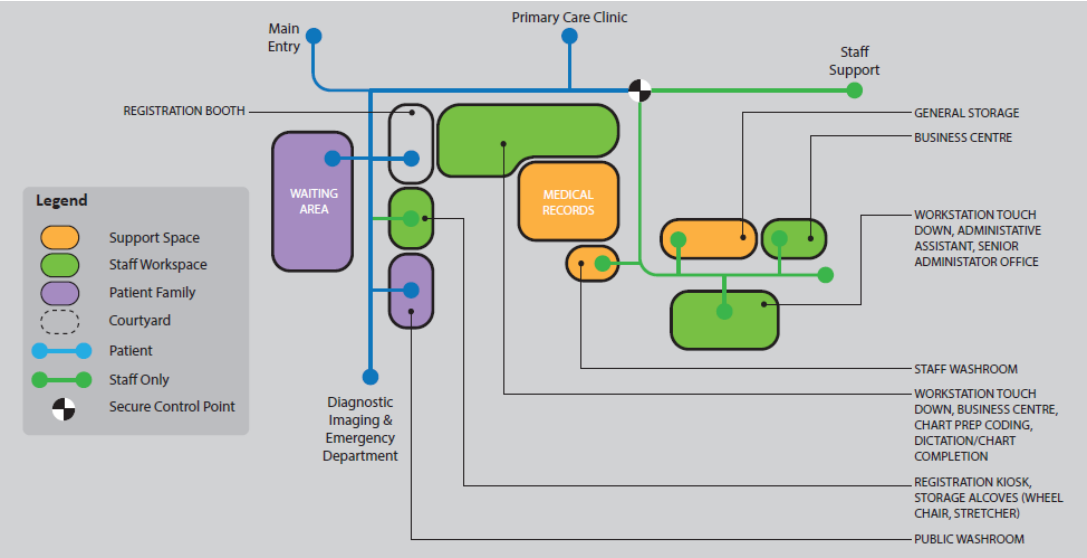
1A.10.4.1(1)(b) Registration Kiosk will be adjacent by General Circulation to the Main Entrance, Lobby, and Waiting Area of the Building.

1A.10.4.1(1)(c) Remote registration room will have a direct adjacency to the ED triage area.

1A.10.4.1(1)(d) Registration will be adjacent by General Circulation with health information management systems, and sSte Administration as there are space and Staff sharing considerations.

1A.10.4.2 Functional Relationship Diagram

1A.10.4.2(1) Functional relationships between key areas will generally be as illustrated in the following is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.



1A.10.4.3 Internal Design Criteria

1A.10 REGISTRATION

1A.10.4.3(1) For a description of General Planning Concepts applicable to the registration, see Section 1A.0. These two sections must be read together.

1A.10.4.3(2) **Registration Booth**

1A.10.4.3(2)(a) The Registration Booth will be a separate area that is distinct from the Lobby Waiting Areas where Patients will have visual and audible privacy.

1A.10.4.3(2)(b) The Registration Booth will have a minimum of 2 floor to ceiling walls for privacy and form an alcove such that the Patient does not sit in the circulation space while registering.

1A.10.4.3(2)(c) The Registration Booth will have a width of no less than 1600mm, with a countertop no less than 900mm deep .

1A.10.4.3(2)(d) There will be room for 2 side-by-side chairs in the Registration Booth.

1A.10.4.3(2)(e) The Registration Booth will be designed to be accessible by those in wheelchairs and/or with compromised mobility.

1A.10.4.3(2)(f) There will be a glass partition between clerk and Patient areas.

1A.10.4.3(2)(g) The area behind the Registration Booth will be suitable for administrative type functions.

1A.10.4.3(3) **Registration Kiosk**

1A.10.4.3(3)(a) the The Registration Kiosk will be located and angled to ensure visual privacy from Main Entrance and Waiting Area.

1A.10.4.3(3)(b) The Registration Kiosk will be designed to be accessible by those in wheelchairs and/or with compromised mobility.

1A.10.4.3(3)(c) The Registration Kiosk will have a clear privacy screen.

1A.10.4.3(3)(d) The Registration Kiosk will require data and power connections.

1A.10.4.3(4) **Remote Registration Room**

1A.10.4.3(4)(a) The remote registration phone will be located at the Triage desk on the Waiting Area side.

1A.10.4.3(4)(b) The remote registration phone will be monitored by CCTV from the Waiting Area.

1A.10.4.3(5) **Waiting Area**

1A.10.4.3(5)(a) The Waiting Area will be located in close proximity to the Registration Booth, DI, and Lab, and will accommodate the Patients waiting for these services.

1A.10.4.3(5)(b) The Waiting Area will accommodate 20 people including those with Bariatric needs, and those with compromised mobility (e.g., walkers, wheelchairs, etc.).

1A.10.4.3(6) Wayfinding

1A.10.4.3(6)(a) The Registration Booth, kiosk, and remote registration room will be easily accessible and identifiable from the Building's Main Entrance. They must be visually obvious to anyone entering through the Building's main doors.

1A.10.4.3(7) Furniture and Finishes

1A.10.4.3(7)(a) Walls in circulation corridors will be supplied with guards that will double as handrails. Door frames will be supplied with guards to prevent chipping and denting caused by mobility aids, delivery carts, stretchers, and cleaning machines.

1A.10.4.3(7)(b) Flooring will consist of smooth, non-porous, anti-skid, and anti-static material that is resilient to high traffic, dropped objects, and repeated exposure to cleaning chemicals.

1A.10.4.3(7)(c) All furniture will be comfortable and easy to clean.

1A.10.5 SCHEDULE OF ACCOMMODATION

1A.10.5.1 Space requirements for registration are identified in Net Square Metres (NSM). Space identified is assumed to meet 2040/41 needs.

1A.10 Registration: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
10.1	**Main Registration**					
10.1.01	Registration Booth	1	11.0	11.0	- Moveable sit/stand Workstation with computer; data; chair; dual monitor; phone; glass partitions between clerk and Patient area with microphone; configuration to allow for privacy and confidentiality but allow views to the Waiting Area; booth to be wheelchair accessible; includes switchboard; label printer; desktop printer; nurse call; height-adjustable desk with storage, systems furniture desk	- Ensure adjacency to ED and to the Main Entrance
10.1.02	Registration Kiosk	1	2.0	2.0	- Power and data requirements; confidential computer screen viewing; phone	-
10.1.03	Remote Registration Room	1	0.6	0.6	- Phone with video capability; hand-sanitizer	- Ensure adjacency to ED and to Registration via General Circulation

1A.10 REGISTRATION

1A.10 Registration: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
10.1.04	Waiting Area	1	27.0	27.0	- Accommodates 20 people; soft seating; educational materials and pamphlets	- General waiting for DI and Lab
10.1.05	Storage Alcove: Wheelchairs	1	2.0	2.0	- Storage area for 1-2 wheelchairs	-
Registration: Main Registration				**Total NSM**		
				42.6		
10.2	**Staff Support**					
-	Business Centre	- Shared with Site Administration				
-	General Storage Room	- Shared with HIMS and Site Administration				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Registration: Staff Support				**Total NSM**		
				0.0		
Total Registration Area				**Total NSM**		
				42.6		

1A.11 SITE ADMINISTRATION

This specification outlines the functional, operational, and physical requirements for the Site Administration department.

1A.11.1 FUNCTIONAL DESCRIPTION

1A.11.1.1 Statement of Purpose

1A.11.1.1(1) Site Administration will accommodate the following:

1A.11.1.1(1)(a) Administrative and non-Patient contact functions required to support the day-to-day operations of the Building and operations of the Authority's funded services conducted off-site.

1A.11.1.1(1)(b) The Building's occupational health and safety functions.

1A.11.1.1(1)(c) Site leadership and itinerant (touchdown) workspace for visitors such as Authority's management and visiting clinicians.

1A.11.1.2 Scope of Services

1A.11.1.2(1) Functional Content

1A.11.1.2(1)(a) The following list specifies the minimum set of functions that will be accommodated within Site Administration spaces:

1A.11.1.2(1)(a)(i) Office-based functions including reading, producing correspondence and Documents, small scale printing and photocopying and receipt and distribution of hard copy mail.

1A.11.1.2(1)(a)(ii) Conducting medical Staff administration, including granting and tracking hospital privileges.

1A.11.1.2(1)(a)(iii) Administration and Staff visits associated with the Building's occupational health and safety program.

1A.11.1.2(1)(a)(iv) Managing practical learning experiences by medial learners, nursing students and students in the allied health professions.

1A.11.1.2(2) Planning Assumptions

1A.11.1.2(2)(a) Space will be provided for an on-Site Administration. Touchdown workspace for the area health services administrator, Authority Staff, regional leadership, contractors, and others will be accommodated elsewhere within the Building.

1A.11.1.2(3) Anticipated Trends in Service Delivery

1A.11.1.2(3)(a) The following list are trends expected within the planning horizon of this project, and that are expected to affect the nature and/or extent of functions

accommodated within Site Administration. Effects of these trends will be reflected in Site Administration's design.

1A.11.1.2(3)(a)(i) Advances in computer networks, wireless networks, and mobile computing will continue enabling Staff to work remotely from the central Workstation. This space will require generic workspaces that any eligible Staff member can access for periods of time, and while an on-site presence is required.

1A.11.1.2(3)(a)(ii) For Staff with an administrative responsibility, meetings will continue accounting for a substantial part of each workday. There is a need for the ability to teleconference and videoconference from the Staff member's Workstation to Meeting Rooms.

1A.11.2 OPERATIONAL DESCRIPTION

1A.11.2.1 Hours of Operation

1A.11.2.1(1) Site Administration will be available Monday to Friday, from 0800-1600.

1A.11.2.2 Organization & Management

1A.11.2.2(1) The Site Administration area will be managed by the senior administrator.

1A.11.2.3 Workflow

1A.11.2.3(1) Staff

1A.11.2.3(1)(a) Site Administration Staff will arrive to the Site Administration department by entering the Building through the Main Entrance or the Staff Entrance.

1A.11.3 STAFFING

1A.11.3.1(1) Estimated future staffing for Site Administration is summarized below. The information is for space planning purposes only and does not represent a commitment for hiring.

Site Administration: Projected Staffing	
Position	**Projected FTE**
	2040/41
Senior Administrator	1.0
Administrative Assistant	1.0
Total Site Administration Staffing	**2.0**

1A.11.4 DESIGN CRITERIA

1A.11.4.1 External Relationships

1A.11.4.1(1) Site Administration will be co-located with HIMS and Registration as there are space and staffing requirements that need to be met.

1A.11.4.2 Internal Design Criteria

1A.11.4.2(1) For a description of General Planning Concepts applicable to the Site Administration department, see Section 1A.0. These two sections must be read together.

1A.11.4.2(2) Offices and Workstations

1A.11.4.2(2)(a) All offices and Workstations will use systems furniture, except where reviewed and approved by the Authority.

1A.11.4.2(3) Environmental Considerations

1A.11.4.2(3)(a) Acoustic Insulation

1A.11.4.2(3)(a)(i) Private and confidential discussions will be conducted throughout the Site Administration. The space will be designed to ensure that sound, at a level equivalent to a typical conversation, will not transmit between Workstations, the medical records area, and any adjacent areas (e.g. Workstations, corridors, etc.).

1A.11.4.2(3)(b) Lighting

1A.11.4.2(3)(b)(i) Provide natural lighting and/or views to the outside through Indirect Natural Light to the health records Staff.

1A.11.4.2(3)(b)(ii) Provide variable artificial lighting in the health records area to accommodate different levels of ambient lighting commensurate with the functions ongoing at any one time in that space.

1A.11.4.2(3)(b)(iii) Provide individual Workstations with task lighting.

1A.11.4.2(3)(b)(iv) Surface colours used throughout Site Administration will be compatible with these lighting specifications.

1A.11.5 SCHEDULE OF ACCOMMODATION

1A.11.5.1 Space requirements for Site Administration are identified as follows. Space identified is assumed to meet 2040/41 needs.

1A.11 Site Administration: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
11.1	**Offices and Workstations**					
11.1.01	Office: Senior Administrator	1	10.0	10.0	- Private office with desk, chair, cabinets, computer, phone, data	-

1A.11 SITE ADMINISTRATION

1A.11 Site Administration: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
11.1.02	Workstation: Administrative Assistant	1	4.6	4.6	- Chair, computer, data, phone, cabinet	-
11.1.03	Workstation: Touchdown	3	3.0	9.0	- Chair, computer, data, phone, cabinet	-
11.1.04	Office: APLW	1	10.0	10.0	- Private office with desk, chair, cabinets, computer, phone, data	-
-	Office: Head Nurse	- Located on Inpatient unit				
Site Administration: Offices and Workstations				**Total NSM**		
				33.6		
11.2	**Staff Support**					
11.2.01	Business Centre	1	7.0	7.0	- Photocopier, fax, paper supplies, clerical storage; mail slots, cupboard space and mail slots (millwork)	- Shared with IMIT, Registration
11.2.02	General Storage Room	1	5.0	5.0	- Storage for general items; include shelving, data, and power requirements	- Shared with HIMS, IMIT, Registration
11.2.03	Staff Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	-
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
Site Administration: Staff Support				**Total NSM**		
				16.6		
Total Site Administration Area				**Total NSM**		
				50.2		

1A.12 BIOMEDICAL ENGINEERING

This specification outlines the functional, operational, and physical requirements for the Biomedical Engineering department.

1A.12.1 FUNCTIONAL DESCRIPTION

1A.12.1.1 Statement of Purpose

1A.12.1.1(1) The purpose of the Biomedical Engineering space is to provide a satellite for biomedical engineering personnel to ensure optimal operating condition of biomedical systems and equipment in the Building. Activities in the Biomedical Engineering space will include the implementation of a preventative maintenance program, as well as corrective and reactive (ad hoc) repairs of equipment.

1A.12.1.2 Scope of Services

1A.12.1.2(1) Functional Content

1A.12.1.2(1)(a) Functions that may be performed in the space include, but are not limited to:

1A.12.1.2(1)(a)(i) Design, modification, or repair to medical instruments or systems.

1A.12.1.2(1)(a)(ii) Calibrate and/or repair biomedical equipment.

1A.12.1.2(1)(a)(iii) Perform safety and performance testing of biomedical equipment.

1A.12.1.2(1)(a)(iv) The following list specifies the minimum set of functions that will be accommodated within the spaces:

1A.12.1.2(1)(a)(iv)A Receiving, recording and temporary holding of all biomedical devices delivered to the area, including new devices requiring assembly, set-up, calibration and/or testing and existing devices requiring maintenance or repair.

1A.12.1.2(1)(a)(iv)B Receiving, recording and organized storing of all equipment and supplies used in the assembly, set-up, calibration and testing of biomedical devices.

1A.12.1.2(1)(a)(iv)C Disassembling, assembling, setting-up, calibrating and testing new and existing biomedical devices.

1A.12.1.2(1)(a)(iv)D Maintaining a library of reference manuals, warranties and service records of all biomedical devices used in the Building; storage of both electronic and hard copy media will be accommodated in this department.

1A.12.1.2(1)(a)(iv)E Receiving / preparing biomedical devices for off-site servicing and receiving/preparing devices for return to use following off-site servicing.

1A.12.1.2(1)(a)(iv)F Coordinating on-site work of private service contractors.

1A.12.1.2(1)(a)(iv)G Sourcing new equipment and collaborating with clinical Staff on evaluating new purchases and ensuring compliance with current standards.

1A.12.1.2(1)(a)(iv)H Supporting Diagnostic Imaging (DI) with quality control and maintenance.

1A.12.1.2(1)(a)(iv)I Decommissioning, discarding of obsolete or irreparably damaged biomedical devices in conjunction with the appropriate vendor.

1A.12.1.2(2) Planning Assumptions

1A.12.1.2(2)(a) No dedicated on-site Biomedical Engineering Staff will be accommodated. However, a Biomedical Engineering Workroom will be provided and electronic workflow management (service logs and inventory management) will be implemented.

1A.12.1.2(3) Anticipated Trends in Service Delivery

1A.12.1.2(3)(a) The following list are trends expected within the planning horizon of this project, and that are expected to affect the nature and/or extent of functions accommodated within this department.

1A.12.1.2(3)(b) Improving Assistive Technologies

1A.12.1.2(3)(b)(i) Robotic assistive technologies for other healthcare functions such as robotic “assistants” that can help providers with the lifting and transfer of Patients, to prevent injuries.

1A.12.1.2(3)(b)(ii) Implementation of robotic devices / exoskeletons that can assist people with muscle weakness and other mobility issues.

1A.12.1.2(3)(b)(iii) Chip-enabled prosthetics.

1A.12.1.2(3)(c) Wearable Devices

1A.12.1.2(3)(c)(i) Wearables are advancing, and the devices will be able to collect more detailed information about your health, while also serving as a conduit to medical providers, who can use the data collected to provide better care.

1A.12.1.2(3)(c)(ii) Increasing calibration and troubleshooting of biomedical devices at point-of- use and using hardwired or wireless connections with technical Staff located in the Biomedical Engineering department or off-site.

1A.12.1.2(3)(c)(iii) Increasing use of technology in maintaining health and combatting diseases.

1A.12.1.2(3)(c)(iv) Increasing “smart” technology incorporated into devices.

1A.12.1.2(3)(c)(v) Increasing interfaces between the Patient, monitoring devices and the Electronic Medical Record.

1A.12.2 OPERATIONAL DESCRIPTION

1A.12.2.1 Hours of Operation

1A.12.2.1(1) Biomedical Engineering will be available remotely from Monday to Friday, from 0800-1600, and on-site as required.

1A.12.2.2 Organization & Management

1A.12.2.2(1) Biomedical Engineering will be managed by the head nurse.

1A.12.2.3 Workflow

1A.12.2.3(1) Staff

1A.12.2.3(1)(a) Clinical Staff will generate a listing of equipment requiring preventative and unplanned maintenance.

1A.12.2.3(1)(b) Requests for service will be received electronically and a Staff person will assign the work order according to need and location. The priority will be assessed and confirmed through Biomedical Engineering service personnel to establish timelines, methods, equipment, and materials that may be required.

1A.12.2.3(1)(c) Some equipment will be sent off-site for repair, depending on service contract, warranty status, and nature of equipment. This process will be managed by the Supply Chain management Staff.

1A.12.3 STAFFING

1A.12.3.1 No dedicated Biomedical Engineering Staff are planned for the Building.

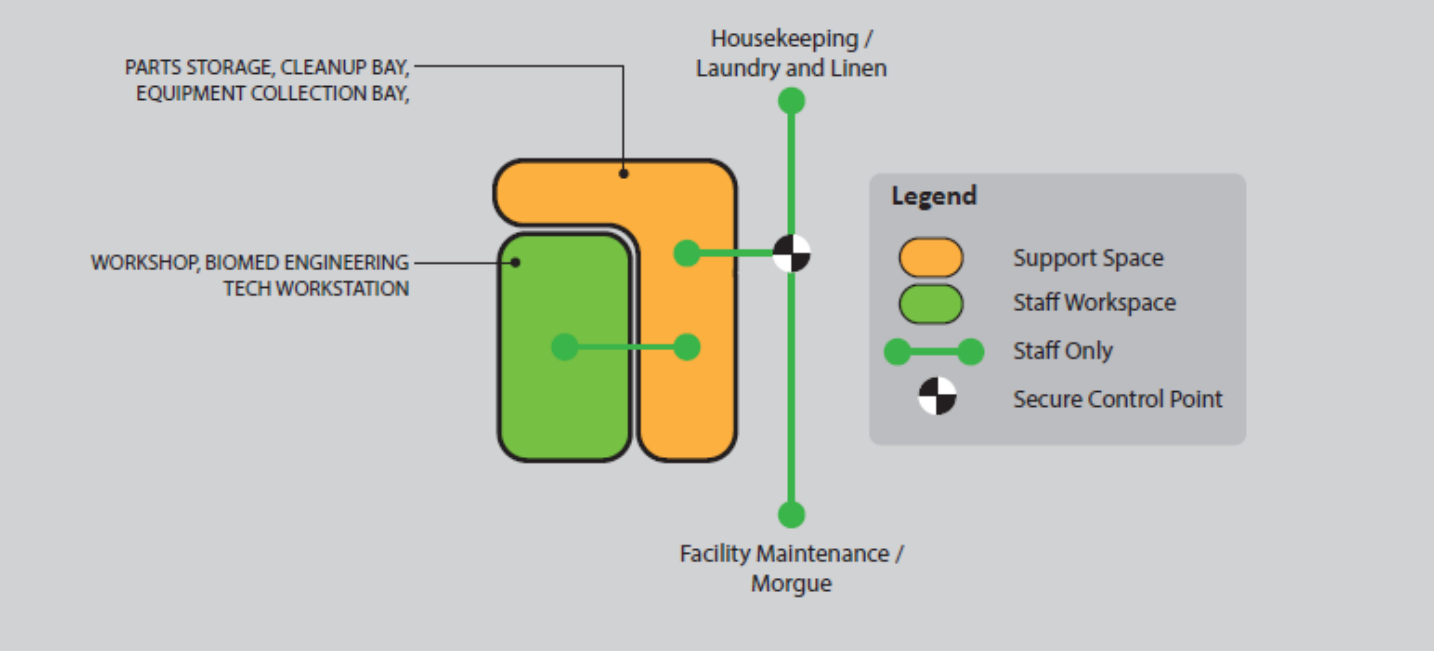
1A.12.4 DESIGN CRITERIA

1A.12.4.1 External Relationships

1A.12.4.1(1) Biomedical Engineering will be accessible via General Circulation for Staff arriving to the Building.

1A.12.4.2 Functional Relationship Diagram

1A.12.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.12.4.3 Internal Design Criteria

1A.12.4.4 For a description of General Planning Concepts applicable to the Biomedical Engineering department, see Section 1A.0. These two sections must be read together.

1A.12.4.4(1) Open Plan

1A.12.4.4(1)(a) Storage and repair spaces will be separated but organized within a common, open floor space.

1A.12.4.4(1)(b) Dedicated and Secured storage will be provided in the Biomedical Engineering department.

1A.12.4.4(2) Space Considerations

1A.12.4.4(2)(a) The space will provide for the safe handling of biomedical equipment.

1A.12.4.4(2)(b) Storage area for chemicals will comply with all relevant statutes and hazardous materials programs.

1A.12.4.4(2)(c) Provide lockable storage for equipment and tools.

1A.12.4.4(3) Workshop

1A.12.4.4(3)(a) The workshop will have medical gases will be accommodated in the workspace.

1A.12.4.4(3)(b) Provide a lifting device (hoist) with minimum 250kg capacity to aid in handling heavy equipment.

1A.12.4.4(4) Electrical Considerations

1A.12.4.4(4)(a) Electrical power and data will be provided in all storage areas within Biomedical Engineering.

1A.12.4.4(4)(b) Access to 120VAC 60Hz and single phase 220 / 240VAC 60Hz power outlets, LAN data connections, and medical gases such as vacuum, oxygen, and medical air – all ports / connections will be strategically placed to allow for optimization of workflow. All ports will be labelled per facility standards using Lamicoids or other suitable labels.

1A.12.4.4(4)(c) Walls will be painted per hospital specification, and lead-lined. Bulletin boards and white boards will be provided.

1A.12.4.4(4)(d) Access will be controlled using locking doors per hospital standard.

1A.12.4.4(4)(e) Vinyl flooring will be installed in accordance with hospital specification and will be of a type resistant to germicidal cleaning solutions.

1A.12.4.4(4)(f) A counter with hood for fume extraction will be provided.

1A.12.5 SCHEDULE OF ACCOMMODATION

1A.12.5.1 Space requirements for this department are identified as follows. Space identified is assumed to meet 2040/41 needs.

1A.12 Biomedical Engineering: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
12.1	**Workspace**					
12.1.01	Touchdown Workstation: Biomedical Engineering Tech	1	3.0	3.0	- Workstation (phone, clerical storage, PC, Data)	-
12.1.02	Equipment Collection Bay	1	8.0	8.0	- Includes mobile equipment; accommodates 1-2 pallets; shelving	-
12.1.03	Workshop	1	10.0	10.0	- Open floor area; medical gases; portable lift	- Ensure storage and repair spaces are separated
12.1.04	Clean Up Bay	1	3.0	3.0	- Includes basin sink; include plumbing and drainage requirements	-
12.1.05	Flammable Liquid Storage	1	1.0	1.0		-
12.1.06	Parts Storage	1	5.0	5.0	- Shelving; include charging requirements	-

1A.12 Biomedical Engineering: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
12.1.07	Hand Hygiene Sink	1	1.0	1.0	- Non-porous material; splash free	-
Biomedical Engineering: Workspace				**Total NSM**		
				31.0		
12.2	**Staff Support**					
-	Business Centre	- Shared with adjacent departments				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Biomedical Engineering: Staff Support				**Total NSM**		
				0.0		
Biomedical Engineering Area Requirements				**Total NSM**		
				31.0		

1A.13 FACILITY MAINTENANCE

This specification outlines the functional, operational, and physical requirements for the Facility Maintenance (FM) Department.

1A.13.1 FUNCTIONAL DESCRIPTION

1A.13.1.1 Statement of Purpose

1A.13.1.1(1) FM provides maintenance services for the Building, including the building and plant systems, but excluding information technology and bio-medical equipment.

1A.13.1.2 Scope of Services

1A.13.1.2(1) Functional Content

1A.13.1.2(1)(a) A preventive maintenance management system will be employed to carry out the tasks required to maintain the equipment in good operating order within the various systems.

1A.13.1.2(1)(a)(i) These include building envelope, architectural finishes, grounds, electrical distribution and infrastructure, medical gases, air, fluid transfer distribution and storage systems, HVAC systems, boiler, hot water, steam, sterilization systems and distribution, life safety systems such as fire alarm, nurse call, code blue, auxiliary Communication Systems, security systems, plumbing, elevators (if required), refrigeration, and other related systems.

1A.13.1.2(1)(a)(ii) Scheduling and deploying maintenance engineers to work sites throughout the Building.

1A.13.1.2(1)(b) Other general services include the management and maintenance of:

1A.13.1.2(1)(b)(i) Site property, grounds, irrigation, drainage, fencing, signage, lighting, parking, auxiliary buildings, utility service corridors systems, and public areas management and maintenance.

1A.13.1.2(1)(b)(ii) Facilities exterior, building envelope, foundations, roof systems, and utility services building connections from demarcations.

1A.13.1.2(1)(b)(iii) Interior walls of the Building, architectural finishes, floors, ceilings, and structural elements.

1A.13.1.2(1)(b)(iv) Building operational services systems and building operating systems.

1A.13.1.2(1)(b)(v) Doors, hardware, key control, signage, loading docks, air tube systems, kitchen services, elevators, sterilization, rolling stock, beds, etc.

1A.13.1.2(1)(b)(vi) Primary electrical transformation and distribution systems and secondary electrical distribution systems.

1A.13.1.2(1)(b)(vii) Emergency power generation, distribution, and uninterrupted power supply systems.

1A.13.1.2(1)(b)(viii) Lighting systems and controls.

1A.13.1.2(1)(b)(ix) Nurse call, code call, intercoms, and other audio communication systems.

1A.13.1.2(1)(b)(x) Life safety alarming, monitoring, and protection systems.

1A.13.1.2(1)(b)(xi) HVAC generation, distribution, and systems.

1A.13.1.2(1)(b)(xii) Maintaining inventories of spare/replacement parts and maintenance supplies for high demand items (e.g., lubricants, seals, casters)

1A.13.1.2(1)(b)(xiii) Quality air and ventilation systems distribution, control and maintenance (i.e. HEPA, AIRs, computer rooms, and other specially ventilated areas).

1A.13.1.2(1)(b)(xiv) Plumbing and water treatment systems (e.g., demineralization, ultraviolet, filtration systems).

1A.13.1.2(1)(b)(xv) Fire suppression sprinkler standpipe, and fire hydrant systems.

1A.13.1.2(1)(b)(xvi) Medical gases distribution, bulk storage, and generation systems.

1A.13.1.2(1)(b)(xvii) Special and wastewater collection system.

1A.13.1.2(1)(b)(xviii) Heating systems distribution and maintenance.

1A.13.1.2(1)(b)(xix) Hazardous waste and flammable storage.

1A.13.1.2(1)(b)(xx) Statutory testing

- 1A.13.1.2(1)(b)(xx)A Fire prevention and safety.
- 1A.13.1.2(1)(b)(xx)B Supervision / coordination of work requiring specialized training/outsourced services, such as elevators and medical gases.

1A.13.1.2(1)(b)(xxi) Organized maintenance tasks, including:

- 1A.13.1.2(1)(b)(xxi)A Preventive maintenance intended to actively reduce the risk of on-demand maintenance.
- 1A.13.1.2(1)(b)(xxi)B Corrective (or on-demand) maintenance, which are unplanned activities to correct, repair, replace, or refurbish the facilities.
- 1A.13.1.2(1)(b)(xxi)C Predictive maintenance, which uses specialized tests (vibration, thermography, etc.) to predict the need for maintenance of certain equipment within the facilities.

1A.13.1.2(2) Planning Assumptions

1A.13.1.2(2)(a) There are no strategic changes planned for facilities maintenance. However, improvements to the safety and functionality of the area, initiating electronic management of inventory, assets, and preventative maintenance will be accommodated.

1A.13.2 OPERATIONAL DESCRIPTION

1A.13.2.1 Hours of Operation

1A.13.2.1(1) FM services will be available on-site Monday to Friday, 0800-1600. Services will be available on a call back basis after hours and on holidays and weekends.

1A.13.2.2 Organization & Management

1A.13.2.2(1) The FM area will be managed by the FM supervisor.

1A.13.2.3 Workflow

1A.13.2.3(1) Staff

1A.13.2.3(1)(a) FM Staff will access the FM area via General Circulation.

1A.13.3 STAFFING

1A.13.3.1 Estimated future Staffing for this department is summarized below. The information is for space planning purposes only and does not represent a commitment for hiring.

Facilities Maintenance: Projected Staffing	
Position	**Projected FTE**
	2040/41
Facilities Maintenance Staff	2.0

1A.13.4 DESIGN CRITERIA

1A.13.4.1 External Relationships

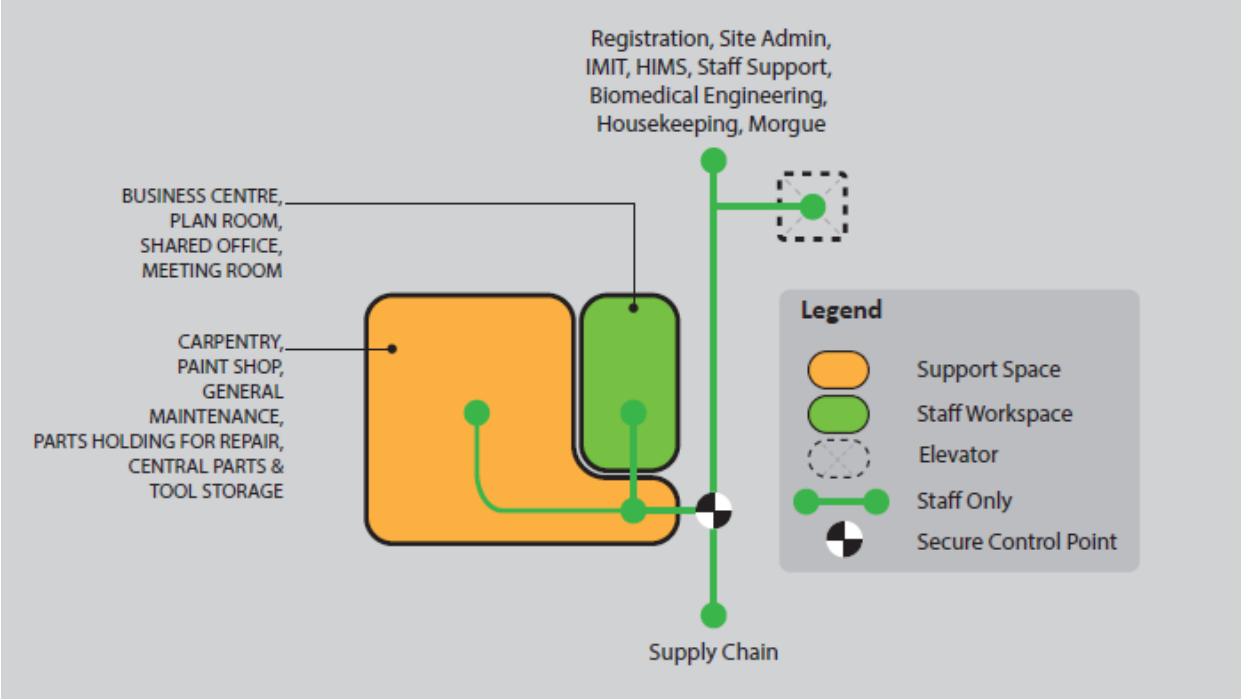
1A.13.4.1(1) FM will be adjacent by controlled access to the loading dock for the movement of supplies from loading dock, movement of beds to off-site repair, and disposition of waste.

1A.13.4.1(2) FM will provide Secure, 24-hour access for via controlled circulation contract service vendors.

1A.13.4.1(3) FM will be adjacent to housekeeping and supply chain via controlled circulation to share the Business Centre and Plan Room.

1A.13.4.2 Functional Relationship Diagram

1A.13.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.13.4.3 Internal Design Criteria

1A.13.4.3(1) For a description of General Planning Concepts applicable to this department, see Section 1A.0. These two sections must be read together.

1A.13.4.3(2) General Internal Layout

1A.13.4.3(2)(a) The department will be organized into 2 major areas as follows:

1A.13.4.3(2)(a)(i) Administrative area

1A.13.4.3(2)(a)(ii) Service area

1A.13.4.3(3) Administrative Area

1A.13.4.3(3)(a) Workspace will be developed using systems furniture. It will include a meeting table with four chairs.

1A.13.4.3(3)(b) The Business Centre and Plan Room will be shared by Housekeeping and Supply Chain.

1A.13.4.3(4) Service Area

1A.13.4.3(4)(a) The general maintenance area will be directly accessible from the administrative area.

1A.13.4.3(4)(b) Configuration of the space will allow for a piece of plywood to be cut within space.

1A.13.4.3(4)(c) Provide modular storage systems that will be flexible and expandable (parts and tools).

1A.13.4.3(4)(d) Storage for critical parts with a high turnover will be centrally located in the service area.

1A.13.4.3(4)(e) The gas cylinder storage room will be located adjacent to the shipping / receiving area.

1A.13.4.3(4)(f) Site maintenance storage will be located outside of the Building, will be Secured and shared by the auxiliary for exterior tools.

1A.13.5 SCHEDULE OF ACCOMMODATION

1A.13.5.1 Space requirements for this department are identified on the following pages. Space identified is assumed to meet 2040/41 needs.

1A.13 Facilities Maintenance: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
13.1	**Administrative Area**					
13.1.01	Shared Office and Meeting Space: FM Staff	1	12.6	12.6	- Workspace with chair, computer, data, phone, cabinet; small meeting area with table with 2 chairs	-
13.1.02	Business Centre and Plan Room	1	7.0	7.0	- Storage for SLH plans, photocopier/fax; clerical supplies; cupboard space and mail slots (millwork)	- Shared with housekeeping, SCM
Facilities Maintenance: Administrative Area				**NSM**		
				19.6		
13.2	**Service Area**					
13.2.01	Carpentry / Paint Shop / General Maintenance	1	28.0	28.0	- 1 computer Workstation; articulated hose for dust collection; moveable table saw, miter saw, cut off saw; sheet storage; painting booth (small fume hood); flammable storage units vented outside; utility sink; first aid station/eye wash; in-floor lift (ergonomic considerations); overhead lift (5-ton)	-

1A.13 Facilities Maintenance: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
13.2.02	Holding for Items Requiring Repair	1	12.0	12.0	- Storage for items awaiting repairs (beds, equipment, walkers, etc.); open floor space with power and data considerations	-
13.2.03	Central Parts and Tool Storage	1	10.0	10.0	- High turnover critical parts and maintenance items (ladders, etc.)	-
-	Chemical Storage	Included in building gross up in the mechanical space				
13.2.04	Gas Cylinder Storage Room	1	15.0	15.0	- Requires outside access (6 smaller - 100lbs, 6 bigger - 800lbs); portable oxygen racks	- Locate by shipping / receiving area
13.2.05	Wash Bay	Shared with Housekeeping (ref 15.1.04)				
Facilities Maintenance: Service Area				**NSM**		
				65.0		
13.3	**Staff Support**					
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Facilities Maintenance: Staff Support				**NSM**		
				0.0		
Total Facilities Maintenance Area				**Total NSM**		
				84.6		
	Exterior Requirements					
13.2.07	Site Maintenance Storage	1	13.0	13.0	- Secure storage of site maintenance equipment; single car garage type of area and finishes; could be detached from the facility	- Shared with Auxiliary for their gardening tools

1A.14 NUTRITION AND FOOD SERVICE

This specification outlines the functional, operational, and physical requirements for the Nutrition and Food Service department.

1A.14.1 FUNCTIONAL DESCRIPTION

1A.14.1.1 Statement of Purpose

1A.14.1.1(1) The Nutrition and Food Service department will provide daily meals, nourishments, snacks and supplies to Patients, Residents, Staff, and visitors.

1A.14.1.1(1) The clinical nutrition department liaises within the Nutrition and Food Services department and collectively they report to the health service administrator. Both departments aim to provide food and nutrition support for the Inpatient and Long-Term Care (LTC) population.

1A.14.1.2 Scope of Services

1A.14.1.2(1) Functional Content

1A.14.1.2(1)(a) The Nutrition and Food Services and clinical nutrition department will assess all Patients' dietary needs and meet their nutritional requirements, including LTC Residents.

1A.14.1.2(1)(b) The Nutrition and Food Services department will provide Inpatient and Resident meals, nourishments, snacks, and Staff food services.

1A.14.1.2(1)(c) Bulk family dining style meals will be provided for the Long-Term Care Resident population to be served to Residents in a dining room. The acute care population will receive fully assembled meal trays at bed side. Both sectors wills be offered a selective menu on 28-day menu cycle.

1A.14.1.2(1)(d) The registered dietitians will determine diet definition and standards related to Patient menu offerings, texture modifications, nutrition support, and specialized nutrition products.

1A.14.1.2(2) Planning Assumptions

1A.14.1.2(2)(a) Planning assumes that the department will support meals-on-wheels in the future, possibly extending to assisted living apartments within the community, offering lunch and dinner meals to two to three clients per day, from Monday to Friday.

1A.14.1.2(2)(b) Nutrition and food service volumes are to be 54 daily meals to long term care, 27 daily meals to the acute care population, and an additional 12 daily meals (lunch and dinner, Monday to Friday) to support the meals-on-wheels program.

1A.14.1.2(2)(c) Staff meal service will consist of a refrigerated merchandizer with limited items supplied by Nutrition and Food Services.

1A.14.1.2(2)(d) A computerized dietary management information system will be included to support the operation of food services and will be fully integrated with the Building's information system.

1A.14.1.2(2)(e) Computerized shared workstations will be used in the Inpatient and Long-Term Care Units for use by the clinical dietitians and diet technicians.

1A.14.1.2(4) Exclusions

1A.14.1.2(4)(a) Provision of vending machines will be a third-party contracted service and will not supported by Nutrition and Food Services.

1A.14.2 OPERATIONAL DESCRIPTION

1A.14.2.1 Hours of Operation

1A.14.2.1(1) Level of services and hours of operation will reflect customer demand and Staff needs.

1A.14.2.1(2) Inpatient and Long-Term Care Units will receive three meals daily along with nourishments and snacks.

1A.14.2.2 Organization & Management

1A.14.2.2(1) Nutrition and Food Services Staff will report to a Health Service Administrator.

1A.14.2.3 Workflow

1A.14.2.3(1) In-Patient Care

1A.14.2.3(1)(a) Patients are offered a system select meal item in accordance with diet profile daily.

1A.14.2.3(1)(a)(i) All food items will be received, stored, prepared, and assembled hot within the main kitchen.

1A.14.2.3(1)(a)(ii) Menu items will consist of a combination of raw and semi-processed ingredients prepared onsite and pre-prepared items procured from institutional and commercial food suppliers.

1A.14.2.3(1)(a)(iii) Fully assembled meals will be delivered to the unit via cart service. A nourishment station will also be provided in the acute care unit to stock nourishments and snacks.

1A.14.2.3(2)(a)(iv) Meal service times for acute care Patients will be determined in conjunction with Inpatient Units.

1A.14.2.3(2)(a)(v) After meal service, all carts, trays, and dishware will be returned to the main kitchen for sanitation.

1A.14.2.3(2) Long Term Care Residents

1A.14.2.3(2)(a) Meals for Long Term Care Residents will be prepared and assembled in bulk, prior to each meal.

1A.14.2.3(2)(a)(i) Hot and cold food will be delivered to the home kitchen in advance of services in a bulk food cart and positioned in the on-unit servery / home kitchen.

1A.14.2.3(2)(a)(ii) Nutrition and Food Service Staff will facilitate meal selection and portion and plate meals from the bulk cart. The bulk cart will be stationary during breakfast service, however, may be mobile during lunch and dinner service.

1A.14.2.3(2)(a)(iii) Meal service times for Long-Term Care Residents will be determined in conjunction with Long-Term Care Unit personnel.

1A.14.2.3(2)(a)(iv) LTC Staff will support Nutrition and Food Services with meal selection, service, and feeding assistance.

1A.14.2.3(2)(a)(v) After meal service, all carts, trays, and dishware will be returned to the main kitchen for sanitation. A commercial undercounter dish machine will be maintained within the Long-Term Care Resident home kitchen for sanitation of selected service wares and/or Resident personal items that remain on the unit.

1A.14.3 STAFFING

1A.14.3.1 Nutrition and Food Services staffing will provide shift-and-a-half coverage and provide service three meals per day, seven days per week. Estimated future staffing for this component is summarized below.

Registration: Projected Staffing	
Position	**Projected FTE**
	2040/41
Cook	2.1
Dietary Aide	2.8
Total Staffing	**4.9**

1A.14.4 DESIGN CRITERIA

1A.14.4.1 External and Internal Relationships

1A.14.4.1(1)(a) The kitchen should have convenient access through non-public circulation to the hospital receiving dock for the receipt of food product and soiled dock for the removal of waste.

1A.14.4.1(1)(b) The kitchen shall be near major vertical and horizontal circulation routes for delivery of meals to Patient and Resident units.

1A.14.4.1(1)(c) The kitchen and Staff Lunch Room should be co-located directly adjacent to one another to mitigate staffing and space needs.

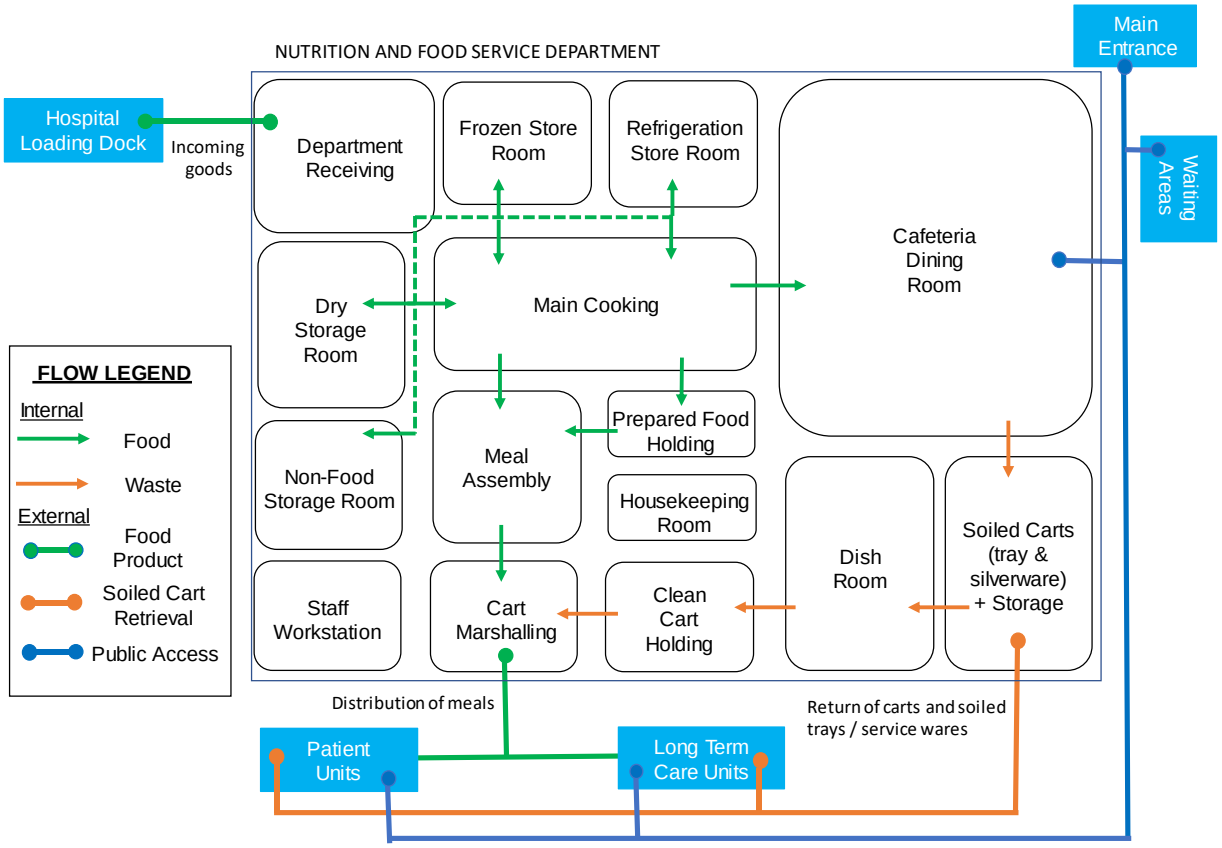
1A.14.4.1(1)(d) The kitchen and Staff Lunch Room will require convenience access to Staff washrooms and locker facilities.

1A.14.4.2 Functional Relationship Diagram

1A.12.4.2(1) The kitchen will be designed to support a forward workflow and a separate and non-crossing flow of waste and soiled carts and service wares.

1A.12.4.2(2) Functional relationships within the Nutrition and Food Service Department and between key areas will generally be as illustrated in the following diagram. The diagram is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.

1A.14 NUTRITION AND FOOD SERVICES



1A.14.4.3 Internal Design Criteria

1A.14.4.3(1) Flexibility and Adaptability

1A.14.4.3(1)(a) To the extent possible, mobile equipment will be used so as to allow for movement and repositioning in the future, easy replacement and ease of cleaning.

1A.14.4.3(1)(b) At a minimum the lighting, walk-in refrigerators and freezers, and production equipment will be on delayed vital power.

1A.14.4.3(1)(c) Architectural provisions will be required to enable removal and replacement of any large food service equipment following the end of its useful life.

1A.14.4.3(2) Long-Term Care

1A.14.4.3(2)(a) On-unit dining room and home kitchen will be central to the Resident home area and designed adjacent to other living spaces to enhance Resident observation and interaction with the dietary team member. The goal will be to create an optimal dining experience for the Residents and, therefore, many features (program and design) such as the following should be customized to each Resident home area:

1A.14.4.3(2)(a)(i) Comfortable, home-like ambiance with artwork, appropriate lighting, and pleasant colours to help stimulate the appetite;

1A.14.4.3(2)(a)(ii) Access or view to outdoors;

1A.14.4.3(2)(a)(iii) Home kitchen featuring domestic-style counters and cabinetry;

1A.14.4.3(2)(a)(iv) Wheelchair accessible “breakfast bar” or counter around the home kitchen where Residents can observe meal preparation activities, participate in food programs, and speak with the dietary Staff;

1A.14.4.3(2)(a)(v) Activity room with close proximity to the dining room in order to allow for accommodation of larger programs and events that may occupy both spaces.

1A.14.4.3(2)(a)(vi) Space to accommodate mobility devices.

1A.14.4.3(3) Environment

1A.14.4.3(3)(a) Conditioned velocity supply air as well as ventilation will be provided in all kitchen work areas. Slight negative pressure will be provided for odour control.

1A.14.4.3(3)(b) Work areas will be gradually sloped to central floor drains for general drainage and to enable mechanically assisted spray wash and chemical sanitation.

1A.14.4.3(3)(c) Spot cooling will be provided in selected work areas within the main kitchen.

1A.14.4.3(3)(d) The kitchen will require clearance of no less than 3 metres from finished floor to finish ceiling and 4.3 metres to underside of slab.

1A.14.4.3(4) Materials and Finishes

1A.14.4.3(4)(a) Commercial, heavy duty, non-slip flooring which is washable, impervious to food acids and oils, and suitable for rolling equipment will be utilized, and all corners between walls, floors, and ceilings will be coved within kitchen facilities.

1A.14.4.3(4)(b) Any walk-in freezers and refrigerators will require depressed floor slabs (a minimum of 200mm deep) to allow for smooth access for carts.

1A.14.4.3(4)(c) Air-cooled refrigeration units will be utilized for walk-in coolers and freezers.

1A.14.4.3(4)(d) All wall finishes within the kitchen will be smooth, washable, durable, and comfortable. Protection from cart damage on walls and columns will be provided.

1A.14.4.3(5) Lighting

1A.14.4.3(5)(a) To the extent possible, functional areas within the main kitchen will be enhanced by natural light.

1A.14.4.3(6) Mechanical Design/ Air Handling (as required)

1A.14.4.3.(6)(a) Kitchen exhaust systems with automatic wash down ventilators, fire control systems and control panels will continue to be required above any cooking equipment to vent grease, odours, and gas fumes from the cooking appliances.

1A.14.4.3(6)(b) Exhaust ventilators will also be required for all dishwashing equipment. Additional ventilation with the capability to remove excessive humidity and odour will be required in the warewashing and waste management areas.

1A.14.4.3(7) Code and Standards

1A.14.4.3(7)(a) The design will minimally meet or exceed applicable provincial infection prevention and control guidelines, including:

1A.14.4.3(7)(a)(i) National Sanitary Foundation (NSF).

1A.14.4.3(7)(a)(ii) Underwriters Laboratories Canada (ULC).

1A.14.4.3(7)(a)(iii) National Electric Manufacturers Association (NEMA).

1A.14.4.3(7)(a)(iv) National Electric Code, US (N.E.C.).

1A.14.4.3(7)(a)(v) American Society of Mechanical Engineers (ASME).

1A.14.4.3(7)(a)(vi) National Fire Protection Agency (NFPA) and UL standard ULC-S646-98 for exhaust ventilators.

1A.14.4.3(8) Furniture and Equipment

1A.14.4.3(8)(a) The long-term care will require:

1A.14.4.3(8)(a)(i) The home kitchen and servery will require a domestic stove to support on-unit programs, a reach-in refrigerator to stock on-unit supplies, and a hand hygiene sink.

1A.14.4.3(8)(a)(ii) The dining room will also contain a nourishment station accessible by Residents and family members. The nourishment station will be equipped with a domestic toaster, kettle, and water dispenser.

1A.14.4.3(8)(b) The medical Inpatient and Emergency Department will require:

1A.14.4.3(8)(b)(i) A shared nourishment station to stock nourishments and snacks.

1A.14.4.3(8)(c) Staff Lunch room will require:

1A.14.4.3(8)(c)(i) Tables (combination of two and four tops) and chairs to accommodate Staff dining.

1A.14.4.3(8)(c)(ii) Condiment counter complete with microwave, water dispenser, and refrigerator.

1A.14.5 SCHEDULE OF ACCOMMODATION

1A.14.5.1 Space requirements for Nutrition and Food Services are identified below in net square metres (nsm). Space identified is assumed to meet 2040/41 needs.

1A.14 Nutrition & Food Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
14.1	**Refrigerated, Frozen and Dry Storage Area**					
14.1.01	Department Receiving	1	8.0	8.0	Area for sorting and segregating production. Door wide enough to accommodate a pallet.	
14.1.02	Dry Store Room	1	8.0	8.0		
14.1.03	Refrigerated Store Room	1	6.0	6.0	Prefabricated unit	2.4m x 2.5m
14.1.04	Frozen Store Room	1	7.5	7.5	Prefabricated unit	2.4m x 3.2m
14.1.05	Non-Food Store Room	1	8.0	8.0		
Nutrition & Food Services: Refrigerated, Frozen and Dry Storage Area				**Total NSM**		
				37.5		
14.2	**Food Production Area**					
14.2.01	Workstation, Staff	1	6.0	6.0		
14.2.02	Main Cooking (including Bakery)	1	9.3	9.3		3 linear metres of cooking line
14.2.03	Not used	0	0	0		
14.2.04	Meal Assembly	1	7.5	7.5		
14.2.05	Cart Marshalling Room	1	7.5	7.5	Assumes capacity for up to 4 carts and an allowance of 1.86 NSM / cart	
Nutrition & Food Services: Food Production Area				**Total NSM**		
				30.3		
14.3	**Ware Washing Area**					
14.3.01	Soiled Cart Receiving / Sorting Room	1	7.4	7.4	Assumes capacity for up to 4 carts and an allowance of 1.86 NSM / cart	
14.3.02	Dish Room	1	6.0	6.0	Rack machine and composter	
14.3.03	Clean Cart Holding	1	5.6	5.6	Assumes capacity for up to 3 carts and an allowance of 1.86 NSM / cart	
14.3.04	Housekeeping Closet	1	4.5	4.5	1 floor sink, standard wall mounted sink and storage cabinetry.	
Nutrition & Food Services: Ware Washing Area				**Total NSM**		
				23.5		
14.4	**Lunch Room (Staff Only)**					
14.4.1	Lunch Room	1	33.4	33.4	Assumes seating for up to 20 at tables of varying sizes and 1.67 NSM / seat	

1A.14 NUTRITION AND FOOD SERVICES

1A.14 Nutrition & Food Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
Nutrition & Food Services:Lunch Room (Staff only)				**Total NSM**		
				33.4		
Total Nutrition & Food Services Area				**Total NSM**		
				124.7		
14.5	**Exterior Space**					
14.5.01	Staff Patio	1	30.0	30.0	- Outdoor space accessible from 14.4.1 Staff Lunch Room and/or 18.101 Staff Lounge / Breakroom; 20sqm of the area will be a wheelchair accessible surface; 12sqm of this area will be covered and wheelchair accessible	-
Nutrition & Food Services: Exterior Space				**Total SQM**	**-**	**Total SQM**
				30.0	**-**	**30.0**

1A.15 HOUSEKEEPING

This specification outlines the functional, operational, and physical requirements for the Housekeeping department.

1A.15.1 FUNCTIONAL DESCRIPTION

1A.15.1.1 Statement of Purpose

1A.15.1.1(1) Housekeeping Staff will perform cleaning duties throughout the Building and maintain clean and sanitary conditions as established in accordance with the Authority's policies procedures and processes.

1A.15.1.2 Scope of Services

1A.15.1.2(1) Functional Content

1A.15.1.2(1)(a) Housekeeping cleaners will perform the following functions:

1A.15.1.2(1)(a)(i) Clean areas such as floors, baseboard, stairways, walls, windows, and ceilings by methods such as scrubbing, sweeping, vacuuming, dust mopping, spot washing, and wet washing with mops and buckets and/or mechanical equipment.

1A.15.1.2(1)(a)(ii) Empty, clean, and disinfect waste / recycling containers; collect, disinfect, compact, and remove garbage / recycling according to departmental procedures.

1A.15.1.2(1)(a)(iii) Move selected portions of the waste stream from points-of-use, and from soiled utility/holding rooms to the soiled dock area. The major portions of the waste stream including soiled linen, non-infectious trash, and mixed recyclables, will be transported in carts and totes.

1A.15.1.2(1)(a)(iv) Clean and disinfect washrooms and replenishes items / supplies such as soap and towels.

1A.15.1.2(1)(a)(v) Cleans, disinfects, and makes beds and bassinettes; clean and tidy items such as cupboards, lockers, basins, and tables.

1A.15.1.2(1)(a)(vi) Clean items such as furniture, ledges, fixtures, and venetian blinds

1A.15.1.2(1)(a)(vii) Dust air vents and ducts, radiators, and light fixtures; remove, rehang drapes, and bed curtains as required.

1A.15.1.2(1)(a)(viii) Move furniture such as beds, stretchers, and other furniture and/or equipment manually and/or using aides such as dollies and carts.

1A.15.1.2(1)(a)(ix) Clean furniture, by methods such as vacuuming, shampooing, and brushing.

1A.15.1.2(1)(a)(x) Clean and disinfect nursing areas and isolation rooms, Patient equipment, such IV poles, commodes, sharps containers and wheelchairs.

1A.15.1.2(1)(a)(xi) Maintain housekeeping machines and equipment by cleaning, and replacing items such as filter bags and report damaged and/or inoperable fixtures, equipment and furniture and reports low supplies

1A.15.1.2(1)(a)(xii) Order, receive, and stock housekeeping supplies throughout the Hospital.

1A.15.1.2(1)(a)(xiii) Mobile Patient equipment cleaning (soiled equipment is cleaned and disinfected, tagged with green tape and put in clean utility rooms).

1A.15.1.2(1)(a)(xiv) Recycling is limited on site as there is not a suitable area in the community for distribution. Confidential shredding is under a contracted service. A potential shift in services may be an increased emphasis / expansion of recyclables and the separation of organic materials.

1A.15.1.2(1)(a)(xv) Decentralized housekeeping rooms are required throughout the Building with Housekeeping Staff being responsible for replenishment of supplies in Housekeeping rooms.

1A.15.1.2(1)(a)(xvi) Management structure is changed to include 1 manager of support services and 1 food & nutrition services supervisor to cover Vanderhoof & Fort St James locations. Additional clerical support will be shared between all support service departments (i.e. 0.2 FTE allocated to each of Food and Nutrition Services, Housekeeping, and Laundry and Linen).

1A.15.1.2(2) Planning Assumptions

1A.15.1.2(2)(a) A central Housekeeping area will be accommodated along with satellite Housekeeping Closets located throughout the Building.

1A.15.2 OPERATIONAL DESCRIPTION

1A.15.2.1 Hours of Operation

1A.15.2.1(1) Housekeeping will be available 7 days per week on rotating hours (approximately 6:00am – 6:00pm scheduled coverage). Emergency call in only as required.

1A.15.2.1(2) Support services supervisor will be shared between Housekeeping, Laundry and Linen, and Food and Nutrition Services, supported by a manager who is also shared. Day-to-day responsibilities will be those of the supervisor.

1A.15.2.2 Organization & Management

1A.15.2.2(1) Housekeeping will be managed by the support services supervisor.

1A.15.2.3 Workflow

1A.15.2.3(1) Staff

1A.15.2.3(1)(a) Staff will be assigned to specific areas of the hospital to provide cleaning services.

1A.15.2.3(1)(b) The storage, maintenance and recharging of large pieces of cleaning equipment (e.g. auto scrubbers, burnishers, floor finishing/ stripping machine, etc.) will be accommodated centrally, as will the storage of bulk cleaning supplies.

1A.15.2.3(1)(c) The various forms of soiled material handling/waste management will be addressed as follows:

1A.15.2.3(1)(c)(i) General non-infectious trash will be collected on the Patient care units from individual Patient rooms, treatment areas, soiled utility, and soiled holding rooms. Housekeeping Staff will transport trash carts located throughout the hospital directly to central waste holding area adjacent to the loading docks and/or directly into trash compactor.

1A.15.2.3(1)(c)(ii) Recyclables will be collected manually, segregated and stored in a central recycling area adjacent to the soiled docks, until the items are picked up by a recycling company(s). All recyclables will be stored in bins next to the loading dock.

1A.15.2.3(1)(c)(iii) Confidential paper waste will be stored in small totes located in alcoves throughout the Building.

1A.15.2.3(1)(c)(iv) Regulated medical waste, including infectious waste and sharps will be collected at the source and taken to the soiled holding area.

1A.15.2.3(1)(c)(v) Hazardous waste will be stored in user areas, before Housekeeping picks-up and transports the waste to a Secure storage facility adjacent to the soiled loading dock.

1A.15.3 STAFFING

1A.15.3.1 Estimated future Staffing for this department is summarized below. The information is for space planning purposes only and does not represent a commitment for hiring.

Housekeeping: Projected Staffing	
Position	**Projected FTE**
	2040/41
Housekeepers	4.0

1A.15.4 DESIGN CRITERIA

1A.15.4.1 External Relationships

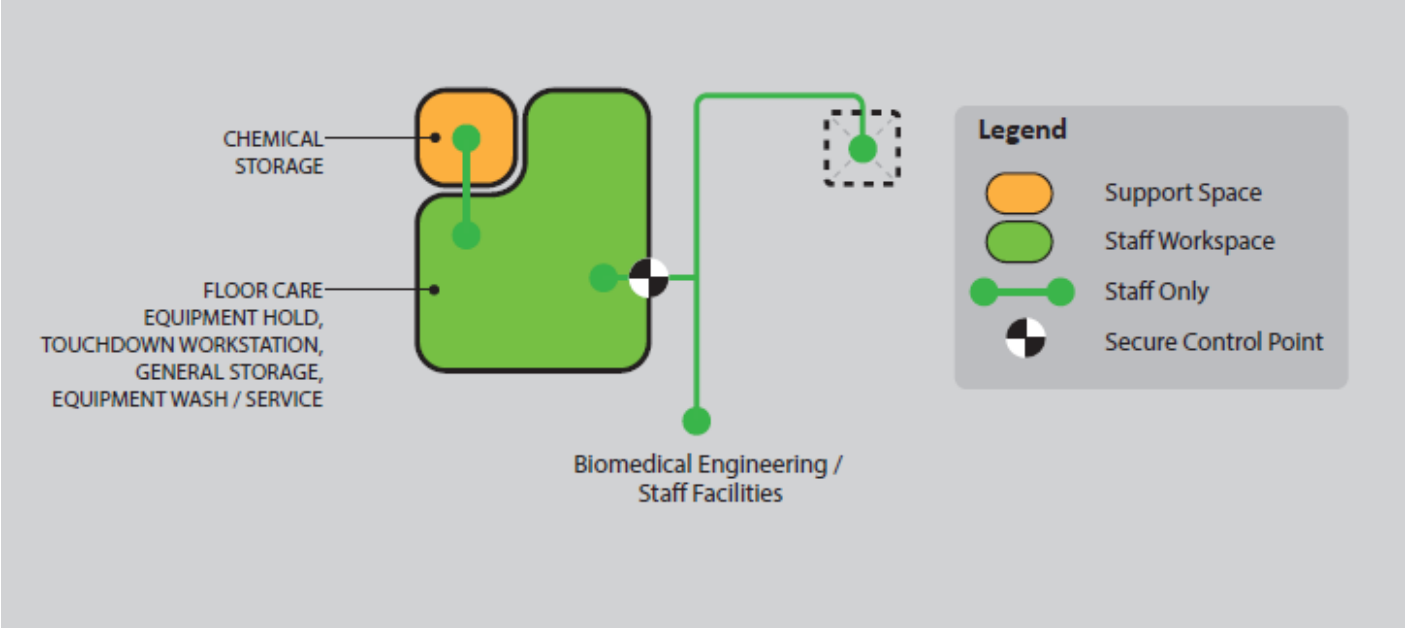
1A.15.4.1(1) The central Housekeeping area will be accessible via Convenient Access to loading dock.

1A.15.4.1(2) The central Housekeeping area will be accessible via controlled circulation to the shared Business Centre.

1A.15.4.1(3) The central Housekeeping area will be accessible via General Circulation to the rest of the Building.

1A.15.4.2 Functional Relationship Diagram

1A.15.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.15.4.3 Internal Design Criteria

1A.15.4.3(1) For a description of General Planning Concepts applicable to this department, see Section 1A.0. These two sections must be read together.

1A.15.4.3(2) Storage and Supply Area

1A.15.4.3(2)(a) General Storage Area

1A.15.4.3(2)(a)(i) Storage of bulk supplies and consumables will be accommodated on wire rack shelving.

1A.15.4.3(2)(b) Additional Considerations

1A.15.4.3(2)(b)(i) Floor care equipment storage will provide additional ventilation due to fumes emitted during battery charging.

1A.15.4.3(2)(b)(ii) Floor care equipment storage will have floor drains, as well as wall faucets / hose bibs, and hand wash sinks.

1A.15.4.3(2)(b)(iii) Adequate power sources for recharging of floor equipment will be provided.

1A.15.4.3(2)(b)(iv) Chemical storage will be separate, Secured room adjacent to the general storage area.

1A.15.4.3(2)(b)(v) All Housekeeping Rooms and Closets will have door openings at least 1.2 metres wide.

1A.15.4.3(3) Housekeeping Closets

1A.15.4.3(3)(a) Housekeeping Closets will be Secured rooms accessible only by Housekeeping Staff.

1A.15.4.3(3)(b) They will be equipped with floor sinks.

1A.15.4.3(3)(c) The Housekeeping Closets will accommodate a floor sink, burnisher, vacuum, housekeeping cart, and cleaning and paper supplies.

1A.15.5 SCHEDULE OF ACCOMMODATION

1A.15.5.1 Space requirements for this department are identified as follows. Space identified is assumed to meet 2040/41 needs.

1A.15 Housekeeping: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
15.1	**Storage and Supply Area**					
15.1.01	General Storage Area	1	10.0	10.0	- Bulk supplies, consumables, and carts; include storage medium; floor drain/mop sink	-
15.1.02	Chemical Storage	1	5.0	5.0	- Include shelving and HVAC requirements	
15.1.03	Floor care equipment holding area	1	4.0	4.0	- Secure but open floor area for floor cleaner; include electrical, charging, and ventilation requirements	-
15.1.04	Equipment Washing/Servicing	1	13.9	13.9	- Include plumbing and electrical requirements; cart washing area; access to chemicals; include water pressure requirements; floor drain	-
-	Housekeeping Closets	Located strategically throughout the Building				
Housekeeping: Storage and Supply Area				**NSM**		
				32.9		
15.2	**Staff Support**					

1A.15 HOUSEKEEPING

1A.15 Housekeeping: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
-	Office: Supervisor	Accommodated in Facilities Maintenance shared office				
15.2.01	Workstation: Touchdown	1	3.0	3.0	- Chair, computer, data, phone, cabinet; for Staff to check worklog	- located within storage area
-	Business Centre	- Shared with adjacent departments				
-	Meeting Room	- Accommodated in the Support Staff Facilities				
-	Staff Lockers	- Accommodated in the Support Staff Facilities				
-	Staff Lounge	- Accommodated in the Support Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Housekeeping: Staff Support				**NSM**		
				3.0		
Total Housekeeping Area Requirements				**Total NSM**		
				35.9		

1A.16 LAUNDRY AND LINEN SERVICES

This specification outlines the functional, operational, and physical requirements for Laundry and Linen Services.

1A.16.1 FUNCTIONAL DESCRIPTION

1A.16.1.1 Statement of Purpose

1A.16.1.1(1) Linen and Laundry Services will support the collection, receipt and inventory of hospital linen and processing Resident personal garments.

1A.16.1.2 Scope of Services

1A.16.1.2(1) Functional Content

1A.16.1.2(1)(a) On premise laundry functions will accommodate the collection and storage of linen received from the central laundry, both centrally and decentrally on the Patient and Resident units.

1A.16.1.2(1)(b) The on-premise facilities will be designed to accommodate the receipt of exchange carts and/or bulk linen from the central laundry.

1A.16.1.2(1)(c) A sorting and cart make up area will be provided within the on-premise laundry to allow for the building of individual unit linen carts for linen received in bulk.

1A.16.1.2(1)(d) Clean linens will be distributed to closets/alcoves within Patient and Resident units using a top-up system.

1A.16.1.2(1)(e) Soiled linen holding area will be located within the Materiel's Management component to ensure linage to the loading dock and maintain separate movement and storage of clean and dirty linens.

1A.16.1.2(2) Planning Assumptions

1A.16.1.2(2)(a) Hospital laundry, with the exception of residential care clients' personal garments, will be processed off-site. This will include all institutional linens and Staff uniforms (i.e. scrubs and lab coats)

1A.16.1.2(2)(b) Linen processed off-site will be received 3 days per week and each delivery will consist of receipt of at least 3 to 4 linen carts.

1A.16.1.2(2)(c) Residential care clients will have their laundry processed on-site using facilities located with their living accommodations.

1A.16.1.2(2)(d) General linen and laundry is anticipated to range from 4 to 6 kg per Patient / Resident per day, translating into approximately 35K to 55K kg of linen annually.

1A.16.1.2(2)(e) Resident personal linen is anticipated to at 1kg per Resident per day, or 8K to 9K kg annually.

1A.16.2 OPERATIONAL DESCRIPTION

1A.16.2.1 Hours of Operation

1A.16.2.1(1) Linen processed off-site will be received 3 days per week (Mondays, Wednesdays, and Fridays).

1A.16.2.1(2) Personal garments will be laundered within the Long-Term Care Units daily.

1A.16.2.2 Organization & Management

1A.16.2.2(1) Linen and Laundry Services Attendant will report to Manager of Housekeeping Services.

1A.16.2.3 Workflow

1A.16.2.3(1) Soiled linen will be collected and placed in linen hampers located on each unit.

1A.16.2.3(2) Soiled linen will then be either placed in linen carts located in soiled utility rooms on each unit and ported to a central soiled linen holding areas awaiting pick up and transportation to the central laundry.

1A.16.2.3(3) Clean linen will be received either via exchange cart or in bulk. Linen will be sorted, placed on carts and portered to each unit for top up to unit par levels.

1A.16.2.3(3) Resident personal linen will be collected and placed in linen bags with Resident identifier and processed utilizing washers and dryers located on the LTC unit.

1A.16.2.4 Support Activities

1A.16.2.4(1) Facilities Management

1A.16.2.4(1)(a) Facilities management will support maintenance to any on-premise equipment and/or manage contracts with external maintenance contractors.

1A.16.2.4(2) Care Units

1A.16.2.4(2)(a) Care or on-unit Staff will be responsible for laundering Resident personal garments.

1A.16.2.4(3) Materials Management

1A.16.2.4(3)(a) Soiled linen collection area will reside within the Materials Management area to ensure separation of soiled and clean laundry functions and allow for direct adjacency to the loading dock for return of soiled linen to the off-site central laundry.

1A.16.2.4(3)(b) Materials management will manage contracts with the health regions chemical company to provide chemicals, pumping equipment and perform test on the wash formulas.

1A.16.3 STAFFING

1A.16.3.1 Estimated future staffing for this component is summarized below.

Registration: Projected Staffing	
Position	**Projected FTE**
	2040/41
Laundry attendant	1.4

1A.16.4 DESIGN CRITERIA

1A.16.4.1 External and Internal Relationships

1A.16.4.1(1) The following key adjacencies will be provided:

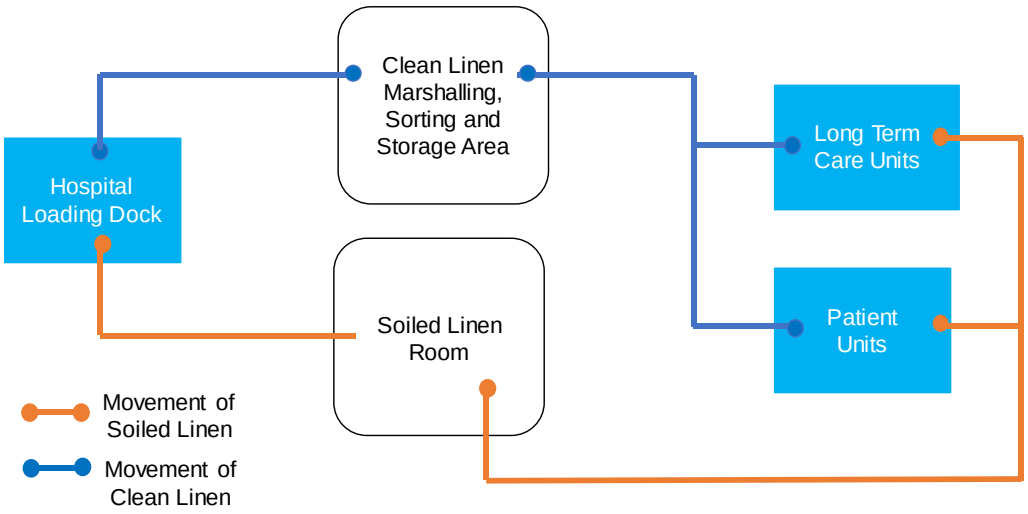
1A.16.4.1(1)(a) The on-premise laundry facilities (clean linen holding, sorting and cart make up area) will require convenient access through non-public circulation to the hospital receiving dock for the receipt of bulk linen.

1A.16.4.1(1)(b) The on-premise laundry facilities will require convenient access through non-public circulation to major vertical and horizontal circulation routes for delivery of linen carts to Patient and Resident units.

1A.16.4.1(1)(c) The soiled linen collection area will require convenient access through non-public circulation to the hospital loading dock for retrieval of soiled carts to be send to the central laundry.

1A.16.4.2 Functional Relationship Diagram

1A.16.4.2(1) Functional relationships between key areas will be generally as illustrated in the following diagram. The diagram is not to scale, not all spaces may be illustrated, and arrows do not indicate all required connections.



1A.16.4.3 Internal Design Criteria

1A.16.4.3(1) Infection Prevention and Control

1A.16.4.3(1)(a) The design will meet or exceed applicable provincial infection prevention and control guidelines.

1A.16.4.3(1)(a) Proper separation of clean and soiled linen will be maintained through the facility.

1A.16.4.3(2) Environment

1A.16.4.3(2)(a) Wide single or double door access will be required at key entrances and exists to the laundry for receipt of linen carts. Automatic doors will be provided.

1A.16.4.3(3) Materials and Finishes

1A.16.4.3(3)(a) Heavy duty slip-resistant and cushioned flooring, which is washable, impermeable to moisture and suitable for rolling equipment will be provided throughout the on-premise laundry areas.

1A.16.4.3(3)(b) All general areas within the laundry areas will be gradually sloped to central floor drains for general drainage and to enable mechanically assisted spray wash and chemical sanitation.

1A.16.4.3(3)(c) Wall finishes will be smooth, washable, durable and comfortable and provide protection from cart damage.

1A.16.4.3(4) Furniture and Equipment

1A.16.4.3(4)(a) Heavy duty domestic washers and dryers will be provided within the residential care unit to meet the Resident personals laundry service needs.

1A.16.4.3(5) Safety and Security

1A.16.4.3(5)(a) All linen rooms (i.e. Clean Linen Marshalling, Sorting and Storage Area and Soiled Linen Room) will be a restricted area accessible only by approved personnel. All points of access and egress will be code or card access only.

1A.16.5 SCHEDULE OF ACCOMMODATION

1A.16.5.1 Space requirements for Laundry and Linen Services are identified below in net square metres (nsm). Space identified is assumed to meet 2040/41 needs.

1A.16 Laundry and Linen Services: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
16.1	**Clean Linen Marshalling and Sorting Area**					
16.1.01	Linen Sorting and Cart Marshalling Area	1	11.0	11.0		

16.1.02	Linen Storage	1	4.0	4.0		
Laundry and Linen Services: Clean Linen Marshalling and Sorting Area				**Total NSM**		
				15.0		
16.2	**Soiled Linen Room**					
16.2.01	Soiled Linen Room	1	8.0	8.0		
Laundry and Linen Services: Soiled Linen Room				**Total NSM**		
				8.0		
Total Laundry and Linen Services Area				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				23.0	**1.10**	**25.3**

1A.17 MORGUE

This specification outlines the functional, operational, and physical requirements for the Morgue.

1A.17.1 FUNCTIONAL DESCRIPTION

1A.17.1.1 Statement of Purpose

1A.17.1.1(1) The Morgue will receive the cadavers of deceased Patients and Residents. While the attending to and grieving with deceased Inpatients will be accommodated in the various Inpatient Care areas and LTC, there will continue to be a need for this centralized holding function as some arrivals in the Building will be dead-on-arrival (DOA).

1A.17.1.1(2) There will be no provision for autopsies or any other procedure.

1A.17.1.2 Scope of Services

1A.17.1.2(1) Functional Content

1A.17.1.2(1)(a) The following list specifies the minimum set of functions that will be accommodated within the Morgue:

1A.17.1.2(1)(a)(i) Receive and temporarily provide cold storage of cadavers arriving from anywhere in the Building.

1A.17.1.2(1)(a)(ii) Provide privacy for family and friends attending the cadaver.

1A.17.1.2(1)(a)(iii) Provide Secured storage of specimens from sexual assault cases treated in the ED, and in accordance with chain of custody requirements.

1A.17.1.2(1)(a)(iv) Provide access to mortuary attendants for transferring the cadaver to local funeral homes.

1A.17.1.2(1)(a)(v) Provide grieving area for families of deceased persons.

1A.17.1.2(2) Planning Assumptions

1A.17.1.2(2)(a) The Morgue will provide cadaver viewing and cadaver storage, with appropriate access for funeral home services.

1A.17.1.2(2)(a)(i) No autopsy services will be accommodated.

1A.17.2 OPERATIONAL DESCRIPTION

1A.17.2.1 Hours of Operation

1A.17.2.1(1) The Morgue will be available 24 hours a day, 7 days per week.

1A.17.2.2 Organization & Management

1A.17.2.2(1) The Morgue will be managed by the head nurse.

1A.17.2.3 Workflow

1A.17.2.3(1) Staff

1A.17.2.3(1)(a) Staff will access the Morgue through the elevator and into the direct, Staff only entrance into the Morgue area.

1A.17.2.3(2) Cadavers

1A.17.2.3(2)(a) Cadavers will be transported to the Morgue by nursing Staff from anywhere in the Building.

1A.17.2.3(2)(b) Cadavers leaving the Building will depart via a discreet exit adjacent to the main loading dock.

1A.17.2.3(2)(c) All cadaver transport will be conducted using covered transport carts.

1A.17.2.3(3) Visitors

1A.17.2.3(3)(a) Visitors will arrive at the Morgue by the elevator and directed by visual cues to the viewing area and bereavement room.

1A.17.2.3(3)(b) Visitors will not enter the Cadaver Storage area.

1A.17.3 STAFFING

1A.17.3.1 No dedicated Morgue Staff will be planned in the Building.

1A.17.4 DESIGN CRITERIA

1A.17.4.1 External Relationships

1A.17.4.1(1) Direct Access via Internal Circulation for movement of cadavers to the Morgue.

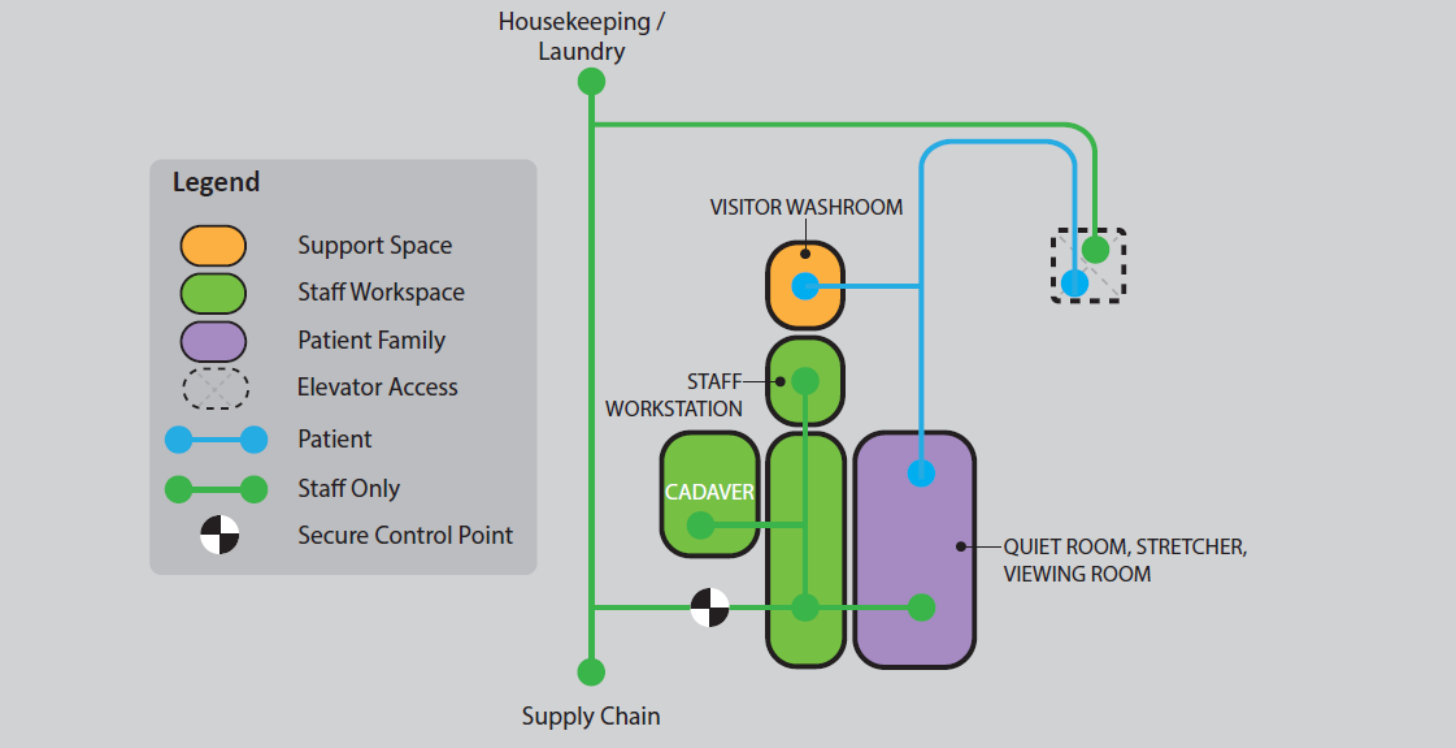
1A.17.4.1(2) Direct Access via Internal Circulation for movement of cadavers from the Morgue to the funeral homes via loading dock.

1A.17.4.1(3) Convenient Access through public circulation for families and visitors to the viewing area.

1A.17 MORGUE

1A.17.4.2 Functional Relationship Diagram

1A.17.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.17.4.3 Internal Design Criteria

1A.17.4.3(1) For a description of General Planning Concepts applicable to the Morgue, see Section 1A.0. These two sections must be read together.

1A.17.4.3(2) Access and Egress

1A.17.4.3(2)(a) Visitors to the Morgue will be periodic and unpredictable in their timing. Sensitivities around family and friends of deceased arriving at the same time as a cadaver cannot be over emphasized. Regardless of the anticipated frequency of visitor access, the Morgue will include 2 separate points of access/egress. One (1) point will be reserved for family and friends arriving to visit with deceased persons, and the other will be reserved for the receiving and discharging of cadavers.

1A.17.4.3(3) Internal Circulation

1A.17.4.3(3)(a) The Viewing Room will be physically, visually, and acoustically separate from the quiet / bereavement area and adjacent to the Cadaver Storage area. A Secured doorway will be provided enabling movement of cadavers from the Cadaver Storage area to the Viewing Room. A doorway will also be provided connecting the Viewing Room to the Quiet Room to allow visitor access to gather around the body within the Viewing Room.

1A.17.4.3(4) Grieving / Viewing Area

1A.17.4.3(4)(a) A Viewing Room, which accommodates the stretcher, will be connected to the quiet bereavement room by Glazing and a doorway to allow for family and friends to see and/or gather around the deceased.

1A.17.4.3(4)(b) Glazing separating these two areas will be coverable from the cadaver-holding side to control visual access into this area.

1A.17.4.3(4)(c) Access to a public washroom will be provided.

1A.17.4.3(5) Cadaver Storage Area

1A.17.4.3(5)(a) The Cadaver Storage will be crypt storage with the capacity to store four cadavers, including one Bariatric cadaver.

1A.17.4.3(5)(b) Secure storage for personal belongs to the cadavers will be provided.

1A.17.4.3(5)(c) The Cadaver Storage area will be connected to the Viewing Room and to the stretcher holding area.

1A.17.4.3(5)(d) The stretcher holding area will hold cadavers waiting for transport off site.

1A.17.4.3(5)(e) Coroner Workstation will be developed using systems furniture and will include Secured personal storage for the coroner.

1A.17.4.3(6) Provisions for Bariatric Cadavers

1A.17.4.3(6)(a) Moving Bariatric cadavers to/from refrigerated storage will require installation of a ceiling mounted lifts system. Lifts will have a maximum rated capacity of 450 kg and will be fully operable by a single person.

1A.17.4.3(7) Environmental Control

1A.17.4.3(7)(a) Cadavers kept in the Morgue will be in various stages of decay, and odour/vapour control will be a primary consideration. Air exchanges per hour will be sufficient to prevent the buildup of offensive odours and harmful vapours. Airflow patterns will be such that air flows away from visitors and towards the cadaver. This specification implies a horizontal circulation of internal air handling. In the case of autopsy procedures, the airflow will be away from the “alive” and towards the “deceased”. This specification implies

a “downdraft” airflow pattern in which air flows from the ceiling to the floor in the vicinity of the autopsy table and grossing bench.

1A.17.4.3(7)(b) Separate temperature regulation will be provided between the Viewing Room, Quiet / Bereavement Room, and the Cadaver Storage area.

1A.17.4.3(7)(c) Sealed Bariatric transport carts will be used to transport Bariatric cadavers.

1A.17.5 SCHEDULE OF ACCOMMODATION

1A.17.5.1 Space requirements for the Morgue are identified in the table below. Space identified is assumed to meet 2040/41 needs.

1A.17 Morgue: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
17.1	**Grieving/Viewing Area**					
17.1.01	Viewing Room	1	5.0	5.0	- Accommodates 1 stretcher position; include Glazing to provide controlled visual access from Quiet / Bereavement Room; include internal blinds between windowpanes	Adjacent to the Family / Grieving Room
17.1.02	Quiet / Bereavement Room	1	12.0	12.0	- Accommodates 6 family members with visual access into the Viewing Room; soft seating; lighting considerations	-
Morgue: Grieving/Viewing Area				**Total NSM**		
				17.0		
17.2	**Cadaver Storage Area**					
17.2.01	Workstation: Staff	1	4.6	4.6	- Workstation; computer terminal, data; phone; file storage; secure locker space for coroner and for any belongings that accompany the cadaver	-
17.2.02	Cadaver Storage	1	12.0	12.0	- Storage for 4 cadaver holding spaces including 1 Bariatric space on the bottom of the crypt storage; provide crypt storage; lift system	Access via corridor near elevator
17.2.03	Hand Hygiene Sink	1	1.0	1.0	- Non-porous material; splash free	
17.2.04	Stretcher Holding	1	5.0	5.0	- Storage area for 2 stretchers waiting for transport off site	-
17.2.05	Public Washroom	1	4.6	4.6	- Accessible 2-piece washroom (sink, toilet)	- For family and all Staff in the basement

1A.17 MORGUE

1A.17 Morgue: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
Morgue: Cadaver Storage Area				**Total NSM**		
				27.2		
17.3	**Staff Support**					
-	Business Centre	- Shared with adjacent departments				
-	General Storage Room	- Shared with adjacent departments				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Morgue: Staff Support				**Total NSM**		
				0.0		
Total Morgue Area				**Total NSM**		
				44.2		

1A.18 STAFF FACILITIES

This specification outlines the functional, operational, and physical requirements for the Staff Facilities.

1A.18.1 FUNCTIONAL DESCRIPTION

1A.18.1.1 Statement of Purpose

1A.18.1.1(1) The Staff Facilities accommodate general Staff areas and consists of the Staff Lounge / Break Room, shared Meeting Rooms, and Lockers and Change Rooms.

1A.18.1.1(2) These spaces are critical to Staff wellbeing, morale, and recruitment and retention strategies. Therefore, ensuring that the Staff support areas reflect an environment that is conducive to teamwork, and fosters Staff cohesion, and satisfaction will be strongly reflected in the Building.

1A.18.1.2 Scope of Services

1A.18.1.2(1) Functional Content

1A.18.1.2(1)(a) The following list specifies the minimum set of functions that will be accommodated:

1A.18.1.2(1)(a)(i) Staff Lounge

1A.18.1.2(1)(a)(i)A The Staff Lounge will be shared by all Staff in the Building.

1A.18.1.2(1)(a)(i)B It will provide a calming and relaxing area for Staff to feel “off-stage”.

1A.18.1.2(1)(a)(i)C It includes soft seating, kitchenette, and an area for dining.

1A.18.1.2(1)(a)(ii) General Meeting Rooms

1A.18.1.2(1)(a)(ii)A The shared Meeting Rooms are shared by all Staff in the Building and, potentially, community members.

1A.18.1.2(1)(a)(iii) Staff Lockers and Change Rooms

1A.18.1.2(1)(a)(iii)A The Lockers and Change Rooms are shared by all Staff in the Building and sub-divided over both floors.

1A.18.1.2(1)(a)(iii)B Staff lockers on the main floor should be adjacent to the Building’s Staff entrance.

1A.18.1.2(1)(a)(iii)C Provide Staff lockers, changing areas, and washrooms.

1A.18.1.2(1)(a)(iii)D Provide Secured storage of personal belongings for Staff who do not have an on-site dedicated Workstation or Secured storage within their department.

1A.18.1.2(2) Planning Assumptions

1A.18.1.2(2)(a) One Meeting Room will be located in the in medical Inpatient area to create a stronger adjacency for Staff.

1A.18.1.2(2)(b) The Lockers and change area will be sub-divided onto each floor for more Convenient Access to Staff.

1A.18.2 OPERATIONAL DESCRIPTION

1A.18.2.1 Hours of Operation

1A.18.2.1(1) Staff support spaces will be available 24 hours per day, 7 days per week.

1A.18.2.2 Organization & Management

1A.18.2.2(1) Staff Facilities will be managed by the Building maintenance supervisor.

1A.18.2.3 Workflow

1A.18.2.3(1) Staff

1A.18.2.3(1)(a) Staff will access the Staff Lounge / Break Room as appropriate during their shift. It will be located in an appropriate location that is close to the majority of Staff.

1A.18.2.3(1)(b) The Meeting Rooms will be on the main floor and grouped together to assist in managing the access, one exception is the Meeting Room that will be located in the medical Inpatient area.

1A.18.2.3(1)(c) The Meeting Rooms will be grouped together, and separated by partitions, to enable flexibility in the size and type of meetings that can be accommodated.

1A.18.2.3(1)(d) Staff will access the Lockers and change area on the main floor from the Staff Entrance.

1A.18.2.3(1)(e) Staff will access the Lockers and change area in the basement by entering the Building through the Staff Entrance and walking downstairs or taking the elevator to the basement level.

1A.18.3 STAFFING

1A.18.3.1 There is no dedicated Staffing for the Staff Facilities.

1A.18.4 DESIGN CRITERIA

1A.18.4.1 External Relationships

1A.18.4.1(1) Provide Convenient Access via General Circulation for movement of Staff to the Staff Lounge.

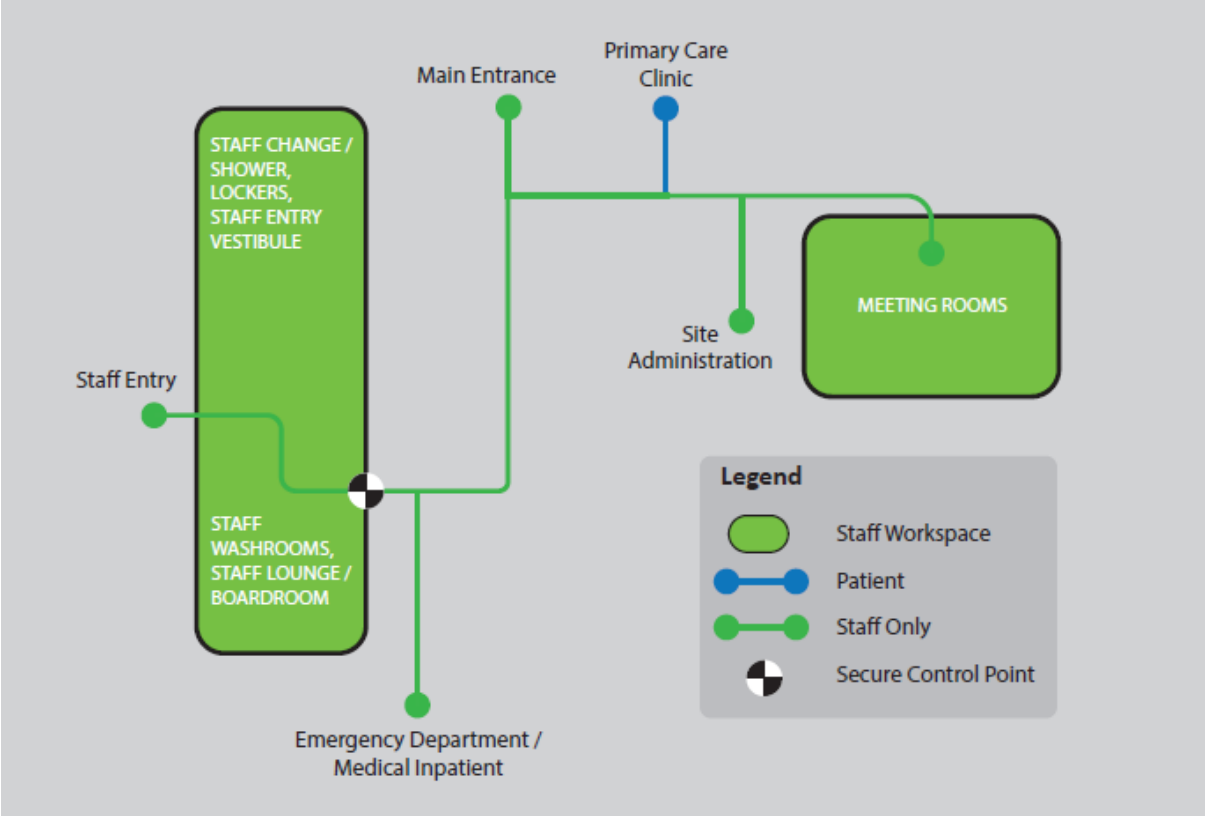
1A.18.4.1(2) Provide Convenient Access via General Circulation for movement of the Staff to the Meeting Rooms.

1A.18.4.1(3) Provide direct access via General Circulation from the Staff Entrance to the Lockers and change area on the main level.

1A.18.4.1(4) Provide Convenient Access via General Circulation from the Staff Entrance to the Lockers and change area on the basement level.

1A.18.4.2 Functional Relationship Diagram

1A.18.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.



1A.18.4.3 Internal Design Criteria

1A.18.4.3(1) For a description of General Planning Concepts applicable to the Staff Facilities, see Section 1A.0. These two sections must be read together.

1A.18.4.3(2) Staff Lounge / Break Room

1A.18.4.3(2)(a) The Staff Lounge / Break Room will be shared by all Building Staff.

1A.18.4.3(2)(b) The kitchenette will accommodate two fridges, two microwaves, one set of two sinks, counter space, cabinets, garbage and recycling accommodations, and a coffee station.

1A.18.4.3(2)(c) The environment (finishes, lighting, colour) in the room will provide a sense of respite for Staff.

1A.18.4.3(2)(c)(i) The area dedicated to lounging will accommodate soft seating and visual access to a tv.

1A.18.4.3(2)(d) Lighting

1A.18.4.3(2)(d)(i) Natural light (indirect or direct) will be provided into this space.

1A.18.4.3(2)(d)(ii) Artificial lighting will be variable to accommodate different levels of ambient lighting commensurate with the functions ongoing at any one time in that space.

1A.18.4.3(3) Meeting Rooms

1A.18.4.3(3)(a) The Meeting Rooms will be shared by all Staff and departments.

1A.18.4.3(3)(b) All Meeting Rooms will be serviced by teleconference and videoconference technology. Videoconference technology will accommodate computer interface.

1A.18.4.3(3)(c) For information management information technology requirements and details, refer to Schedule 1 section 7.7 – Communications.

1A.18.4.3(3)(d) All tables and chairs will be light weight and moveable as required.

1A.18.4.3(3)(e) The Meeting Rooms will be co-located..

1A.18.4.3(3)(e)(i) One of the 6-person Meeting Rooms will be located in the medical Inpatient area.

1A.18.4.3(3)(f) Artificial lighting will be variable to accommodate different levels of ambient lighting commensurate with the functions ongoing at any one time in that space (i.e., lighting requirements are different during meetings compared to when materials are being presented on screen).

1A.18.4.3(3)(g) Surface colours used throughout the area will be compatible with these lighting specifications.

1A.18.4.3(3)(h) Acoustic Insulation

1A.18.4.3(3)(h)(i) Private and confidential discussions will be conducted in this area. Design and construction features will ensure that sound, at a level equivalent to a typical conversation, does not transmit between adjoining Meeting Rooms and adjacent corridors.

1A.18.4.3(4) Lockers and Change Areas

1A.18.4.3(4)(a) The Lockers and change areas will be sub-divided into two areas: the main floor and the basement level.

1A.18.4.3(4)(a)(i) The Lockers and change area on the basement level will be dedicated to those departments and Staff located on that level.

1A.18.4.3(4)(a)(ii) The Lockers and change area on the main level will be dedicated to all other departments and Staff.

1A.18.4.3(4)(b) All lockers will be “Z” style lockers.

1A.18.4.3(4)(c) Lighting

1A.18.4.3(4)(c)(i) Artificial lighting will be variable to accommodate different levels of ambient lighting.

1A.18.4.3(4)(d) Access and Security to the Lockers and Change Areas

1A.18.4.3(4)(d)(i) Access to the Lockers and change areas will be restricted to authorized Staff. Technology will be used to control access.

1A.18.4.3(4)(d)(ii) Lockers will be located along a non-public corridor.

1A.18.4.3(4)(d)(iii) All Staff lockers will be accommodated in a Staff only corridor / area with the Change Rooms adjacent to this space.

1A.18.5 SCHEDULE OF ACCOMMODATION

1A.18.5.1 Space requirements for this department are identified in the table below. Space identified is assumed to meet 2040/41 needs.

1A.18 STAFF FACILITIES

1A.18 Staff Facilities: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
18.1	**Staff Lounge Area**					
18.1.01	Staff Lounge / Break Room	1	30.0	30.0	- Accommodates 20 Staff; soft seating for 10; tables and chairs for 10; tv; kitchen with 2 fridges, 2 microwaves, 1 set of sinks, coffee station, counter space, cabinets, garbage and recycling bins	- This could be sub-divided to create better access and adjacencies. This will be dependent on design and layout.
Staff Facilities: Staff Lounge Area				**Total NSM**		
				30.0		
18.2	**Shared Meeting Rooms**					
18.2.01	Meeting Room (6 people)	3	15.0	45.0	- Accommodates 6 people; lightweight and moveable tables & chairs; multi-media capable	- Locate 18.2.02 and 2 instances of 18.2.01 contiguously - 1 instance of 18.2.01 will be location in the Inpatient unit
18.2.02	Meeting Room (12-15 people)	1	30.0	30.0	- Accommodates 12-15 people; lightweight and moveable tables & chairs; multi-media capable	
Staff Facilities: Shared Meeting Rooms				**Total NSM**		
				75.0		
18.3	**Basement Locker and Change Area**					
18.3.01	Lockers	10	0.7	7.0	- "Z" lockers	-
18.3.02	Change Area	1	6.0	6.0	-Change area with shower	-
18.3.03	Staff Washroom	2	4.6	9.2	- Include plumbing and drainage requirements	-
Staff Facilities: Basement Locker and Change Area				**Total NSM**		
				22.2		
18.4	**Main Floor Locker Area**					
18.4.01	Lockers	36	0.6	21.6	- "Z" lockers	-
18.4.02	Change Area	1	2.7	2.7	- Enclosed area separated by walls	-
18.4.03	Staff Washroom	2	4.6	9.2	- Include plumbing and drainage requirements	-
18.4.04	Shower Area	1	2.7	2.7	- Enclosed area separated by walls	-
Staff Facilities: Main Floor Locker Area				**Total NSM**		
				36.2		
Total Staff Facilities Area				**Total NSM**		
				163.4		

1A.19 SUPPLY CHAIN

This specification outlines the functional, operational, and physical requirements for the Supply Chain department.

1A.19.1 FUNCTIONAL DESCRIPTION

1A.19.1.1 Statement of Purpose

1A.19.1.1(1) The Supply Chain department includes the purchasing, warehousing and distribution of supplies and equipment.

1A.19.1.1(2) The Supply Chain department will manage the ordering, receiving, processing, and distributing of the majority of items used throughout the Building.

1A.19.1.1(3) Incoming and outgoing mail will be processed through this area, as will most outgoing equipment, soiled / contaminated items, and wastes.

1A.19.1.2 Scope of Services

1A.19.1.2(1) Functional Content

1A.19.1.2(1)(a) Functions conducted in the Supply Chain department include, but are not limited to:

1A.19.1.2(1)(a)(i) Receiving purchase requisitions from all users.

1A.19.1.2(1)(a)(ii) Receiving incoming and outgoing items in the following categories (includes checking against purchase orders/packing slips where applicable):

1A.19.1.2(1)(a)(ii)A Equipment (i.e. new incoming equipment and outgoing equipment in need of maintenance or repair by private / off-site vendors or being sent for disposal).

1A.19.1.2(1)(a)(ii)B Consumable supplies, including medical / surgical supplies (combination of flow-through and bulk storage functions).

1A.19.1.2(1)(a)(ii)C Pharmaceuticals (incoming purchases – flow through function only).

1A.19.1.2(1)(a)(ii)D Cytotoxic / hazardous materials (incoming purchases – flow through function only).

1A.19.1.2(1)(a)(ii)E Food products (incoming dry goods – flow through function only).

1A.19.1.2(1)(a)(ii)F Mail (incoming and outgoing).

1A.19.1.2(1)(a)(iii) Tracking and notification of all deliveries and movement of capital assets to and from the site.

1A.19.1.2(1)(a)(iv) Break out and decasing bulk deliveries that arrive on pallets or other delivery methods.

1A.19.1.2(2) Planning Assumptions

1A.19.1.2(2)(a) A part-time FTE will be dedicated to the Supply Chain department. This FTE will either be located off-site and visit the site on a regular basis (e.g. once a week) or it could be included as part of a larger, multi-disciplinary scope of work for a Staff member located in the Building. Ultimately, the role of this FTE is to redistribute the task of managing the Supply Chain processes away from the clinical Staff.

1A.19.1.2(3) Anticipated Trends in Service Delivery

1A.19.1.2(3)(a) In the future, automated inventory control management systems may be implemented in the Building which will shift inventory practices towards “just-in-time” management, reducing the bulk storage requirements.

1A.19.2 OPERATIONAL DESCRIPTION

1A.19.2.1 Hours of Operation

1A.19.2.1(1) The Supply Chain department will be available Monday to Friday, from 0800-1600.

1A.19.2.2 Organization & Management

1A.19.2.2(1) The Supply Chain department area will be managed by the support services supervisor.

1A.19.2.3 Workflow

1A.19.2.3(1) Staff

1A.19.2.3(1)(a) Staff will arrive to the Supply Chain department by entering the Building through the Main Entrance or the Staff Entrance.

1A.19.2.3(2) Materials, Supplies, and Equipment

1A.19.2.3(2)(a) The majority of materials, supplies, and equipment will arrive to the Building through the Loading Dock.

1A.19.2.3(2)(b) If required, items will be decased in the Decasing Area and moved to the warehouse area in either the general bulk storage, valuable storage, or in the short-term equipment holding areas.

1A.19.2.3(2)(c) Materials, supplies, and equipment will be distributed throughout the Building as determined by inventory requirements and special requests.

1A.19.3 STAFFING

1A.19.3.1(1) Estimated future Staffing for this department is summarized below. The information is for space planning purposes only and does not represent a commitment for hiring.

Supply Chain: Projected Staffing	
Position	**Projected FTE**
	2040/41
Supply Chain Staff	0.2

1A.19.4 DESIGN CRITERIA

1A.19.4.1 External Relationships

1A.19.4.1(1) The following adjacencies will be provided:

1A.19.4.1(1)(a) Provide Direct Access via controlled circulation from the Loading Dock to the warehouse area for receiving deliveries.

1A.19.4.1(1)(b) Provide Direct Access via controlled circulation to the Loading Dock for the compressed gas storage.

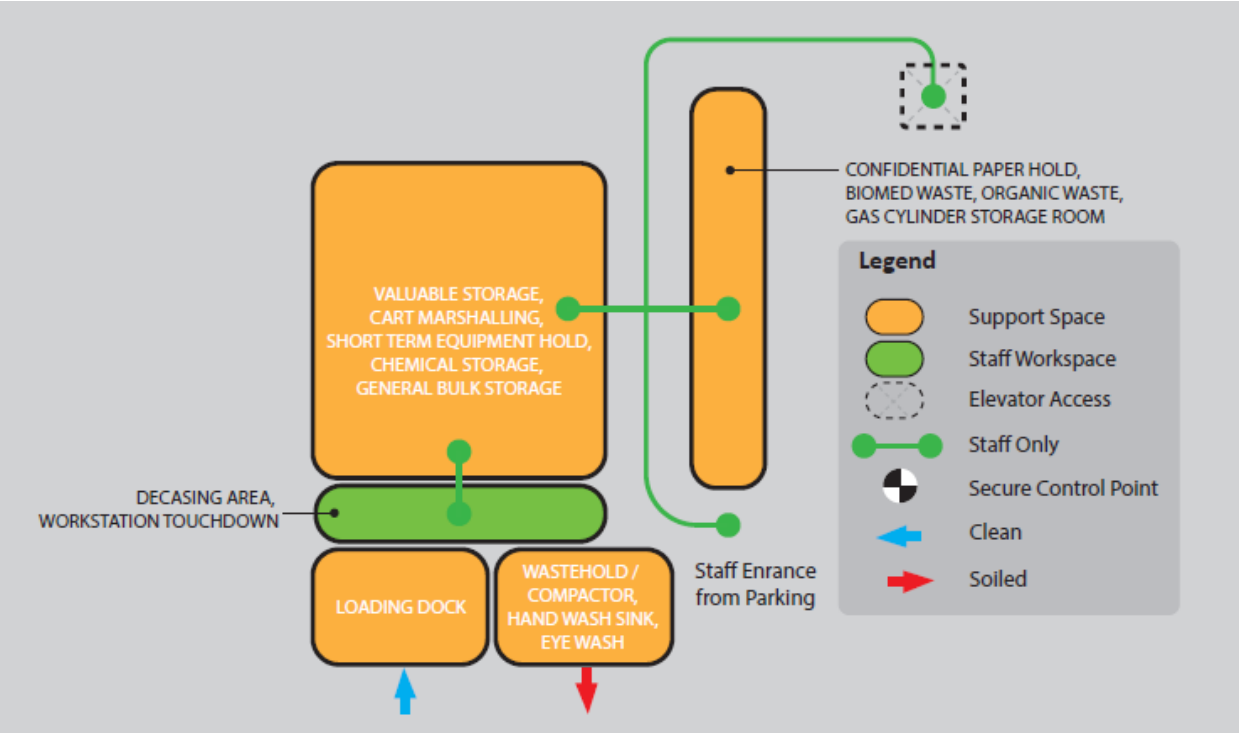
1A.19.4.1(1)(c) Soiled and clean supplies will not go through the warehouse. Separate corridors will be provided.

1A.19.4.1(1)(d) Provide access via General Circulation for the distribution of all items throughout the Building.

1A.19.4.2 Functional Relationship Diagram

1A.19.4.2(1) Functional relationships between key areas will generally be as illustrated in the following diagram. Please note that the diagram is not to scale, not all rooms may be illustrated, and arrows do not indicate all required connections.

1A.19 SUPPLY CHAIN



1A.19.4.3 Internal Design Criteria

1A.19.4.3(1) For a description of General Planning Concepts applicable to the Supply Chain department, see Section 1A.0. These two sections must be read together.

1A.19.4.3(2) Loading Dock Specifications

1A.19.4.3(2)(a) Depth of the Loading Dock platform, as measured from the wall surface forming the curb of the truck docking area (pit wall) to the opposing exterior, will be 4270 mm and planned as a continuous-run platform, free of walls/structural support, changes in grade, raised seams, or features that could impede the movement of items, many of which will be manually transported on dollies, carts, and hand trucks.

1A.19.4.3(2)(b) The Loading Dock surface will be non-skid, non-porous, and anti-static.

1A.19.4.3(2)(c) All portions of the curb will be protected by a molded or laminated rubber bumper of not less than 100 mm. The intent of this feature is to protect both the building and trucks from impact damage.

1A.19.4.3(2)(d) Ramps

1A.19.4.3(2)(d)(i) The ramp will be located at the extreme end of the Loading Dock and will be installed to accommodate manual transport of items from the driveway bed to the Loading Dock surface.

1A.19.4.3(2)(d)(ii) The ramp will be either straight run or curved but will not be switch-backed. The ramp's maximum grade will comply with OH&S standards.

1A.19.4.3(2)(e) Safety Stairs

1A.19.4.3(2)(e)(i) A set of safety stairs will be installed near the doorway access point.

1A.19.4.3(2)(e)(ii) In addition to providing Emergency access/egress between the loading dock, this stairway will also be used by couriers.

1A.19.4.3(2)(f) Covered Dock

1A.19.4.3(2)(f)(i) Portions of the Loading Dock enclosed within the Building will be provided with an overhead door for truck loading access and a man door adjacent to the overhead door).

1A.19.4.3(2)(f)(ii) The minimum clearance between dock surface and the canopy will be not less than 4270 mm.

1A.19.4.3(2)(f)(iii) The horizontal run of the canopy will extend 2700 mm as measured perpendicularly beyond the face of the Building and will provide coverage for the full width of the Loading Dock overhead door and the man door.

1A.19.4.3(2)(f)(iv) Dimensions of the Loading Dock will provide for segregation of materiel streams. There will be clear separation between incoming (typically clean) items as opposed to outgoing (typically soiled, contaminated, or used and being sent for salvage) items.

1A.19.4.3(2)(f)(v) Space will be allowed for the waste and compactor area.

1A.19.4.3(2)(f)(vi) The dock surface will be finished to minimize risk of falls and include a heated surface if/where appropriate.

1A.19.4.3(2)(g) Power

1A.19.4.3(2)(g)(i) The wall forming the exterior limits of the Loading Dock surface will be serviced by 115 VAC electrical outlets.

1A.19.4.3(2)(g)(ii) Position of the outlets will be between 1070 mm. and 1370 mm above the dock's surface.

1A.19.4.3(2)(h) Lighting

1A.19.4.3(2)(h)(i) The Loading Dock and driveway areas will be supplied with lighting for safety and security purposes.

1A.19.4.3(2)(h)(ii) Automatic sensors responding to ambient light conditions will be installed near the top of the Building, and not in an area subject to shadows or reflected light.

1A.19.4.3(2)(h)(iii) Automatic motion sensors will be installed to provide surveillance over the entire Loading Dock surface, ramps, stairwell, and driveway.

1A.19.4.3(2)(i) Dock Levelers and/or Scissor Lifts

1A.19.4.3(2)(i)(i) Each truck berth will be supplied with a recessed dock leveler or scissor lift capable of achieving a maximum grade of 10% (downwards from truck to Loading Dock) if a ramp is required. This is to be confirmed during detailed design.

1A.19.4.3(2)(i)(ii) Final dimensions and capacities of the dock levelers or scissor lift will be determined, in part, by the anticipated maximum truck size and transport vehicle (i.e., forklift, hand truck, cart, and dolly) plus payload to be accommodated.

1A.19.4.3(2)(i)(iii) Controls for each leveling system will be located away from the vicinity of the leveler to avoid unintentional activation while in use. In the case where a scissor lift is used, the controls will be accommodated on the scissor lift itself with room for an operator and pallets and fashioned with appropriate guardrails.

1A.19.4.3(2)(i)(iv) Ensure funeral home vehicles will be provided with access to the Morgue.

1A.19.4.3(2)(j) Light Duty Vehicles

1A.19.4.3(2)(j)(i) Temporary light duty vehicle parking spaces will be incorporated into the driveway's design, and in the vicinity of the ramp and safety stairs.

1A.19.4.3(2)(k) Grades

1A.19.4.3(2)(k)(i) Design, configuration, orientation, and maximum permissible grade of the driveway will be determined, in part, by the choice of truck berth configuration (i.e. straight line or saw tooth), site grade / topography / availability and the maximum dimensions / weight of vehicles anticipated to use the driveway.

1A.19.4.3(3) Decasing Area

1A.19.4.3(3)(a) The Decasing Area will be an open floor area with similar finishes to the general bulk storage area.

1A.19.4.3(3)(b) The Decasing Area will be adjacent to the Loading Dock.

1A.19.4.3(3)(c) A short-term equipment holding room will be located adjacent to the Loading Dock. This room will be Secured with card access and will have similar finishes to the general bulk storage area.

1A.19.4.3(3)(d) An emergency eye wash station will be provided.

1A.19.4.3(4) Chemical Storage Room

1A.19.4.3(4)(a) Provide a storage room with at least one wall being an exterior Building wall with a pressure release panel, if determined to be a code requirement based on chemicals intended to be stored in this room. If code does not deem this to be a necessity, then the location and pressure release panel requirements are not applicable.

1A.19.4.3(4)(b) The door to this room will automatically close and will be hinged to swing out on its vertical axis.

1A.19.4.3(4)(c) This room will have a minimum fire resistance rating of one hour.

1A.19.4.3(5) General Bulk Storage

1A.19.4.3(5)(a) Shelving will be open metal shelving that is adjustable for large and small items.

1A.19.4.3(5)(a)(i) Space and storage medium requirements for this area will vary depending on the selected material, type, and strategic direction.

1A.19.4.3(5)(b) A valuables storage room will be provided that is adjacent to the general bulk storage area and is Secured by swipe card access.

1A.19.4.3(5)(c) Open floor space will be provided for cart marshalling.

1A.19.4.3(5)(d) Flooring will have finishing that prevents wear from movement of supplies and equipment, will be non-skid, and anti-spark.

1A.19.4.3(5)(e) The floor will be equipped with a drain connected to a dry sump. There will be liquid-tight seals between interior walls and the floor.

1A.19.4.3(5)(f) Overhead clearance will be a minimum 3.7 metres.

1A.19.4.3(5)(g) Aisle widths will be minimum of 1.2 metres.

1A.19.4.3(5)(h) An industrial floor scale will be provided.

1A.19.4.3(5)(i) Compressed gas storage will be located adjacent to the Loading Dock.

1A.19.4.3(6) Waste and Recycling Area

1A.19.4.3(6)(a) Compactors, bins, and waste storage will have Direct Access to the outside.

1A.19.4.3(6)(b) The area will be covered and protected from precipitation and other environmental elements.

1A.19.4.3(6)(c) The area will be well lit and Secure.

1A.19.4.3(7) Secured Access

1A.19.4.3(7)(a) Supply Chain department will be Secured by swipe card access.

1A.19.4.3(8) Clean Utility / Supply Rooms

1A.19.4.3(8)(a) Clean utility / supply rooms will be located strategically in the Building.

1A.19.4.3(8)(b) A par wall system will be provided for supply storage areas.

1A.19.4.3(8)(c) Shelving and/or carts for supplies will be accommodated in all clean utility / supply rooms throughout the Building.

1A.19.4.3(8)(d) The room configuration will adhere to the following:

1A.19.4.3(8)(d)(i) Par wall is procured in 0.9 metre sections and requires 0.3 metres for staging.

1A.19.4.3(8)(d)(i)A For example, 3 sections would require 3 sections (2.7 metres) plus 0.3 metres for staging for a total of 3 metres. These dimensions could be impacted by the type of entrances that are used.

1A.19.4.3(9) Environmental Control

1A.19.4.3(9)(a) Exhaust gases from vehicles using the Loading Dock area are prohibited from entering the Building either through the passive air exchange or through the air intake and handling systems.

1A.19.4.3(9)(b) Interior areas immediately adjacent to the Loading Docks will be provided with climate controls enabling heating and cooling independently from other areas.

1A.19.5 SCHEDULE OF ACCOMMODATION

1A.19.5.1 Space requirements for this department are identified as follows. Space identified is assumed to meet 2040/41 needs.

1A.19 Supply Chain: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
19.1	**Shipping and Receiving**					
19.1.01	Loading Dock	1	25.0	25.0	- 1 bay; include lighting and monitoring	-

1A.19 SUPPLY CHAIN

1A.19 Supply Chain: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
19.1.02	Decasing Area	1	12.0	12.0	-	-
19.1.03	Short Term Equipment Holding	1	8.0	8.0	- Short-term holding of outgoing equipment; Loaner equipment etc.	-
19.1.04	Chemical Storage	1	6.0	6.0	- Ensure appropriate mechanical requirements are met	-
19.1.05	Hand Wash Sink	1	1.0	1.0	Hands free	
19.1.06	Emergency Eye Wash Station	1	1.0	1.0	- Combined unit; include water temperature and pressure; floor drain	Adjacent to work area
19.1.07	Workstation: Touchdown for SC Staff	1	3.0	3.0	- Multipurpose work space with desk, chair, data connection	-
Supply Chain: Shipping and Receiving				**NSM**		
				56.0		
19.2	**Warehouse Area**					
19.2.01	General Bulk Storage	1	70.0	70.0	- Adjustable open metal shelving for large and small items; minimum aisle width 1219mm	-
19.2.02	Valuable Storage	1	4.0	4.0	- Secure due to valuable items	-
19.2.03	Cart Marshalling Area	1	6.0	6.0	- 3 exchange/top-up carts	-
Supply Chain: Warehouse Area				**NSM**		
				80.0		
19.3	**Staff Support**					
-	Business Centre	- Shared with adjacent departments				
-	General Storage Room	- Shared with adjacent departments				
-	Meeting Room	- Accommodated in the Staff Facilities				
-	Staff Lockers	- Accommodated in the Staff Facilities				
-	Staff Lounge	- Accommodated in the Staff Facilities				
-	Staff Washroom	- Shared with adjacent departments				
Supply Chain: Staff Support				**Total NSM**		
				0.0		

1A.19 Supply Chain: Schedule of Accommodation (Detailed Space List)						
Ref #	**Room Type**	**Quantity**	**NSM/ Space**	**Total NSM**	**Room Description**	**Ratio and Distribution**
19.4	**Waste and Recycling Area**					
19.4.01	Waste Holding and Compactor Area	1	15.0	15.0	- Holding for waste, garbage, and recycling; access to waste compactor	locate on building exterior
19.4.02	Organic Waste Holding	1	5.0	5.0	- vented space	locate on building exterior
19.4.03	Biomedical Waste Holding	1	5.0	5.0	- Accommodates negative pressure; cleanable	locate on building exterior
19.4.04	Confidential Paper Holding	1	5.0	5.0	- Secure area	locate on building exterior
Housekeeping: Waste and Recycling Area				**NSM**		
				30.0		
Total Supply Chain Area				**Total NSM**	**Minimum Required CGF**	**Minimum Required CGSM**
				166.0	**1.37**	**227.4**
19.5	**Waste and Recycling - Exterior**					
19.5.01	Waste Staging Area			Provide an exterior area with related truck staging space to accommodate the following: - four (4) 6-yard bins for waste in a screened area, sized to accommodate the maneuvering of the bins for truck pick-up. - one (1) 20-yd roll-off bin for cardboard, located in a space at least 12200 mm L x 3500 mm W with truck staging and maneuvering in front of it. If any portion of this area is under cover, provide minimum 4300 mm clear height. - Provide clearances, bollards etc. as required to protect that Building from truck damage. - Related truck staging area will be dedicated to this function with adequate space for maneuvering and will not endanger pedestrian walkways or vehicle parking spaces nearby.		Located at exterior of Building with convenient direct access from the Waste Holding room and staff entrance

APPENDIX 1B(I)

EQUIPMENT & FURNITURE RESPONSIBILITY CATEGORIES

APPENDIX 1B (I) EQUIPMENT & FURNITURE RESPONSIBILITY CATEGORIES

1.1 DEFINITIONS

In this Schedule:

"Acceptance Protocol" has the meaning set out in Section 1.7.10 of this Schedule;

"Category 1 Equipment" means the equipment described and listed as "Category 1" in the Equipment Lists (or similar equipment); further defined in Section 1.2 below.

"Category 2 Equipment" means the equipment described and listed as "Category 2" in the Equipment Lists (or similar equipment); further defined in Section 1.3 below.

"Category 3 Equipment" means the equipment described and listed as "Category 3" in the Equipment Lists (or similar equipment); further defined in Section 1.4 below.

"Category 4 Equipment" means the equipment described and listed as "Category 4" in the Equipment Lists (or similar equipment); further defined in Section 1.5 below.

"Category 5 Equipment" means the equipment described and listed as "Category 5" in the Equipment Lists (or similar equipment); further defined in Section 1.6 below.

"Commission" means to assemble, install and test and commission the equipment or system in accordance with any commissioning requirements set out in this Agreement, and applicable standards and good industry practice, including to ensure that the Equipment is operating in accordance with the manufacturer's requirements and specifications, and "Commissioned" and "Commissioning" have a corresponding meaning;

"Deliver" means to deliver Equipment to the Facility, and "Delivered" and "Delivery" have corresponding meanings;

"Equipment" means the Category 1 Equipment, the Category 2 Equipment, the Category 3 Equipment, the Category 4 Equipment and the Category 5 Equipment as described in Appendix 1B;

"Equipment Committee" means the committee established pursuant to Section 1.7.7 of this Schedule;

"Equipment Cut Sheets" means the equipment data sheets set out in the Equipment List containing specifications for items of equipment on the Equipment List, as those cut sheets may be updated in accordance with this Agreement;

"Equipment Lists" means Appendix 1B: EQUIPMENT LIST, attached to the Statement of Requirements;

"Equipment Logistics Schedule" has the meaning set out in Section 1.7.11 of this Schedule;

"Install" means to install in the Facility, including making connections to necessary building services (including plumbing, heating, cooling, ventilation and electricity) and connections to necessary communication or network interfaces or devices, and "Installed" and "Installation" have corresponding meanings;

"Receive" means the provision of equipment and staff to accept Delivery and provide an appropriate and secure staging and storage area to be used prior to Setup, and "Received" and "Receiving" have corresponding meanings;

"Setup" includes:

a) transportation and movement within the Facility from the Delivery or storage location to the final installation location;
b) placement in the final location within the Facility; and
c) any necessary unwrapping, unpacking, disposing and/or recycling all wrapping and packaging materials, and assembly.

"Storage" means the provision of secure space with the appropriate environment to allow received Equipment to be set, placed, loaded, unloaded or otherwise warehoused without damage while awaiting Setup, and "Store", "Stored" and "Storing" have corresponding meanings.

"Supply" means the management and completion of procurement processes, up to and including Delivery, for Equipment, including the payment to vendors, and "Supplied" has a corresponding meaning.

1.2 CATEGORY 1 EQUIPMENT (AUTHORITY SUPPLIED, AUTHORITY INSTALLED)

1.2.1. Responsibilities For Category 1 Equipment

The Authority intends to, but is not obligated to, Supply, Receive, Setup, Install and Commission the Category 1 Equipment.

1.2.2. Timing of Delivery and Installation of Category 1 Equipment

The Design-Builder will:

(a) as early as practicable:

(i) for each item of Category 1 Equipment, provide on the Equipment Logistics Schedule the earliest date when the Facility will be available to the Authority to Install such item, which date must, for all Category 1 Equipment and any required Setup or Installation equipment that will not fit through the constructed doorways and other physical constraints on access, be a reasonable period in advance of the construction of such doorways and other physical constraints on access; and

(ii) identify to the Authority the date by which each item of Category 1 Equipment must be Delivered, Installed and Commissioned so as not to delay the Design, the Construction, Substantial Completion of the Building or the Authority's use and occupation of the Facility; and

(b) as required from time to time until Substantial Completion of the Building, but no less than once per calendar month, update the information in Section 1.2.2(a) above so that at all times it is an accurate, reasonable and realistic representation of the Design-Builder's plans for the completion of the Design and Construction of the

Facility. The Authority will cause the relevant item of Category 1 Equipment the Authority wishes to have Installed in the Facility to be Delivered by the date specified by the Design-Builder under Section 1.2.2(a) above.

1.2.3. Timing of Delivery and Installation of Category 1 Equipment

Subject to Section 1.2.2(a)(i) above and unless otherwise noted on the Equipment List or the Equipment Logistics Schedule, no Category 1 Equipment will be Delivered prior to Substantial Completion of the Building. Delivery after Substantial Completion of the Building will not relieve the Design-Builder of its obligations under the Design-Build Agreement to complete the Design and Construction to accommodate the Equipment in the Facility and the obligations under this Schedule.

1.3 CATEGORY 2 EQUIPMENT (AUTHORITY SUPPLIED, DESIGN-BUILDER INSTALLED)

1.3.1. Responsibilities For Category 2 Equipment

The Authority intends to, but is not obligated to, Supply the Category 2 Equipment. The Design-Builder will Receive, Setup/Assemble, Install and Commission all Category 2 Equipment. The Design-Builder will be responsible for notifying the Authority of any Category 2 Equipment that is Delivered damaged or short of the complete quantities on the weigh bill/bill of lading. Such discrepancy will be noted on the weigh bill/bill of lading provided to the shipper.

1.3.2. Timing of Delivery and Installation of Category 2 Equipment

The Design-Builder will:

(a) as early as practicable provide on the Equipment Logistics Schedule the dates by which each item of Category 2 Equipment must be Delivered, Installed and Commissioned so as not to delay the Design, the Construction, Substantial Completion of the Building or the Authority's use and occupation of the Facility; and

(b) as required from time to time until Substantial Completion of the Building, but no less than once per calendar month, update the information in Section 1.3.2(a) above so that at all times it is an accurate, reasonable and realistic representation of the Design-Builder's plans for the completion of the Design and Construction of the Facility. The Authority will cause each item of Category 2 Equipment to be Delivered by the date specified by the Design-Builder under Section 1.3.2(a) above.

1.4 CATEGORY 3 EQUIPMENT (AUTHORITY SUPPLIED, VENDOR INSTALLED, DESIGN-BUILDER COORDINATED)

1.4.1. Responsibilities For Category 3 Equipment

The Authority intends to, but is not obligated to, Supply the Category 3 Equipment. The Design-Builder will Receive and Commission all Category 3 Equipment and will coordinate the Setup/Assembly, Installation, and Testing with the Vendor. The Design-Builder will be responsible for notifying the Authority of any Category 3 Equipment that is Delivered damaged or short of the complete quantities on the weigh bill/bill of lading. Such discrepancy will be noted on the weigh bill/bill of lading provided to the shipper.

1.4.2. Timing of Delivery and Installation of Category 3 Equipment

The Design-Builder will:

(a) as early as practicable provide on the Equipment Logistics Schedule the dates by which each item of Category 3 Equipment must be Delivered, Installed and Commissioned so as not to delay the Design, the Construction, Substantial Completion of the Building or the Authority's use and occupation of the Facility; and

(b) as required from time to time until Substantial Completion of the Building, but no less than once per calendar month, update the information in Section 1.4.2(a) above so that at all times it is an accurate, reasonable and realistic representation of the Design-Builder's plans for the completion of the Design and Construction of the Facility. The Authority will cause each item of Category 3 Equipment to be Delivered by the date specified by the Design-Builder under Section 1.4.2(a) above.

1.5 CATEGORY 4 EQUIPMENT (DESIGN-BUILDER SUPPLIED, DESIGN-BUILDER INSTALLED)

1.5.1. Responsibilities for Category 4 Equipment

The Design-Builder will Supply, Deliver, Receive, Setup/Assemble, Install and Commission all Category 4 Equipment.

1.5.2. Standards for Equipment

The Design-Builder will cause all Category 4 Equipment to be:

(a) new;

(b) of good quality and in a safe, serviceable and clean condition in accordance with the Equipment List;

(c) of the type specified in the Statement of Requirements, if applicable;

(d) in compliance with all Laws; and

(e) in compliance with all certifications or standards that would be reasonable for similar equipment in a similar application if Supplied and Installed by the Authority. The Design-Builder will, as soon as practicable after receiving a request from the Authority, supply to the Authority evidence demonstrating its compliance with this Section 1.5.2.

1.5.3. Warranties

The Design-Builder will ensure that all manufacturer's and vendor's warranties for all Category 4 Equipment:

(a) commence no earlier than the date of first clinical use of the relevant item of Category 4 Equipment; and

(b) are in the Authority's name.

1.5.4. Training

The Design-Builder will include the Authority staff and other representatives to be notified and included in all stages of the Receiving, Setup/Assembly, Installation and Commissioning to ensure there is a comprehensive overview of the Equipment, including its features, calibration and interfaces. The Design-Builder will be knowledgeable on the proper use and maintenance of all Category 4 Equipment and will provide sufficient training and education of the Authority and persons designated by the Authority to enable proper use and maintenance of the Category 4 Equipment. The Design-Builder will not be responsible for providing the Authority with training and education in respect of Category 1 Equipment, Category 2 Equipment, Category 3 Equipment, and Category 5 Equipment. On or before the Target Building Substantial Completion Date, the Design-Builder will transfer and deliver to the Authority all guidance material and manuals relating to Category 4 Equipment items as produced and provided by the manufacturer or the vendor of such items.

1.6 CATEGORY 5 EQUIPMENT (AUTHORITY RELOCATED)

1.6.1. Responsibilities for Category 5 Equipment

The Authority intends to, but is not obligated to, relocate the Category 5 Equipment from its existing location to the new Facility. The Authority may, at its discretion, Supply new Category 5 Equipment in lieu of relocating existing Category 5 Equipment and may designate it for purposes of this Appendix 1D – Equipment as Category 5 Equipment or alternatively as Category 1 Equipment, Category 2 Equipment, Category 3 Equipment or Category 4 Equipment. A change to the Design-Builder's obligations by a re-designation as Category 2 Equipment, Category 3 Equipment or Category 4 Equipment will be implemented as a Change.

1.6.2. Timing of Delivery and Installation of Category 5 Equipment

Unless otherwise noted on the Equipment List or the Equipment Logistics Schedule, no Category 5 Equipment will be Delivered prior to Substantial Completion of the Building. Delivery after Substantial Completion of the Building will not relieve the Design-Builder of its obligations under the Design-Build Agreement to complete the Design and Construction to accommodate the Equipment in the Facility and the obligations under this Schedule.

1.7 GENERAL

1.7.1. Integration of Equipment with Design of Facility

The Design-Builder will ensure that all Equipment is integrated with the overall Design of the Facility and will include such Equipment as part of the development of Design under this Agreement. To the extent practicable, any required changes to the Design of the Facility as a result of changes to Equipment requirements will be resolved as part of the Design Development process.

1.7.2. Changes affecting Design or Construction

If the Authority increases or decreases the quantities of Equipment, procures other items in substitution for those identified on the Equipment List or otherwise changes the items to be procured and there is an effect on the Design or Construction, such increase, decrease, procurement or change, and the effect thereof, will constitute a Change. The parties will endeavour to agree to an expedited Change process to deal with Equipment changes.

1.7.3. Staging and Storage

The Design-Builder will:

(a) provide a secure, dry space to accommodate staging and storage of Equipment;

(b) allow Authority representatives to access and work within the space;

(c) will ensure that the space is able to maintain a reasonable temperature to store and work in; and

(d) provide power to the space and will notify the Authority, in advance, of any power interruptions.

1.7.4. Storage Costs

The Authority will reimburse the Design-Builder for any incremental out of pocket storage costs for any item of Category 1 Equipment or Category 2 Equipment if such item is Delivered materially in advance of the earliest delivery date for such item as identified by the Design-Builder under Section 1.2.2(a) or 1.3.2(a) of this Schedule in the Equipment Logistics Schedule. Any storage costs incurred by the Design-Builder due to Equipment being Delivered by the delivery date as set out in the Equipment Logistics Schedule delivery date, but not ready for Setup, will be borne by the Design-Builder.

1.7.5. Equipment Commissioning

The Design-Builder will incorporate its Commissioning responsibilities under this Schedule into its commissioning activities for the Facility as contemplated in this Agreement. All Category 2 Equipment, Category 3 Equipment and Category 4 Equipment must be Commissioned, and the Acceptance Protocol completed where applicable, prior to Substantial Completion of the Building.

1.7.6. Addition of Additional Equipment or Replacement of Existing Equipment

If the Authority identifies Equipment that is in addition to, or in replacement of certain items of, the Equipment, the Authority may in its discretion:

(a) elect to have the Design-Builder Supply, Deliver, Receive, Setup, Install and/or Commission such additional Equipment, in accordance with and subject to the procedures for Changes; or

(b) itself perform any of such activities.

1.7.7. Equipment Committee

The parties will establish an Equipment Committee composed of 2 (or any other number agreed between the parties) representatives of each party. The Equipment Committee will meet regularly (and not less than once per month) to review the status of, and to provide advice to the parties with respect to the Equipment Supply, Delivery, Receiving, Setup, Installation and Commissioning.

1.7.8. Title

The Design-Builder will cause the procurement arrangements for Category 4 Equipment to provide for a direct transfer of title to such Equipment from the vendors to the Authority. Title to Category 4 Equipment may be reserved by third party unpaid vendors until the earlier of the date of payment and the Target Building Substantial Completion Date. The Design-Builder will pay all such unpaid vendors prior to the Target Building Substantial Completion Date for amounts owing on outstanding invoices.

1.7.9. Damage and Loss

Any damage or loss occurring prior to the Target Building Substantial Completion Date to:

(a) Category 2 Equipment, Category 3 Equipment or Category 4 Equipment after it has been Received; or

(b) Category 1 Equipment or Category 5 Equipment after it is Installed if it is installed prior to the Target Building Substantial Completion Date, is the responsibility of the Design-Builder.

1.7.10. Acceptance Protocol

A document will be provided by the Design-Builder to the Authority for each Category 2 Equipment, Category 3 Equipment and Category 4 Equipment that certifies that all testing of the relevant Equipment has been completed to demonstrate that it has been installed in accordance with the manufacturer's requirements and is functioning in accordance with the specifications included in the relevant equipment purchase contract or purchase order (the "Acceptance Protocol"). Without limiting the Design-Builder's obligation to Commission the relevant Equipment, the Design- Builder will, to the Authority's reasonable satisfaction, complete all of the aspects of the Acceptance Protocol for each item of Category 2 Equipment, Category 3 Equipment and Category 4 Equipment. If:

(a) prior to the Target Building Substantial Completion Date, the Design-Builder fails to complete any aspect of an Acceptance Protocol for any item of Category 2 Equipment, Category 3 Equipment or Category 4 Equipment; and

(b) the Authority waives the requirement for the Design-Builder to complete the relevant Acceptance Protocol prior to the Target Building Substantial Completion Date, then subject to meeting the other requirements for Substantial Completion of the Building each such failure will be a deficiency and the Authority may make the withholding described in the Design-Build Agreement.

1.7.11. Equipment Logistics Schedule

The Design-Builder will propose a draft schedule (the "Equipment Logistics Schedule") within 30 days after the Effective Date and the parties will seek to finalize the Equipment Logistics Schedule, each party acting reasonably, within 90 days after the Effective Date, in accordance with the following principles:

(a) in order to take advantage of the most recent technological advances, final decisions on the selection of Equipment sensitive to or anticipated to be revised with newer technology prior to the Target Building Substantial Completion Date, together with any training or service requirements, will not be made by the Authority until as late as possible in the period for Construction;

(b) the Design-Builder will require adequate time to issue competitive bidding documents, receive proposals, clarify aspects of proposals, and Receive, Install and Commission the Equipment;

(c) the Authority will require the ability to take advantage of bulk or other purchase opportunities advantageous to it; and

(d) the Design-Builder will undertake the precautions set out by Equipment vendors to protect any Equipment that is required to be Delivered or Installed while construction is still underway; however, as an additional precaution some sensitive Equipment (such as medical devices and equipment with electronic components) may require Delivery, Installation and Commissioning dates that are late in the period for Construction. The parties may modify the Equipment Logistics Schedule by mutual agreement, each acting reasonably.

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																	
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
00.0 General	General	00.00.00	Distributed	A002	0939458	ALLOWANCE, HEADWALLS, ACCESSORIES	Placeholder for Headwall's accessories.	12	3	A	Amico Corporation											H							No								
00.0 General	General	00.00.00	Distributed	A003	0940357	ALLOWANCE, PATIENT LIFT ACCESSORIES, SLINGS	Assorted sizes and models of slings for ceiling patient lifts.	30	1	A		Guldmann										O																
00.0 General	General	00.00.00	Distributed	A004	0940432	ALLOWANCE, RECEPTACLE, RECYCLING	Estimated quantity. The Design-Builder should finalize the room locations (and eventual deployment) during coordination meetings and provide wall-backing where wall-mounted types will be required.	40	2	A		Generic										X																
00.0 General	General	00.00.00	Distributed	A007	0940433	ALLOWANCE, RECEPTACLE, WASTE	Estimated quantity. The Design-Builder should finalize the room locations (and eventual deployment) during coordination meetings and provide wall-backing where wall-mounted types will be required.	40	2	A		Generic										X																
00.0 General	General	00.00.00	Distributed	A005	0940434	ALLOWANCE, RECEPTACLE, WASTE&RECY, PUBLIC SPACES	Colliers does not plan for outdoor & for public spaces. Proponent to finalize for aesthetic design.	4	2	A		Generic										X																
00.0 General	General	00.00.00	Distributed	A006	0940435	ALLOWANCE, RECEPTACLE, WASTE, BIOHAZARD	Estimated quantity. The Design-Builder should finalize the room locations (and eventual deployment) during coordination meetings and provide wall-backing where wall-mounted types will be required.	25	2	A		Generic										X																
00.0 General	General	00.00.00	Distributed	E009	0934870	BLENDER, AIR/OXYGEN	Two pressure compensated flowmeters mounted on either side for delivery of air and oxygen.	25	1	E	Bird Products Corporation	ULTRABLENDER	10040A	4.80	3.60	5.00	122	91	127	4.0	1.8	W																4x AA Batteries
00.0 General	General	00.00.00	Distributed	E031	0931485	CONTAINER, SHARPS	Wall mounted. Capacity: 3.1 L (3.28 quart). Funnel-shaped opening with safety neck. Yellow inner liner. Clear top. Secure cap closure for safe transport.	25	2	E	Kendall Canada Inc.	300450/305475		6.00	6.00	11.50	152	152	292	7.0	3.2	W																
00.0 General	General	00.00.00	Distributed	E044	0939963	FLOWMETER, AIR	DISS with metal hand twist adapter. Dual scale: 0 to 5 L/min on an expanded scale. 5 to 15 L/min for general use. Nickel plated-brass manifold. Precision seat and valve.	25	2	E	Datex-Ohmeda (Canada) Inc	6702-1290-921		2.00	2.00	6.00	56	58	152	0.2	0.1	O																
00.0 General	General	00.00.00	Distributed	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	5	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F															
00.0 General	General	00.00.00	Distributed	E099	0940356	PATIENT TRANSFER UNIT, CART	Storage for air supply mattress. Capacity: up to 10 single-patient use mats and slings. Push handle on rear.	1	2	E	Hovertech International	Universal Cart		19.00	19.00	38.50	483	483	978	37.8	17.2	F																
00.0 General	General	00.00.00	Distributed	E112	0937417	REGULATOR, SUCTION, INTERMITTENT/ CONTINUOUS	Intermittent. Will do continuous. W/ DISS male and overflow safety trap, DISS with hand twist adapter (twist adapter must be metal). Ranges to be low, medium, high and emergency therapeutic.	15	2	E	Datex-Ohmeda (Canada) Inc	6702-1251-908	6702-1251-908	3.00	5.00	7.00	76	127	178	7.0	3.2	O																
01.0 Ambulatory Services	Reception and Waiting Area	01.01.01	Reception (3)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	3	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																
01.0 Ambulatory Services	Reception and Waiting Area	01.01.02	Records Management	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	2	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																
01.0 Ambulatory Services	Reception and Waiting Area	01.01.02	Records Management	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																
01.0 Ambulatory Services	Reception and Waiting Area	01.01.03	Business Centre		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																															
01.0 Ambulatory Services	Reception and Waiting Area	01.01.04	Waiting Area	F012	0939567	CHAIR, STACKING, BARIATRIC	Side Chair with arms, Stacking, Grade-3 (Vinyl). 4 point base.	2	3	F	Spec Furniture	Snowball 2	1853	31.00	22.00	33.00	787	559	838			F																
01.0 Ambulatory Services	Reception and Waiting Area	01.01.04	Waiting Area	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	23	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
01.0 Ambulatory Services	Reception and Waiting Area	01.01.06	Wheelchair Alcove	E146	0938410	WHEELCHAIR, ADULT	Seat width: 16". Seat depth: 16". Capacity: 250 lb. Swing away footrest, articulating elevating legrest. Casters: 8 x 1". Wheels: 24 x 1". Padded fixed full length arm.	2	2	E	Invacare	TREX2		28.25	31.88	34.00	718	810	864	43.0	19.6	F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.01	Medical Office Assistant Room	F046	0941318	CHAIR, TASK, CLINICAL	24/7 Medium Back chair with Arms.	4	3	F	Global Furniture	Harmony	GC35022-3	26.00	24.00	42.50	660	610	1,080	43.0	19.6	F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.01	Medical Office Assistant Room	E116	0938390	SCALE, CLINICAL	Flat, mobile scale. Weight capacity: 200kg, Graduation: 100g<150kg>200g. Battery powered with automatic switch-on/off. ABS plastics and plexiglas construction.	1	3	E	Seca	877		12.64	14.02	2.36	321	356	60	9.2	4.2	F																Battery powered: 6 AA batteries
01.0 Ambulatory Services	Primary Care Clinic	01.02.01	Medical Office Assistant Room	E117	0938391	SCALE, CLINICAL, BARIATRIC	Platform scale. Weight capacity: 800lbs , Graduation: 0.2lbs / 100g. Battery powered with automatic switch-on/off. Power adapter optional (98.4" cable length). TARE, BMI, auto-HOLD functions.	1	3	E	Seca	634		25.20	23.60	2.10	640	599	53	31.7	14.4	F																6 x AA Battery powered. (Optional power adapter)
01.0 Ambulatory Services	Primary Care Clinic	01.02.01	Medical Office Assistant Room	E118	0939188	SCALE, INFANT/PEDIATRIC	With cart. Built-in digital readout for weighing of neonates, infants and toddlers. Capacity: 45 lb (20 kg). Accuracy: 2/10 oz (5 g). Includes standard cradle.	1	1	E	Welch Allyn Inc.	4802D-AX-XB	412490 Cart	33.50	23.50	46.50	851	597	1,181	63.0	28.6	F	110	1		60		Plug		Yes								6 D sized alkaline batteries. USP port.
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	E149	0941431	CART, SUPPLY	Parwall Unit 36" W, 6 Baskets, (4) 12" Fine Mesh, (3) 18" Dividers, Single-sided. Comes with Caster and label Holder. tr	4	2	E	Acart Equipment Ltd.	ParWall36M	Par Wall	36.00	26.00	78.00	914	660	1,981			F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	E031	0931485	CONTAINER, SHARPS	Wall mounted. Capacity: 3.1 L (3.28 quart). Funnel-shaped opening with safety neck. Yellow inner liner. Clear top. Secure cap closure for safe transport.	1	2	E	Kendall Canada Inc.	300450/305475		6.00	6.00	11.50	152	152	292	7.0	3.2	W																
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	E153	0939903	LIGHT, MAGNIFIER	Wall mount clamp. 30" clamp base, flexible gooseneck arm. 22 watt fluorescent bulb.	1	2	E	Dazor Mfg. Corp.	LMC-150-ES-5		0.00	0.00	0.00				6.0	2.7	O	100	1		60	15	Plug		No								
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	E156	0942974	RECEPTACLE	CSRX - 3.8 L Container with wall-mounted bracket	1	2	E	Stericycle	CsRx		9.09	5.31	8.50	231	135	216			W																
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	E110	0940636	REFRIGERATOR, PHARMACY, UNDERCOUNTER	Medical-Grade pharmacy refrigerator feature ventilated, pull-out pharmacy drawers and ventilated shelves for secure storage requiring safe cold storage.	1	2	E	Helmer Labs Inc.	HPR105-GX		24.00	26.70	31.50	610	678	800	182.0	82.6	F	115			69		Plug										220-240v 50-60hz
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	E152	0943656	REFRIGERATOR, UPRIGHT, PHARMACY	1° to 10°C. Adjustable operating temperature range (°C or °F). Uniform forced air Directional cooling with oversized evaporators and condensers. Temperature controller. Keyed door locks, casters, sample-simulated probe, probe access port, UL/C-UL listed. Monitoring & Alarms. 2 Slide Glass doors and 8 adj shelves.	1	2	E	VWR Scientific Products	10-819-580		54.13	31.50	78.63	1,375	800	1,997	455.0	206.4	F														
01.0 Ambulatory Services	Primary Care Clinic	01.02.01.01	Medication Room	F032	0935466	WHITEBOARD, MAGNETIC	Aluminum frame. Magnetic writing surface. Accessory tray to hold dry erase markers and erasers.	1	3	F	Quartet Manufacturing	3413820059		96.00	4.00	48.00	2,438	102	1,219	63.8	29.0	W															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	4	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	2	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	2	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes								Powered from main PC unit.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	2	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes								150VA. Comm. port: RS-232 with an RJ45 connector.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	2	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	2	3	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60											
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VGZ2	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120					1,115	Plug		Yes								1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	2	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	2	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug										100 to 240v, 50 to 60hz.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	2	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E133	0929449	STRETCHER, ADULT	Capacity: 700 lb (318 kg). Dual pedestal hydraulics. Push handle at head end. Patient surface: 30x75.25" (762x1911 mm). 4" (102 mm) mattress. Height range: 20.75 - 34" (527 - 864 mm).	2	3	E	Stryker	1105	Prime Series	38.00	85.00	34.00	965	2,159	864			F	120	1		60		Plug										
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E136	0937780	SUCTION MACHINE	Portable. Integrated vacuum regulator and handle. Includes canister and disposable liner. Canister capacity: 1200 mL. High vacuum/high flow.	2	1	E	Laerdal Medical Canada Ltd.	Laerdal Suction Unit	78003020/57151	13.00	6.30	12.40	330	160	315	8.8	4.0	O	115	1	5.0	60		Plug	5-15P									Operating/charging: 115 V or 12-28 VDC. 12 VDC lead/acid battery, 2 Ah, rechargeable battery. Power cord: 6 ft (1829 mm) long, approximate.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	E157	0939150	TABLE, PREP	Mobile. Stainless steel. Flat top shelf. With lower shelf. Four 3" (76 mm) swivel casters.	2	1	E	Imperial Surgical Company	OR-3641D		36.00	20.00	34.00	914	508	864	70.0	31.8	F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02	Exam/ Treatment Room (2)	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	2	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	14	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	7	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes								Powered from main PC unit.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	7	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes								150VA. Comm. port: RS-232 with an RJ45 connector.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	7	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	7	4	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60											
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VGZ2	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120					1,115	Plug		Yes								1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	7	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug										100 to 240v, 50 to 60hz.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	7	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	7	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug										
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.01	Exam Room, Typical (7)	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	7	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W															
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	4	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH W	INCH D	INCH H	MM W	MM D	MM H	LB	KG	PLACEMENT	VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	4	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes									Powered from main PC unit.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	4	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150VA. Comm. port: RS-232 with an RJ45 connector.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	4	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	4	4	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60													
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VG22	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	4	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug											100 to 240v, 50 to 60hz.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	4	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	4	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug											
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.02	Exam Room, Small (4)	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	4	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	1	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes									Powered from main PC unit.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	1	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150VA. Comm. port: RS-232 with an RJ45 connector.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	1	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	1	4	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60													
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VG22	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug											100 to 240v, 50 to 60hz.
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	1	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug											
01.0 Ambulatory Services	Primary Care Clinic	01.02.02.03	Exam Room, Inboard	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.03	Alcove, Procedure Cart	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	2	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.03	Alcove, Procedure Cart	E088	0943796	LIGHT, EXAM/TREATMENT, MOBILE	Mobile. Single LED light head, Pattern size (d10) at 1 m: 16.0 cm (6.3"). Color temperature (K): 4,500. 80,000 Lux. CRI: 95. Size of light head: 300mm (11.81").	1	1	E	Trumpf	TruLight 1000M								5.3	2.4	F	110	1		60		Hard											Power pack supply voltage DC-DC box: 24 V DC (+/- 10%) Maximum power consumption of total system: 50 VA Maximum thermal load of the light head: 20 W
01.0 Ambulatory Services	Primary Care Clinic	01.02.07	Group Consultation Room	F009	0939546	CHAIR, MEETING	One-piece seat and back, mesh. 5 star caster base. seat height range of 6"	8	3	F	Herman Miller	CQ52FN	Setu	25.25	17.00	38.60	641	432	980			F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.07	Group Consultation Room	F026	0941908	TABLE, FLIP-TOP, CASTERED, 60"X24", POWERED	Rectangular laminate top, pop up duplex receptacle. T-Base leg on casters.	4	3	F	Spec Furniture	Manhattan	MRTFTCRC	60.00	24.00	29.00	1,524	610	737			F	115					Plug		No									1 duplex + plug in cord 15A circuit Power monument at table top by furniture vendor. Power connection at floor box provided by contractor.
01.0 Ambulatory Services	Primary Care Clinic	01.02.07	Group Consultation Room	F032	0935466	WHITEBOARD, MAGNETIC	Aluminum frame. Magnetic writing surface. Accessory tray to hold dry erase markers and erasers.	1	3	F	Quartet Manufacturing	3413820059		96.00	4.00	48.00	2,438	102	1,219	63.8	29.0	W																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.08	Clinician Workroom (3)	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	3	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.08	Clinician Workroom (3)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	12	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.08	Clinician Workroom (3)	F039	0941836	TABLE, PRINTER	Premium grade, high performance laminate, with 2mm thick edges. Full modesty panels.	3	3	F	Global Furniture	A2430PT	Adaptabilities	30.00	24.00	29.50	762	610	749			F																	
01.0 Ambulatory Services	Primary Care Clinic	01.02.08	Clinician Workroom (3)	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	3	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.01	ITP Clinician Workstation (10)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	10	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.01	ITP Clinician Workstation (10)	F039	0941836	TABLE, PRINTER	Premium grade, high performance laminate, with 2mm thick edges. Full modesty panels.	2	3	F	Global Furniture	A2430PT	Adaptabilities	30.00	24.00	29.50	762	610	749			F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.01	ITP Clinician Workstation (10)	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	2	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	F038	0937075	CHAIR, TASK, EXECUTIVE	Fully upholstered leather seat and back $60/yard. With adjustable arms.	1	3	F	Steelcase	465A000	Think	28.50	24.25	42.00	724	616	1,067	42.0	19.1	F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	1	3	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60													
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VG22	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																	Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug											100 to 240v, 50 to 60hz.
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	1	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug											
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	F029	0939672	TABLE, ROUND	Standard Seating height. X-base. Laminate top	1	3	F	Spec Furniture	Manhattan	MNX36	36.00	0.00	29.00	914		737	55.0	25.0	F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.01	IPT Consultation Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	F038	0937075	CHAIR, TASK, EXECUTIVE	Fully upholstered leather seat and back $60/yard. With adjustable arms.	1	3	F	Steelcase	465A000	Think	28.50	24.25	42.00	724	616	1,067	42.0	19.1	F																	
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	1	3	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60													
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VG22	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																	Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug											100 to 240v, 50 to 60hz.

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																						ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2								
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	1	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug														
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	F029	0939672	TABLE, ROUND	Standard Seating height. X-base. Laminate top	1	3	F	Spec Furniture	Manhattan	MNX36	36.00	0.00	29.00	914		737	55.0	25.0	F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.02	IPT Consultation Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	F038	0937075	CHAIR, TASK, EXECUTIVE	Fully upholstered leather seat and back $60/yard. With adjustable arms.	1	3	F	Steelcase	465A000	Think	28.50	24.25	42.00	724	616	1,067	42.0	19.1	F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	E089	0938559	LIGHT, EXAM/TREATMENT, WALL MOUNTED	12" wall mount extension. 5,500 deg K colour temperature, LED life: 50,000 hours.1 White LED. Touchless on/off control. Light intensity: 15,000 lux - 30,000 lux	1	3	E	Welch Allyn Inc.	Green Series 300		3.54	3.15	33.27	90	80	845	5.7	2.6	W	110	1	0.3	60		Plug														100-240v, 50-60hz
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																				Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug														100 to 240v, 50 to 60hz.
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	1	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug														
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	F029	0939672	TABLE, ROUND	Standard Seating height. X-base. Laminate top	1	3	F	Spec Furniture	Manhattan	MNX36	36.00	0.00	29.00	914		737	55.0	25.0	F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.03.03	IPT Consultation Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.05	Office: Nurse Manager	F003	0943371	CABINET, STORAGE, COMBO	Four pull-out drawers. Laminate	1	3	F	Global Furniture	Zira		36.00	24.00	66.00	914	610	1,676			F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.05	Office: Nurse Manager	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.05	Office: Nurse Manager	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	Pi2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.05	Office: Nurse Manager	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No												Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.05	Office: Nurse Manager	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				
01.0 Ambulatory Services	Interprofessional Services (ITP)	01.03.06	Alcove: Equipment and Consumable Supplies	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F																				
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	F005	0939569	CHAIR, LOUNGE, 1 SEAT	Fully upholstered in grade 3 vinyl integrated arms. 4 star swivel base.	2	3	F	Herman Miller	NOALN251	Always	31.00	31.50	36.50	787	800	927			F																				
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	2	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F																				
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	F013	0939685	CHAIR, STACKING, PLASTIC	Stacking Chair With Arms. Weight Capacity: 300. Polymer shell and frame.	10	3	F	Globalcare	6750	BAKHITA	22.50	21.00	31.50	572	533	800	12.0	5.5	F																				
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	E098	0929581	OVEN, MICROWAVE	Countertop. Domestic. Capacity: 1.1 cu ft (31.15 L). Turntable cooking system. 10 power levels.	1	4	E	General Electric Appliances	PEM10WFC		24.00	13.31	12.00	610	338	305	33.0	15.0	T	120	1	11.5	60	1,300	Plug														Grounded 3 prong plug. Electrical input @ 120V: 11.50 Amp.
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	E151	0941075	REFRIGERATOR FREEZER, UPRIGHT	Top freezer Stainless steel Refrigerator. Total Capacity:17.5 cu.ft. Reversible door, with 4.03 cu ft freezer capacity. Frost free interior, 2 full width glass shelves and 2 vegetable crispers.	1	2	E	General Electric Appliances	GTE18GSNRSS		28.00	32.62	67.37	711	829	1,711	192.0	87.3	F	120	1	15.0	60		Plug														
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	4	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F																				
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	F049	0944170	TABLE, SQUARE	Square Table. 24"x24". Laminate top, disc base.	4	3	F	Global Furniture	Swap Tables	SWP572	24.00	24.00	22.00	610	610	559			F																				
01.0 Ambulatory Services	Common Space	01.04.01	Staff Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				
01.0 Ambulatory Services	Common Space	01.04.02	Central Stores	E149	0941431	CART, SUPPLY	Parwall Unit 36" W, 6 Baskets, (4) 12" Fine Mesh, (3) 18" Dividers, Single-sided. Comes with Caster and label Holder. !!!	8	2	E	Acart Equipment Ltd.	ParWall36M	Par Wall	36.00	26.00	78.00	914	660	1,981			F																				
01.0 Ambulatory Services	Common Space	01.04.02	Central Stores	E151	0941075	REFRIGERATOR FREEZER, UPRIGHT	Top freezer Stainless steel Refrigerator. Total Capacity:17.5 cu.ft. Reversible door, with 4.03 cu ft freezer capacity. Frost free interior, 2 full width glass shelves and 2 vegetable crispers.	1	2	E	General Electric Appliances	GTE18GSNRSS		28.00	32.62	67.37	711	829	1,711	192.0	87.3	F	120	1	15.0	60		Plug														
01.0 Ambulatory Services	Common Space	01.04.03	Housekeeping Closet	A001	0940446	ALLOWANCE, HOUSEKEEPING	toilet bowl swab and caddy; putty knife; safety goggles; cleaning bucket; mop hand and mop heads; wall mop units; dust mop; dust pan; broom; wet floor signs; PPE	1	2	A		Generic										X																		
01.0 Ambulatory Services	Common Space	01.04.03	Housekeeping Closet	E016	0938321	CART, HOUSEKEEPING	Microfibre cart. 7.25 cu ft of locking cabinet area. 5 cu ft of storage space. Secure cabinet doors, interchangeable handles. 8" wheels and 4" casters. Locking security hood. Includes 34gal vinyl bag	1	2	E	Rubbermaid	FG9T7500BLA		22.00	48.25	53.50	559	1,226	1,359	70.0	31.8	F																				
01.0 Ambulatory Services	Common Space	01.04.03	Housekeeping Closet	E123	0941177	SHELVING, METAL	Solid 18-guage steel shelving. Weight load capacity: 48" shelf (800 lbs), 60" (600 lbs), 72" (300 lbs). Shelves adjusted in 1" intervals along post. Adjustable levelling legs.	1	2	E	Metro	1842FS		42.00	18.00	74.00	1,067	457	1,880	18.0	8.2	F																				
01.0 Ambulatory Services	Administrative Space	01.05.01	Private Office: Clinic Manager	F003	0943371	CABINET, STORAGE, COMBO	Four pull-out drawers. Laminate	1	3	F	Global Furniture	Zira		36.00	24.00	66.00	914	610	1,676			F																				
01.0 Ambulatory Services	Administrative Space	01.05.01	Private Office: Clinic Manager	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																				
01.0 Ambulatory Services	Administrative Space	01.05.01	Private Office: Clinic Manager	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	Pi2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
01.0 Ambulatory Services	Administrative Space	01.05.01	Private Office: Clinic Manager	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No												Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.01	Private Office: Clinic Manager	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	1	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																				
01.0 Ambulatory Services	Administrative Space	01.05.01	Private Office: Clinic Manager	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				
01.0 Ambulatory Services	Administrative Space	01.05.02	Private Office: Interprofessional Team Lead	F003	0943371	CABINET, STORAGE, COMBO	Four pull-out drawers. Laminate	1	3	F	Global Furniture	Zira		36.00	24.00	66.00	914	610	1,676			F																				
01.0 Ambulatory Services	Administrative Space	01.05.02	Private Office: Interprofessional Team Lead	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																				
01.0 Ambulatory Services	Administrative Space	01.05.02	Private Office: Interprofessional Team Lead	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	Pi2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
01.0 Ambulatory Services	Administrative Space	01.05.02	Private Office: Interprofessional Team Lead	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No												Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.02	Private Office: Interprofessional Team Lead	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	1	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																				
01.0 Ambulatory Services	Administrative Space	01.05.02	Private Office: Interprofessional Team Lead	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				
01.0 Ambulatory Services	Administrative Space	01.05.03	Private Office: Executive Director	F003	0943371	CABINET, STORAGE, COMBO	Four pull-out drawers. Laminate	1	3	F	Global Furniture	Zira		36.00	24.00	66.00	914	610	1,676			F																				
01.0 Ambulatory Services	Administrative Space	01.05.03	Private Office: Executive Director	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																				
01.0 Ambulatory Services	Administrative Space	01.05.03	Private Office: Executive Director	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	Pi2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
01.0 Ambulatory Services	Administrative Space	01.05.03	Private Office: Executive Director	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No												Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.03	Private Office: Executive Director	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	1	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																				
01.0 Ambulatory Services	Administrative Space	01.05.03	Private Office: Executive Director	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																				

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																		
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
01.0 Ambulatory Services	Administrative Space	01.05.04	Shared Workspace: Floater, Data Entry	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
01.0 Ambulatory Services	Administrative Space	01.05.04	Shared Workspace: Floater, Data Entry	F045	0943658	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	2	3	F	Globalcare	FOLI	1200 SERIES	46.00	29.00	68.00	1,168	737	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.04	Shared Workspace: Floater, Data Entry	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W															
01.0 Ambulatory Services	Administrative Space	01.05.05	Shared Workspace: Scheduler, Biller (2)	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	4	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F															
01.0 Ambulatory Services	Administrative Space	01.05.05	Shared Workspace: Scheduler, Biller (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	4	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
01.0 Ambulatory Services	Administrative Space	01.05.05	Shared Workspace: Scheduler, Biller (2)	F045	0943658	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	4	3	F	Globalcare	FOLI	1200 SERIES	46.00	29.00	68.00	1,168	737	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.05	Shared Workspace: Scheduler, Biller (2)	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W															
01.0 Ambulatory Services	Administrative Space	01.05.06	Workstation: PSP	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
01.0 Ambulatory Services	Administrative Space	01.05.06	Workstation: PSP	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.07	Shared Office: Visitors/ Unassigned	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	3	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
01.0 Ambulatory Services	Administrative Space	01.05.07	Shared Office: Visitors/ Unassigned	F045	0943658	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	3	3	F	Globalcare	FOLI	1200 SERIES	46.00	29.00	68.00	1,168	737	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
01.0 Ambulatory Services	Administrative Space	01.05.07	Shared Office: Visitors/ Unassigned	F039	0941836	TABLE, PRINTER	Premium grade, high performance laminate, with 2mm thick edges. Full modesty panels.	1	3	F	Global Furniture	A2430PT	Adaptabilities	30.00	24.00	29.50	762	610	749			F															
01.0 Ambulatory Services	Administrative Space	01.05.07	Shared Office: Visitors/ Unassigned	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W															
02.0 Concierge	Auxiliary / Volunteer Services	02.01.01	Auxiliary Support	E023	0932689	CART, UTILITY	3 tiers. Stainless steel. 1"(25mm) lip on three sides of top and middle shelves. 500 lb weight capacity. Shelf clearance: 13.1" (333mm). Rubber swivel 5" (127mm) casters. Shelves welded to the legs.	2	2	E	Acart Equipment Ltd.	3067		22.38	39.25	37.25	568	997	946	68.0	30.9	F															
02.0 Concierge	Auxiliary / Volunteer Services	02.01.01	Auxiliary Support	E151	0941075	REFRIGERATOR FREEZER, UPRIGHT	Top freezer Stainless steel Refrigerator. Total Capacity:17.5 cu.ft. Reversible door, with 4.03 cu ft freezer capacity. Frost free interior, 2 full width glass shelves and 2 vegetable crispers.	2	2	E	General Electric Appliances	GTE18GSNRSS		28.00	32.62	67.37	711	829	1,711	192.0	87.3	F	120	1	15.0	60		Plug									
02.0 Concierge	Auxiliary / Volunteer Services	02.01.01	Auxiliary Support	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	2	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
02.0 Concierge	Lobby / Entrance Area	02.03.01	Entrance Vestibule		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
02.0 Concierge	Lobby / Entrance Area	02.03.02	Lobby	FXXX	0940427	ALLOWANCE, FURNITURE	Allowance Lobby Furniture: Planning will be detailed during Coordination Meetings	2	3	F			ZZZ									X															
02.0 Concierge	Lobby / Entrance Area	02.03.04	Gathering Space	F012	0939567	CHAIR, STACKING, BARIATRIC	Side Chair with arms, Stacking, Grade-3 (Vinyl). 4 point base.	5	3	F	Spec Furniture	Snowball 2	1853	31.00	22.00	33.00	787	559	838			F															
02.0 Concierge	Lobby / Entrance Area	02.03.04	Gathering Space	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	20	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F															
02.0 Concierge	Lobby / Entrance Area	02.03.04	Gathering Space	F026	0941908	TABLE, FLIP-TOP, CASTERED, 60"X24", POWERED	Rectangular laminate top, pop up duplex receptacle. T-Base leg on casters.	4	3	F	Spec Furniture	Manhattan	MRTFTCRC	60.00	24.00	29.00	1,524	610	737			F	115					Plug		No								1 duplex + plug in cord 15A circuit Power monument at table top by furniture vendor. Power connection at floor box provided by contractor.
02.0 Concierge	Lobby / Entrance Area	02.03.05	Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
02.0 Concierge	Spiritual Services	02.04.01	Non-Denominational Spiritual Room	F012	0939567	CHAIR, STACKING, BARIATRIC	Side Chair with arms, Stacking. Grade-3 (Vinyl). 4 point base.	1	3	F	Spec Furniture	Snowball 2	1853	31.00	22.00	33.00	787	559	838			F															
02.0 Concierge	Spiritual Services	02.04.01	Non-Denominational Spiritual Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	9	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F															
02.0 Concierge	Spiritual Services	02.04.02	Non-Denominational Spiritual Storage Room		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1	2	E																												
03.0 Clinical Laboratory	Specimen Collection	03.02.01	Specimen Collection Station	E002	0938308	BASSINET, INFANT	Stainless steel. Modular tubular frame. Clear PVC infant basket with card holder. Includes mattress. Four 3" (76.2 mm) non-marking casters, 2 swivel and 2 with brakes.	1	1	E	Imperial Surgical Company	PH-2655/2657/2659		33.00	17.00	42.75	838	432	1,086	70.0	31.8	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.01	Specimen Collection Station	E166	0943818	BIN SYSTEM, WALL MOUNTED	Wall mounted. Polystyrene. 4 clear plastic bins, tip out 45 deg for access. Removable. Molded-in handles with label holder. Inside each bin dimensions (wxdxh): 5x5x5-1/4" (127x127x133 mm).	2	2	E	Uline Canada	S-21121		24.00	6.63	8.13	610	168	207	6.0	2.7	W															
03.0 Clinical Laboratory	Specimen Collection	03.02.01	Specimen Collection Station	E167	0943817	BIN SYSTEM, WALL MOUNTED	Wall mounted. Polystyrene. 5 clear plastic bins, tip out 45 deg for access. Removable. Molded-in handles with label holder. Inside each bin dimensions (wxdxh): 3-7/8x3-7/8x4-1/4" (99x99x108 mm).	2	2	E	Uline Canada	S-21120		24.00	5.50	6.50	610	140	165	4.0	1.8	W															
03.0 Clinical Laboratory	Specimen Collection	03.02.01	Specimen Collection Station	E029	0938339	CHAIR, PHLEBOTOMY, BARIATRIC	Three position recliner w/ infinite back adjustments. Trendelenburg. Drop-down armrests. Locking casters. Two flip-up 11.5" W x 18" D side tables. Weight capacity: 450 lbs (204kg).	1	2	E	Winco Manufacturing	6540		36.25	44.00	49.00	921	1,118	1,245	111.0	50.4	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.01	Specimen Collection Station	F016	0940213	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	Electric Height Adjustable Table. Ranges 22.6" to 48.6" in height. Laminate Top. With Mobile Box/ File Pedestal	1	3	F	Globalcare	PH3T3060	FOLI	58.00	29.00	48.60	1,473	737	1,234	129.6	58.9	F	120	1		60		Plug								Single motor hex rod drive system 0.5 W power draw when not in use
03.0 Clinical Laboratory	Specimen Collection	03.02.01	Specimen Collection Station	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C11018		23.00	0.00	27.50	584		699	0.0	0.0	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.02	Specimen Collection Station	E002	0938308	BASSINET, INFANT	Stainless steel. Modular tubular frame. Clear PVC infant basket with card holder. Includes mattress. Four 3" (76.2 mm) non-marking casters, 2 swivel and 2 with brakes.	1	1	E	Imperial Surgical Company	PH-2655/2657/2659		33.00	17.00	42.75	838	432	1,086	70.0	31.8	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.02	Specimen Collection Station	E167	0943817	BIN SYSTEM, WALL MOUNTED	Wall mounted. Polystyrene. 5 clear plastic bins, tip out 45 deg for access. Removable. Molded-in handles with label holder. Inside each bin dimensions (wxdxh): 3-7/8x3-7/8x4-1/4" (99x99x108 mm).	2	2	E	Uline Canada	S-21120		24.00	5.50	6.50	610	140	165	4.0	1.8	W															
03.0 Clinical Laboratory	Specimen Collection	03.02.02	Specimen Collection Station	E166	0943818	BIN SYSTEM, WALL MOUNTED	Wall mounted. Polystyrene. 4 clear plastic bins, tip out 45 deg for access. Removable. Molded-in handles with label holder. Inside each bin dimensions (wxdxh): 5x5x5-1/4" (127x127x133 mm).	2	2	E	Uline Canada	S-21121		24.00	6.63	8.13	610	168	207	6.0	2.7	W															
03.0 Clinical Laboratory	Specimen Collection	03.02.02	Specimen Collection Station	E028	0938515	CHAIR, PHLEBOTOMY	Three position recliner w/ infinite back adjustments. Trendelenburg. Drop-down armrests. Locking casters. Two flip-up 11.5" w x 18" d side tables. Weight Capacity: 275 lbs	1	2	E	Winco Inc.	6530		32.25	39.00	49.00	819	991	1,245	93.7	42.6	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.02	Specimen Collection Station	F016	0940213	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	Electric Height Adjustable Table. Ranges 22.6" to 48.6" in height. Laminate Top. With Mobile Box/ File Pedestal	1	3	F	Globalcare	PH3T3060	FOLI	58.00	29.00	48.60	1,473	737	1,234	129.6	58.9	F	120	1		60		Plug								Single motor hex rod drive system 0.5 W power draw when not in use
03.0 Clinical Laboratory	Specimen Collection	03.02.02	Specimen Collection Station	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C11018		23.00	0.00	27.50	584		699	0.0	0.0	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.03	Specimen Collection Washroom		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
03.0 Clinical Laboratory	Specimen Collection	03.02.04	Storage Cart	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F															
03.0 Clinical Laboratory	Specimen Collection	03.02.05	Nutrition Station	E109	0938579	REFRIGERATOR, UNDERCOUNTER	Refrigerator capacity: 4.4 cu. ft .Single door. Reversible door swing. Adjustable glass shelf.	1	2	E	Danby Products, North America	DAR044A4BSLDD		20.68	21.06	33.03	525	535	839	72.5	33.0	F	110	1		60		Plug									
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.01	Specimen and Courier Drop Off		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.02	Pass-Through Cabinet	E107	0941171	REFRIGERATOR, LABORATORY, PASS-THROUGH	Single glass door. Temp range: 2 to 10 deg C. Three shelves. Four casters, two locking.	1	2	E	Nor-Lake Scientific	NSPT242WWF/S		27.50	37.17	79.62	699	944	2,022			F	115		3.2	60											1/3 hp
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.03	Workstation	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.03	Workstation	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.03	Workstation	F023	0938786	STORAGE, SHELVING	Laminate SH, adjustable shelves	1	3	F	Herman Miller	L2BC.72362ON1LNT	TU	36.00	20.00	72.00	914	508	1,829			F															
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.04	Freezer and Fridge Area	E074	0940627	LAB FREEZER, UNDERCOUNTER	Temp range -15 to -30C; Lockable door, password protected settings, optional PIN access; Alarms: door ajar, power failure, condenser temp; Downloadable event log	1	2	E	Helmer Labs Inc.	ILF-105		24.00	26.75	34.00	610	679	864	215.0	97.7	F	115	1		60		Plug	NEMA 5-15								230v 50-60hz 15 amp dedicated ground circuit Maximum current 5.75 FLA / 2.9 FLA / 3.1 FLA
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.04	Freezer and Fridge Area	E105	0940632	REFRIGERATOR, LABORATORY	High performance storage of medical and scientific products. Lockable door, password protected settings. Event/Temperature/Access logs.	1	2	E	Helmer Labs Inc.	ILR120-GX		29.02	31.61	79.57	737	803	2,021	445.0	201.9	F	115			60		Plug	NEMA								220-240v 50/60hz Power Plug/Power Cord Lenghth: NEMA 5-15 hospital-grade | 115V 60Hz, 8 to 10 ft (2.4-3.0m) Facility Supply Rating: Branch circuit with earth ground, meeting plug/cord ratings as well as local electrical safety codes and requirements 110-120V AC: 15 A (minimum) 220-240V AC: 10 A (minimum)
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.05	Centrifugation and Specimen Pour Off	E011	0943805	CABINET, SAFETY, ACID STORAGE	Poly corrosive cabinet, Capacity: 4 gal. 2 adjustable shelves. 100% high-density polyethylene (HDPE) construction. Internal sump for spillage.	1	2	E	Uline Canada	H-5659		18.00	18.00	22.00	457	457	559	32.0	14.5	F															
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.05	Centrifugation and Specimen Pour Off	T071	000T071-01	LAB CENTRIFUGE, REFRIGERATED, COUNTER TOP		1	5	E		10830-746	10830-746	13.62	16.02	27.48	346	407	698	114.4	52.0	T	120		8.0	60		Plug									
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.06	Send Out	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.06	Send Out	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TS5ARS3060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug										Integrated power and data in desks and tables
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.07	Accessioning Storage	E024	0940457	CART, WIRE	5 tiers, all wire. Capacity: 750 lb (340 kg), maximum. Donut bumpers. Four 5" (127 mm) swivel casters, 2 braking.	1	2	E	Acart Equipment Ltd.	M8455CH		48.00	24.00	80.00	1,219	610	2,032	108.0	49.1	F															
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.08	Confidential Garbage		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.09	Phlebotomy cart area	E018	0938324	CART, PHLEBOTOMY	3 drawers. Drawer divider. Side bin. Work surface on top w/ lip. Modular rail system for accessories. Sharps container. 5" (127mm) casters , two w/ brakes.	1	2	E	Market Lab Inc.	ML21491		23.25	20.50	34.25	591	521	870	0.0	0.0	F															
03.0 Clinical Laboratory	Accessioning and Send Out	03.03.09	Phlebotomy cart area	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.01	Blood Products Storage	E073	0940626	LAB FREEZER, PLASMA	Eye-level color touchscreen interface. Lockable door and password protected. Event log with alarms.	1	2	E	Helmer Labs Inc.	ILF- 120		29.50	29.50	58.25	749	749	1,480	443.0	200.9	F	115			60		Plug	NEMA								208/230V 60Hz 230V 50Hz Building Supply Rating: 15 amp dedicated ground circuit Poer Plug/Power Cord Length: NEMA 5-15 hospital grade plug (115V) NEMA 6-15 hospital grade plug (208/230V 60Hz) CEE 7/7 plug (230V 50Hz) 8-10 ft (2439-3048 mm)

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.01	Blood Products Storage	E105	0940632	REFRIGERATOR, LABORATORY	High performance storage of medical and scientific products. Lockable door, password protected settings. Event/Temperature/Access logs.	2	2	E	Helmer Labs Inc.	iLR120-GX		29.02	31.61	79.57	737	803	2,021	445.0	201.9	F	115			60		Plug	NEMA									220-240v 50/60hz Power Plug/Power Cord Lenghth: NEMA 5-15 hospital-grade | 115V 60Hz, 8 to 10 ft (2.4-3.0m) Facility Supply Rating: Branch circuit with earth ground, meeting plug/cord ratings as well as local electrical safety codes and requirements 110-120V AC: 15 A (minimum) 220-240V AC: 10 A (minimum)
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.02	Tag Printer	F023	0938786	STORAGE, SHELVING	Laminate SH, adjustable shelves	1	3	F	Herman Miller	L2BC.723620N1LNT	TU	36.00	20.00	72.00	914	508	1,829			F																
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.03	Blood Products Room Temperature Storage	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F																
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.03	Blood Products Room Temperature Storage	E024	0940457	CART, WIRE	5 tiers, all wire. Capacity: 750 lb (340 kg), maximum. Donut bumpers. Four 5" (127 mm) swivel casters, 2 braking.	1	2	E	Acart Equipment Ltd.	MB455CH		48.00	24.00	80.00	1,219	610	2,032	108.0	49.1	F																
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.03	Blood Products Room Temperature Storage	F045	0943658	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	46.00	29.00	68.00	1,168	737	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.04	Testing Area	E069	0943789	LAB CENTRIFUGE, CELL WASHER	Color touchscreen interface. Digital calibration. Door interlock. Flexibility of 12- or 24-place rotors. 60 cycle process time. Tube dimensions: 10x75 or 12x75mm. 49 dBA noise level. Max speed: 3,500 RPM	1	1	E	Helmer Labs Inc.	Ultra CW II		13.00	16.75	22.90	330	425	582	53.8	24.4	T	115	1		60		Plug		No									Power Plug: 115V 60HZ NEMA-5
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.04	Testing Area	E072	0938375	LAB CENTRIFUGE, SERO-FUGE	For blood cell washing and separation procedures. Spin speed: 3,400 rpm (1000g RCF). Digital display.	1	1	E	Clay Adams	Serofuge 2000		16.93	12.99	12.01	430	330	305	27.9	12.7	T	120		1.5	60	66	Plug		No								
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.05	Microscope	E076	0938563	LAB MICROSCOPE, INVERTED	Motorized (6 position),widefield microscope. LED lamp, Motorized universal condensor. Confocal scanner, super resolution processing.	1	1	E	Olympus Canada.	I X plore Standard		12.72	18.70	28.39	323	475	721	103.4	47.0	T	120		1.8	60		Plug										AC 100–120 V, 50/60 Hz; 1.8 A
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.05	Microscope	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.06	Plasma Thawer/ Incubator	E077	0938379	LAB PLASMA THAWER	Plasma thawing system using both controlled temperature and agitation to reduce thaw times. Stainless steel chamber and baskets. Thaw capacity: 8 bags. Chamber volume: 32 L (8.5 gal).	1	1	E	Helmer Labs Inc.	QuickThaw DH8		18.50	22.00	23.00	470	559	584	74.0	33.6	T	115	1	10.0	60		Plug	5-15P	Yes									15 Amp dedicated ground circuit.
03.0 Clinical Laboratory	Transfusion Medicine and Blood Bank	03.04.06	Plasma Thawer/ Incubator	E078	0938380	LAB PLATELET INCUBATOR AND AGITATOR	30 platform rotators. Fixed angle 3D rotator. Simple speed adjustment from 2 to 80rpm. Continuous or timed operation with automatic switch-off. Audible and visual alarm. Operating temp: 5-40deg C	1	1	E	Fisher Scientific	Fisherbrand Rotator	15504080	11.50	16.30	6.70	292	414	170	13.2	6.0	O	120		0.8	60	7	Plug										100-240V, 0.8A, 6.5W, 50/60Hz
03.0 Clinical Laboratory	Hematology	03.05.01	Hematology Analyzer	E064	0943655	LAB ANALYZER, HEMATOLOGY	Automated. Low WBC application. Provides an automated 6-part differential on every sample. Fluorescent Flow Cytometry. Produces granulocyte count that includes: myelocytes, promyelocytes and metamyelocytes. Integrated rack, Automatic rerun and reflex functionality. Up to 60 samples/hour. Data storage: 100,000 samples.	1	1	E	Sysmex Corporation of America (TOA)	XN-550		17.70	26.00	17.70	450	660	450	116.8	53.0	T	120	1		60		Plug		Yes									Power consumption: 250 VA Monitor: 120 VAC Power consumption: 36 VA.
03.0 Clinical Laboratory	Hematology	03.05.01	Hematology Analyzer	F023	0938786	STORAGE, SHELVING	Laminate SH, adjustable shelves	1	3	F	Herman Miller	L2BC.723620N1LNT	TU	36.00	20.00	72.00	914	508	1,829			F																
03.0 Clinical Laboratory	Hematology	03.05.02	Microscope	E091	0936967	LAB MICROSCOPE	Microscope with ergonomic single head. LED illumination. Objectives: 4x, 10x, 20x, and 40x magnification. Filter...	1	1	E	Nikon Canada Incorporated	ECLIPSE Ci-E		8.78	13.03	19.37	223	331	492	33.9	15.4	T	120	1		60	13	Plug		No								
03.0 Clinical Laboratory	Hematology	03.05.02	Microscope	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																
03.0 Clinical Laboratory	Hematology	03.05.03	Manual Hematology & Fluids Workstation	E158	0935191	LAB ANALYZER, SEDIMENTATION RATE	Erythrocyte sedimentation rate analyzer. Test time: 30 min. Capacity: up to 20 samples. On board QC. Built-in printer, LIS interface.	1	1	E	ELITech Group	Excyte 20		13.00	12.25	7.88	330	311	200	11.0	5.0	T	110	1	3.5	60		Plug	5-15P	Yes									12 VDC.
03.0 Clinical Laboratory	Hematology	03.05.03	Manual Hematology & Fluids Workstation	E070	0940625	LAB CENTRIFUGE, COUNTER TOP	Routine laboratory centrifuge. RPM: 6000 min max. RCF: 4226 max. Capacity: 4x100 ml, 32x15 ml and 8 slide carriers for cyto prep. Swing-out rotor.	1	1	E	Hettich	ROTOFIX 32A	1206-01	14.41	16.93	10.12	366	430	257	50.6	23.0	T	115	1		60		Plug										100-127v, 208-240v, 50-60hz 300VA
03.0 Clinical Laboratory	Hematology	03.05.03	Manual Hematology & Fluids Workstation	T079	000T079-01	LAB SLIDE MAKER/STAINER		1	5	E		Aeospray Pro	7152	22.00	10.00	21.00	559	254	533	33.5	15.2	T	120	1		60	200	Plug		Yes								200W max.
03.0 Clinical Laboratory	Hematology	03.05.03	Manual Hematology & Fluids Workstation	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																
03.0 Clinical Laboratory	Hematology	03.05.04	Bio-Safety Cabinet	E010	0941445	CABINET, SAFETY, BIOLOGICAL	6 ft wide. Class II, Type B2. Interior duplex outlet. Touch screen control. HEPA supply filter. UV light. Includes height adjustable stand, integrated camera with monitor.	1	3	E	Nuaire Inc.	NU-560-600		77.64	31.42	62.01	1,972	798	1,575	680.0	309.1	F	115	1	2.6	60		Plug										Rated Amp: 10 12 ft (2.5 m) 14 GA- 3 wire power cord (15Amp). Constructor to provide 15 A circuit protected from distribution panel with thermal circuit breaker. The unit shall have 3 internal electrical circuits: one each for blower and lights and one dedicated circuit for duplex outlets.
03.0 Clinical Laboratory	Hematology	03.05.05	Coagulation Analyzer	T062	000T062-01	LAB ANALYZER, COAGULATION		1	5	E				38.18	28.73	27.75	970	730	705	309.0	140.5	T	115	1		60		Plug		Yes								1400 VA
03.0 Clinical Laboratory	Hematology	03.05.05	Coagulation Analyzer	F023	0938786	STORAGE, SHELVING	Laminate SH, adjustable shelves	1	3	F	Herman Miller	L2BC.723620N1LNT	TU	36.00	20.00	72.00	914	508	1,829			F																
03.0 Clinical Laboratory	Hematology	03.05.06	Storage Area	E024	0940457	CART, WIRE	5 tiers, all wire. Capacity: 750 lb (340 kg), maximum. Donut bumpers. Four 5" (127 mm) swivel casters, 2 braking.	2	2	E	Acart Equipment Ltd.	MB455CH		48.00	24.00	80.00	1,219	610	2,032	108.0	49.1	F																
03.0 Clinical Laboratory	Hematology	03.05.06	Storage Area	E075	0940628	LAB FREEZER, UPRIGHT	Temperature range -15 to -30C; Lockable door, password protected settings, optional PIN access; RTD control sensor; Alarms: high/low, power failure, condenser temp door ajar; event & temp log	1	2	E	Helmer Labs Inc.	iLF- 120		30.75	32.50	80.00	781	826	2,032	443.0	201.4	F	115	1		60		Plug	NEMA 5-15									15 amp dedicated ground circuit
03.0 Clinical Laboratory	Hematology	03.05.06	Storage Area	E106	0940634	REFRIGERATOR, LABORATORY, UPRIGHT, DOUBLE-DOORS	Storage Volume: 56 cu ft (1586 L). Swivel Locking 4x Casters.	1	2	E	Helmer Labs Inc.	iLR256-GX		59.00	37.70	79.60	1,499	958	2,022	703.0	319.6	F	115	1		60		Plug	5-15									Power Plug/Power Cord Length NEMA 5-15 hospital-grade | 115V 60Hz, 8 to 10 ft (2.4-3.0m)
03.0 Clinical Laboratory	Chemistry	03.06.01	Urinalysis Area (2)	E068	0938372	LAB ANALYZER, URINE	Semi-automated. Throughput: approximately 600 test strips/hour. Continuous strip loading. LCD touch screen. Integrated thermal printer. Custom reports.	2	1	E	Roche Diagnostics	Cobas u 411		16.73	13.34	10.24	425	339	260	26.0	11.8	T	115	1		60		Plug		Yes									RS 232 interface to barcode reader, sediment terminal and host computer.
03.0 Clinical Laboratory	Chemistry	03.06.01	Urinalysis Area (2)	E070	0940625	LAB CENTRIFUGE, COUNTER TOP	Routine laboratory centrifuge. RPM: 6000 min max. RCF: 4226 max. Capacity: 4x100 ml, 32x15 ml and 8 slide carriers for cyto prep. Swing-out rotor.	2	1	E	Hettich	ROTOFIX 32A	1206-01	14.41	16.93	10.12	366	430	257	50.6	23.0	T	115	1		60		Plug										100-127v, 208-240v, 50-60hz 300VA
03.0 Clinical Laboratory	Chemistry	03.06.01	Urinalysis Area (2)	E091	0936967	LAB MICROSCOPE	Microscope with ergonomic single head. LED illumination. Objectives: 4x, 10x, 20x, and 40x magnification. Filter.	2	1	E	Nikon Canada Incorporated	ECLIPSE Ci-E		8.78	13.03	19.37	223	331	492	33.9	15.4	T	120	1		60	13	Plug		No								
03.0 Clinical Laboratory	Chemistry	03.06.01	Urinalysis Area (2)	F023	0938786	STORAGE, SHELVING	Laminate SH, adjustable shelves	2	3	F	Herman Miller	L2BC.723620N1LNT	TU	36.00	20.00	72.00	914	508	1,829			F																
03.0 Clinical Laboratory	Chemistry	03.06.02	Point-of-Care Instruments	E066	0939432	LAB ANALYZER, BLOOD GAS, POC	Point of care. To measure: act (celite and kaolin), creatinine, ctnI, pt/inr, glucose, lactate, hematocrit, chloride, sodium, potassium, PH, PCO2, PO2, ionized calcium, urea nitrogen, hemoglobin.	1	1	E	Abbott Laboratories Limited	i-STAT		2.52	2.05	8.23	64	52	209	1.1	0.5	O																• Power : two 9 vol t, i i t hi um batteries
03.0 Clinical Laboratory	Chemistry	03.06.02	Point-of-Care Instruments	E065	0938370	LAB ANALYZER, IMMUNOASSAY, POC	Colour touchscreen. Memory: 2000 patient test results, 500 QC test results. Data transfer via QR code, wifi, USB. Sample size: 150microlitre, Infrared interface, LED/IRED class 1.	1	1	E	Roche Diagnostics	Cobas h 232 POC		4.13	9.61	2.01	105	244	51	1.1	0.5	O	115	1		60		Plug		Yes									350-150mA Output: 12V DC, 1.25 A Universal battery pack
03.0 Clinical Laboratory	Chemistry	03.06.02	Point-of-Care Instruments	E067	0938371	LAB ANALYZER, PROTEIN, FETAL FIBRONECTIN	Includes, display screen, keypad, and cassette insertion site. Memory capacity: 50 calibration records, 50 control records, 1000 patient records. Operating temperature: 15-30 deg Celsius.	1	1	E	Hologic Inc.	RapidFFN 10Q		6.90	8.90	3.00	175	226	76	1.6	0.7	T	120	1	0.7	60		Plug		Yes									Input connector: Coaxial power plug with positive center conductor Output connectors: 9 pin data connector, 2 host USB connectors
03.0 Clinical Laboratory	Chemistry	03.06.02	Point-of-Care Instruments	E070	0940625	LAB CENTRIFUGE, COUNTER TOP	Routine laboratory centrifuge. RPM: 6000 min max. RCF: 4226 max. Capacity: 4x100 ml, 32x15 ml and 8 slide carriers for cyto prep. Swing-out rotor.	1	1	E	Hettich	ROTOFIX 32A	1206-01	14.41	16.93	10.12	366	430	257	50.6	23.0	T	115	1		60		Plug										100-127v, 208-240v, 50-60hz 300VA
03.0 Clinical Laboratory	Chemistry	03.06.03	Chemistry Analyzer	E061	0942665	LAB ANALYZER, CHEMISTRY, AUTOMATED	Chemistry Analyzer with Electrolyte (IMT) and photo-metric testing. Accepted samples: Serum, Plasma,, CSF, Urine, Whole blood. Up to 1800 tests/hour: 1200 photometric and 600 IMT tests/hour. Reaction temperature: 37 deg. Celsius +/- 0.3 deg Celsius. Two Trays that holds up to 70 packs for photometric, reagent probe cleaner and water bath additive.	1	3	E	Siemens Canada Ltd	Atellica CH 930		58.70	45.50	53.70	1,491	1,156	1,364	1,036.0	469.9	F	208	3		60		Plug									Requires a 4.4 kVA (U.S.)/3.7 kVA (EU) power source; single-phase, 2-pole, 3-wire configuration; with Class III grounding. Will support incoming AC voltage from a nominal line voltage range of 200 to 240 VAC, 50/60 Hz. Main supply voltage fluctuations are not to exceed ±10 percent of the nominal voltage. Power consumption: 1.9 kilowatts/hour (maximum)
03.0 Clinical Laboratory	Chemistry	03.06.03	Chemistry Analyzer	E080	0942920	LAB WATER SYSTEM, REVERSE OSMOSIS	Production Rate of 30 L/hr to 120 L/hr. Flow Rate from 2 L/min to 4 L/min	1	3	E	Elga Labwater, John Meunier Inc	Medica Pro-60		31.80	18.80	32.80	808	478	833	114.6	52.0	F																
03.0 Clinical Laboratory	Chemistry	03.06.04	Storage Area (Fridge/ Freezer)	E075	0940628	LAB FREEZER, UPRIGHT	Temperature range -15 to -30C; Lockable door, password protected settings, optional PIN access; RTD control sensor; Alarms: high/low, power failure, condenser temp door ajar; event & temp log	1	2	E	Helmer Labs Inc.	iLF- 120		30.75	32.50	80.00	781	826	2,032	443.0	201.4	F	115	1		60		Plug	NEMA 5-15									15 amp dedicated ground circuit
03.0 Clinical Laboratory	Chemistry	03.06.04	Storage Area (Fridge/ Freezer)	E105	0940632	REFRIGERATOR, LABORATORY	High performance storage of medical and scientific products. Lockable door, password protected settings. Event/Temperature/Access logs.	2	2	E	Helmer Labs Inc.	iLR120-GX		29.02	31.61	79.57	737	803	2,021	445.0	201.9	F	115			60		Plug	NEMA									220-240v 50/60hz Power Plug/Power Cord Lenghth: NEMA 5-15 hospital-grade | 115V 60Hz, 8 to 10 ft (2.4-3.0m) Facility Supply Rating: Branch circuit with earth ground, meeting plug/cord ratings as well as local electrical safety codes and requirements 110-120V AC: 15 A (minimum) 220-240V AC: 10 A (minimum)
03.0 Clinical Laboratory	Chemistry	03.06.05	Quality Assurance Area	E063	0938505	LAB ANALYZER, GLUCOSE, POC	Battery-powered unit for blood glucose monitoring, with base charging unit. Handheld. Integrated barcode scanner. Fully automated testing procedure.	1	1	E	Roche Diagnostics	Acc-Chek Inform II	Cobas	3.74	7.60	1.73	95	193	44	0.7	0.4	O	115	1	1.7	60		Plug		Yes									Input voltage:+ 7.5 V DC Input frequency: DC Input current:1.7 A (max) Lithium-ion rechargeable battery.
03.0 Clinical Laboratory	Non-Clinical Support	03.07.01	Lab Safety Vestibule	E023	0932689	CART, UTILITY	3 tiers. Stainless steel. 1"(25mm) lip on three sides of top and middle shelves. 500 lb weight capacity. Shelf clearance: 13.1" (333mm). Rubber swivel 5" (127mm) casters. Shelves welded to the legs.	1	2	E	Acart Equipment Ltd.	3067		22.38	39.25	37.25	568	997	946	68.0	30.9	F																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.01	Lab Safety Vestibule	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.02	Bulk Storage	E024	0940457	CART, WIRE	5 tiers, all wire. Capacity: 750 lb (340 kg), maximum. Donut bumpers. Four 5" (127 mm) swivel casters, 2 braking.	2	2	E	Acart Equipment Ltd.	MB455CH		48.00	24.00	80.00	1,219	610	2,032	108.0	49.1	F																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.03	File Storage	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.03	File Storage	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use
03.0 Clinical Laboratory	Non-Clinical Support	03.07.03	File Storage	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	2	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.04	Housekeeping Closet	A001	0940446	ALLOWANCE, HOUSEKEEPING	toilet bowl swab and caddy; putty knife; safety googles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE	1	2	A		Generic											X																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.04	Housekeeping Closet	E016	0938321	CART, HOUSEKEEPING	Microfibre cart. 7.25 cu ft of locking cabinet area. 5 cu ft of storage space. Secure cabinet doors, interchangeable handles. 8" wheels and 4" casters. Locking security hood. Includes 24gal vinyl bag	1	2	E	Rubbermaid	FG9T7500BLA		22.00	48.25	53.50	559	1,226	1,359	70.0	31.8	F																
03.0 Clinical Laboratory	Non-Clinical Support	03.07.04	Housekeeping Closet	E123	0941177	SHELVING, METAL	Solid 18-guage steel shelving. Weight load capacity: 48" shelf (800 lbs), 60" (600 lbs), 72" (300 lbs). Shelves adjusted in 1" intervals along post. Adjustable levelling legs.	1	2	E	Metro	1842FS		42.00	18.00	74.00	1,067	457	1,880	18.0	8.2	F																
03.0 Clinical Laboratory	Staff Support	03.08.01	Workstation: Touchdown	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																
03.0 Clinical Laboratory	Staff Support	03.08.01	Workstation: Touchdown	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E055	0938548	IMAGING, LEAD SHIELD	Barrier, Mobile, Clear Lead, Full Window, For ionizing radiation, 0.5 mm LE Window size 30" w x 54.5" h (76 x 138.4 cm)	1	1	E	Biodex Medical Systems	042-582 Clear-Lead		30.00	10.50	75.00	762	267	1,905	97.9	44.5	F																
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E056	0943795	IMAGING, RADIOGRAPHIC SYSTEM	Upgradeable technology to help eliminate obsolescence. Elevating Table. Smart Features to automate tasks. DR technology. SmartGrid image processing. Improved Cybersecurity. Image Preview on the tubehead. Color-coded buttons on the tubehead handles. Functional Lighting. Remote Control. Auto-Collimation. Auto-Long Light Imaging.	1	3	E	Carestream Health Canada	DRX-Compass										F	400	3	158.0	60		Hard		Yes									Minimum Recommended Service Rating (A): 100 Minimum Recommended Mains Disconnect to Generator (5 m max):21 mm2 Minimum Recommended Transformer Rating(kVA): 105 Minimum Recommended Ground Wire Size: 21 mm2 Maximum Main Resistance (ohm): 0.13
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E159	0942466	IMAGING, WARMER, CONTRAST MEDIA	Continuous operation. Operating range: 30 to 42 degrees C. Indication accuracy: +/- .5 degrees C. LCD display. Chamber dimensions (wxdxh): 13-1/4"x12-5/16"x12-1/2".	1	1	E	GE Healthcare Clinical Systems	W-002	12-140AE	19.00	13.00	21.00	483	330	533	0.0	0.0	T	115	1		60	220										
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	1	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60											

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																		ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E113	0941174	RESTRAINT, IMMOBILIZER, CHILD	Restraint with table and integrated cassette holder (Analog). For use with 14"x17" film cassettes and CR plates up to 5/8" thick. Adjustable seat, adjustable lead shield. Weight Capacity: 35 lbs	1	1	E	Universal Medical Inc	Pigg-O-Stat	7756	20.00	20.00	35.00	508	508	889			O																		
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E132	0938398	STOOL, STEP	Chrome construction. Non-slip rubber mat and rubber tips. Handrail that measures 35-3/4" from the floor.	1	1	E	BLICKMAN INC	1251		11.38	14.25	9.00	289	362	229	8.0	3.6	F																	
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.01	Radiology Imaging Room	E136	0937780	SUCTION MACHINE	Portable. Integrated vacuum regulator and handle. Includes canister and disposable liner. Canister capacity: 1200 ml. High vacuum/high flow.	1	1	E	Laerdal Medical Canada Ltd.	Laerdal Suction Unit	78003020/57151	13.00	6.30	12.40	330	160	315	8.8	4.0	O	115	1	5.0	60		Plug	5-15P										Operating/charging: 115 V or 12-28 VDC. 12 VDC lead/acid battery, 2 Ah, rechargeable battery. Power cord: 6 ft (1829 mm) long, approximate.
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.02	Change Cubicle (2)	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	2	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.04	Wheelchair Alcove	E146	0938410	WHEELCHAIR, ADULT	Seat width: 16". Seat depth: 16". Capacity: 250 lb. Swing away footrest, articulating elevating legrest. Casters: 8 x 1". Wheels: 24 x 1". Padded fixed full length arm.	1	2	E	Invacare	TREX2		28.25	31.88	34.00	718	810	864	43.0	19.6	F																	
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.05	Stretcher Alcove	T057	000T057-01	IMAGING, STRETCHER		1	5	E		PRIME X		38.00	85.00	36.50	965	2,159	927	400.0	181.8	F																		Powered lift (if available), in 1105X and 1115X only. , 120V, 10A, 60Hz
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.06	Blanket Warmer	E014	0938615	CABINET, WARMING, UNDERCOUNTER	Includes embedding module with cryoconsole. 5 L paraffin reservoir, 6 wells heated forceps reservoir. Isolated cold spot adjacent to dispensing area for specimen manipulation and orientation.	1	1	E	Enthermics Medical Systems	EC350		18.50	23.50	28.00	470	597	711	91.0	41.4	F	120	1	6.7	60	1	Plug	5-15										NEMA 5-15P; 15A 125V Plug; Hospital Grade
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.07	Workstation: Tech		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.08	Reading Station	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.08	Reading Station	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VGZ2	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
04.0 Diagnostic Imaging	Imaging and Technical Support Area	04.02.08	Reading Station	F034	0930262	RAD ERGONOMIC WORKSTATION	Height adjustable worksurface up to 49.5" (125cm), with cable management system, 2 CPU holder and 8 outlet power bar. Monitor mounts include 6 USB ports, swing arm extender, 6 outlet power bar.	1	3	F	Redrick	B600		70.00	70.00	49.50	1,778	1,778	1,257	600.0	272.7	F	120	1		60		Plug										
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																		
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E036	0941777	ELECTROCARDIOGRAPH	With height adjustable (56-62") mobile workstation. 15.6" LED, full HD monitor touch screen.	1	1	E	GE Healthcare Clinical Systems	MAC VU360		19.00	28.00	62.00	483	711	1,575	75.3	34.2	F	120	1		60		Plug		Yes									Powered by AC adapter or replaceable and rechargeable internal battery (hot swappable).
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																		Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E160	0938493	PULMONARY FUNCTION MACHINE, BODY PLETHYSMOGRAPH	Platinum Elite-DX - RTD-Body Box, Main install Software, 24 All-in-One PC (c/w-keyboard, mouse), Davis weather station, including interface cable, Color Printer, Mobile Cart, DLCO and O2 kit.	1	3	E	Novus Medical Inc.	Platinum Elite								0.0	0.0	F	100		12.0	60													LESS THAN 100 MICROAMPERES
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E116	0938390	SCALE, CLINICAL	Flat, mobile scale. Weight capacity: 200kg, Graduation: 100g<150kg>200g. Battery powered with automatic switch-on/off. ABS plastics and plexiglas construction.	1	3	E	Seca	877		12.64	14.02	2.36	321	356	60	9.2	4.2	F																	Battery powered: 6 AA batteries
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E130	0934711	SPIROMETER	Colour display, built-in thermal printer. Measure FVC, VC, IVC, MVV w/real time curves. Pre&post bronchial response. W/Windows-based software, Bluetooth adapter for external printer, bacteria filters.	1	1	E	Medical International Research (MIR)	SPIROLAB-III		12.20	8.07	2.56	310	205	65	4.2	1.9	F	120	1	0.5	60		Plug		Yes									Unit with built-in rechargeable battery.
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																	
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	E133	0929449	STRETCHER, ADULT	Capacity: 700 lb (318 kg). Dual pedestal hydraulics. Push handle at head end. Patient surface: 30x75.25" (762x1911 mm). 4" (102 mm) mattress. Height range: 20.75 - 34" (527 - 864 mm).	1	3	E	Stryker	1105	Prime Series	38.00	85.00	34.00	965	2,159	864			F	120	1		60		Plug										
04.0 Diagnostic Imaging	Staff Support	04.02.08.01	PFT/ ECG Room	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	1	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F																
04.0 Diagnostic Imaging	Staff Support	04.03.01	Business Centre	F028	0942613	TABLE, RECTANGLE	Rectangular Table, 36"x72", Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWP532	72.00	36.00	30.00	1,829	914	762			F																	
04.0 Diagnostic Imaging	Staff Support	04.03.02	Storage Room	E024	0940457	CART, WIRE	5 tiers, all wire. Capacity: 750 lb (340 kg), maximum. Donut bumpers. Four 5" (127 mm) swivel casters, 2 braking.	2	2	E	Acart Equipment Ltd.	MB455CH		48.00	24.00	80.00	1,219	610	2,032	108.0	49.1	F																
04.0 Diagnostic Imaging	Staff Support	04.03.02	Storage Room	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																		Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
04.0 Diagnostic Imaging	Triage and Waiting Area	04.03.03	Linen Cart Alcove	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	E063	0938505	LAB ANALYZER, GLUCOSE, POC	Battery-powered unit for blood glucose monitoring, with base charging unit. Handheld. Integrated barcode scanner. Fully automated testing procedure.	1	1	E	Roche Diagnostics	Acc-Chek Inform II	Cobas	3.74	7.60	1.73	95	193	44	0.7	0.4	O	115	1	1.7	60		Plug		Yes									Input voltage:+ 7.5 V DC Input frequency: DC Input current:1.7 A (max) Lithium-ion rechargeable battery.
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																		Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug										100 to 240v, 50 to 60hz.
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	E117	0938391	SCALE, CLINICAL, BARIATRIC	Platform scale. Weight capacity: 800lbs , Graduation: 0.2lbs / 100g. Battery powered with automatic switch-on/off. Power adapter optional (98.4" cable length). TARE, BMI, auto-HOLD functions.	1	3	E	Seca	634		25.20	23.60	2.10	640	599	53	31.7	14.4	F																		6 x AA Battery powered. (Optional power adapter)
05.0 Emergency	Triage and Waiting Area	05.01.01	Triage/ Registration Station	E118	0939188	SCALE, INFANT/PEDIATRIC	With cart. Built-in digital readout for weighing of neonates, infants and toddlers. Capacity: 45 lb (20 kg). Accuracy: 2/10 oz (5 g). Includes standard cradle.	1	1	E	Welch Allyn Inc.	4802D-AX-XB	412490 Cart	33.50	23.50	46.50	851	597	1,181	63.0	28.6	F	110	1		60		Plug		Yes									6 D sized alkaline batteries. USP port.
05.0 Emergency	Triage and Waiting Area	05.01.03	Wheelchair Alcove	E146	0938410	WHEELCHAIR, ADULT	Seat width: 16". Seat depth: 16". Capacity: 250 lb. Swing away footrest, articulating elevating legrest. Casters: 8 x 1". Wheels: 24 x 1". Padded fixed full length arm.	1	2	E	Invacare	TREX2		28.25	31.88	34.00	718	810	864	43.0	19.6	F																	
05.0 Emergency	Triage and Waiting Area	05.01.04	Stretcher Alcove	E133	0929449	STRETCHER, ADULT	Capacity: 700 lb (318 kg). Dual pedestal hydraulics. Push handle at head end. Patient surface: 30x75.25" (762x1911 mm). 4" (102 mm) mattress. Height range: 20.75 - 34" (527 - 864 mm).	1	3	E	Stryker	1105	Prime Series	38.00	85.00	34.00	965	2,159	864			F	120	1		60		Plug										
05.0 Emergency	Treatment Area	05.01.05	Public Waiting	F012	0939567	CHAIR, STACKING, BARIATRIC	Side Chair with arms, Stacking. Grade-3 (Vinyl). 4 point base.	1	3	F	Spec Furniture	Snowball 2	1853	31.00	22.00	33.00	787	559	838			F																	
05.0 Emergency	Treatment Area	05.01.05	Public Waiting	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	9	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																
05.0 Emergency	Treatment Area	05.01.05	Public Waiting	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	2	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F																	
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E001	0938307	ARTICULATING ARM	Dual arm system; up to 102" (2600mm). Brake system: friction, Electro-pneumatic. Number of drawers per shelf: Max 4. Load capacity: 176lbs. Data module reorganization.	2	3	E	Trumpf Medical System	TruPort Booms		12.00	12.00	69.00	305	305	1,753	375.0	170.5	C																
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E014	0938615	CABINET, WARMING, UNDERCOUNTER	Includes embedding module with cryoconsole. 5 L paraffin reservoir, 6 wells heated forceps reservoir. Isolated cold spot adjacent to dispensing area for specimen manipulation and orientation.	1	1	E	Enthermics Medical Systems	EC350		18.50	23.50	28.00	470	597	711	91.0	41.4	F	120	1	6.7	60	1	Plug	5-15										NEMA 5-15P; 15A 125V Plug; Hospital Grade
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E015	0938320	CART, DIFFICULT INTUBATION	Cart with a minimum of five drawers of various heights. Lockable. Ball bearing slides. Solid poly handles. Framed bumper. Four 5" (127 mm) casters, one locking.	1	2	E	Acart Equipment Ltd.	MKT524		33.50	25.00	39.75	851	635	1,010	0.0	0.0	F																
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F																
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E020	0938326	CART, RESUSCITATION	Capacity: 300 lb (136.40 kg), approximate. 5 drawers: 2 - 3", 2 - 6", & 1 - 9". Lightweight polymer construction. Passive lock. Push handle. Four 5" (127 mm) casters, front with brakes.	1	2	E	Metro Cart	LECCRP3	Lifeline	37.99	22.64	45.50	965	575	1,156	215.0	97.7	F																
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E032	0938344	DEFIBRILLATOR	Biphasic waveform. Multiple energy selections. External apex/sternum paddles. ECG monitoring. LCD color display. Depth & rate CPR feedback.	1	1	E	Stryker	LIFEPAK 15		15.80	9.10	12.50	401	231	318	18.5	8.4	T																	Battery Operated: Lithium Ion AC or DC Power Adaptor for Battery Charging The AC Power Adapter operates with either 120 or 240 Vac line power. Data Transfer: Wired - Serial Port RS232 Communication Wireless - Bluetooth Technology provides connection to other Bluetooth enabled devices
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E047	0938618	HYPERTHERMIA UNIT	Unit can be used to maintain normothermia. Two airflow settings and hose-end temperature sensing. Three temperature sensors and adjustable airflow provide great heat transfer.	1	1	E	Bair Hugger	77500		14.00	13.00	13.00	356	330	330			F	110	1	11.7	60		Plug										
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	4	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes									Powered from main PC unit.
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	2	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150VA. Comm. port: RS-232 with an RJ45 connector.
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	2	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E057	0941910	IMAGING, STRETCHER, TRAUMA	Trauma Stretcher with 30° wide patient surface. Integrated transfer board, pneumatic backrest, and Glideaway siderails. Four (4) integrated IV receptacles, Oxygen tank holder, with x-ray capability. Weight capacity: 700 lbs. 8" (20cm) Omni surface casters with wheel covers.	1	3	E	Stryker Canada Inc	Prime X	Prime Series	30.50	85.00	36.50	775	2,159	927			F															
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	1	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60												
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single-head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	1	4	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60												
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E094	0938384	MONITOR, PHYSIOLOGICAL	To be mounted on articulating arm. 8 wave monitor incl.12L ECG,SpO2, Co2, ,Inv BPx2 ,temp, MMS server module.	1	3	E	Philips Healthcare	IntelliVue MX800		59.15	6.69	14.17	1,502	170	360	43.2	19.6	O	120	1		60	145	Plug		Yes									100-240V 50-60hz. Current: 0.9 to 1.9 A. Note: installation by vendor. Cat 6 cabling to central station by contractor. Wireless module to use hospital wireless infrastructure.
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VGZ2	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL														ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug										100 to 240v, 50 to 60hz.
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E121	0938537	SCOPE, VIDEO LARYNGOSCOPE	Image Processor, Video, Laryngoscopic Intubation	1	3	E	Verathon	AVL		8.86	3.15	7.48	225	80	190	2.2	1.0	O	110	1	2.5	60		Plug										100-240 VAC, 50-60hz 12v DC, 2.5 A max Battery Specifications: Battery type: Lithium-ion Battery life: Under normal operating conditions, a fully charged battery lasts approximately 90 minutes Charging time: Charging time off line will take no more than 6 hours from an empty battery to a full charge Rated capacity: 2150 mAh Nominal voltage: 7.2 V Max charging voltage: 8.4 V Nominal weight: 90 g (3.17 oz) Width:23 mm (0.9 in) Length: 391 mm (5.4 in) Thickness: 23 mm (0.9 in)
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E161	0943295	STAND, MAYO	Manually operated. Sled base. Height adjustable from 38 to 58" (965 to 1473 mm). Tray size: 19 x 13" (483 x 330 mm).	1	1	E	Imperial Surgical Company	3665		19.00	13.00	38.00	483	330	965	0.0	0.0	F															
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E157	0939150	TABLE, PREP	Mobile. Stainless steel. Flat top shelf. With lower shelf. Four 3" (76 mm) swivel casters.	1	1	E	Imperial Surgical Company	OR-3641D		36.00	20.00	34.00	914	508	864	70.0	31.8	F															
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E141	0938613	VENTILATION/BIPAP UNIT	W/ mobile stand. Includes standard & enhanced alarm package. W/ disposable bacteria filter, disposable circuit, support arm, humidifier and mount.	1	1	E	Philips Healthcare	V60		15.50	16.50	13.30	394	419	338	25.7	11.7	F	110	1		60	300	Plug										Battery is optional
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	T142	000T142-01	VENTILATOR, TRANSPORT		1	5	E		LTV 1200		10.50	13.50	3.25	267	343	83	14.5	6.6	O							Yes								AC adaptor input: 100-250 VAC, 60Hz. Battery option: 11-15 VDC.
05.0 Emergency	Treatment Area	05.02.01	Trauma / Resuscitation Room	E143	0935034	WARMER, BLOOD/FLUID	Blood/fluid warming unit. Flow rates: 150 ml to 30,000 ml/hr. Output temperatures: 33 to 41 deg C (91 to 106 deg F).	1	1	E	Augustine Medical, Inc	RANGER	24500	7.50	10.00	4.50	191	254	114	7.0	3.2	O	110	1		60	900	Plug										
05.0 Emergency	Treatment Area	05.02.02	Scrub Sink		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																												
05.0 Emergency	Treatment Area	05.02.03	Crash Cart Alcove	E020	0938326	CART, RESUSCITATION	Capacity: 300 lb (136.40 kg), approximate. 5 drawers: 2 - 3", 2 - 6", & 1 - 9". Lightweight polymer construction. Passive lock. Push handle. Four 5" (127 mm) casters, front with brakes.	1	2	E	Metro Cart	LECCRP3	Lifeline	37.99	22.64	45.50	965	575	1,156	215.0	97.7	F															
05.0 Emergency	Treatment Area	05.02.03	Crash Cart Alcove	E032	0938344	DEFIBRILLATOR	Biphasic waveform. Multiple energy selections. External apex/sternum paddles. ECG monitoring. LCD color display. Depth & rate CPR feedback.	1	1	E	Stryker	LIFEPAK 15		15.80	9.10	12.50	401	231	318	18.5	8.4	T															Battery Operated: Lithium Ion AC or DC Power Adaptor for Battery Charging The AC Power Adapter operates with either 120 or 240 Vac line power. Data Transfer: Wired - Serial Port RS232 Communication Wireless - Bluetooth Technology provides connection to other Bluetooth enabled devices
05.0 Emergency	Treatment Area	05.02.03	Crash Cart Alcove	T136	000T136-01	SUCTION MACHINE		1	5	E		Serres liner		12.99	6.30	12.40	330	160	315	8.8	4.0	O															Operating/Charging 100-240 VAC or 12-28 VDC NiMH + Sealed Lead-Acid Battery :12 VDC 2.0Ah
05.0 Emergency	Treatment Area	05.02.04	Quiet Room		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																												
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F															
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F															
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	2	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F															
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	2	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F															
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	2	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O							Yes								Powered from main PC unit.
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	2	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes							150VA. Comm. port: RS-232 with an RJ45 connector.
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	2	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F															
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	2	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60											
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	2	4	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60											
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E094	0938384	MONITOR, PHYSIOLOGICAL	To be mounted on articulating arm. 8 wave monitor incl.12L ECG,SpO2, Co2, ,Inv BPx2 ,temp, MMS server module.	2	3	E	Philips Healthcare	IntelliVue MX800		59.15	6.69	14.17	1,502	170	360	43.2	19.6	O	120	1		60	145	Plug		Yes							100-240V 50-60hz. Current: 0.9 to 1.9 A. Note: installation by vendor. Cat 6 cabling to central station by contractor. Wireless module to use hospital wireless infrastructure.
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	2	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HP24G4/VG22	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120					1,115	Plug		Yes							1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	2	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug										100 to 240v, 50 to 60hz.
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E133	0929449	STRETCHER, ADULT	Capacity: 700 lb (318 kg). Dual pedestal hydraulics. Push handle at head end. Patient surface: 30x75.25" (762x1911 mm). 4" (102 mm) mattress. Height range: 20.75 - 34" (527 - 864 mm).	2	3	E	Stryker	1105	Prime Series	38.00	85.00	34.00	965	2,159	864			F	120	1		60		Plug										
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E136	0937780	SUCTION MACHINE	Portable. Integrated vacuum regulator and handle. Includes canister and disposable liner. Canister capacity: 1200 ml. High vacuum/high flow.	1	1	E	Laerdal Medical Canada Ltd.	Laerdal Suction Unit	78003020/57151	13.00	6.30	12.40	330	160	315	8.8	4.0	O	115	1	5.0	60		Plug	5-15P								Operating/charging: 115 V or 12-28 VDC. 12 VDC lead/acid battery, 2 Ah, rechargeable battery. Power cord: 6 ft (1829 mm) long, approximate.
05.0 Emergency	Treatment Area	05.02.05	Exam/ Treatment Room (2)	E094	0938384	MONITOR, PHYSIOLOGICAL	To be mounted on articulating arm. 8 wave monitor incl.12L ECG,SpO2, Co2, ,Inv BPx2 ,temp, MMS server module.	2	3	E	Philips Healthcare	IntelliVue MX800		59.15	6.69	14.17	1,502	170	360	43.2	19.6	O	120	1		60	145	Plug		Yes							100-240V 50-60hz. Current: 0.9 to 1.9 A. Note: installation by vendor. Cat 6 cabling to central station by contractor. Wireless module to use hospital wireless infrastructure.
05.0 Emergency	Treatment Area	05.02.06	Isolation Ante Room	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F															
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F															
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F															
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F															
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	1	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F															
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E087	0938557	LIGHT, EXAM / TREATMENT, CEILING MOUNTED	12x13" (305x336 mm) single head LED exam light. Intensity: 51,200 LUX at 1 m. Total reach: 42" (1067 mm). Colour temperature: 4317 deg K.	1	4	E	Skytron	Spectra		71.00	0.00	124.00	1,803		3,150	35.8	16.3	C	110	1	0.4	60											
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E095	0938386	MONITOR, VITAL SIGNS, WALL-MOUNTED	NIBP,SpO2,temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection. Headwall rail mounted	1	3	E	Welch Allyn Inc.	Connex 6000 Series	64NTXX-B/4701-62	11.00	6.00	10.00	279	152	254	9.5	4.3	R	120		1.5	60		Plug		Yes							Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max.
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug										100 to 240v, 50 to 60hz.
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E161	0943295	STAND, MAYO	Manually operated. Sled base. Height adjustable from 38 to 58" (965 to 1473 mm). Tray size: 19 x 13" (483 x 330 mm).	1	1	E	Imperial Surgical Company	3665		19.00	13.00	38.00	483	330	965	0.0	0.0	F															
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E136	0937780	SUCTION MACHINE	Portable. Integrated vacuum regulator and handle. Includes canister and disposable liner. Canister capacity: 1200 ml. High vacuum/high flow.	1	1	E	Laerdal Medical Canada Ltd.	Laerdal Suction Unit	78003020/57151	13.00	6.30	12.40	330	160	315	8.8	4.0	O	115	1	5.0	60		Plug	5-15P								Operating/charging: 115 V or 12-28 VDC. 12 VDC lead/acid battery, 2 Ah, rechargeable battery. Power cord: 6 ft (1829 mm) long, approximate.
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E137	0938642	TABLE, EXAM	Power height adjustable: 18 to 37" (457 to 940 mm). Patient weight capacity: 400 lb (181.4 kg). Gas assist back section. Seamless upholstery top.	1	3	E	Ritter	222		30.00	76.70	37.00	762	1,948	940	375.0	170.5	F	115	1	5.0	60		Plug									
05.0 Emergency	Treatment Area	05.02.08	Procedure Room	E157	0939150	TABLE, PREP	Mobile. Stainless steel. Flat top shelf. With lower shelf. Four 3" (76 mm) swivel casters.	1	1	E	Imperial Surgical Company	OR-3641D		36.00	20.00	34.00	914	508	864	70.0	31.8	F															
05.0 Emergency	Treatment Area	05.02.09	IV Therapy	E018	0938324	CART, PHLEBOTOMY	3 drawers. Drawer divider. Side bin. Work surface on top w/ lip. Modular rail system for accessories. Sharps container. 5" (127mm) casters , two w/ brakes.	1	2	E	Market Lab Inc.	ML21491		23.25	20.50	34.25	591	521	870	0.0	0.0	F															
05.0 Emergency	Treatment Area	05.02.09	IV Therapy	E029	0938339	CHAIR, PHLEBOTOMY, BARIATRIC	Three position recliner w/ infinite back adjustments. Trendelenburg. Drop-down armrests. Locking casters. Two flip-up 11.5" W x 18" D side tables. Weight capacity: 450 lbs (204kg).	1	2	E	Winco Manufacturing	6540		36.25	44.00	49.00	921	1,118	1,245	111.0	50.4	F															
05.0 Emergency	Treatment Area	05.02.09	IV Therapy	E136	0937780	SUCTION MACHINE	Portable. Integrated vacuum regulator and handle. Includes canister and disposable liner. Canister capacity: 1200 ml. High vacuum/high flow.	1	1	E	Laerdal Medical Canada Ltd.	Laerdal Suction Unit	78003020/57151	13.00	6.30	12.40	330	160	315	8.8	4.0	O	115	1	5.0	60		Plug	5-15P								Operating/charging: 115 V or 12-28 VDC. 12 VDC lead/acid battery, 2 Ah, rechargeable battery. Power cord: 6 ft (1829 mm) long, approximate.
05.0 Emergency	Treatment Area	05.02.09	IV Therapy	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	2	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F															
05.0 Emergency	Treatment Area	05.02.11	Blanket Warmer (2)	E013	0938614	CABINET, WARMING	Plug-in model. Double compartment free standing. Total capacity 15.4 cu ft. Stainless steel casing and doors. Glass windows. Capacity: 40-50 Blankets	2	1	E	Enthermics Medical Systems	EC1540		24.00	32.50	72.75	610	826	1,848	374.0	170.0	F	120	1	16.0	60	2	Plug									
05.0 Emergency	Treatment Area	05.02.12	Cart Alcove (8)	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	6	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F															
05.0 Emergency	Treatment Area	05.02.12	Cart Alcove (8)	T036	000T036-01	ELECTROCARDIOGRAPH		1	5	E	GE Healthcare Clinical Systems	MAC 5500		38.10	35.10	9.40	968	892	239			O															
05.0 Emergency	Treatment Area	05.02.12	Cart Alcove (8)	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
05.0 Emergency	Treatment Area	05.02.13	Storage Alcove: Portable X-Ray	A009	0938547	ALLOWANCE, IMAGING, APRON'S	Individual radiation protection pieces; variable styles	1	1	E	Ultra Ray Inc.	ZZZ										O															
05.0 Emergency	Treatment Area	05.02.13	Storage Alcove: Portable X-Ray	E059	0933265	IMAGING, X-RAY UNIT, DIGITAL, MOBILE	Mobile. Radiographic X-ray system. Wireless connectivity from detector to system. Fully digital with flashpad digital detector. 360 deg turn with one hand. 2 touch-screen displays. Battery operated.	1	3	E	Carestream Health Canada	DRX-Revolution		22.70	48.00	77.00	577	1,219	1,956	1,268.0	576.4	F	120	1		60		Plug		Yes							Battery operated. Lead acid. 12 Amp-hr energy capacity. Generator power rating: 32 kW at 100 kvp.
05.0 Emergency	Treatment Area	05.02.13	Storage Alcove: Portable X-Ray	E102	0938574	RACK, APRON, WALL MOUNTED	Wall mounted rack to accommodate up to 4 agrons. 8 pegs. High tensile aluminum construction.	1	2	E	Bar-Ray Products, Inc.	60081		20.00	4.75	3.00	508	121	76	12.0	5.5	W															
05.0 Emergency	Treatment Area	05.02.15	Clinical Workstation, Nursing Station (2)	F047	0941891	CABINET, STORAGE	Laminate finish. Four adjustable shelves. Lockable.	1	3	F	Global Furniture	Zira		36.00	24.00	66.00	914	610	1,676	0.0	0.0	F															
05.0 Emergency	Treatment Area	05.02.15	Clinical Workstation, Nursing Station (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F															
05.0 Emergency	Treatment Area	05.02.15	Clinical Workstation, Nursing Station (2)	E063	0938505	LAB ANALYZER, GLUCOSE, POC	Battery-powered unit for blood glucose monitoring, with base charging unit. Handheld. Integrated barcode scanner. Fully automated testing procedure.	2	1	E	Roche Diagnostics	Acc-Chek Inform II	Cobas	3.74	7.60	1.73	95	193	44	0.7	0.4	O	115	1	1.7	60		Plug		Yes							Input voltage:+ 7.5 V DC Input frequency: DC Input current:1.7 A (max) Lithium-ion rechargeable battery.
05.0 Emergency	Treatment Area	05.02.15	Clinical Workstation, Nursing Station (2)	E093	0939180	MONITOR, CENTRAL STATION	32 channels for patient central monitoring w/dual displays, two-channel recorder/rack, laser printer, telemetry. 96 hour full disclosure 19" (533 mm) flat panel colour touch displays w/desk top mount.	1	3	E	Philips Healthcare	Center iX	INTELLIVUE INFO	60.00	7.60	16.70	1,524	193	424	19.4	8.8	T	120	1	15.0	60	125	Plug		Yes							15 Amp dedicated quad outlet within 3' of the rear of unit(s). twork Requirements: Ethernet 10/100 base T outlet within only 3' of the rear of the computer(s). All network drops are to be Category 5e or higher certified. Input voltages - Processing unit: 100 - 127 VAC, 50 - 60 Hz, 125 Watts maximum. Dual flat screen display (each unit): 81 - 264 VAC, 48 - 62 Hz, 1 Amp. 2-channel recorder: 60 VDC, 26 Watts maximum. 2-channel recorder power supply: 100 - 240V, 50/60Hz, 72 Watts max. Laser printer: 100 - 127 VAC, 50 - 60 Hz, 72 Watts maximum.

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																		ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
05.0 Emergency	Treatment Area	05.02.16	Physician Workstation	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																			
05.0 Emergency	Treatment Area	05.02.17	Medical Student/ Resident Workstation	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																			
05.0 Emergency	Treatment Area	05.02.17	Medical Student/ Resident Workstation	F016	0940213	DESK, HEIGHT ADJUSTABLE, W/ STORAGE	Electric Height Adjustable Table. Ranges 22.6" to 48.6" in height. Laminate Top. With Mobile Box/ File Pedestal	1	3	F	Globalcare	PH3T3060	FOLI	58.00	29.00	48.60	1,473	737	1,234	129.6	58.9	F	120	1		60		Plug											Single motor hex rod drive system 0.5 W power draw when not in use
05.0 Emergency	Treatment Area	05.02.18	Business Centre	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																			
05.0 Emergency	Treatment Area	05.02.18	Business Centre	F028	0942613	TABLE, RECTANGLE	Rectangular Table, 36"x72", Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWP532	72.00	36.00	30.00	1,829	914	762			F																		
05.0 Emergency	Treatment Area	05.02.19	Report Room	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	6	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																			
05.0 Emergency	Treatment Area	05.02.19	Report Room	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	6	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																		
05.0 Emergency	Treatment Area	05.02.19	Report Room	E171	0943479	MONITOR, VIEWING STATION, PACS	A picture archiving and communication system (PACS) for radiology	1	3	E	Barco Coronis Fusion (diagnostic monitor)	MDCC6530/HPZ4G4/VGZ2	Coronis Fusion	71.30	17.50	24.60	1,811	445	625			T	120				1,115	Plug		Yes									1 data drop required. Electrical requirements based on the system setup: Plug required for each computer CPU and computer monitor
05.0 Emergency	Treatment Area	05.02.20	Patient Nutrition Station	E098	0929581	OVEN, MICROWAVE	Countertop. Domestic. Capacity: 1.1 cu ft (31.15 L). Turntable cooking system. 10 power levels.	1	4	E	General Electric Appliances	PEM10WFC		24.00	13.31	12.00	610	338	305	33.0	15.0	T	120		11.5	60	1,300	Plug											Grounded 3 prong plug. Electrical input @ 120V: 11.50 Amp.
05.0 Emergency	Treatment Area	05.02.20	Patient Nutrition Station	E111	0938580	REFRIGERATOR, UPRIGHT	11 cu ft (312 L) all refrigerator. Reversible door hinge.	1	2	E	Danby Products, North America	DAR110A1BSLDD		23.93	26.06	58.75	608	662	1,492	142.2	64.6	F	110	1	15.0	60		Plug											
05.0 Emergency	Clinical and Non-Clinical Support	05.02.21	Linen Alcove (2)	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	2	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	E031	0931485	CONTAINER, SHARPS	Wall mounted. Capacity: 3.1 L (3.28 quart). Funnel-shaped opening with safety neck. Yellow inner liner. Clear top. Secure cap closure for safe transport.	1	2	E	Kendall Canada Inc.	300450/305475		6.00	6.00	11.50	152	152	292	7.0	3.2	W																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	E153	0939903	LIGHT, MAGNIFIER	Wall mount clamp. 30" clamp base, flexible gooseneck arm. 22 watt fluorescent bulb.	1	2	E	Dazor Mfg. Corp.	LMC-150-ES-5		0.00	0.00	0.00				6.0	2.7	O	100	1		60	15	Plug		No										
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	E090	0943657	MEDICATION DISPENSING SYSTEM	6 Drawer Main Unit + 7 Drawer Auxiliary + Single Column Auxiliary + Barcode scanner.	1	3	E	Becton Dickinson	Pyxis ES		84.80	28.00	79.50	2,154	711	2,019	0.0	0.0	F	115	1	3.0	60		Plug		Yes									
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	E156	0942974	RECEPTACLE	CSRX - 3.8 L Container with wall-mounted bracket	1	2	E	Stericycle	CsRx		9.09	5.31	8.50	231	135	216			W																	
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	E110	0940636	REFRIGERATOR, PHARMACY, UNDERCOUNTER	Medical-Grade pharmacy refrigerator feature ventilated, pull-out pharmacy drawers and ventilated shelves for secure storage requiring safe cold storage.	1	2	E	Helmer Labs Inc.	HPR105-GX		24.00	26.70	31.50	610	678	800	182.0	82.6	F	115			69		Plug										220-240v 50-60hz
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	E165	0942979	REFRIGERATOR, UPRIGHT, PHARMACY	Shelf Weight Capacity of 100 lbs max. 13 Cu.Ft capacity	1	2	E	Becton Dickinson	Pyxis Full		24.25	29.50	70.50	616	749	1,791	363.0	164.7	F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.01	Medication Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.02	Clean Utility/ Supply Room	E149	0941431	CART, SUPPLY	Parwall Unit 36" W, 6 Baskets, (4) 12" Fine Mesh, (3) 18" Dividers, Single-sided. Comes with Caster and label Holder. !!!	8	2	E	Acart Equipment Ltd.	ParWall36M	Par Wall	36.00	26.00	78.00	914	660	1,981			F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	A010	0943652	ALLOWANCE, BP CUFFS	Allowance for several sizes of BP cuffs	1	1	A	ZZZ - Generic Descriptions	zzz										X																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E149	0941431	CART, SUPPLY	Parwall Unit 36" W, 6 Baskets, (4) 12" Fine Mesh, (3) 18" Dividers, Single-sided. Comes with Caster and label Holder. !!!	1	2	E	Acart Equipment Ltd.	ParWall36M	Par Wall	36.00	26.00	78.00	914	660	1,981			F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E034	0938351	DOPPLER, FETAL PULSE DETECTOR	Fetal pocket doppler. Integral probe protection and storage. Waterproof 2MHz probe. Built-in loudspeaker. Obstetrical application.	1	1	E	Huntleigh Diagnostics	Sonicaid FD2		2.91	1.06	5.51	74	27	140	0.7	0.3	X																Runs on rechargeable 9V battery
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E035	0938352	DOPPLER, FLOW DETECTOR	With cart. 32 channels. Includes 19" monitor, isolated power supply, cart mounted day/night camera, and software.	1	1	E	Natus Nerology	Nicolet ELITE200R		26.00	0.00	48.75	660		1,238	11.9	5.4	F	110	1		60		Plug		No									Rechargeable Battery.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	T048	000T048-01	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	T048	000T048-02	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	T048	000T048-03	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	T048	000T048-04	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	2	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150VA. Comm. port: RS-232 with an RJ45 connector.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E101	0938572	I.V. INFUSION PUMP, SYRINGE	Large display, 45 deg clamp; Minimizes loss of nutrients. Max purge rate: 500ml/h. Pumping pressure limits: 11 levels. Audible alarms, warning and prompts.	3	1	E	CareFusion	Alaris Enteral		12.20	7.87	4.76	310	200	121	6.0	2.7	O	115	1		60	20	Plug										Rechargeable sealed NiMH. Automatically charges when pump is connected to AC power.
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	4	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	T058	000T058-01	IMAGING, ULTRASOUND SYSTEM		1	5	E		LOGIQ e		21.30	20.10	44.50	541	511	1,130	78.6	35.7	F	120	1		60		Plug		Yes									Console 120V, 60Hz, max 130VA Data connection: USB 2.0 (3), LAN 10/100/1000 BASeT, docking cart connector, HDMI Isolation cart 3 probe port (optional)
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E084	0944413	LIFTER, PATIENT	Lifting capacity: Safe working load of 227 kg (500 lb). Dual controls: Mast or with the Hand Control. Includes Scale. Low friction castors, the rear two with brakes. Includes Slings.	1	1	E	Arjo	Maxi 500		4.25	4.49	7.95	108	114	202	116.5	52.8	F	120			60		Plug										Battery charger input: 100 to 240 VAC / 50-60 Hz / 50VA Battery charger output: 24 Vdc, 1A, 24VA Battery Type: 24V, 4Ah Rechargeable (Sealed Lead-Acid)
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E088	0943796	LIGHT, EXAM/TREATMENT, MOBILE	Mobile. Single LED light head, Pattern size (d10) at 1 m: 16.0 cm (6.3"). Color temperature (K): 4,500. 80,000 Lux. CRI: 95. Size of light head: 300mm (11.81").	1		E	Trumpf	TruLight 1000IM								5.3	2.4	F	110	1		60		Hard										Power pack supply voltage DC-DC box: 24 V DC (+/- 10%) Maximum power consumption of total system: 50 VA Maximum thermal load of the light head: 20 W
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F																Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E115	0938589	SAW, PLASTER	Includes integral dust collector, CastVac with 8 ft. hose and Mobile Stand (for use with 940, 840, and 848 Cast Cutters)	1	1	E	Stryker	940 Cast Removal Sys		20.00	20.00	34.50	508	508	876			O	120	1	8.5	60		Plug			120	1	1.5	60		Plug			Power cord for vacuum: 12 ft (3.7 m).
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E120	0939202	SCANNER, BLADDER	The unit includes probe, Display 1280 x 800 pixels, Battery type Lithium Ion (Li-Ion)	1	3	E	Verathon Medical Canada	0270-0959 Prime Plus		8.94	10.20	4.92	227	259	125	3.9	1.8	F	120	1	1.4	60		Plug		No									Input voltage 24 V DC Input frequency DC Input current 2.5 A Input connection 2.5 mm (0.1 in), center positive Output 18 V DC max, 4 A max Insulation Protection Class III Fuses No user replaceable fuses Input Verathon® Supplied Battery, 11.1 V DC Output USB Ports, 5 V DC at 100 mA maximum from each port Insulation Type BF
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E123	0941177	SHELVING, METAL	Solid 18-guage steel shelving. Weight load capacity: 48" shelf (800 lbs), 60" (600 lbs), 72" (300 lbs). Shelves adjusted in 1" intervals along post. Adjustable levelling legs.	3	2	E	Metro	1842FS		42.00	18.00	74.00	1,067	457	1,880	18.0	8.2	F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F																
05.0 Emergency	Clinical and Non-Clinical Support	05.03.03	Equipment Storage	E141	0938613	VENTILATION/BIPAP UNIT	W/ mobile stand. Includes standard & enhanced alarm package. W/ disposable bacteria filter, disposable circuit, support arm, humidifier and mount.	2	1	E	Philips Healthcare	V60		15.50	16.50	13.30	394	419	338	25.7	11.7	F	110	1		60	300	Plug										Battery is optional
05.0 Emergency	Clinical and Non-Clinical Support	05.03.04	Soiled Utility Room	E033	0943794	DISPOSAL SYSTEM, MACERATOR	Macerator. Stainless steel grade 304. Pulverises pulps by advanced blade technology. Discharged directly into the main sewage system. Disposing 4 pulp utensils/ Cycle. Cycle from 85 seconds. Contactless operation. Graphical user interface. Pre- & post self cleaning. Uses cold water. Includes deodoriser.	1	3	E	Bowers Medical Sygply	Dolphin 7920		19.69	55.24	24.49	500	1,403	622	218.3	99.0	F	110	1		60		Plug		No								With dedicated 15A breaker (minimum)
05.0 Emergency	Clinical and Non-Clinical Support	05.03.04	Soiled Utility Room	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																
05.0 Emergency	Decontamination and RCMP / EMS Workroom	05.03.05	Housekeeping Room	A001	0940446	ALLOWANCE, HOUSEKEEPING	toilet bowl swab and caddy; putty knife; safety goggles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE	1	2	A		Generic										X																
05.0 Emergency	Decontamination and RCMP / EMS Workroom	05.03.05	Housekeeping Room	E016	0938321	CART, HOUSEKEEPING	Microfibre cart. 7.25 cu ft of locking cabinet area. 5 cu ft of storage space. Secure cabinet doors, interchangeable handles. 8" wheels and 4" casters. Locking security hood. Includes 24gal vinyl bag	1	2	E	Rubbermaid	FG9T7500BLA		22.00	48.25	53.50	559	1,226	1,359	70.0	31.8	F																
05.0 Emergency	Decontamination and RCMP / EMS Workroom	05.03.05	Housekeeping Room	E123	0941177	SHELVING, METAL	Solid 18-guage steel shelving. Weight load capacity: 48" shelf (800 lbs), 60" (600 lbs), 72" (300 lbs). Shelves adjusted in 1" intervals along post. Adjustable levelling legs.	1	2	E	Metro	1842FS		42.00	18.00	74.00	1,067	457	1,880	18.0	8.2	F																
05.0 Emergency	Decontamination and RCMP / EMS Workroom	05.04.01	Decontamination Room		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																															
05.0 Emergency	Staff Support	05.04.02	RCMP/ BCEMS Workstation	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																			
05.0 Emergency	Staff Support	05.04.02	RCMP/ BCEMS Workstation	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TSSARS3060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug											Integrated power and data in desks and tables
05.0 Emergency	Ambulance Bay	05.05.01	Sleep Room	F036	0940058	BED, SINGLE	All laminate. Accommodate mattress size 36x80. Mattress is not included.	1	3	F	Stance Healthcare	SPB-8036-R	Royale	38.25	82.00	30.00	972	2,083	762	220.0	100.0	F																
05.0 Emergency	Ambulance Bay	05.05.01	Sleep Room	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	1	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F																
05.0 Emergency	Ambulance Bay	05.05.01	Sleep Room	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	1	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F																
05.0 Emergency	Ambulance Bay	05.05.01	Sleep Room	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																			
05.0 Emergency	Ambulance Bay	05.05.01	Sleep Room	F020	0939671	DESK, 48"X24"	Freestanding desk full gables, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F																		
05.0 Emergency	Ambulance Bay	05.05.01	Sleep Room	F037	0943388	LAMP, TABLE	Knob switch. Warm white emitting colour. Base diameter: 5.91" (150 mm). LED bulb.	1	3	F	Nordic Nest	Designer Classic	466674237	7.09	0.00	12.99	180		330	7.7	3.5	T	120	1		60		Plug										
05.0 Emergency	Inpatient Areas	05.06.01	Ambulance Bay		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1	2	E																													
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E004	0943719	BED, ELECTRIC	Adaptive Bed Alarm, ability to Adjust Sensitivity Based on Siderail Configuration. Bed status check with iBed® Watch. Connect to the nurse call system without any cable. Patient-Centric clinical dashboard. Prevent falls with bed exit alarm. Maximum patient weight : 500lb	6	3	E	Stryker Canada Inc	ProCuity 3009 LEX		41.50	102.01	30.00	1,054	2,591	762			F	120	1	8.0	60		Plug										
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	6	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F																
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	F007	0939677	CHAIR, PATIENT, HIGH BACK	Upholstered seat and back (vinyl or equivalent). Metal frame. Plastic arm caps. Non-marking glides. Weight Capacity: 500 lbs.	6	3	F	Globalcare	GC3655	PRIMACARE HT	25.00	27.01	48.50	635	686	1,232	62.1	28.2	F																
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	F011	0939548	CHAIR, SLEEPER	Side Sleeper. Grade 4 vinyl, laminate front, vinyl arms. Full width of 80"	6	3	F	Stance Healthcare Inc.	Oasis	SL800	46.00	30.00	35.50	1,168	762	902	240.0	109.1	F																

Appendix 1B(II): Furniture and Equipment List

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	6	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T048	000T048-05	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T048	000T048-06	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T048	000T048-07	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T048	000T048-08	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T048	000T048-09	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T048	000T048-10	I.V. INFUSION PUMP MODULE		1	5	E		Alaris 8100		3.30	8.90	5.50	84	226	140	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T049	000T049-01	I.V. INFUSION PUMP, CONTROLLER		1	5	E		Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150 VA max. Communication Data port : RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T049	000T049-02	I.V. INFUSION PUMP, CONTROLLER		1	5	E		Alaris 8105		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150 VA max. Communication Data port : RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T049	000T049-03	I.V. INFUSION PUMP, CONTROLLER		1	5	E		Alaris 8105		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150 VA max. Communication Data port : RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T049	000T049-04	I.V. INFUSION PUMP, CONTROLLER		1	5	E		Alaris 8105		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150 VA max. Communication Data port : RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T049	000T049-05	I.V. INFUSION PUMP, CONTROLLER		1	5	E		Alaris		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150 VA max. Communication Data port : RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T049	000T049-06	I.V. INFUSION PUMP, CONTROLLER		1	5	E		Alaris 8105		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150 VA max. Communication Data port : RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	6	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	6	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60													
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E095	0938386	MONITOR, VITAL SIGNS, WALL-MOUNTED	NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection. Headwall rail mounted	6	3	E	Welch Allyn Inc.	Connex 6000 Series	64NTXX-B/4701-62	11.00	6.00	10.00	279	152	254	9.5	4.3	R	120		1.5	60		Plug		Yes									Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	6	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug											100 to 240v, 50 to 60hz.
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E169	0938632	SAFE	Steel battery operated electronic lock with mechanical override key. Anchor hole to secure safe to wall/floor. 0.4 cu.ft capacity.	6	2	E	Mesa Safe	MH101E-KA		15.00	10.00	7.00	381	254	178	25.0	11.3	T																	
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	E162	0937526	SPHYGMOMANOMETER, ANEROID, WALL MOUNT	Wall mounted. Blood pressure aneroid, re-usable one-piece adult cuff	6	1	E	Welch Allyn Inc.	7670-01		6.00	4.00	6.00	159	110	159	1.3	0.6	W																	
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T027	000T027-01	TABLE, OVERBED		1	5	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	T027	000T027-02	TABLE, OVERBED		1	5	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.01	Medical Inpatient Bedroom (6)	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	4	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.02	Medical Inpatient Washroom (6)	E168	0939593	CHAIR, COMMODE/SHOWER	All wheeled chair with padded armrest and backrest. Supplied with commode pan and four braked casters. Aluminum frame. 300lb capacity. Height: floor to seat 21", seat to arm 6".	6	2	E	Performance Health	Homecraft Ocean	565850	18.00	16.00	38.00	457	406	965	10.5	4.8	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.03	Isolation Ante Room	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E005	0938311	BED, ELECTRIC, BARIATRIC	With bed exit alarm, integrated scale, foam mattress. Weight capacity: 1050 lb. Expandable bed frame. Height range: 18.70 to 33.70" (47.50 to 85.60 cm).	1	3	E	Stryker Canada Inc	Bari10A	2230	52.00	98.00	33.70	1,321	2,489	856	700.0	318.2	F	115	1	5.8	60		Plug		Yes									
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	1	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	F008	0940191	CHAIR, PATIENT, HIGH BACK, BARIATRIC	Upholstered seat and back (vinyl or equivalent). Metal frame. Plastic arm caps. Non-marking glides. Weight Capacity: 500 lbs.	1	3	F	Globalcare	GC3656	PRIMACARE HT	35.00	27.00	48.50	889	686	1,232	62.0	28.2	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	F011	0939548	CHAIR, SLEEPER	Side Sleeper. Grade 4 vinyl, laminate front, vinyl arms. Full width of 80"	1	3	F	Stance Healthcare Inc.	Oasis	SL800	46.00	30.00	35.50	1,168	762	902	240.0	109.1	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	1	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	1	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150VA. Comm. port: RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	1	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E086	0938553	LIFTER, PATIENT, CEILING MOUNTED, BARIATRIC	Lift motor only. Compatible track by contractor. Weight capacity: up to 825 lbs. To include 1 bariatric sling.	1	4	E	Guldmann	GH3+		22.80	7.20	98.40	579	183	2,499	31.0	14.1	C	115	1	2.5	60		Plug											Battery: 2 x 24 V NiMH, 2.0 Ah
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E095	0938386	MONITOR, VITAL SIGNS, WALL-MOUNTED	NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection. Headwall rail mounted	1	3	E	Welch Allyn Inc.	Connex 6000 Series	64NTXX-B/4701-62	11.00	6.00	10.00	279	152	254	9.5	4.3	R	120		1.5	60		Plug		Yes									Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max.
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E097	0938569	OPHTHALMOSCOPE/ OTOSCOPE, WALL MOUNTED	Wall mounted or to be mounted on separate support system. Wall transformer, w/ 2 heads, 2 handles, 2 coiled cords, specula dispenser with integral storage compartment, Sphygmomanometer and power cord.	1	1	E	Welch Allyn Inc.	Green Series 777	77792-M	33.98	3.98	11.97	863	101	304	28.0	12.7	W	120			60		Plug											100 to 240v, 50 to 60hz.
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E169	0938632	SAFE	Steel battery operated electronic lock with mechanical override key. Anchor hole to secure safe to wall/floor. 0.4 cu.ft capacity.	1	2	E	Mesa Safe	MH101E-KA		15.00	10.00	7.00	381	254	178	25.0	11.3	T																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	E162	0937526	SPHYGMOMANOMETER, ANEROID, WALL MOUNT	Wall mounted. Blood pressure aneroid, re-usable one-piece adult cuff	1	1	E	Welch Allyn Inc.	7670-01		6.00	4.00	6.00	159	110	159	1.3	0.6	W																	
06.0 Medical Inpatient	Inpatient Areas	06.01.04	Medical Inpatient Bedroom (Bariatric)	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	1	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.06	Charting Area (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.07	Family Lounge	F005	0939569	CHAIR, LOUNGE, 1 SEAT	Fully upholstered in grade 3 vinyl integrated arms. 4 star swivel base.	4	3	F	Herman Miller	NOALN251	Always	31.00	31.50	36.50	787	800	927			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.07	Family Lounge	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	1	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.07	Family Lounge	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	2	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E004	0943719	BED, ELECTRIC	Adaptive Bed Alarm, ability to Adjust Sensitivity Based on Siderail Configuration. Bed status check with iBed® Watch. Connect to the nurse call system without any cable. Patient-Centric clinical dashboard. Prevent falls with bed exit alarm. Maximum patient weight: 500lb	1	3	E	Stryker Canada Inc	ProCuity 3009 LEX		41.50	102.01	30.00	1,054	2,591	762			F	120	1	8.0	60		Plug											
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	1	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	F007	0939677	CHAIR, PATIENT, HIGH BACK	Upholstered seat and back (vinyl or equivalent). Metal frame. Plastic arm caps. Non-marking glides. Weight Capacity: 500 lbs.	1	3	F	Globalcare	GC3655	PRIMACARE HT	25.00	27.01	48.50	635	686	1,232	62.1	28.2	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	F011	0939548	CHAIR, SLEEPER	Side Sleeper. Grade 4 vinyl, laminate front, vinyl arms. Full width of 80"	1	3	F	Stance Healthcare Inc.	Oasis	SL800	46.00	30.00	35.50	1,168	762	902	240.0	109.1	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E172	0939210	DIAGNOSTIC SYSTEM	Wall-mounted. Integrated diagnostic system includes BP monitor, ophthalmoscope/otoscope, disposable specula dispenser, thermometer, wall board and 1 adult cuff.	1	2	E	Welch Allyn Inc.	77791-MX	Green Series	34.00	5.00	12.00	864	127	305	27.8	12.6	W	115	1		60		Plug											Power supply: incoming: 0.18 A maximum. outgoing: 5V, 1A. Transformer: incoming: 5V, 1A. outgoing: 5V, 0.5A. Thermometer: Three 1.5 Vdc AA batteries.
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	1	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes									Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	1	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes									150VA. Comm. port: RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	1	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	1	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60													
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E095	0938386	MONITOR, VITAL SIGNS, WALL-MOUNTED	NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection. Headwall rail mounted	1	3	E	Welch Allyn Inc.	Connex 6000 Series	64NTXX-B/4701-62	11.00	6.00	10.00	279	152	254	9.5	4.3	R	120		1.5	60		Plug		Yes									Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max.
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	E169	0938632	SAFE	Steel battery operated electronic lock with mechanical override key. Anchor hole to secure safe to wall/floor. 0.4 cu.ft capacity.	1	2	E	Mesa Safe	MH101E-KA		15.00	10.00	7.00	381	254	178	25.0	11.3	T																	
06.0 Medical Inpatient	Inpatient Areas	06.01.09	Palliative Care Bedroom	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	1	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.11	Palliative Care Family Lounge	F011	0939548	CHAIR, SLEEPER	Side Sleeper. Grade 4 vinyl, laminate front, vinyl arms. Full width of 80"	2	3	F	Stance Healthcare Inc.	Oasis	SL800	46.00	30.00	35.50	1,168	762	902	240.0	109.1	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.11	Palliative Care Family Lounge	F013	0939685	CHAIR, STACKING, PLASTIC	Stacking Chair With Arms. Weight Capacity: 300. Polymer shell and frame.	6	3	F	Globalcare	6750	BAKHITA	22.50	21.00	31.50	572	533	800	12.0	5.5	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.11	Palliative Care Family Lounge	E098	0929581	OVEN, MICROWAVE	Countertop. Domestic. Capacity: 1.1 cu ft (31.15 L). Turntable cooking system. 10 power levels.	1	4	E	General Electric Appliances	PEM10WFC		24.00	13.31	12.00	610	338	305	33.0	15.0	T	120	1	11.5	60	1,300	Plug											Grounded 3 prong plug. Electrical input @ 120V: 11.50 Amp.
06.0 Medical Inpatient	Inpatient Areas	06.01.11	Palliative Care Family Lounge	E111	0938580	REFRIGERATOR, UPRIGHT	11 cu ft (312 L) all refrigerator. Reversible door hinge.	1	2	E	Danby Products, North America	DAR110A1BSLDD		23.93	26.06	58.75	608	662	1,492	142.2	64.6	F	110	1	15.0	60		Plug											
06.0 Medical Inpatient	Inpatient Areas	06.01.11	Palliative Care Family Lounge	F024	0942615	TABLE, COFFEE, ROUND	Round Table, 36"D, Laminate top, disc base.	2	3	F	Global Furniture	Swap Tables	SWP501	24.00	0.00	22.00	610		559			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.11	Palliative Care Family Lounge	F030	0939739	TABLE, SQUARE	Square table with X base. Laminate top.	1	3	F	Spec Furniture	36X36SQMNX	MANHATTAN	36.00	36.00	29.00	914	914	737			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E002	0938308	BASSINET, INFANT	Stainless steel. Modular tubular frame. Clear PVC infant basket with card holder. Includes mattress. Four 3" (76.2 mm) non-marking casters, 2 swivel and 2 with brakes.	1	1	E	Imperial Surgical Company	PH-2655/2657/2659		33.00	17.00	42.75	838	432	1,086	70.0	31.8	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	T003	000T003-01	BED, BIRTHING		1	5	E	Stryker Canada Inc	LD304		39.00	93.00	35.50	991	2,362	902	460.0	208.7	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E154	0939912	BLANKET, BILI	Blanket phototherapy system. LED and fiberoptic based. Includes 1 small and 1 large fiberoptic pads and stand. Fiberoptic cable length: 53.94" (1370 mm). Includes mounting bracket.	1	1	E	General Electric Healthcare	BiliSoft 2.0		6.50	6.85	8.26	165	174	210	7.9	3.6	O	120	1	0.8	60		Plug											Leakage touch current: Allowable values are 100 µA in normal condition and 500 µA in single fault condition @ 264 V~
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	1	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	F010	0940209	CHAIR, ROCKER	Upholstered seat and back with clean out design. Solid maple frame.. Wall saver edge.	1	3	F	Nemschoff Chairs, Inc.	288-60	Avery Rocker	25.25	35.00	40.50	641	889	1,029	32.0	14.6	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	F011	0939548	CHAIR, SLEEPER	Side Sleeper. Grade 4 vinyl, laminate front, vinyl arms. Full width of 80"	1	3	F	Stance Healthcare Inc.	Oasis	SL800	46.00	30.00	35.50	1,168	762	902	240.0	109.1	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	1	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E034	0938351	DOPPLER, FETAL PULSE DETECTOR	Fetal pocket doppler. Integral probe protection and storage. Waterproof 2MHz probe. Built-in loudspeaker. Obstetrical application.	1	1	E	Huntleigh Diagnostics	Sonicaid FD2		2.91	1.06	5.51	74	27	140	0.7	0.3	X																	Runs on rechargeable 9V battery
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E045	0938357	HAMPER, LINEN	Chrome Hamper Stand with Foot Pedal and Poly Coated Steel Lid. Includes hamper bag storage pouch. Supports 36-42 gallon bags and nylon hamper bag.	1	2	E	Global Industrial	T9F436911		19.00	19.50	38.00	483	495	965	22.0	10.0	F																	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E048	0938359	I.V. INFUSION PUMP MODULE	Module for IV infusion system. LCD displays the drug or IV infusion fluid name, dose and rate. Indicator lights to display channel status.	2	1	E	Becton Dickinson	Alaris 8100		3.30	5.50	8.90	84	140	226	2.5	1.1	O								Yes									Powered from main PC unit.

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL															ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E049	0938360	I.V. INFUSION PUMP, CONTROLLER	Main control unit, support up to four infusion modules. Colour programming screen, displays drug or IV fluid name, dose or rate and volume infused.	1	1	E	Becton Dickinson	Alaris 8015		6.90	9.00	8.80	175	229	224	7.2	3.3	O	120	1		60		Plug		Yes								150VA. Comm. port: RS-232 with an RJ45 connector.
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E050	0938361	I.V. INFUSION PUMP, P.C.A.	PCA module for BD Carefusion IV infusion system. Ability to automatically pause the PCA infusion and deactivate dose request.	1	1	E	Becton Dickinson	Alaris 8120		4.50	7.50	15.00	114	191	381	5.5	2.5	O															Powered from main PC unit.
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E052	0938395	I.V. STAND, ERGONOMIC, HEIGHT ADJ. HOOK	Five legged. 25" (635 mm) diameter cast aluminum base. With urinary drainage bag hook and 4 detachable ram's horn hooks. Height adjustable: 52.25 to 92.75" (1,327 to 2,356 mm).	1	1	E	Brewer Co. Quality Health Care Eq	11360		25.00	0.00	92.75	635		2,356	45.0	20.5	F															
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	T060	000T060-01	INCUBATOR, TRANSPORT, SYSTEM		1	5	E		TI500/147 Stand		22.30	40.30	44.00	566	1,024	1,118	159.0	72.3	F	120	1		60		Plug										DC power requirements : 11-13 V, 200 W (max) Baterry 12 Vdc, 24 AH gel-type battery (lead acid) Observation lamp 35 footcandles - 4 inches above mattress 376 lux - 10 cm above mattress
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	1	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60											
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E092	0938383	MONITOR, FETAL	Measure up to three fetal heart rates, uterine activity and intrauterine pressure. ECG waveform display. Blood pressure and oximetry. Touchscreen. Recorder. Mobile with accessory cart	1	3	E	Philips Healthcare	Avalon FM50		16.50	14.60	6.80	419	371	173	19.8	9.0	O	120		1.3	50				Yes								100 VAC to 240 VAC +/- 10% 50-60hz Requires 2 data connections
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E100	0938388	PUMP, BREAST	With stand and battery. Microprocessor controlled with infinitely adjustable suction levels and cycle speeds. Piston driven. Bottle holders. Variable suction: 0 to 250 mmHg.	1	1	E	Egnell-Ameda Medical Inc.	ELITE		10.00	9.00	7.00	254	229	178	6.4	2.9	F	120	1	1.6	60		Plug		No								30 VA. Battery: NiCad 0.7 Ah. 9' power cord
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E109	0938579	REFRIGERATOR, UNDERCOUNTER	Refrigerator capacity: 4.4 cu. ft. Single door. Reversible door swing. Adjustable glass shelf.	1	2	E	Danby Products, North America	DAR044A4BSLDD		20.68	21.06	33.03	525	535	839	72.5	33.0	F	110	1		60		Plug									
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	T118	000T118-01	SCALE, INFANT W/CART		1	5	E		354		217.00	13.10	6.10	5,512	333	155	5.0	2.3	F															POWER SUPPLY :BATTERIES
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E131	0938397	STOOL, EXAM	5-legged, poly-foam seat cushion stool, w/ backrest. 18" adjustable chrome foot ring. Height adjustment: 20" - 27.5". Chrome hooded dual-wheel casters. Weight capacity: 250lbs.	1	1	E	Cardinal Health Canada	C1101B		23.00	0.00	27.50	584		699	0.0	0.0	F															
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E132	0938398	STOOL, STEP	Chrome construction. Non-slip rubber mat and rubber tips. Handrail that measures 35-3/4" from the floor.	1	1	E	BLICKMAN INC	1251		11.38	14.25	9.00	289	362	229	8.0	3.6	F															
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	E138	0938643	TABLE, INSTRUMENT	Stainless steel	1	2	E	Imperial Surgical Company	OR-3641D		36.00	20.00	34.02	914	508	864			F															
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	1	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F															
06.0 Medical Inpatient	Inpatient Areas	06.01.12	LDRP	T144	000T144-01	WARMER, INFANT		1	5	E	GE Healthcare Life Sciences	Panda Warmer		25.00	47.00	86.00	635	1,194	2,184	220.0	99.8	F															
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	1	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F															
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E047	0938618	HYPERTHERMIA UNIT	Unit can be used to maintain normothermia. Two airflow settings and hose-end temperature sensing. Three temperature sensors and adjustable airflow provide great heat transfer.	1	1	E	Bair Hugger	77500		14.00	13.00	13.00	356	330	330			F	110	1	11.7	60		Plug									
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E051	0938701	I.V. INFUSION PUMP, SYRINGE	Syringe module for BD Carefusion IV infusion system. Accepts syringe sizes from 1mL - 60mL. Flow rate: 0.01mL/hr to 999mL/hr +/- 2% accuracy.	1	1	E	Alaris Medical Systems	8110		4.50	7.50	15.00	114	191	381	4.5	2.1	O															
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E163	0937422	LIGHT, PHOTOTHERAPY	Mobile with stand. High intensity phototherapy, 45 uW at distance from baby of 15" (38 mm) with spot diameter of 14" (355 mm).	1	1	E	GE Healthcare Clinical Systems	Blue Spot PT Lite	Giraffe	20.00	20.00	54.00	508	508	1,372	8.8	4.0	F	120	1	1.0	60		Plug									
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E096	0938385	MONITOR, VITAL SIGNS, MOBILE	W/ mobile stand. NIBP/SpO2/temperature. Massimo technology. Adult, pediatric, neonatal modes. Touch screen. Patient records sent electronically to EMR/EHR, wired connection.	1	3	E	Welch Allyn Inc.	Connex 6000 Series		23.00	0.00	49.00	584		1,245	40.0	18.2	F															Connection required for nurse call, Ethernet and USB connectivity. Nurse call connections: 25 VAC or 60 VDC maximum at 1A max. 9-cell battery: 10.8V (6.75Ah), Lithium-ion Battery life: 7.8hr
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E118	0939188	SCALE, INFANT/PEDIATRIC	With cart. Built-in digital readout for weighing of neonates, infants and toddlers. Capacity: 45 lb (20 kg). Accuracy: 2/10 oz (5 g). Includes standard cradle.	1	1	E	Welch Allyn Inc.	4802D-AX-XB	412490 Cart	33.50	23.50	46.50	851	597	1,181	63.0	28.6	F	110	1		60		Plug		Yes								6 D sized alkaline batteries. USP port.
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E120	0939202	SCANNER, BLADDER	The unit includes probe, Display 1280 x 800 pixels, Battery type Lithium Ion (Li-Ion)	1	3	E	Verathon Medical Canada	0270-0959 Prime Plus		8.94	10.20	4.92	227	259	125	3.9	1.8	F	120	1	1.4	60		Plug		No								Input voltage 24 V DC Input frequency DC Input current 2.5 A Input connection 2.5 mm (0.1 in), center positive Output 18 V DC max, 4 A max Insulation Protection Class III Fuses No user replaceable fuses Input Verathon® Supplied Battery, 11.1 V DC Output USB Ports, 5 V DC at 100 mA maximum from each port Insulation Type BF
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	T135	000T135-01	STRETCHER/CRIB, PEDIATRIC		1	5	E	Stryker Canada Inc	CUB 190		65.50	37.00	40.00	1,664	940	1,016	375.0	170.5	F															
06.0 Medical Inpatient	Inpatient Areas	06.01.14	Storage	E138	0938643	TABLE, INSTRUMENT	Stainless steel	1	2	E	Imperial Surgical Company	OR-3641D		36.00	20.00	34.02	914	508	864			F															
06.0 Medical Inpatient	Clinical Support	06.01.15	Patient Activation Area	E037	0940891	EXERCISE UNIT, BALANCE, PARALLEL BARS	Height range: 26 - 39" (660 - 991 mm). Width: 19 - 26" (483 - 660 mm). Stainless steel handrails. 10' x 34" platform. Weight capacity: 250 lb	1	2	E	Performance Health	961542	Metron Value	34.00	120.00	39.00	864	3,048	991	204.0	92.7	F															
06.0 Medical Inpatient	Clinical Support	06.01.15	Patient Activation Area	E038	0938704	EXERCISE UNIT, STAIR TREADS	Step depth: 9". 25 levels, electronically adjustable resistance range. Delineated steps. Steps per minute 24-137 spm. Water bottle holder. Max user weight: 300lbs.	1	2	E	Star Trac	E-ST Stepper		27.00	43.00	70.25	686	1,092	1,784	174.9	79.5	F															Self Powered
06.0 Medical Inpatient	Clinical Support	06.01.15	Patient Activation Area	E173	0933043	EXERCISE UNIT, TREADMILL, MOTORIZED	Commercial grade treadmill with medical sideralls. Low starting speed of 0.1 mph (0.16 kph), adjustable in 0.1 increments (0.16 kph).	1	2	E	Scifit	ACS000M	5607-29	31.50	81.50	63.00	800	2,070	1,600	397.0	180.5	F	120		15.0	60		Plug									
06.0 Medical Inpatient	Clinical Support	06.02.01	Blanket Warmer	E013	0938614	CABINET, WARMING	Plug-in model. Double compartment free standing. Total capacity 15.4 cu ft. Stainless steel casing and doors. Glass windows. Capacity: 40-50 Blankets	1	1	E	Enthermics Medical Systems	EC1540		24.00	32.50	72.75	610	826	1,848	374.0	170.0	F	120	1	16.0	60	2	Plug									
06.0 Medical Inpatient	Staff Support	06.02.02	Cart, Storage Alcoves (2)	E019	0938325	CART, PROCEDURE	Drawers: one-3" (76 mm), two-6" (152 mm), one-9" (229 mm). Smooth, stain resistant surfaces with rounded corners. Key lockable.	2	2	E	Metro Cart	Flexline	FLPROC1	32.25	22.38	39.00	819	568	991	150.0	68.2	F															
06.0 Medical Inpatient	Staff Support	06.03.01	Family Washroom		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
06.0 Medical Inpatient	Staff Support	06.03.02	Workstation: Unit Clerk	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F														
07.0 Long-Term Care	Resident Bedroom and Support	07.01.01	Single Resident Room (16)	E006	0938312	BED, LONG TERM CARE	Battery back up. Patient lock-outs, Embedded patient controls in siderails. Emergency CPR button. Power status controls. Programmable night lights. Integrated nurse call button.	16	3	E	Stryker Canada Inc	SPIRIT 5700		40.00	95.75	34.00	1,016	2,432	864	0.0	0.0	F	110	1	8.0	60		Plug		No							
07.0 Long-Term Care	Resident Bedroom and Support	07.01.01	Single Resident Room (16)	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	16	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.01	Single Resident Room (16)	F004	0938319	CABINET, WARDROBE	Features 2 adjustable shelves and 1 fixed shelf. Maximizes storage. ISTA 3A certified. EPP-compliant laminated particle board.	16	3	F	Overstock Furniture	SouthShore Morgan		0.00						0.0	0.0	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.01	Single Resident Room (16)	F007	0939677	CHAIR, PATIENT, HIGH BACK	Upholstered seat and back (vinyl or equivalent). Metal frame. Plastic arm caps. Non-marking glides. Weight Capacity: 500 lbs.	16	3	F	Globalcare	GC3655	PRIMACARE HT	25.00	27.01	48.50	635	686	1,232	62.1	28.2	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.01	Single Resident Room (16)	E085	0938552	LIFTER, PATIENT, CEILING MOUNTED	Lift motor only. Compatible track by contractor. Weight capacity: up to 600 lbs. To include 1 standard sling	8	4	E	Guldmann	GH3		22.80	7.20	98.40	579	183	2,499	21.1	9.6	C	115	1	2.5	60											
07.0 Long-Term Care	Resident Bedroom and Support	07.01.01	Single Resident Room (16)	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	16	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.02	Resident Washroom (16)	E168	0939593	CHAIR, COMMODE/SHOWER	All wheeled chair with padded armrest and backrest. Supplied with commode pan and four braked casters. Aluminum frame. 300lb capacity. Height: floor to seat 21", seat to arm 6".	16	2	E	Performance Health	Homecraft Ocean	565850	18.00	16.00	38.00	457	406	965	10.5	4.8	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	E007	0938507	BED, LONG TERM CARE, BARIATRIC	With bed exit alarm, integrated scale, foam mattress. Weight capacity: 1000 lb. Expandable bed frame. Deck height range: 10.75 to 30".	2	3	E	Stryker	Bari10A	2230	2.05	52.00	3.86	52	1,321	98	700.0	318.2	F	115		5.8	60											
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	F001	0943389	CABINET, BEDSIDE	Laminate. 3 drawers, with liner. 3/4" (19 mm) thick board. Edges sealed with 1 mm PVC edge banding.	2	3	F	Stance Healthcare Inc.	Royale Series	SR120	20.00	20.75	30.00	508	527	762	98.0	44.6	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	F004	0938319	CABINET, WARDROBE	Features 2 adjustable shelves and 1 fixed shelf. Maximizes storage. ISTA 3A certified. EPP-compliant laminated particle board.	2	3	F	Overstock Furniture	SouthShore Morgan		0.00						0.0	0.0	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	F008	0940191	CHAIR, PATIENT, HIGH BACK, BARIATRIC	Upholstered seat and back (vinyl or equivalent). Metal frame. Plastic arm caps. Non-marking glides. Weight Capacity: 500 lbs.	2	3	F	Globalcare	GC3656	PRIMACARE HT	35.00	27.00	48.50	889	686	1,232	62.0	28.2	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	F011	0939548	CHAIR, SLEEPER	Side Sleeper. Grade 4 vinyl, laminate front, vinyl arms. Full width of 80"	2	3	F	Stance Healthcare Inc.	Oasis	SL800	46.00	30.00	35.50	1,168	762	902	240.0	109.1	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	E086	0938553	LIFTER, PATIENT, CEILING MOUNTED, BARIATRIC	Lift motor only. Compatible track by contractor. Weight capacity: up to 825 lbs. To include 1 bariatric sling.	2	4	E	Guldmann	GH3+		22.80	7.20	98.40	579	183	2,499	31.0	14.1	C	115	1	2.5	60		Plug									Battery: 2 x 24 V NiMH, 2.0 Ah
07.0 Long-Term Care	Resident Bedroom and Support	07.01.03	Single Bariatric Resident Room (2)	F027	0940188	TABLE, OVERBED	Mobile Table, U-base with casters. Height range of 29 to 44"	2	3	F	Spec Furniture	Overbed		17.00	32.00	44.00	432	813	1,118			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.04	Bariatric Resident Washroom (2)	E026	0938332	CHAIR, COMMODE, BARIATRIC	Bariatric. Stationary. Capacity: 700 lb. Extra-large, heavy duty. Toilet seat snaps on, lid is removable. Latex free. Height of seat: 20.88". Over toilet clearance: 18.25". Width between arms: 24".	1	2	E	Performance Health	9950		28.50	24.00	29.90	724	610	759	0.0	0.0	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.06	Charting Alcoves (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F														
07.0 Long-Term Care	Resident Bedroom and Support	07.01.06	Charting Alcoves (2)	F020	0939671	DESK, 48"X24"	Freestanding desk full gabbles, with no storage. W/ Cable Mgmt	1	3	F	POI Business Interiors	Payback	Steelcase	48.00	24.00	29.00	1,219	610	737			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.07	Tub Room	E013	0938614	CABINET, WARMING	Plug-in model. Double compartment free standing. Total capacity 15.4 cu ft. Stainless steel casing and doors. Glass windows. Capacity: 40-50 Blankets	1	1	E	Enthermics Medical Systems	EC1540		24.00	32.50	72.75	610	826	1,848	374.0	170.0	F	120	1	16.0	60	2	Plug									
07.0 Long-Term Care	Resident Bedroom and Support	07.01.07	Tub Room	E086	0938553	LIFTER, PATIENT, CEILING MOUNTED, BARIATRIC	Lift motor only. Compatible track by contractor. Weight capacity: up to 825 lbs. To include 1 bariatric sling.	1	4	E	Guldmann	GH3+		22.80	7.20	98.40	579	183	2,499	31.0	14.1	C	115	1	2.5	60		Plug									Battery: 2 x 24 V NiMH, 2.0 Ah
07.0 Long-Term Care	Resident Bedroom and Support	07.01.07	Tub Room	E128	0933223	SHOWER TROLLEY	Height adjustable. Weight capacity: 400 lb (182 kg), patient. Dual drainage holders. Includes mattress, head pillow and foldable side supports. Four 5" (125 mm) casters, all with brakes.	1	3	E	Arjo Canada Inc.	Carevo	BAC1111-01	35.00	79.00	37.60	889	2,007	955	180.4	82.0	F	115	1		60		Plug									Two sets removable batteries, NiMH, 24 V DC, 2.5 Ah capacity. Battery charger.
07.0 Long-Term Care	Resident Bedroom and Support	07.01.07	Tub Room	E140	0943390	TUB, TREATMENT	Still bath. Auto fill. Height adjustable. Tub shell length: 75" (1900 mm), polyester re-inforced fiberglass. Keyhole shape. Integrated liquid dispensing system. Shower handle. Maintain consistent water temperature with automatic shutdown. Emergency lowering device.	1	4	E	Arjo	Rhapsody System 23		38.19	89.37	62.40	970	2,270	1,585	639.3	290.0	F	120	1	10.0	60	1,200	Hard									Should be connected directly to electrical mains, including protective ground.■ Separate fusing and circuit breaker of correct amperage, ground-fault-circuit interrupter (10 mA), must be installed (not included with tub). The unit must be continuously powered. Separate emergency switch placed and easily accessible near the unit.■
07.0 Long-Term Care	Resident Bedroom and Support	07.01.08	Living Room	F005	0939569	CHAIR, LOUNGE, 1 SEAT	Fully upholstered in grade 3 vinyl integrated arms. 4 star swivel base.	7	3	F	Herman Miller	NOALN251	Always	31.00	31.50	36.50	787	800	927			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.08	Living Room	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	3	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.08	Living Room	F024	0942615	TABLE, COFFEE, ROUND	Round Table, 36"D, Laminate top, disc base.	2	3	F	Global Furniture	SWP501		24.00	0.00	22.00	610		559			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.08	Living Room	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	5	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.09	Dining Area	F013	0939685	CHAIR, STACKING, PLASTIC	Stacking Chair With Arms. Weight Capacity: 300. Polymer shell and frame.	20	3	F	Globalcare	6750	BAKHITA	22.50	21.00	31.50	572	533	800	12.0	5.5	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.09	Dining Area	F030	0939739	TABLE, SQUARE	Square table with X base. Laminate top.	4	3	F	Spec Furniture	36X36SQMNX	MANHATTAN	36.00	36.00	29.00	914	914	737			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.09	Dining Area	F049	0944170	TABLE, SQUARE	Square Table, 24"x24", Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWP572	24.00	24.00	22.00	610	610	559			F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.10	Activity Room	F047	0941891	CABINET, STORAGE	Laminate finish. Four adjustable shelves. Lockable.	1	3	F	Global Furniture	Zira		36.00	24.00	66.00	914	610	1,676	0.0	0.0	F															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.10	Activity Room	F002	0939160	CABINET, STORAGE, METAL	2 Door Storage Cabinet - One Fixed Shelf, Three Adjustable Shelves. 2 hinged doors. Lockable. Chrome plated handles.	1	3	F	Global Furniture	9336-572L		36.00	18.00	72.00	914	457	1,829	133.0	60.5	F															

Appendix 1B(II): Furniture and Equipment List

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
07.0 Long-Term Care	Resident Bedroom and Support	07.01.10	Activity Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	8	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
07.0 Long-Term Care	Resident Bedroom and Support	07.01.10	Activity Room	F026	0941908	TABLE, FLIP-TOP, CASTERED, 60"X24", POWERED	Rectangular laminate top, pop up duplex receptacle. T-Base leg on casters.	2	3	F	Spec Furniture	Manhattan	MRTFTCRC	60.00	24.00	29.00	1,524	610	737			F	115					Plug		No									1 duplex + plug in cord 15A circuit Power monument at table top by furniture vendor. Power connection at floor box provided by contractor.
07.0 Long-Term Care	Resident Bedroom and Support	07.01.11	Hair Salon Alcove	E021	0938508	CART, SALON ACCESSORIES	Mobile salon accessories cart with lockable door.	1	2	E	Nico Line Esthetic	N20E		17.00	15.55	34.00	432	395	864	15.0	6.8	F																	
07.0 Long-Term Care	Resident Bedroom and Support	07.01.11	Hair Salon Alcove	E030	0939809	CHAIR, SALON	Classic Barber Chair - Reclining 30deg	1	2	E	Belmont	225	391411	35.00	34.00	47.00	889	864	1,194	180.0	81.8	F																	
07.0 Long-Term Care	Resident Bedroom and Support	07.01.13	Storage		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1	_	_																													
07.0 Long-Term Care	Resident Bedroom and Support	07.01.15	Clinical Workstations, Nursing Station (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
07.0 Long-Term Care	Resident Bedroom and Support	07.01.15	Clinical Workstations, Nursing Station (2)	E063	0938505	LAB ANALYZER, GLUCOSE, POC	Battery-powered unit for blood glucose monitoring, with base charging unit. Handheld. Integrated barcode scanner. Fully automated testing procedure.	2	1	E	Roche Diagnostics	Acc-Chek Inform II	Cobas	3.74	7.60	1.73	95	193	44	0.7	0.4	O	115	1	1.7	60		Plug		Yes									Input voltage:+ 7.5 V DC Input frequency: DC Input current:1.7 A (max) Lithium-ion rechargeable battery.
07.0 Long-Term Care	Resident Bedroom and Support	07.01.16	Physician Workstation	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
07.0 Long-Term Care	Resident Bedroom and Support	07.01.17	Business Centre		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1	_	_																													
07.0 Long-Term Care	Resident Bedroom and Support	07.01.19	Patient Washroom	E168	0939593	CHAIR, COMMODE/SHOWER	All wheeled chair with padded armrest and backrest. Supplied with commode pan and four braked casters. Aluminum frame. 300lb capacity. Height: floor to seat 21", seat to arm 6".	1	2	E	Performance Health	Homecraft Ocean	565850	18.00	16.00	38.00	457	406	965	10.5	4.8	F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.01	Family Meeting Room	F005	0939569	CHAIR, LOUNGE, 1 SEAT	Fully upholstered in grade 3 vinyl integrated arms. 4 star swivel base.	2	3	F	Herman Miller	NOALN251	Always	31.00	31.50	36.50	787	800	927			F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.01	Family Meeting Room	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	1	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.01	Family Meeting Room	F024	0942615	TABLE, COFFEE, ROUND	Round Table, 36"D, Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWP501	24.00	0.00	22.00	610		559			F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.01	Family Meeting Room	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	2	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	T148	000T148-01	CART, MEDICATION	ID: 0928963	1	5	E		Avalo AC Med Cart		24.00	36.00	39.50	610	914	1,003			F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	T148	000T148-02	CART, MEDICATION	ID: 0928963	1	5	E		Avalo AC Med Cart		24.00	36.00	39.50	610	914	1,003			F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	E031	0931485	CONTAINER, SHARPS	Wall mounted. Capacity: 3.1 L (3.28 quart). Funnel-shaped opening with safety neck. Yellow inner liner. Clear top. Secure cap closure for safe transport.	1	2	E	Kendall Canada Inc.	300450/305475		6.00	6.00	11.50	152	152	292	7.0	3.2	W																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	E153	0939903	LIGHT, MAGNIFIER	Wall mount clamp. 30" clamp base, flexible gooseneck arm. 22 watt fluorescent bulb.	1	2	E	Dazor Mfg. Corp.	LMC-150-ES-5		0.00	0.00	0.00				6.0	2.7	O	100	1		60	15	Plug		No									
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	E156	0942974	RECEPTACLE	CSRX - 3.8 L Container with wall-mounted bracket	1	2	E	Stericycle	CsRx		9.09	5.31	8.50	231	135	216			W																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	E111	0938580	REFRIGERATOR, UPRIGHT	11 cu ft (312 L) all refrigerator. Reversible door hinge.	1	2	E	Danby Products, North America	DAR110A1BSLDD		23.93	26.06	58.75	608	662	1,492	142.2	64.6	F	110	1	15.0	60		Plug											
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.03	Medication Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.04	Clean Utility/ Supply Room	E149	0941431	CART, SUPPLY	Parwall Unit 36" W, 6 Baskets, (4) 12" Fine Mesh, (3) 18" Dividers, Single-sided. Comes with Caster and label Holder. ?	6	2	E	Acart Equipment Ltd.	ParWall36M	Par Wall	36.00	26.00	78.00	914	660	1,981			F																	
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.05	Equipment Storage	E084	0944413	LIFTER, PATIENT	Lifting capacity: Safe working load of 227 kg (500 lb). Dual controls: Mast or with the Hand Control. Includes Scale. Low friction castors, the rear two with brakes. Includes Slings.	1	1	E	Arjo	Maxi 500		4.25	4.49	7.95	108	114	202	116.5	52.8	F	120			60		Plug											Battery charger input: 100 to 240 VAC / 50-60 Hz / 50VA Battery charger output: 24 Vdc, 1A, 24VA Battery Type: 24V, 4Ah Rechargeable (Sealed Lead-Acid)
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.05	Equipment Storage	T119	000T119-01	SCALE, WHEELCHAIR		1	5	E		proplus		32.38	36.25		822	921				F																	Adaptor 120V included. 6 d-cell bateres (not included) Connection: via USB and Serial port.
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.05	Equipment Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	2	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
07.0 Long-Term Care	Environmental Services	07.02.07.01	Soiled Utility Room	E033	0943794	DISPOSAL SYSTEM, MACERATOR	Macerator. Stainless steel grade 304. Pulverizes pulps by advanced blade technology. Discharged directly into the main sewage system. Disposing 4 pulp utensils/ Cycle. Cycle from 85 seconds. Contactless operation. Graphical user interface. Pre- & post self cleaning. Uses cold water. Includes deodoriser.	1	3	E	Bowers Medical Sypply	Dolphin 7920		19.69	55.24	24.49	500	1,403	622	218.3	99.0	F	110	1		60		Plug		No									With dedicated 15A breaker (minimum)
07.0 Long-Term Care	Environmental Services	07.02.07.01	Soiled Utility Room	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
07.0 Long-Term Care	Environmental Services	07.02.07.02	Soiled Utility Room	T200	000T200-01	FLUSHER/DISINFECTOR		1	5	E	Arjo Canada Inc.	Tornado FD1810		17.72	22.83	51.97	450	580	1,320	265.0	120.2	F	120			60													1N
07.0 Long-Term Care	Environmental Services	07.02.07.02	Soiled Utility Room	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
07.0 Long-Term Care	Environmental Services	07.02.08	Housekeeping Closet	A001	0940446	ALLOWANCE, HOUSEKEEPING	toilet bowl swab and caddy; putty knife; safety googles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE	1	2	A		Generic										X																	
07.0 Long-Term Care	Environmental Services	07.02.08	Housekeeping Closet	E016	0938321	CART, HOUSEKEEPING	Microfibre cart. 7.25 cu ft of locking cabinet area. 5 cu ft of storage space. Secure cabinet doors, interchangeable handles. 8" wheels and 4" casters. Locking security hood. Includes 34gal vinyl bag	1	2	E	Rubbermaid	FG9T7500BLA		22.00	48.25	53.50	559	1,226	1,359	70.0	31.8	F																	
07.0 Long-Term Care	Environmental Services	07.02.08	Housekeeping Closet	E123	0941177	SHELVING, METAL	Solid 18-guage steel shelving. Weight load capacity: 48" shelf (800 lbs), 60" (600 lbs), 72" (300 lbs). Shelves adjusted in 1" intervals along post. Adjustable levelling legs.	1	2	E	Metro	1842FS		42.00	18.00	74.00	1,067	457	1,880	18.0	8.2	F																	
08.0 HIMS	Health Records Area	08.01.01	Medical Records	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
08.0 HIMS	Health Records Area	08.01.01	Medical Records	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use
08.0 HIMS	Health Records Area	08.01.02	Workstation: Chart Preparation, Coding (2)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
08.0 HIMS	Health Records Area	08.01.02	Workstation: Chart Preparation, Coding (2)	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	4	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use
08.0 HIMS	Health Records Area	08.01.03	Workstation: Touchdown	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
08.0 HIMS	Health Records Area	08.01.03	Workstation: Touchdown	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TS5ARS3060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug											Integrated power and data in desks and tables
08.0 HIMS	Health Records Area	08.01.04	Business Centre		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																															
08.0 HIMS	Health Records Area	08.01.05	Dictation/ Chart Completion Area	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	4	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
08.0 HIMS	Health Records Area	08.01.05	Dictation/ Chart Completion Area	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
08.0 HIMS	Health Records Area	08.01.05	Dictation/ Chart Completion Area	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TS5ARS3060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug											Integrated power and data in desks and tables
08.0 HIMS	Health Records Area	08.01.05	Dictation/ Chart Completion Area	F029	0939672	TABLE, ROUND	Standard Seating height. X-base. Laminate top	1	3	F	Spec Furniture	Manhattan	MNX36	36.00	0.00	29.00	914		737	55.0	25.0	F																	
09.0 IMIT	IT Department	09.01.01	Telecommunications Rooms		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																															
10.0 Registration	Main Registration	10.01.01	Registration Booth	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
10.0 Registration	Main Registration	10.01.01	Registration Booth	F044	0937496	STOOL, EXAM/WORK	Mobile. No backrest. 16" diameter upholstered with 4" high resilience molded foam. Pneumatic height adjustment: 23-28". 5 legged cast aluminum base.	5	3	F	Global Medical Products Inc.	RXC2328	BIOFIT	20.00	0.00	27.00	508		686	0.0	0.0	F																	
10.0 Registration	Main Registration	10.01.02	Registration Kiosk		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																															
10.0 Registration	Main Registration	10.01.03	Remote Registration Room		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																															
10.0 Registration	Main Registration	10.01.04	Waiting Area	F012	0939567	CHAIR, STACKING, BARIATRIC	Side Chair with arms, Stacking. Grade-3 (Vinyl). 4 point base.	3	3	F	Spec Furniture	Snowball 2	1853	31.00	22.00	33.00	787	559	838			F																	
10.0 Registration	Main Registration	10.01.04	Waiting Area	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	17	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
10.0 Registration	Main Registration	10.01.04	Waiting Area	F025	0939738	TABLE, END	Laminate Rectangular table top. Metal base	4	3	F	Global Furniture	Primacare HT	GC3661-HP	24.00	20.00	17.00	610	508	432			F																	
10.0 Registration	Offices and Workstations	10.01.05	Storage Alcove: Wheelchairs	E146	0938410	WHEELCHAIR, ADULT	Seat width: 16". Seat depth: 16". Capacity: 250 lb. Swing away footrest, articulating elevating legrest. Casters: 8 x 1". Wheels: 24 x 1". Padded fixed full length arm.	2	2	E	Invacare	TREX2		28.25	31.88	34.00	718	810	864	43.0	19.6	F																	
11.0 Site Administration	Offices and Workstations	11.01.01	Office: Senior Administrator	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
11.0 Site Administration	Offices and Workstations	11.01.01	Office: Senior Administrator	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
11.0 Site Administration	Offices and Workstations	11.01.01	Office: Senior Administrator	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use
11.0 Site Administration	Offices and Workstations	11.01.01	Office: Senior Administrator	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	1	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																	
11.0 Site Administration	Offices and Workstations	11.01.01	Office: Senior Administrator	F023	0938786	STORAGE, SHELVING	Laminate 5H, adjustable shelves	1	3	F	Herman Miller	L2BC.723620N1LNT	TU	36.00	20.00	72.00	914	508	1,829			F																	
11.0 Site Administration	Offices and Workstations	11.01.01	Office: Senior Administrator	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W																	
11.0 Site Administration	Offices and Workstations	11.01.02	Workstation: Administrative Assistant	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI2B325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
11.0 Site Administration	Offices and Workstations	11.01.02	Workstation: Administrative Assistant	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																		ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
11.0 Site Administration	Offices and Workstations	11.01.03	Workstation: Touchdown (3)	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																		
11.0 Site Administration	Staff Support	11.01.04	Office: APLW	F002	0939160	CABINET, STORAGE, METAL	2 Door Storage Cabinet - One Fixed Shelf, Three Adjustable Shelves. 2 hinged doors. Lockable. Chrome plated handles.	1	3	F	Global Furniture	9336-S72L		36.00	18.00	72.00	914	457	1,829	133.0	60.5	F																	
11.0 Site Administration	Staff Support	11.01.04	Office: APLW	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
11.0 Site Administration	Staff Support	11.01.04	Office: APLW	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
11.0 Site Administration	Staff Support	11.01.04	Office: APLW	F017	0944285	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	60.00	60.00	68.00	1,524	1,524	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
11.0 Site Administration	Staff Support	11.01.04	Office: APLW	F022	0939597	FILE, LATERAL, DRAWERS: 4	Painted metal construction, integrated pull	1	3	F	Herman Miller	LW200.364		36.00	19.38	51.50	914	492	1,308			F																	
11.0 Site Administration	Staff Support	11.01.04	Office: APLW	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W															
11.0 Site Administration	Staff Support	11.02.01	Business Centre	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
11.0 Site Administration	Staff Support	11.02.01	Business Centre	F028	0942613	TABLE, RECTANGLE	Rectangular Table, 36"x72", Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWPS32	72.00	36.00	30.00	1,829	914	762			F																	
11.0 Site Administration	Workspace	11.02.02	General Storage Room	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	4	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
12.0 Biomedical Engineering	Workspace	12.01.01	Touchdown Workstation: Biomedical Engineering Tech	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
12.0 Biomedical Engineering	Workspace	12.01.01	Touchdown Workstation: Biomedical Engineering Tech	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TSSAR53060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug										Integrated power and data in desks and tables
12.0 Biomedical Engineering	Workspace	12.01.02	Equipment Collection Bay	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
12.0 Biomedical Engineering	Workspace	12.01.03	Workshop	E083	0941947	LIFTER, PALLET, MOTORIZED	WALK/RIDE ELECTRIC PALLET TRUCK. LOAD CAPACITY: 6000 LB (2727 KG). LIFT HEIGHT: 9.25" (235 MM), LIFT 6" (150MM). OUTSIDE FORK SPREAD: 22" (559 MM), FORK WIDTH 9". HEAD LENGTH: 36.7" (930MM).	1	3	E	Crown Lift Trucks	PE4500-60		27.00	48.00	48.00	686	1,219	1,219	1,496.0	680.0	F																24-volt fused electrical system. 175 amp battery connector. Batteries: Option 1: 24V, 330A hour, 7.7 Kwh Option 2: 24V, 930A hour, 21.5 kWh
12.0 Biomedical Engineering	Workspace	12.01.03	Workshop	E170	0944638	SHOP TOOLS, LIFTER	Mobile lift with standard steel forks. Hold-down mechanism secures carriage, Maximum lifting height of 5 ft 11". Up to 500 lbs (227kg) load capacity. Two 8" non-marking rear wheels and 1" dual wheel front swivel castors. Includes Load platform for lifting flat surfaces.	1	3	E	Genie Industries	GL-4		24.75	12.00	71.00	629	305	1,803	392.0	177.8	F																Heavy Duty winch.
12.0 Biomedical Engineering	Workspace	12.01.03	Workshop	E147	0938622	WORKBENCH	Single sided, Stainless steel worksurface. Motorized Table height adjastable:29" to 36" with electrical outlet2.	1	2	E	Mottlab Inc.	ATF2860		60.00	28.00	84.00	1,524	711	2,134			F	120	1		60		Plug	L5-20P		120	1		60		Plug	L5-20P	Electrical Cord Length: 4' Requires 2 Dedicated 20A circuits
12.0 Biomedical Engineering	Workspace	12.01.04	Clean Up Bay		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
12.0 Biomedical Engineering	Workspace	12.01.05	Flammable Liquid Storage	E012	0922807	CABINET, SAFETY, FLAMMABLE STORAGE	Flammable safety cabinet. Capacity 170.34 L (45 gal). Self-closing doors.	1	2	E	Justrite Manufacturing	Sure-Grip EX	4655602	43.00	18.00	65.00	1,092	457	1,651	272.0	123.6	F																	
12.0 Biomedical Engineering	Administrative Area	12.01.06	Parts Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	2	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
13.0 Facilities Maintenance	Administrative Area	13.01.01	Shared Office and Meeting Space: FM Staff	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	2	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
13.0 Facilities Maintenance	Administrative Area	13.01.01	Shared Office and Meeting Space: FM Staff	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	2	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
13.0 Facilities Maintenance	Administrative Area	13.01.01	Shared Office and Meeting Space: FM Staff	F029	0939672	TABLE, ROUND	Standard Seating height, X-base. Laminate top	1	3	F	Spec Furniture	Manhattan	MNX36	36.00	0.00	29.00	914		737	55.0	25.0	F																	
13.0 Facilities Maintenance	Administrative Area	13.01.01	Shared Office and Meeting Space: FM Staff	F032	0935466	WHITEBOARD, MAGNETIC	Aluminum frame. Magnetic writing surface. Accessory tray to hold dry erase markers and erasers.	1	3	F	Quartet Manufacturing	3413820059		96.00	4.00	48.00	2,438	102	1,219	63.8	29.0	W																	
13.0 Facilities Maintenance	Service Area	13.01.02	Business Centre and Plan Room	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	3	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
13.0 Facilities Maintenance	Service Area	13.01.02	Business Centre and Plan Room	F028	0942613	TABLE, RECTANGLE	Rectangular Table, 36"x72", Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWPS32	72.00	36.00	30.00	1,829	914	762			F																	
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk. wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No								Single motor hex rod drive system 0.5 W power draw when not in use
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	E083	0941947	LIFTER, PALLET, MOTORIZED	WALK/RIDE ELECTRIC PALLET TRUCK. LOAD CAPACITY: 6000 LB (2727 KG). LIFT HEIGHT: 9.25" (235 MM), LIFT 6" (150MM). OUTSIDE FORK SPREAD: 22" (559 MM), FORK WIDTH 9". HEAD LENGTH: 36.7" (930MM).	1	3	E	Crown Lift Trucks	PE4500-60		27.00	48.00	48.00	686	1,219	1,219	1,496.0	680.0	F																24-volt fused electrical system. 175 amp battery connector. Batteries: Option 1: 24V, 330A hour, 7.7 Kwh Option 2: 24V, 930A hour, 21.5 kWh
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	E125	0922871	SHOP TOOLS, HOIST, CHAIN	5 tonne (5000 kg) capacity, 2 speed electric chain hoist. 2 speed motor driven trolley. 5m (16.4') lift height. Single girder under running bridge crane, 4.572 m (15') span, 10m (32.8') long runway.	1	2	E	Richards-Wilcox Custom Systems	GIS GCH2500/2NF20575		80.00	14.75	5.25	2,032	375	133	641.0	291.4	C	575	3		60		Hard		115	1		60					Nominal power of crane: 10.4 hp. Main fuse size at bridge panel: 20 A. Nominal current of crane: 13.5 A. Power factor at starting current: 0.78. Power factor at nominal current: 0.91. Control voltage: 115 V.
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	E126	0938566	SHOP TOOLS, SAW, MITRE	12" dual bevel sliding mitre saw. Integrated jobsite lights, Dual horizontal steel rails with 3 larger linear bearings. Integral dust channel. Saw bevels left and right 0-48 deg	1	1	E	Milwaukee Electric Tools	6955-20HP		26.30	40.10	22.00	668	1,019	559	68.5	31.1	F	120	1	15.0	60		Plug										
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	E127	0938640	SHOP TOOLS, SAW, TABLE	10" left tilt contractor saw, with 30" RH Rip with steel wings. One piece rail system. Tubular stand with two fixed wheels and one swivel wheel. Blade brake function, Table size (wxl): 20x27"	1	1	E	Delta International Machinery Corp	36-5000		20.00	33.00	44.00	508	838	1,118	230.0	104.6	F	120	1		60		Plug										
13.0 Facilities Maintenance	Service Area	13.02.01	Carpentry/ Paint Shop/ General Maintenance	E147	0938622	WORKBENCH	Single sided, Stainless steel worksurface. Motorized Table height adjastable:29" to 36" with electrical outlet2.	2	2	E	Mottlab Inc.	ATF2860		60.00	28.00	84.00	1,524	711	2,134			F	120	1		60		Plug	L5-20P		120	1		60		Plug	L5-20P	Electrical Cord Length: 4' Requires 2 Dedicated 20A circuits
13.0 Facilities Maintenance	Service Area	13.02.02	Holding for Items Requiring Repair		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
13.0 Facilities Maintenance	Service Area	13.02.03	Central Parts and Tool Storage	A008	0943650	ALLOWANCE, LADDERS	Allowance of $2,500 for 10 to 15 Feet ladders.	1	1	A	ZZZ - Generic Descriptions	ZZZ										X																	
13.0 Facilities Maintenance	Service Area	13.02.03	Central Parts and Tool Storage	E012	0922807	CABINET, SAFETY, FLAMMABLE STORAGE	Flammable safety cabinet. Capacity 170.34 L (45 gal). Self-closing doors.	1	2	E	Justrite Manufacturing	Sure-Grip EX	4655602	43.00	18.00	65.00	1,092	457	1,651	272.0	123.6	F																	
13.0 Facilities Maintenance	Service Area	13.02.03	Central Parts and Tool Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	2	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
13.0 Facilities Maintenance	Service Area	13.02.04	Gas Cylinder Storage Room		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
13.0 Facilities Maintenance	Refrigerated, Frozen and Dry Storage Area	13.02.07	Site Maintenance Storage		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																														
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.01	Department Receiving	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.01	Department Receiving	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TSSAR53060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug										Integrated power and data in desks and tables
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.01	Department Receiving	E164	0941740	PRINTER, LABEL, TRAY	Tabletop barcode printer for food trays	1	1	E	Epson	CW-C6500P		17.50	20.90	12.80	445	531	325	57.3	26.0	T	120	1				60		Yes								1 data port required
14.0 Nutrition & Food Services	Food Production Area	14.02.01	Workstation: Staff	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.01	Workstation: Staff	E164	0941740	PRINTER, LABEL, TRAY	Tabletop barcode printer for food trays	1	1	E	Epson	CW-C6500P		17.50	20.90	12.80	445	531	325	57.3	26.0	T	120	1				60		Yes								1 data port required
14.0 Nutrition & Food Services	Cafeteria (Staff Only)	14.03.04	Housekeeping Room	A001	0940446	ALLOWANCE, HOUSEKEEPING	toilet bowl swab and caddy; putty knife; safety goggles; cleaning bucket; mop hand and mop heads; wall mop unit; dust mop; dust pan; broom; wet floor signs; PPE	1	2	A		Generic										X																	
14.0 Nutrition & Food Services	Cafeteria (Staff Only)	14.03.04	Housekeeping Room	E016	0938321	CART, HOUSEKEEPING	Microfibre cart. 7.25 cu ft of locking cabinet area. 5 cu ft of storage space. Secure cabinet doors, interchangeable handles. 8" wheels and 4" casters. Locking security hood. Includes 3&gal vinyl bag	1	2	E	Rubbermaid	FG9T7500BLA		22.00	48.25	53.50	559	1,226	1,359	70.0	31.8	F																
14.0 Nutrition & Food Services	Cafeteria (Staff Only)	14.03.04	Housekeeping Room	E123	0941177	SHELVING, METAL	Solid 18-guage steel shelving. Weight load capacity: 48" shelf (800 lbs), 60" (600 lbs), 72" (300 lbs). Shelves adjusted in 1" intervals along post. Adjustable levelling legs.	1	2	E	Metro	1842FS		42.00	18.00	74.00	1,067	457	1,880	18.0	8.2	F																
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	F013	0939685	CHAIR, STACKING, PLASTIC	Stacking Chair With Arms. Weight Capacity: 300. Polymer shell and frame.	20	3	F	Globalcare	6750	BAKHITA	22.50	21.00	31.50	572	533	800	12.0	5.5	F																	
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	E151	0941075	REFRIGERATOR FREEZER, UPRIGHT	Top freezer Stainless steel Refrigerator. Total Capacity:17.5 cu.ft. Reversible door, with 4.03 cu ft freezer capacity. Frost free interior, 2 full width glass shelves and 2 vegetable crispers.	1	2	E	General Electric Appliances	GTE18GSNRSS		28.00	32.62	67.37	711	829	1,711	192.0	87.3	F	120	1	15.0	60		Plug										
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	F049	0944170	TABLE, SQUARE	Square Table, 24"x24", Laminate top, disc base.	10	3	F	Global Furniture	Swap Tables	SWPS72	24.00	24.00	22.00	610	610	559			F																	
15.0 Housekeeping	Storage and Supply Area	15.01.01	General Storage Area	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	4	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
15.0 Housekeeping	Storage and Supply Area	15.01.02	Chemical Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	3	2	E	Acart Healthcare Storage Solutions	B36CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F																	
15.0 Housekeeping	Storage and Supply Area	15.01.03	Floor care equipment holding area	E041	0938266	FLOOR MACHINE, BURNISHER	20" (500 mm) working width. 1200 rpm. Electrical spray unit. Front steer wheel to allow maneuverability and straight line action. Foldable handle. Floating pad drive gives constant working pressure.	1	2	E	Wood Wyant Inc	ERGODISC 1200		20.00	38.00	47.00	508	965	1,194	92.4	42.0	F	120	1		60	1,300	Plug	5-15P	No								82" (25 m) power cord length.
15.0 Housekeeping	Storage and Supply Area	15.01.03	Floor care equipment holding area	E040	0943003	FLOOR MACHINE, POLISHER	Single disc machine for spray cleaning with scrub brush and folding handle. With drive pad assembly. Speed: 300 rpm. Working width: 17" (43 cm). Integrated electrical spray unit with centre feed dispe	1	2	E	Taski of Switzerland	ERGODISC 300		18.90	26.38	46.85	480	670	1,190	90.0	40.9	F	120	1		60	1,100	Plug	5-15									Cable length: 15 m (47 feet).
15.0 Housekeeping	Storage and Supply Area	15.01.03	Floor care equipment holding area	E042	0934875	FLOOR MACHINE, SCRUBBER	Battery powered, ride-on, automatic floor scrubber/dryer. 700 mm (27.5") working width. 930 mm (36.6") squeegee width.	1	2	E	Taski of Switzerland	SWINGO 2500		66.54	30.71	53.94	1,690	780	1,370	1,232.0	560.0	F	120	1		60	2,000	Plug										On-board charger. Battery rated voltage: 24V. Battery capacity: 240 to 295 AH/C5 . Battery autonomy (nominal): 3 to 5 hr. Nominal consumption: 2,000 W.

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																		ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
15.0 Housekeeping	Storage and Supply Area	15.01.03	Floor care equipment holding area	E043	0943783	FLOOR MACHINE, VACUUM, UPRIGHT	High-performance dual motor system. Lighted Display. Light weight construction. 3 L Capacity . 15" Cleaning Path, Four Levels Filtration; Captures 98.73% at 0.3-.5 microns per ASTM 3150. Clean up to 7-feet above the floors. Sound level : 67 dBA.	2	2	E	Taski of Switzerland	PROFORCE 1500XP	500078	15.00	7.86	48.00	381	200	1,219	18.0	8.2	F	120	1	10.0		924	Plug		No									Power: 924 W Dual Motor Hose Length (ft) : 16 in, 1.33 ft Power Cord:nS0 ft (SKU:104284)
15.0 Housekeeping	Staff Support	15.01.04	Equipment Washing/ Servicing	E145	0938620	WASHER, HIGH PRESSURE	Wall mounted. Electric high pressure washer. Automatic start/stop system. 2 HP (1,491 W). 1500 psi. 2 gpm. Chemical injector. 50 ft (15.24 m) hose. Includes spray gun & lance. 4 spray tips. LED light.	1	2	E		X-1520FW1ARH		22.00	32.00	40.00	559	813	1,016	115.0	52.3	F	110	1	17.0	60													Electric Motor: 2HP Baldor Single Phase 3450 RPM - Full Frame Thermo Overload Protection Continuous Duty
15.0 Housekeeping	Clean Linen Marshalling and Sorting Area	15.02.01	Workstation: Touchdown	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
15.0 Housekeeping	Clean Linen Marshalling and Sorting Area	15.02.01	Workstation: Touchdown	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TSSARS3060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug											Integrated power and data in desks and tables
17.0 Morgue	Grieving/Viewing Area	17.01.01	Viewing Room	E134	0940490	STRETCHER, CADAVER	Concealed cadaver transport cart. Lightweight aluminum, equipped with corner guards; on casters. Cadaver weight limit 300 lbs. maximum.	1	3	E	CSI/Jewett Industries	CCT101		30.00	84.00	36.00	762	2,134	914	210.0	95.5	F																
17.0 Morgue	Cadaver Storage Area	17.01.02	Quiet/ Bereavement Room	F005	0939569	CHAIR, LOUNGE, 1 SEAT	Fully upholstered in grade 3 vinyl integrated arms. 4 star swivel base.	2	3	F	Herman Miller	NOALN251	Always	31.00	31.50	36.50	787	800	927			F																	
17.0 Morgue	Cadaver Storage Area	17.01.02	Quiet/ Bereavement Room	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	1	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F																	
17.0 Morgue	Cadaver Storage Area	17.01.02	Quiet/ Bereavement Room	F014	0939575	CHAIR, STACKING, W/ARMS	Stacks 10 high on dolly, 6 on floor. Grade 3 vinyl seat and back. 4 point base. Seat shell made from 100% recycled plastic	2	3	F	Spec Furniture	Snowball 2	1851	23.50	21.50	33.00	597	546	838			F																	
17.0 Morgue	Cadaver Storage Area	17.01.02	Quiet/ Bereavement Room	F024	0942615	TABLE, COFFEE, ROUND	Round Table, 36"D, Laminate top, disc base.	1	3	F	Global Furniture	Swap Tables	SWP501	24.00	0.00	22.00	610		559			F																	
17.0 Morgue	Cadaver Storage Area	17.02.01	Workstation: Staff	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
17.0 Morgue	Cadaver Storage Area	17.02.01	Workstation: Staff	F018	0940215	DESK, L-SHAPE, HEIGHT ADJUSTABLE, W/ STORAGE	1 height adjustable desk wall mounted overhead. Metal mobile Box//Box/File Pedestal.	1	3	F	Globalcare	FOLI	1200 SERIES	72.00	72.00	68.00	1,829	1,829	1,727	129.5	58.9	F	120	1		60		Plug		No									Single motor hex rod drive system 0.5 W power draw when not in use
17.0 Morgue	Cadaver Storage Area	17.02.02	Cadaver Storage	E150	0941711	CRYPTS (3407)	CRYPT, REFRIGERATED, BUILT-IN: Storage for 4 cadaver holding spaces including 1 Bariatric spaces on the bottom of the crypt storage. Door dimensions: 32"W x 22" H.	1	4	E	Mopec	KA1400		98.13	97.00	83.00	2,493	2,464	2,108			F	115	1		60												
17.0 Morgue	Cadaver Storage Area	17.02.02	Cadaver Storage	T082	000T082-01	LIFTER, CADAVER		1	5	E	Handicare	C-450		8.60	12.50	5.70	218	318	145	22.0	10.0	C																
17.0 Morgue	Cadaver Storage Area	17.02.02	Cadaver Storage	E082	0940603	LIFTER, CADAVER	Bariatric. Hydraulic. Height adjustable: 13.4 to 76.8" (340 to 19.51 mm). Capacity: 800 lb (364 kg). Suitable for 5 tier racks. Tray: 23 to 32 (584 to 813 mm). End access. Scale. Handle control.	1	4	E	Mopec	JD5001		34.40	95.20	76.80	874	2,418	1,951	700.0	318.2	F	115	1	8.0	60		Plug											Two 12 VDC sealed rechargeable battery.
17.0 Morgue	Staff Lounge Area	17.02.04	Stretcher Holding	F041	0942717	CABINET, STORAGE, SH	Metal storage cabinet SH	1	3	F	Global Furniture	9300 Series Storage	9336-S72L	36.00	18.00	72.00	914	457	1,829			F																	
17.0 Morgue	Staff Lounge Area	17.02.04	Stretcher Holding	F042	0943458	CABINET, WARDROBE	Wardrobe with Lockable Door	1	3	F	Norix Group Inc.	Prodigy	PRD802	24.00	24.00	78.00	610	610	1,981	168.0	76.2	F																	
17.0 Morgue	Staff Lounge Area	17.02.04	Stretcher Holding	E134	0940490	STRETCHER, CADAVER	Concealed cadaver transport cart. Lightweight aluminum, equipped with corner guards; on casters. Cadaver weight limit 300 lbs. maximum.	2	3	E	CSI/Jewett Industries	CCT101		30.00	84.00	36.00	762	2,134	914	210.0	95.5	F																
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	F005	0939569	CHAIR, LOUNGE, 1 SEAT	Fully upholstered in grade 3 vinyl integrated arms. 4 star swivel base.	5	3	F	Herman Miller	NOALN251	Always	31.00	31.50	36.50	787	800	927			F																	
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	F006	0940190	CHAIR, LOUNGE, 2 SEAT	Fully upholstered in grade 3 vinyl. Metal 4 leg base.	2	3	F	Spec Furniture	9102M	Tailor	52.50	29.00	33.00	1,334	737	838	116.0	52.7	F																	
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	F013	0939685	CHAIR, STACKING, PLASTIC	Stacking Chair With Arms. Weight Capacity: 300. Polymer shell and frame.	10	3	F	Globalcare	6750	BAKHITA	22.50	21.00	31.50	572	533	800	12.0	5.5	F																	
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	E098	0929581	OVEN, MICROWAVE	Countertop. Domestic. Capacity: 1.1 cu ft (31.15 L). Turntable cooking system. 10 power levels.	2	4	E	General Electric Appliances	PEM10WFC		24.00	13.31	12.00	610	338	305	33.0	15.0	C	120	1	11.5	60	1,300	Plug											Grounded 3 prong plug. Electrical input @ 120V: 11.50 Amp.
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	E111	0938580	REFRIGERATOR, UPRIGHT	11 cu ft (312 L) all refrigerator. Reversible door hinge.	2	2	E	Danby Products, North America	DAR110A1BSLDD		23.93	26.06	58.75	608	662	1,492	142.2	64.6	F	110	1	15.0	60		Plug											
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	F049	0944170	TABLE, SQUARE	Square Table, 24"x24", Laminate top, disc base.	5	3	F	Global Furniture	Swap Tables	SWP572	24.00	24.00	22.00	610	610	559			F																	
18.0 Staff Facilities	Shared Meeting Rooms	18.01.01	Staff Lounge/ Break Room	F033	0938411	WHITEBOARD, MAGNETIC, SMALL	The 48" x 36" Wall-Mountable Magnetic Whiteboard from Luxor is made of strong, painted steel enclosed in an aluminum frame. It features a magnetic writing surface for added versatility. The whiteboard also includes a two-inch removable accessory tray to hold dry erase markers and erasers.	1	3	F	Luxor Corporation	WB4836W		48.00	1.00	36.00	1,219	25	914	0.0	0.0	W														
18.0 Staff Facilities	Shared Meeting Rooms	18.02.01	Meeting Room (6 people) (3)	F009	0939546	CHAIR, MEETING	One-piece seat and back, mesh. 5 star caster base. seat height range of 6"	18	3	F	Herman Miller	CQS2FN	Setu	25.25	17.00	38.60	641	432	980			F																	
18.0 Staff Facilities	Shared Meeting Rooms	18.02.01	Meeting Room (6 people) (3)	F026	0941908	TABLE, FLIP-TOP, CASTERED, 60"X24", POWERED	Rectangular laminate top, pop up duplex receptacle. T-Base leg on casters.	6	3	F	Spec Furniture	Manhattan	MRTFTCRC	60.00	24.00	29.00	1,524	610	737			F	115					Plug		No									1 duplex + plug in cord 15A circuit Power monument at table top by furniture vendor. Power connection at floor box provided by contractor.
18.0 Staff Facilities	Basement Locker and Change Area	18.02.02	Meeting Room (12-15 people)	F009	0939546	CHAIR, MEETING	One-piece seat and back, mesh. 5 star caster base. seat height range of 6"	15	3	F	Herman Miller	CQS2FN	Setu	25.25	17.00	38.60	641	432	980			F																	
18.0 Staff Facilities	Basement Locker and Change Area	18.02.02	Meeting Room (12-15 people)	F026	0941908	TABLE, FLIP-TOP, CASTERED, 60"X24", POWERED	Rectangular laminate top, pop up duplex receptacle. T-Base leg on casters.	4	3	F	Spec Furniture	Manhattan	MRTFTCRC	60.00	24.00	29.00	1,524	610	737			F	115					Plug		No									1 duplex + plug in cord 15A circuit Power monument at table top by furniture vendor. Power connection at floor box provided by contractor.
18.0 Staff Facilities	Basement Locker and Change Area	18.03.01	Lockers (10)	F050	0944173	BENCH, LOCKER ROOM	Industrial particle board construction, with High pressure laminate surface. For locker rooms. Includes two 3" diameter bolt mounted pedestals.	1	3	F	Salsbury Industries	77783D		36.00	9.50	18.00	914	241	457	35.0	15.9	F															
18.0 Staff Facilities	Main Floor Locker Area	18.03.02	Change Area	F050	0944173	BENCH, LOCKER ROOM	Industrial particle board construction, with High pressure laminate surface. For locker rooms. Includes two 3" diameter bolt mounted pedestals.	1	3	F	Salsbury Industries	77783D		36.00	9.50	18.00	914	241	457	35.0	15.9	F															
18.0 Staff Facilities	Main Floor Locker Area	18.04.01	Lockers (36)	F050	0944173	BENCH, LOCKER ROOM	Industrial particle board construction, with High pressure laminate surface. For locker rooms. Includes two 3" diameter bolt mounted pedestals.	1	3	F	Salsbury Industries	77783D		36.00	9.50	18.00	914	241	457	35.0	15.9	F															
18.0 Staff Facilities	Shipping and Receiving	18.04.02	Change Area (2)	F050	0944173	BENCH, LOCKER ROOM	Industrial particle board construction, with High pressure laminate surface. For locker rooms. Includes two 3" diameter bolt mounted pedestals.	2	3	F	Salsbury Industries	77783D		36.00	9.50	18.00	914	241	457	35.0	15.9	F															
19.0 Supply Chain	Shipping and Receiving	19.01.01	Loading Dock		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																													
19.0 Supply Chain	Shipping and Receiving	19.01.02	Decasing Area		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																													
19.0 Supply Chain	Shipping and Receiving	19.01.03	Short Term Equipment Holding	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
19.0 Supply Chain	Shipping and Receiving	19.01.04	Chemical Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	2	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
19.0 Supply Chain	Warehouse Area	19.01.07	Workstation: Touchdown for SC staff	F015	0939741	CHAIR, TASK, W/ARMS	Full Ergonomic midback, Upholstered Seat and Mesh (suspension) Back. With lumbar support. Grade 3 vinyl Fabric. 5 caster base. Fully adjustable arms. Weight capacity 350 LB	1	3	F	Herman Miller	PI28325AFAJ	Verus	27.50	24.00	40.00	699	610	1,016			F																	
19.0 Supply Chain	Warehouse Area	19.01.07	Workstation: Touchdown for SC staff	F021	0939740	DESK, STRAIGHT	Freestanding desk, full gables, with no storage.	1	3	F	Steelcase	TSSARS3060	Payback	60.00	30.00	29.00	1,524	762	737			F	120	1		60		Plug											Integrated power and data in desks and tables
19.0 Supply Chain	Warehouse Area	19.02.01	General Bulk Storage	E155	0943631	SHELVING, STEEL	14 gauge steel beams front and back. Adjustable on 1" centres. Upright frame with Load capacity of 6000 lbs. Wire mesh shelf type. Shelving dimensions: 24 x 36". Includes Frame connectors.	30	2	E	North American Steel	EasyUp 5000	5004/5022/5031/5152	36.00	24.00	74.00	914	610	1,880	27.0	12.3	F															
19.0 Supply Chain	Warehouse Area	19.02.02	Valuable Storage	E124	0940410	SHELVING, WIRE	4-tier, wire. Bottom shelf with solid cover.	1	2	E	Acart Healthcare Storage Solutions	836CH		36.00	18.00	69.00	914	457	1,753	53.0	24.1	F															
19.0 Supply Chain	Waste and Recycling Area	19.02.03	Cart Marshalling Area	E023	0932689	CART, UTILITY	3 tiers, Stainless steel. 1"(25mm) lip on three sides of top and middle shelves. 500 lb weight capacity. Shelf clearance: 13.1" (333mm). Rubber swivel 5" (127mm) casters. Shelves welded to the legs.	3	2	E	Acart Equipment Ltd.	3067		22.38	39.25	37.25	568	997	946	68.0	30.9	F															
19.0 Supply Chain	Waste and Recycling Area	19.04.01	Waste Holding and Compactor Area		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																													
19.0 Supply Chain	Waste and Recycling Area	19.04.03	Biomedical Waste Holding		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																													
19.0 Supply Chain	Waste and Recycling - Exterior	19.04.04	Confidential Paper Holding		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																													
19.0 Supply Chain	Waste and Recycling - Exterior	19.05.01	Waste Staging Area		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1																													

APPENDIX 1C

ACOUSTICS AND NOISE CONTROL MEASURES

APPENDIX 1C – ACOUSTIC AND NOISE CONTROL MEASURES

ACOUSTIC AND NOISE CONTROL MEASURES

1. Definitions
    a. "Acoustic Consultant" means a Consulting Engineer specializing in Acoustics and Noise Control.
    b. "dBA" is a weighted sound pressure level within a space adjusted based on human hearing systems (e.g. less sensitive to low frequencies).
    c. "Leq" is a time weighted equivalent sound level
    d. "NC" means: Noise Criteria. NC is a single number rating that is sensitive to the relative loudness within a given space at different frequencies.
    e. "NIC" stands for Noise Isolation Class. NIC is the single-number rating of the noise reduction that is measured between adjacent spaces. It is related to the STC of the partition separating the adjacent spaces but does not require correction for partition area or the sound absorption capacity of the receiving room. NIC is then simpler to measure in the field than STC and is the most direct measure of sound insulation between rooms.
    f. "NRC" means Noise Reduction Coefficient. NRC is a single number rating of the sound absorbing properties of a material – derived by arithmetically averaging the Sabine absorption coefficients at 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz. An NRC of 0.00 indicates zero absorption while; an NRC of 1.00 indicates 100% absorption;
    g. "PI" means Privacy Index. The privacy index is a way of measuring how intelligible speech is across a given space as defined in ASTM 1130.
    h. "RT_{60}" stands for reverberation time. RT_{60} is the time (in seconds) taken for the sound level in a room to decay by 60 decibels following the abrupt termination of the source of sound. RT_{60} is the primary measure of 'acoustic liveness' of a space. A short RT_{60} (i.e. less than 0.9 seconds) favours speech intelligibility while a long RT_{60} (i.e. greater than 1.5 seconds) favours music.
    i. "STC" means: (Laboratory) Sound Transmission Class. STC is a single number that is an indication of a partition's ability to block sound (i.e. primarily in the speech frequencies). The higher the STC rating, the higher is the sound transmission loss. For instance: loud speech can be understood fairly well through an STC 30 wall, but should not be intelligible through an STC 60 wall.
    j. STI means Speech Transmission Index. Speech Transmission Index is a measure of speech transmission quality.
2. General Requirements
    a. The Design-Builder will provide an Acoustic Consultant to ensure that the Design complies with acoustic, noise control and vibration requirements.
    b. Design and construct the Building to comply, at a minimum, with the requirements described within this Statement of Requirements.
    c. Provide acoustic and noise control measures necessary to create a healing environment for patients, a safe and comfortable environment for staff and confidentiality where it is required.
    d. Acoustics and noise control measures shall include, but not be limited to, the following:
        i. Attenuation of sound within public, patient, and staff environments;
        ii. Sound isolation between the exterior and interior spaces;
        iii. Sound isolation between interior spaces within the building at both horizontal and

vertical separations designed to work together in tandem;

iv. Sound and vibration isolation of building service systems and sound isolation of building service rooms;

v. Sound isolation as required for specialty rooms including but not limited to meeting rooms and quiet rooms;

vi. Control of noise from equipment within rooms;

vii. Minimization of intercom and public address sounds in patient areas;

viii. Not used; and

ix. Control of noise and vibration from specialized equipment.

e. Design partition and ceiling construction to provide approximately the same degree of sound control through each assembly. When a partition is used for sound isolation, extend the sound control construction from slab to slab.

f. Provide airborne sound insulation for gypsum board/steel stud assembly to close off air leaks and flanking paths by which noise can go around the assembly. Make assemblies airtight. Make the entire perimeter of a sound insulating assembly airtight to prevent sound flanking. Use an acoustic caulking compound or acoustical sealant to seal between the assembly and all dissimilar surfaces (including at window mullions) in accordance with the recommendations of an Acoustic Consultant.

g. Optimum sound isolation requires that the integrity of CMU or concrete walls, gypsum board partitions and ceilings (mass) never be violated by vent or grille cut-outs or by recessed cabinets, light fixtures, etc.

h. Where penetrations are necessary:

i. Minimize placing the penetrations back- to-back and next to each other.

ii. Stagger electrical boxes and medical gas outlets by at least one insulated stud space.

iii. Provide mineral fiber insulation and a non-hardening mastic caulking compound to seal joints around all cut-outs such as electrical, TV and telephone outlets, plumbing escutcheons, recessed cabinets and bathtubs.

iv. Use non setting acoustical caulking to seal where the gaps are too small to insert mineral fibre insulation.

i. Minimize constructions such as ducts, rigid conduits, etc., that act as tubes to transmit sound from one area to another. At common supply and return ducts, provide sound attenuation liners at the diffuser and/or grill to maintain the acoustical requirements described below. Seal around conduits.

j. Isolate structure-borne vibrations and sound with resilient mountings on vibrating equipment to minimize sound transfer to structural materials. Provide ducts, pipes, and conduits with resilient, non-rigid boots or flexible couplings where they leave vibrating equipment; isolate from the structure with resilient gaskets and sealant where they pass through walls, floors, or other building surfaces.

k. Use acoustic screens, vibration isolators, and carefully selected exterior equipment to prevent exterior noise (i.e. in compliance with local noise bylaws) that neighbours may find offensive as well as to reduce the chance for re-entrant noise.

l. Design the Building applying the following overriding principles:

i. Provide room shapes, workstation configurations and sound absorptive materials and finishes appropriate to the interior acoustic and reverberation requirements for the intended use of the room or space;

ii. Provide the required degree of sound insulation between the exterior and interior, as well as between interior spaces within the facilities through space planning and use of appropriate building materials;

iii. Provide finishes that dampen footfall and building services vibration so that the function of vibration-sensitive equipment uses and spaces are not disturbed by the effect.

iv. Provide control of building services noise through space planning to address the adjacency/proximity of mechanical and electrical spaces to minimize their effect on noise sensitive areas;

v. Provide wall, roof, and floor assemblies with acoustic performance in accordance with the minimum requirements listed on the following pages;

vi. Provide buffer zones (e.g. corridors) between noise sensitive areas (e.g. Inpatient Rooms, Resident Rooms, conference rooms, Quiet Rooms, and offices) and noisy areas (e.g. service areas, waiting areas and lounges);

vii. Avoid vertical adjacencies between noisy and noise sensitive areas;

viii. Design and construct interior assemblies to the STC/NIC rating criteria stipulated in this Section.

ix. Room finishes that absorb sound shall be considered for all occupied spaces throughout the Building.

3. Noise Isolation Requirements

a. Provide wall and floor assemblies with STC/NIC ratings in accordance with Table 1 below.

b. Extend the STC/NIC rated assembly full-height from floor to the underside of structure above for all walls and partitions requiring an STC/NIC rating in Table 1. If such a wall or partition cannot extend full height, provide an alternate system, and provide an Acoustic Consultant's report verifying that the required level of speech privacy and other requirements will be achieved with the proposed design;

c. The sound isolation ratings in Table 1 are considered the laboratory STC ratings except where noted. The NIC ratings shown in Table 1 are the field rated targets to be verified by post construction testing by an independent party.

i. Details such as the ceiling plenum conditions, windows, doors, penetrations through the constructions, etc. shall be addressed to optimize the field performance sound isolation rating.

ii. Table 1 will provide Normal speech privacy (except at corridor walls with doors), assuming a background sound level of at least 35 Dba (NC 30). Achieving the NIC ratings in Table 1 will provide Normal speech privacy between adjacent spaces (except for corridor walls with standard, non-acoustically-rated doors), assuming a background sound level of at least 35 dBA (NC 30).

APPENDIX 1C – ACOUSTIC AND NOISE CONTROL MEASURES

Table 1 – STC/NIC Ratings of Demising Walls and Floor/Ceiling Assemblies

Adjacency Combination		NIC- Walls	STC – Walls	NIC- Floor/ Ceiling	STC – Floors/ Ceilings
All patient rooms and spaces unless otherwise noted, including Medical Inpatient Bedrooms (including bariatric), Single Resident Rooms (including bariatric), examination, treatment, and similar	All patient rooms and spaces unless otherwise noted, including Medical Inpatient Bedrooms (including bariatric), Single Resident Rooms (including bariatric), examination, treatment, and similar	47	50	47	50
All patient rooms and spaces unless otherwise noted, including Medical Inpatient Bedrooms (including bariatric), Single Resident Rooms (including bariatric), examination, treatment, and similar	Corridor (with door)	30	35[1,2,3]	47	50
All patient rooms and spaces unless otherwise noted, including Medical Inpatient Bedrooms (including bariatric), Single Resident Rooms (including bariatric), examination, treatment, and similar	Public spaces, Administrative space, lounges, Waiting areas	47	50	47	50
Service Rooms	All patient and resident rooms and occupied spaces	60	65	55	60
Conference rooms and similar	Any space (no door)	50	55	47	50
Conference Rooms and similar	Corridor (with door)	45	50[1,4,5]	47	50
Meeting rooms, multi-purpose rooms, consultation rooms, and similar	Any Space (no door)	45	50	45	50
Meeting rooms, multi-purpose rooms, consultation rooms, and similar	Corridor (with door)	30	35[1,2,3]	47	50

APPENDIX 1C – ACOUSTIC AND NOISE CONTROL MEASURES

Adjacency Combination		NIC- Walls	STC – Walls	NIC- Floor/ Ceiling	STC – Floors/ Ceilings
Quiet Room, waiting rooms, Spiritual rooms	All occupied rooms (no door)	45	50	47	50
Quiet Room, waiting rooms, Spiritual rooms	Corridor (with door)	30	35[1,5]	47	50
Washroom	All occupied spaces (other than meeting rooms)	40	45	47	50
Comm rooms	All occupied spaces	50	55	47	50
Comm rooms	Corridor (with door)	30	35[1,2,3]	47	50

Adjacency Combination		NIC-Walls	STC – Walls	NIC-Floor/ Ceiling	STC – Floors/ Ceilings
Offices (Private/Shared) control rooms	Offices (Private/Shared) control rooms (no door)	42	47	47	50
Offices (Private/Shared) control rooms	Corridor (with door)	30	35[1,2,3]	47	50
All workrooms	All occupied spaces	47	50	47	50
Staff lounges and breakrooms	All occupied spaces	47	50	47	50
Staff lounges and breakrooms	Corridor	30	35[1,2,3]	47	50
Service/HVAC shafts	All occupied spaces	55	60	dna*	dna
Service/HVAC shafts	All unoccupied spaces	40	45	dna	Dna
Medication Room	All occupied rooms	45	50	47	50
Locker Area, locker rooms, change rooms, servery and similar non-critical spaces	All occupied rooms	45	50	47	50
Clinical Workstations (Nursing Stations) and Unit Clerk Workstations (if enclosed)	All occupied rooms	45	50	47	50
Storage and holding spaces	All occupied spaces	42	47	47	50
Storage and holding spaces	All unoccupied spaces	35	40	47	50

dna* means 'does not apply'

Table 1 – Notes:

a. "Public Space" includes lobbies/atria, waiting/pause areas, reception areas, and similar spaces.

b. "Service Rooms/Areas" include elevators, elevator machine rooms, garages, maintenance rooms, mechanical and boiler rooms and similar spaces, also rooms with noisy medical equipment.

c. The STC/NIC ratings for walls noted in Table No. 1 are based on 25 ga. steel studs at 600 mm o.c. If stiffer studs are required alternate designs must be developed to achieve the STC ratings noted. That is, consideration should be given to use of larger studs (i.e. 152 mm vs. 89 mm, etc. at 25 ga.), resilient channel or resilient clips (where practical), double stud or staggered stud walls, use of proprietary materials such as Quiet Rock and equals, etc. CMU is also an alternative in some areas such as around mechanical and electrical rooms.

d. Note[1]: This is a composite rating for walls that include doors and/or glazing in a wall.
Note[2]: The results assume a closed door.

Note[3]: Where sliding doors are required, the acoustic rating does not apply.
Note[4]: Acoustically rated purpose-built door systems; STC 45 or STC 50 applies to the following rooms (except those with 1050 mm (i.e. 3'6") leaf and 450 mm (i.e. 1'6") leaf:

- Service room
- Conference Rooms and rooms with video-conferencing
- MRI Room

Note[5]: Refer to Section 4: Door Requirements

4. Door Requirements

    a. There is an additional requirement for acoustical details for doors in a number of areas. For these areas, the doors require full perimeter acoustic seals as well as an automatic threshold closer and in some cases acoustically rated door slabs. If leveled and caulked-in-place sill plates cannot be use, assurance must be provided that the floor is level across the width of the door.

        i. D1 (standard solid core wood door with acoustic seals, rated STC 28-33) for upgraded acoustic privacy and shall be applied to key meeting rooms.

        ii. D2 (acoustically rated doors with full acoustic seals, rated STC 40-42) for 'high privacy' rooms such as key offices, consultation rooms, office\interview rooms, conference and exam rooms.

        iii. D3 Purpose-built acoustically rated STC 45 doors for service rooms, and conference rooms (especially with video-conferencing capabilities.

    b. Where Table 1 stipulates a combined STC (STCc) as per Note 1, this combined STC is the over-riding performance requirement. The Design-Builder may propose door type D1 for exam rooms if they can demonstrate that the combined STC (STCc) as per Note 1 will be achieved with the D1 door.

5. Background Noise – Interior Spaces

    a. The Design-Builder shall:

        i. In undertaking the design of the Building, evaluate the expected noise from all mechanical and other systems in the Building; and

        ii. Design and construct the Building so that noise from the mechanical and other systems does not exceed the noise level specified in Table 2 below, within the room or space identified.

        iii. Cross-reference Table 2 with the Room Data Sheets to ensure all room types are covered.

Table 2 – Noise Criteria – Rating Within Various Spaces

Room Type	NC/RC(N)	dBA
All patient rooms and spaces unless otherwise noted, including Medical Inpatient Bedrooms (including bariatric), Single Resident Rooms (including bariatric)	30-35	37-42
Exam/treatment rooms and consult/interview rooms and similar	30-35	37-42
Multi-purpose rooms and areas, training rooms, meeting rooms and similar	30-35	37-42

Room Type	NC/RC(N)	dBA
Security rooms and similar	30-35	37-42
Multiple occupant patient care areas	35-40	42-47
Corridors and public spaces	35-40	42-47
Clinical Workstation (Nursing Stations)	30-35	37-42
Offices	30-35	37-42
Reception area, Unit Clerk Workstation, patient/visitor waiting rooms	35-40	42-47
Meeting rooms	25-35	32-42
Laboratory areas and similar	35-40	42-47
Locker Rooms	40-45	47-52

6. Noise Control – Exterior

    a. The interior noise levels (15-minute Leq) due to exterior sources shall not exceed the specified room dBA level noted in Table 2 above.

    b. Noise levels created in routinely occupied outdoor amenity spaces/locations including mental health outdoor activity area, public outdoor spaces and staff outdoor spaces by the operation of any mechanical and other building services systems (including electrical substations/transformers) shall not exceed 55 dBA.

    c. Noise levels created in routinely occupied outdoor amenity spaces/locations including mental health outdoor activity area, public outdoor spaces and staff outdoor spaces by the operation of emergency power generator system shall not exceed 60 dBA.

    d. Where it will not result in the exceedance of the outdoor amenity space noise limit in Clause ‘b’ of this section, noise levels created by operation of mechanical or other building systems (including electrical substation/transformers) shall not exceed 55 dBA at a distance of 10 m from the Building.

    e. Where it will not result in the exceedance of the outdoor amenity space noise limit in Clause ‘c’ of this section, noise levels created by operation of the emergency power generator system shall not exceed 60 dBA at a distance of 10 m from the Building.

    f. Subject to the requirements of Clauses b, c, d and e of this section, noise levels created at the façade of the Building by operation of emergency power generator system shall not exceed 80 dBA.

    g. Subject to the requirements of Clauses b, c, d and e of this section, noise levels created at the façade of the Building by operation of mechanical or other building systems (including electrical substations/transformers) shall not exceed 75 dBA

7. Acoustics for Privacy/Confidentiality Enhancement

    a. There is a requirement to maintain Confidential Privacy (a level of speech privacy) for some of the key areas of the Building. Confidential Privacy rating is defined as follows:

        i. The sum of the composite STC and the A-weighted background noise level shall be at least 75; or

ii. Rated 0.0 – 0.005 on the Speech Transmission Index (STI) scale, or

iii. Rated 95-100 on the Privacy Index (PI) scale.

b. Speech Transmission Index (STI) is measured on a scale of 0 to 1. High value of STI means high speech intelligibility.

Rating	Subjective Environment
0.00 – 0.12	Confidential privacy
0.13 - 0.19	Normal privacy
0.20 – 0.34	Marginal privacy
0.35 – 0.49	Fair communication
0.50 – 0.64	Good communication
0.65 – 1.00	Excellent communication

c. This measurement scale is also used to determine the level of speech that is transmitted outside a given room into another area which, in healthcare, is generally our concern when trying to maintain privacy/confidentiality from others.

d. Another means to measure privacy is via the Privacy Index (PI) as indicated in the following table:

Rating	Subjective Environment
95 -100	Confidential privacy
80 - 95	Normal privacy
60 – 80	Marginal / poor privacy
less than 60	No privacy

e. The following spaces in the Building shall be designed with increased sound proofing in order to achieve Confidential Privacy* rating:

Rooms	Confidentiality Rating
All Exam/Treatment Rooms	Confidential Privacy
Consult/interview rooms	Confidential Privacy
Meeting rooms which may also be used as consult spaces	Confidential Privacy
Offices	Confidential Privacy
Telehealth capable rooms	Confidential Privacy
Staff Lounge	Confidential Privacy
Resuscitation/Trauma Room	Confidential Privacy

* to be verified by post-construction testing by an independent party.
* where sliding doors are required, the confidentiality rating does not apply.

f. Enclosed Room Speech Privacy Design Guidance

i. Speech privacy is based on the level of speech, the acoustical properties of the partition systems, the level of acoustic finishes in a space and the background noise.

ii. Speech privacy can be achieved with proper space planning, partitions and room finishes.

8. Sound Masking

a. Notwithstanding any other provisions of this Agreement, a sound masking system will not be required or utilized.

b. Not used.

c. Not used.

9. Acoustical Finishes

a. Acoustical room finishes, defined as room finishes with an NRC of greater than 0.5, shall be used in all occupied spaces except where prohibited by code requirements. These spaces include, but are not limited to, the following:

i. All patient and resident rooms (e.g. exam/treatment rooms)

ii. Corridors

iii. Staff Room and lounges

iv. Clinical Workstations (Nursing Stations)

v. Waiting areas

vi. Lobby, circulation spaces and atria when provided in the design

vii. Offices and similar

viii. Consultation rooms, interview rooms, meeting rooms and spaces used for education

ix. Quiet rooms

x. Meeting rooms and rooms with video conferencing

xi. Dining Room

b. The extent of acoustical finishes in the spaces listed in Appendix 1A Clinical Specifications will be determined by the Design-Builder's acoustical consultant. However, the area of acoustical finishes shall not be less than the floor plan area, unless high NRC finishes are used.

c. Sound absorbing materials shall be incorporated into the design of rooms so that the Reverberation Times (RT_{60}s) of the rooms do not exceed the values listed in Table 3; or as outlined in the room data sheets.

d. Where achieving the RT_{60}s in Table 3 appears challenging because of limited scope for use of conventional sound absorbing materials due to safety/security concerns best efforts shall be made and alternative approaches explored with the Authority.

Table 3 – Maximum Room Reverberation Times

Room Type(s)	Reverberation Time (Seconds)
Lobby and Entrance Vestibule. Includes atria if provided in the Building design.	1.0
Medical Inpatient Rooms (bedrooms) and Resident Rooms (bedrooms). Includes bariatric versions of these rooms.	0.8
Corridors and public spaces	1.0
Offices	0.8
Staff lounges, staff workrooms	0.8
Clinical Workstations (Nursing Stations), Medication Room	0.8
Dining rooms, multipurpose areas, Activity Room	0.8
Reception Area, Unit Clerk Workstation, patient/visitor waiting areas, rooms with televisions, alcoves where computers may be used	0.8
Rooms where counselling may be provided	0.6
Quiet Room, Spiritual Room, rooms where training will occur	0.6
Meeting rooms, conference rooms	0.6
Multiple occupant clinical spaces	0.6
Laboratory spaces and similar	0.8
Rooms with video-conferencing capability	0.5

10. Rooms with Imaging Equipment

    a. Special care shall be given in the design of any rooms containing imaging equipment, such as the CT Scanners. Attention shall be paid to:

        i. Vibration isolation of the imaging equipment; and

        ii. Room finishes.

    b. For rooms containing imaging equipment the extent of noise and vibration control detailing shall be determined by the project Acoustical Consultant in addition to meeting the requirements of Schedule 1.

11. Acoustic Performance Testing

    a. Post-Construction sound isolation performance verification tests will be carried out on a minimum of two separate examples of each unique wall assembly having a required STC rating of 45 or more (Refer to Appendix 1C [Acoustic and Noise Control Measures]), including tests of all operable partitions.

        i. Compliance testing will be performed by the Design-Builder's Acoustic and Vibration Consultant.

        ii. A test plan that includes the number and location of all tests must be provided to the Authority for approval before testing begins.

        iii. Tests will be performed at the first opportunity that rooms are enclosed and before Construction is complete so that corrective measures can be applied to spaces that are not yet complete.

        iv. NIC tests will be done in compliance with appropriate ASTM standards.

        v. The measured NIC performance must meet the minimum requirement listed in Table 1 of Appendix 1C [Acoustic and Noise Control Measures].

        vi. Compliance test reports must be provided to the Authority for review and approval within 2 weeks of each set of tests.

        vii. If both tests for a given partition type do not achieve the required ASTC rating, then another two (2) walls will be tested to establish the extent of the problem. Corrective measures will be taken as required to correct all deficiencies and all failing walls retested. The Design-Builder will provide all necessary remedial Work and retesting. Further failure to meet the minimum performance requirements will require both re-testing and further testing to demonstrate compliance.

    b. Post-Construction performance verification tests will be carried out of HVAC noise levels (Noise Criteria (NC) in 10% of all occupied spaces as listed in Appendix 1C [Acoustic and Noise Control Measures]:

        i. Compliance testing will be performed by the Design-Builder's Acoustic and Vibration Consultant.

        ii. A test plan that includes the number and location of all tests must be provided to the Authority for approval before testing begins.

        iii. Testing is to occur after completion of air and water balancing.

        iv. The testing will be focused, but not exclusively, on those spaces located closest to the mechanical spaces serving the various portions of the Facility and those most affected by mechanical duct noise sources.

        v. Compliance test reports must be provided to the Authority for review and approval within 2 weeks of each set of tests.

vi. Where the NC requirements of in Appendix 1C [Acoustic and Noise Control Measures] are not met, measures will be taken by the Design-Builder to reduce HVAC noise levels to below the levels shown in Appendix 1C [Acoustic and Noise Control Measures].

vii. Rooms that did not meet the NC requirements will be re-tested after noise reduction has been applied, plus an additional 5% of rooms will be tested. Further failure to meet the minimum performance requirements will require both re-testing and further testing to demonstrate compliance.

viii. If noise issues arise within 24 months following Substantial Completion, potentially due to varying equipment operations during varying heating and cooling loads, the Design-Builder will investigate and correct any deficiencies and provide demonstration of compliance after corrections are installed.

c. Post-Construction performance verification tests will be taken of the reverberation times to demonstrate compliance with Appendix 1C [Acoustic and Noise Control Measures]:

i. Compliance testing will be performed by the Design-Builder's Acoustic and Vibration Consultant.

ii. The testing will include all Meeting Rooms and Multipurpose Rooms with a seating capacity requirement of greater than 10 people, plus a minimum of 10% of spaces where maximum RT60 requirements have been specified in Table 2 of Appendix 1C [Acoustic and Noise Control Measures] with an appropriate cross-section of space types.

iii. Testing is to be performed after room finishes are installed.

iv. A test plan that includes the number and location of all tests must be provided to the Authority for approval before testing begins.

v. Compliance test reports must be provided to the Authority for review and approval within 2 weeks of each set of tests.

vi. Where the measured reverberation times do not meet the requirements in Appendix 1D [Acoustic and Noise Control Measures], corrective measures will be taken to achieve the targets and similar corrective measures will then be applied to all other spaces of the same type.

vii. Rooms that did not meet the RT60 requirements will be re-tested after corrective measures have been taken and an additional 5% of rooms of that type will be tested. Further failure to meet the minimum performance requirements will require both re-testing and further testing to demonstrate compliance.

d. Post-Construction performance verification tests will be carried out of environmental noise levels in exterior spaces associated with the Facility, and at the property lines of the Facility to demonstrate compliance with exterior noise limits listed in Section 6 of Appendix 1C [Acoustic and Noise Control] for both normal operations and operations with emergency power generation:

i. Compliance testing will be performed by the Design-Builder's Acoustic and Vibration Consultant.

ii. A test plan that includes the number and location of all tests must be provided to the Authority for approval before testing begins.

iii. Testing is to occur after completion of air and water balancing with all systems operating as expected under normal conditions and during emergency generator operations.

iv. The testing will be focused, but not exclusively, on those spaces located closest to the noise sources and their associated intakes/exhausts or other related noise source paths.

v. Compliance test reports must be provided to the Authority for review and approval within

2 weeks of each set of tests.

vi. Where the exterior noise limits in Appendix 1C [Acoustic and Noise Control Measures] are not met, measures will be taken by Design-Builder to reduce noise levels to below those limits in Appendix 1C [Acoustic and Noise Control Measures].

vii. Outdoor spaces that did not meet the noise limit requirements will be re-tested after noise reduction has been applied. Further failure to meet the minimum performance requirements will require further noise control and re-testing to demonstrate compliance.

viii. If noise issues arise within 24 months following Substantial Completion, potentially due to varying equipment operations during varying heating and cooling loads, the Design-Builder will investigate and correct any deficiencies and provide demonstration of compliance after corrections are installed.

END OF SECTION

APPENDIX 1C(I)

CONTROL OF VIBRATION AND NOISE DURING CONSTRUCTION

Control of Vibration and Noise During Construction

1) Control of Vibration During Construction

a) The Design-Builder will review with the Authority any expected vibration from the Design-Builder's Construction activities in advance of those activities (as vibration may result in damage to Existing Hospital and residential buildings or affect Existing Hospital installations, infrastructure, operations, and function of sensitive medical equipment or the use and enjoyment of the Existing Hospital and residential buildings and properties), and without limiting the previous sentence, the Design-Builder will:

i) To prevent cosmetic building damage, ground vibrations from the Design-Builder's Construction activities, including all demolition, ground improvement, and general construction activities, do not exceed 5.0 mm/s peak particle velocity when measured on any Existing Hospital building or neighbouring residential building at any time of day, and any day of the week;

ii) To avoid daytime disturbance/annoyance of patients and staff within Existing Hospital and of residents within neighbouring residential buildings, ground vibrations do not exceed 1.0 mm/sec peak particle velocity when measured on any Existing Hospital or neighboring residential building between the hours of 8 am to 7 pm Monday through Friday, and between 8am and 5 pm on weekends;

iii) To prevent daytime disturbance/annoyance of Patients, Residents and staff within Existing Hospital buildings and of residents within neighbouring residential buildings, ground vibrations will not exceed 1.0 mm/sec peak particle velocity when measured on any Existing Hospital building or neighbouring residential building during the hours of work as described in section 2.10.2.

iv) To prevent night-time disturbance/annoyance of Patients, Residents and staff within Existing Hospital buildings and residents within neighbouring residential buildings, ground vibrations will not exceed 0.3 mm/s peak particle velocity when measured on any Existing Hospital building or neighbouring residential building at times other than the hours of work as described in section 2.10.2. or during certain times of the day and certain days of the week as determined by the Authority, acting reasonably; and

v) To avoid disruption to the Authority's 24/7 operations, it is the responsibility of the Design Builder to have a pre-construction vibration survey done by a qualified Acoustic and Vibration Consultant to establish maximum allowable vibration limits for spaces with more stringent vibration requirements such as laboratories, operating rooms, and imaging. The report must indicate the hours of vibration sensitive operations and minimum setback distances for various anticipated construction activities. The results of this study will be used to establish 'do not exceed' limits for vibrations within each of the specialty low vibration spaces during construction; and

vi) Vibration transfer to the Existing Hospital does not adversely affect the Authority's 24/7 operations, including diagnostic operations and equipment in the adjacent buildings.

vii) Vibration complaints must be investigated by the Design Builder and their Acoustic Consultant; the results of the investigation will be documented and will include recommendations for new 'do not exceed' limits to avoid further complaints. The documentation and recommendations will be presented to the Authority for approval.

viii) Complete a Vibration Monitoring Program as follows:

(1) The Design-Builder will retain a qualified independent third- party vibration monitor to complete vibration monitoring during the Construction activities to confirm that the vibrations caused by the Construction activities do not exceed the limits specified in this Appendix;

(2) The Design-Builder will undertake preliminary vibration monitoring at the Site during the initial stages of all Construction activities that are expected to cause vibrations in order to determine magnitude and dissipation rate of the vibrations for each activity and provide a mitigation procedure to prevent exceeding the vibration limits specified in this Appendix;

(3) The Design-Builder will complete initial vibration related Construction activities at a significant distance away from other Existing Hospital buildings. The qualified independent third-party vibration monitor will provide the Authority and the Design-Builder with a report outlining the vibration results from each Construction activity. The Authority will review the preliminary vibration monitoring report and without relieving the Design-Builder of its responsibilities, may require the Design-Builder to comply with additional vibration monitoring requirements for each Construction activity prior to commencement of the Construction activity;

(4) The Design-Builder will install a total of two (2) vibration monitoring stations on existing buildings in locations approved by the Authority.. The Design-Builder will submit typical detail of monitoring stations for the Authority's review prior to installation;

(5) The qualified independent third-party vibration monitor will conduct vibration monitoring during all Construction activity that occurs within 25 m of existing buildings, and as determined by the results of the preliminary vibration monitoring report. The qualified independent third-party vibration monitor is to immediately alert within five (5) minutes to the Authority (or designate) and the Design-Builder if vibrations exceed the limits specified in this Schedule. The Design-Builder will cease within five (5) minutes the activity causing the vibration; and

(6) The qualified independent third-party vibration monitor will provide the Authority and the Design-Builder with a report no later than the 5th day of each month detailing the results of the monitoring for the previous month.

2) Control of Noise During Construction

a) The Design-Builder will discuss with the Authority any expected noise from the Design- Builder's Construction activities in advance of those activities (as noise may affect Existing Hospital operations and Patient care). Without limiting the foregoing, the Design-Builder will:

i) prior to commencement of Construction activities, submit a noise control plan to the Authority. At a minimum, the plan will include the following:

(1) a list of noise sensitive spaces in the Existing Hospital and surrounding areas, and the maximum allowable Construction activity noise levels for each location that is in accordance with Section iv) following;

(2) a noise monitoring plan indicating intended locations of noise monitors;

(3) tentative schedule of activities likely to produce high sound levels, for the duration of the Construction;

(4) planned hours of work for activities expected to produce high noise levels;

(5) descriptions of planned specific noise abatement measures including enhanced hoarding adjacent to the Existing Hospital;

(6) intended staging locations and routes to be used for minimization of noise disturbance; and

(7) the approach to selection of construction equipment to be on the Site.

ii) include any updates to the noise control efforts and also a schedule of upcoming, noise and vibration producing activities;

iii) carry out its Construction activities so that:

(1) sound levels from the Design-Builder's Construction activities do not exceed 65 dBA (Lmax)) in the nearest critical areas, patient rooms, treatment spaces, LDRP, etc., and 80 dBA (Lmax) at neighbouring properties, except with prior written approval from the Authority;

(2) 2.10.6.1(3)b. Between the hours of 7:00 p.m. and 8:00 a.m. Construction activities near the Inpatient Units, Long Term Care Unit, and LDRP will not generate noise levels of more than 40 dBA (Leq) as measured indoors in the relevant rooms of such units.

(3) sound transfer to the Existing Hospital does not adversely affect the Authority's 24/7 operations; and

(4) applicable construction noise bylaw(s) are complied with.

iv) Complete a sound monitoring program for the existing sensitive spaces such as LDRP as follows:

(1) The Design-Builder will complete sound monitoring during the Construction activities to confirm that the sound levels caused by the Construction activities do not exceed the limits specified in this Schedule and in the noise control plan required in i) above;

(2) The Design-Builder will undertake sound monitoring at the Site of all Construction activities that are expected to cause noise in order to determine the magnitude and dissipation rate of the noise for each activity and provide a mitigation procedure to prevent exceeding the sound limits specified in this Schedule. The sound level monitor will provide the Authority and the Design-Builder with a report outlining the noise results from Construction activity.

(3) The Design-Builder will install a total of four (4) sound level monitoring stations in locations approved by the Authority and in consultation with the Design-Builder's consultant. The sound level monitoring stations will be installed within the monitored indoor spaces along the building wall closest to the Construction area. The sound level meter will have the following minimum capabilities:

(a) logging of A-weighted Leq, L10, L1, and Lmax sound levels on an hourly basis, and
(b) remote access via computer to upload logged sound level data;

(4) The sound level monitors will conduct sound monitoring during all Construction activity that affects the LDRP. The sound level monitor is to alert within 5 minutes to the Authority, or designate, and the Design-Builder if noise exceeds the limits specified in this Schedule or the Design-Builder is otherwise not in compliance with this Schedule. The Design-Builder will cease within 5 minutes the activity causing the noise and modify its activity or schedule the activity to a time that is agreeable to the Authority.

(5) Noise complaints must be investigated by the Design Builder and their Acoustic and Vibration Consultant; the results of the investigation will be documented and will include

recommendations for new noise limits to avoid further complaints. The documentation and findings will be provided to the Authority for approval.

APPENDIX 1D

TECHNOLOGY NARRATIVE

Table of Contents

LIST OF TABLES

NO TABLE OF FIGURES ENTRIES FOUND.

LIST OF FIGURES

LIST OF APPENDICES

No table of contents entries found.

Executive Summary

The purpose of the Technology Narrative is to provide general guidance and overview of the technology systems that will reside in the new Stuart Lake Hospital. **The Technology Narrative is intended to supplement Schedule 1 – Statement of Requirements and not to replace or override it.**

1.0 COMMUNICATIONS, SAFETY AND SECURITY

1.1 TELECOMMUNICATION ROOMS AND PATHWAYS

The new hospital will incorporate a fully redundant structured cabling and pathway infrastructure.

Redundant pathways from the service provider will be provided to the demarcation point within the new hospital. Redundant routers running Hot Standby Router Protocol (HSRP) or similar protocol will be utilized to ensure redundancy requirements are met.

Telecommunications rooms shall be located on each floor as to accommodate the 90m distance limitation of category cable and maximize the area they serve. Telecommunications rooms will be designed to mitigate risks due to fire, flood or earthquakes.

Redundant pathways will connect telecommunications rooms via primary and diverse pathways. The redundant pathways will accommodate all backbone cabling with additional space for future growth. The design of the redundant pathways will ensure that in the event that one telecommunications room is not functioning that the remaining telecommunications room will remain fully functional.

Cable tray and EMT conduit shall be run throughout the building to support all IMIT system cabling with room allocated for future growth.

1.2 STRUCTURED CABLING

1.2.1 BACKBONE CABLING

Backbone cabling will consist fibre optic cable. the backbone cabling will utilize redundant conduit pathways to provide connectivity between telecommunications rooms.

1.2.2 HORIZONTAL CABLING

Horizontal cabling will be CAT6A, 4-pair, U/UTP cabling. CAT6A cabling will be utilized for all category cabling run regardless if a lesser cable could be used (i.e. RJ11 Phone jacks).

1.3 TELEPHONY

The telephony system will utilize a Cisco Unified Communications platform and will integrate with the Authority's existing Cisco Unified Communication Manager servers and clusters installed in the Authority's other facilities. Access to the Authority's existing telephony network will be via a Cisco Integrated Services Router (ISR) and VoIP gateways for connection to the Public Switched Telephone Network (PSTN). Each VoIP telephone will be capable at the Authority's discretion to all-page or page to specific zones in the new hospital.

1.4 CELLULAR DISTRIBUTED ANTENNA SYSTEM (DAS)

The cellular DAS system will be active, or passive as required by the local service provider. The cellular DAS system will ensure cellphone calls can be made anywhere in the new hospital with no reduction in signal quality due structural interferences (i.e. building walls, floors and ceilings).

1.5 PUBLIC ADDRESS

The public address system will provide paging capabilities throughout the facility from all telephones and by back-up microphones in the event the VoIP system fails. Sound coverage will be based on loudness (dBa) and clarity [sound transmission index (STI). The public address system will be fully integrated with the VoIP phone system.

The public address system will operate independently and separately from the fire alarm system but will be interconnected via relay for muting during alarm conditions.

1.6 WIRELESS NETWORKS

The wireless network will support access to the Authority networks and guest networks for connectivity of WiFi devices and equipment. The wireless network will provide complete coverage in 5GHz and 2.4 GHz throughout the entire hospital.

Coverage will be based on signal strength as well as capacity (# of user connected at a given time) to ensure seamless connectivity for all user and equipment.

1.7 STAFF COMMUNICATIONS

The Authority's Vocera staff communications system will be utilized and extended to the new hospital. Badges will be provided to staff to allow communication to other staff badges, VoIP telephones, nurse call consoles, patient stations, staff/duty stations and external/internal cellular and landline phones. Charging stations will be provided in designated areas for charging and storage of the staff communication badges.

1.8 INTERCOM

Audio-visual intercoms will be utilized at exterior entrances to the facility. The intercom system will integrate with the access control, telephony and surveillance systems to provide remote door release, 2-way voice communication and visual monitoring capabilities. Master intercom stations will be strategically placed throughout the facility.

1.9 VIDEO CONFERENCING AND TELEHEALTH

Telehealth and video conferencing will include, but is not limited to: telehealth carts, cisco room kits and flat screen displays.

Rooms with telehealth and video conferncing will provide high quility audio-visual call capabilities between hospital staff and remote users and sites. The system will include user friendly and intuitive controls for ease of access for all staff and will be similar to what is being used in the Authorities other facilities.

1.10 PATIENT WANDERING

The patient wandering system will enhance patient safety and security by restricting patients from exiting or entering restricted departments, areas and to the exterior of the facility while allowing staff to pass through unrestricted.

Keypads will be installed at all controlled doors to allow staff to override the access control system to escort patients through controlled door locations.

The patient wandering system will not be RTLS based or utilize the Authority's WiFi network. Each designated door location will be equipped to detect patients who are wearing specialized bracelet tags, when a patient approaches a restricted door the door will lock and an audible alarm and notification will be pushed to designated staff workstations and staff communications devices.

1.11 PATIENT ENTERTAINMENT AND EDUCATION

1.11.1 PATIENT ENTERTAINMENT

Content will be provided to patient rooms via wall mounted flat screen displays. The content will be pushed to patient entertainment displays and administered by a third-party provider. Content will include television programming, clinical applications and internet access.

Patients will be able to seamlessly control and navigate the patient entertainment system via integration to the nurse call pillow speaker.

1.11.2 PATIENT EDUCATION

Bright Sign media players will be utilized to provide patient education to selected standalone flat screen displays in patients and guest waiting areas, lounges, and others.

Patient education displays will be controllable via remote control by Authority staff.

1.12 NURSE CALL

The nurse call system will match one of the two existing manufacturers currently installed in other Authority facilities to allow smooth transitioning and minimal training for Authority staff. Spare parts will also be easier to obtain and will be more readily available when nurse call systems are matched between facilities.

The nurse call system will be the primary communication device for patients to contact staff and for Authority staff to alert other staff for assistance in clinical use and patient care areas.

Patient/bed stations and pillow speakers will allow inpatients to communication and alert staff in the event of an emergency or need of assistance.

Staff terminal/consoles will include a user-friendly graphical user interface (GUI). Staff consoles will assist in accepting and redirecting calls, provide 2-way audio communication to patient stations and staff communication devices, initiate call escalations, and push schedule reminders to staff communication devices.

Dome lights will be placed above the doorway to in rooms containing nurse call equipment and throughout corridor areas to guide staff to the location of multiple code calls. Dome lights will include multiple color code capabilities including but not limited to:

- Code Red (Fire)

- Code White (Panic)
- Code Blue (Cardiac Arrest)
- Additional colours used by the Authority in similar facilities

The nurse call system will include code call capabilities for code blue and staff duress calls. Full integration to the access control system will allow unimpeded pathways for code blue response teams to reach the code location in a timely manner.

Integration to the Connexall software platform with the nurse call system will allow bi-directional communication between the nurse call system and other devices (i.e. Vocera) and allow for future growth and flexibility to integrate new systems.

1.13 ACCESS CONTROL

The access control system will match existing installs in other Authority facilities to allow smooth transitioning and minimal training for Authority staff. Spare parts will also be easier to obtain and will be more readily available when access control systems are matched between facilities.

The access control system will provide necessary separation between the public and clinical space. Staff spaces will be accessible via card reader to staff who are permitted to enter those spaces (i.e electrical room).

The access control system events logs will be saved in case of break-in or other so that dates and times will be easily accessible to the Authority for review.

The access control system will integrate with the fire alarm system and the code blue system to allow unimpeded egress in the event of a fire or emergency and an unimpeded pathway for code blue teams responding to code blue calls.

The use of electromechanical door hardware will be utilized throughout the new hospital to provide increased security, reduced noise and a more aesthetically clean finish.

1.14 FIXED PANIC SYSTEM

Fixed panic/duress stations shall be placed strategically throughout the hospital and parking areas. Hold-up style panic buttons will be installed at locations where audio-visual alarms could escalate the situation and compromise staff safety.

The panic/duress stations (excluding hold-up buttons) will provide an audio and visual alarm in the form of flashing light and siren. The panic/duress stations will also provide two-way verbal communication and integrate directly with the intrusion alarm system to provide an alert to the local RCMP dispatchment.

1.15 STAFF DURESS

The staff duress system will be part of the nurse call system. Staff duress push-buttons will be strategically placed throughout the new hospital and in consultation with the Authority.

Staff duress push-buttons will notify staff via staff communication devices, select workstations and the overhead paging system. The notifications will indicate the location of the call and the nurse call dome and zone lights will guide response teams to the call origin.

1.16 INTRUSION DETECTION

The intrusion alarm system will be provided in areas where protection of physical assets is deemed critical and in consultation with the Authority. The intrusion alarm system will utilize multiple sensor types (i.e. glass break, infrared, and shock) to maximize the effectiveness without nuisance alarms.

The intrusion alarm shall utilize a dialer that will notify the local RCMP dispatch in the event of a security breach.

1.17 CONNEXALL AND SYSTEMS INTEGRATION

System integration is at the core of modern hospital design. The new Stuart Lake Hospital will utilize a Connexall platform as its primary integration middleware and Cerner for electronic health records. Figure 1 and Figure 2 show an example of what those possible connections could look like in the new hospital.

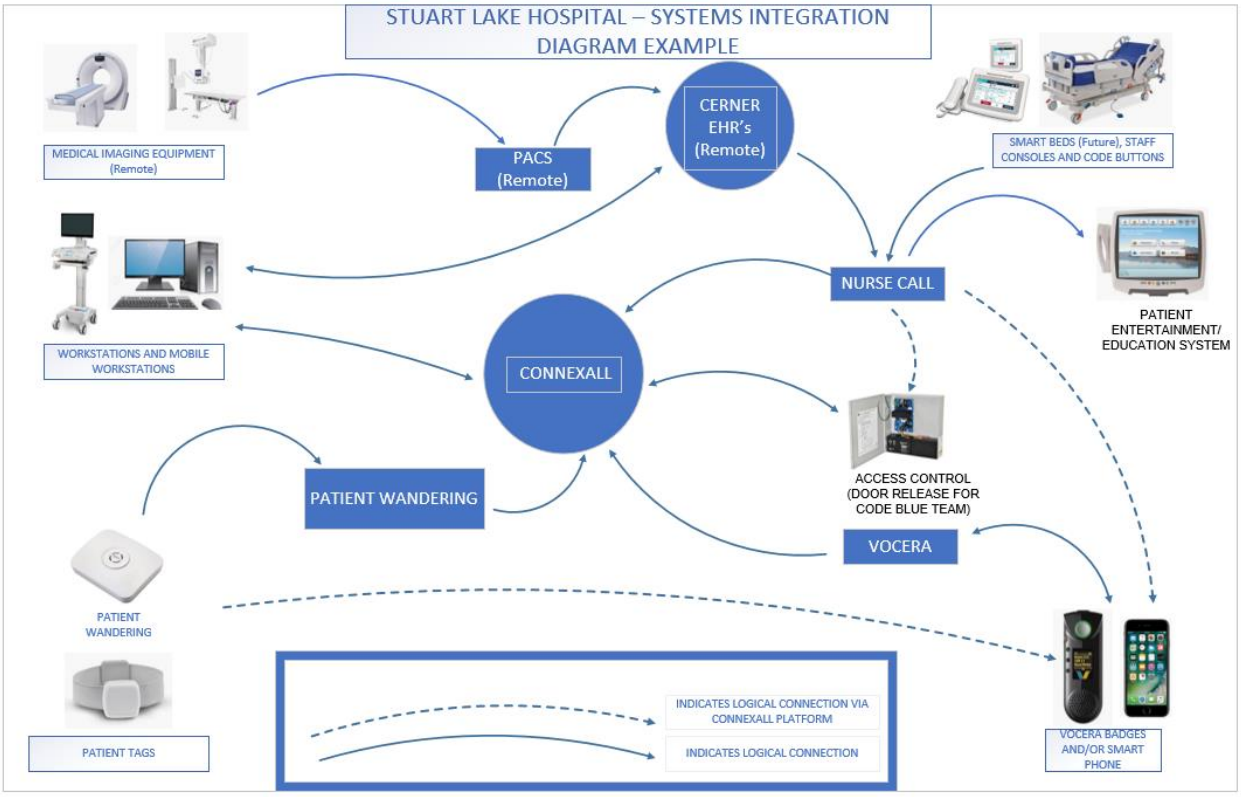


Figure 1 - Connexall Integration Example

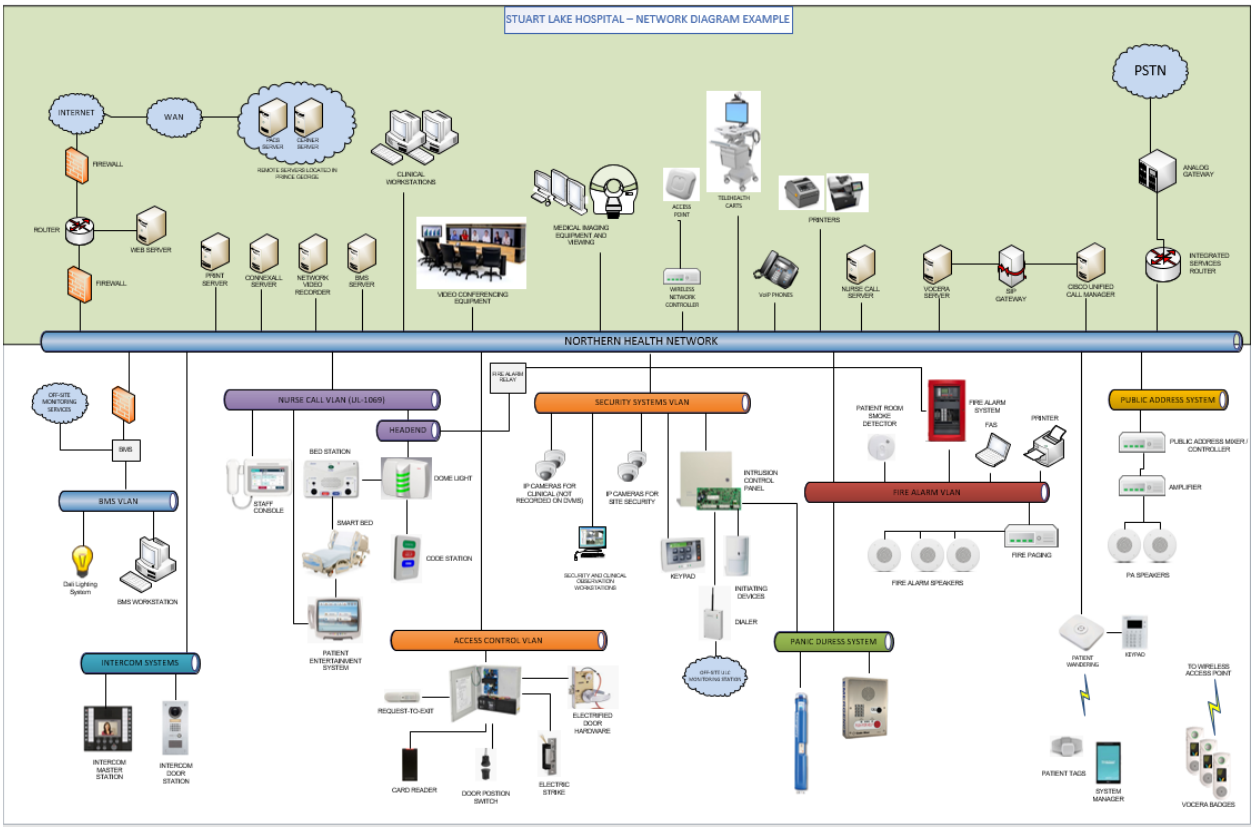


Figure 2 – Network Integration Example

1.18 ASSET TRACKING

Asset tracking for the new hospital will consist of barcode scanners and laminated barcode labels. Laminate barcode labels will be fixed to all design-builder installed equipment and recorded on a software-based spreadsheet application in consultation with the Authority. The spreadsheet will include the type of equipment, the department and room where it resides, along with any other required data requested by the Authority.

1.19 SURVEILLANCE SYSTEM (CCTV)

Complete CCTV coverage will be provided throughout the inside and outside of the hospital, in corridors, public areas and areas determined in consultation with the Authority. Outdoor cameras will be rated for the Stuart Lake climate and shall be equipped with IR technology for low light viewing. Viewing stations will strategically located in multiple locations in consultation with the Authority. Footage from cameras in non-clinical areas will be time stamped and reside on network video recorders so that it can be recalled and reviewed.

		Infrastructure (Passive)				Electronics (Active Equipment)					
System Description	Existing Manufacture or Type	Design	Provide	Install	Commission & Test	Design	Provide	Install	Commission & Test	Program & Configure	License
Division 27 - Communications											
Communications Site Services		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	N/A	N/A
Communications Infrastructure		Design-Builder	Design-Builder	Design-Builder	Design-Builder	N/A	N/A	N/A	N/A	N/A	N/A
Structured Cabling											
Backbone	OM5	Design-Builder	Design-Builder	Design-Builder	Design-Builder	N/A	N/A	N/A	N/A	N/A	N/A
Horizontal	CAT6a	Design-Builder	Design-Builder	Design-Builder	Design-Builder	N/A	N/A	N/A	N/A	N/A	N/A
Owner Supplied Network Equipment		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority	Authority	Design-Builder	Authority	Authority	Authority
Design-Builder Network Equipment		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Wireless Network		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority	Design-Builder	Design-Builder	Authority	Authority
Telephony System - VoIP and Analog		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority	Authority	Authority	Authority	Authority	Authority
Public Address System		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Intercom System		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Nursecall (incl. code blue & staff duress)	Rauland	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Patient Education											
System and Infrastructure	Brightsign	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Content		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Design-Builder	Design-Builder	Authority
Patient Entertainment											
System and Infrastructure		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Content		N/A	N/A	N/A	N/A	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority
Telehealth		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority
Videoconferencing	Cisco Room Kits	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Staff Communications System**	Vocera	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority	Authority	Authority	Authority	Authority	Authority
DAS - Cellular	Telus	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Electronic Health Record System	Cerner	N/A	N/A	N/A	N/A	Authority	Authority	Authority	Authority	Authority	Authority
Integration - Middleware	Connexall	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
PACS		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Authority	Design-Builder	Design-Builder	Design-Builder	Authority
Division 28 - Electronic Safety & Security											
Intrusion Detection System	DSC	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Access Control System	Kantech	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder / Authority*
Surveillance (CCTV)	Avigilon	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Fixed Panic Duress		Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder
Patient Wandering	Wanderguard Blue	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder	Design-Builder

Notes: 1. All system, equipment and cabling designs will be completed in consultation with the Authority

2. If a descrepency exists between the Technology Responsibility Matrix and the Schedule 1 - Statement of Requirements the more stringent standard will apply.

3. All middleware integration , configuration and programing between all systems in Division 28 and Division 27 will be completed by the Design-Builder, unless stated otherwise. Design-Builder to provide all equipment (passive or active) necessary for complete and fully integrated systems as required in Schedule 1 - Statement of Requirments.

4. * Authority will provide the enterprise level access control licensing and LDAP licensing. All additional licensing requirements will be provided by the Design-Builder.

5. ** See SOR for additional information on Design-Builder responsibilities. All Vocera licensing, hardware, software and professional service costs for all systems listed in integration matrix by Authority.

TECHNOLOGY SYSTEMS INTEGRATION MATRIX	Access Control System	Nurse Call System	Surveillance (CCTV)	Fixed Panic System	Public Address	Staff Communication System	Intercom System	Elevator Control	Intrusion Alarm	Connexall System	Fire Alarm	Master Clock - Time Server	Video Conference	Telehealth	Telephony	Cellular DAS	Patient Wandering	Building Management System	Dialer (RCMP dispatch and remote monitoring)	Smart Beds	Patient Entertainment and Education
Access Control System		■	■	■			■	■			■	■					■	■	■		
Nurse Call System			■		■	■		■		■	■	■			■				■	■	■
Surveillance (CCTV)				■			■		■		■	■					■	■			
Fixed Panic System						■			■			■			■				■		
Public Address												■			■						
Staff Communications System										■		■			■	■	■			■	
Intercom System								■													
Elevator Control											■				■		■	■			
Intrusion Alarm												■			■	■		■	■		
Connexall System																					
Fire Alarm												■			■			■	■		
Master Clock - Time Server																		■			
Video Conference														■							
Telehealth															■						
Telephony																			■		
Cellular DAS																			■		
Patient Wandering																					
Building Management System																					
Dialer (Analog and Cellular)																					
Smart Beds																					■
Patient Education and Entertainment																					

1. If a descrepency exists between the Technology Responsibility Matrix and the Schedule 1 - Statement of Requirements the more stringent standard will apply.
2. Authority will provide network time protocol (NTP) for all devices requiring connection to "Master Clock - Time Server"

APPENDIX 1E

WOOD FIRST APPROPRIATE USE MATRIX

APPENDIX 1E – WOOD FIRST APPROPRIATE USE MATRIX

Area of Usage	Appropriateness	Justification
Substructure		
Forming/ Shutter (temporary)	Appropriate	The use of wood in this process is a traditional method of construction.
Structure: Acute & Long Term Care		
Slab on grade	Inappropriate	Not permitted
Beams	Inappropriate	Not permitted
Columns	Inappropriate	Not permitted
Upper Flooring	Inappropriate	Not permitted
Roof (Penthouse)	Inappropriate	Not permitted
Heavy Timber Structure	Not Permitted	Although the base building structure for the acute and long term care building may be required to be of non-combustible construction, proponents may consider a heavy timber design that could be integrated as a 'secondary' structure or decorative installation for specific feature areas.
Non-structural wood framing	Inappropriate	To be installed in compliance with BCBC and authority having jurisdiction requirements
Structure: Primary Care – Wood Framing Permitted		
Slab on grade	Inappropriate	Not Permitted
Beams	Appropriate	Permitted – in accordance with BCBC and authority having jurisdiction requirements
Columns/Posts	Appropriate	Permitted – in accordance with BCBC and Authority having jurisdiction requirements
Upper Flooring	Appropriate	Permitted – in accordance with BCBC and authority having jurisdiction requirements
Lateral System	Appropriate	Permitted – in accordance with BCBC and authority having jurisdiction requirements
Roof (Penthouse)	Appropriate	Permitted – in accordance with BCBC and authority having jurisdiction requirements
Heavy Timber Structure or	Appropriate	Permitted – in accordance with BCBC and authority having jurisdiction requirements
Non-structural wood framing	Appropriate	Permitted – in accordance with BCBC and authority having jurisdiction requirements
Exterior Cladding		
Roof Finish (Flat Roof)	Inappropriate	There is no known wood product for this application.
Walls above ground level	Inappropriate	Not Permitted by Northern Health
Exterior Windows	Inappropriate	Ability to clean and water/chemical resistance are paramount in this location.
Curtain Wall	Inappropriate	There is no known wood product for this application.

APPENDIX 1E – WOOD FIRST APPROPRIATE USE MATRIX

Area of Usage	Appropriateness	Justification
Exterior Doors and Screens	Inappropriate	Not Permitted by Northern Health
Roof Accessories (parapet, cant strips, plywood backing)	Appropriate	Wood permitted for non-exposed and Code compliant applications.
Interior Partitions and Doors		
Partition Studding at Acute Care and Long Term Care	Inappropriate	Not permitted by the BC Building Code.
Partition Studding at Primary Care Centre	Appropriate	Where permitted by BC Building Code
Interior Doors	Appropriate for offices Inappropriate for ORs and MDR	Framing, core and facing of door can be wood for locations not requiring greater than a 90-minute fire resistance rating. Wood doors in high metal cart and material transport traffic areas and high humidity areas like the clinical and MDR areas would be inappropriate.
Vertical Movement		
Stairs (Structural)	Inappropriate	Not permitted by the BC Building Code.
Stairs (treads, risers)	Inappropriate	Not permitted by the BC Building Code.
Guardrails	Appropriate for non-exit stairs	Wood can be used in these locations where there is a low to medium risk of impact.
Handrails	Appropriate	Wood permitted.
Fittings and Equipment		
Hardwood Floor	Inappropriate	Wood could be used in certain, non-clinical locations as a floor finish; this would be limited to high end finished areas which are not subject to low acoustic or high usage requirements. Building code requirements would have to be met.
Ceiling Tiles	Appropriate	Wood could be used in ceiling tiles for aesthetic requirements in certain, non-clinical areas within the building provided that they are not more than 25mm thick with a flame spread rating not more than 25, and except for not more than 10% of ceiling area in a fire compartment is permitted to have an FSR of up to 150. This would be limited to high end finished areas which are not subject to low acoustic or high usage requirements.
Wall Finish	Appropriate	Wood could be used as an interior wall finish for aesthetic and acoustic requirements in certain, non-clinical areas within the building provided that they are not more than 25mm thick with a flame spread rating not more than 150. This would be limited to

APPENDIX 1E – WOOD FIRST APPROPRIATE USE MATRIX

Area of Usage	Appropriateness	Justification
		high end finished areas which are not impaired by acoustic and high usage requirements. Beyond that permitted by the BC Building Code, interior finishes could be supported with an 'alternative solution' approach incorporating other considerations/features such as specific geometry/location of wood, potential fire exposure potential and enhanced fire suppression systems for the area.
Toilet Partitions	Appropriate	The core material for the partitions can be made from wood particles.
Signs	Appropriate	The base material on which the sign is mounted can be of wood.
Loose Equipment (Desks, chairs, etc.)	Appropriate	The core material for the desks, chairs, etc., can be made from particle and complete wood substrate except where CSA standards require non-porous materials.
Fixed Equipment (Millwork)	Appropriate	Frames, core material, doors and substrate for millwork can be constructed with wood. This includes show windows, aprons/backing, shelves, cabinets, and counters.
Modular Benches	Inappropriate	To be stainless steel in Lab
Specialized Equipment	Inappropriate	Clinical equipment and associated environment cannot utilise wood as these environments need to be inert.
Blocking within walls	Appropriate	For attachment of handrails, accessories and similar interior finish items mounted on the surface of walls.
Nailing Elements	Appropriate	Wood nailing elements attached directly to or set into a non-combustible backing for the attachment of interior finishes are permitted provided there is no air space of more than 50mm thick.
Mechanical		
None Known		
Electrical		
None Known		
Site Development		
Landscaping (Architectural, decorative, site furnishings, etc.)	Appropriate	Wood could be used in Landscaped areas for Art and Architectural features.
Contractor		

APPENDIX 1E – WOOD FIRST APPROPRIATE USE MATRIX

Area of Usage	Appropriateness	Justification
Site establishment	Appropriate	Where appropriate, Design Builder is to endeavour to utilise materials of wood and wood derivative for their site establishment.

APPENDIX 1G(I)

INFECTION CONTROL DURING CONSTRUCTION, RENOVATIONS, AND MAINTENANCE OF HEALTH CARE FACILITIES

northern health
the northern way of caring

Clinical Practice Standard **1-11-4-010**

TITLE:	**INFECTION CONTROL DURING CONSTRUCTION, RENOVATIONS, AND MAINTENANCE OF HEALTH CARE FACILITIES**

APPLICABILITY:	All sites and facilities
RELATED POLICES:	
DEFINITIONS:	**Construction Air Handling Unit**: A machine used to move HEPA filtered air into or out of a construction site **Multidisciplinary Team**: A group of various health care facility disciplines that work with the project management team to ensure appropriate infection prevention and control measures are followed during construction and renovation activities

DOCUMENT QUICK LINKS

- Construction/Renovation Permit (#10-200-5022)
- Construction/Renovation Violation Report (#10-200-1012)
- Risk Assessment and Prevention Measure Reference for Hospital Construction and Renovation

KEY POINT

- The purpose of this policy is to determine the infection risks to clients, visitors, staff, physicians, volunteers, and contractors throughout the pre-construction, construction and post construction phases and to prevent the transmission of infections to clients, staff, and visitors during renovations and/or construction.

POLICY STATEMENT (ALL STAFF MUST COMPLY)

All health care facilities within Northern Health will adhere to the Infection Prevention and Control (ICP) Procedures, which include the CSA Z317.13-12 standard *"Infection control during construction, renovation, and maintenance of health care facilities".*

Contractors will be responsible for all liabilities associated with CSA Z317.13-12.

In any areas where this policy is not clear, CSA 317.13-12 shall prevail.

Pre-Construction

- Consultation team/Project Manager must discuss construction/renovation plans with the Health Service Administrator or Plant and Property Manager/designate prior to developing a specification for projects.
- As part of the "start-up meeting", the contractor must file a report with IPC.

- Project Manager and/or Plant and Property Manager/designate will advise IPC of any scheduled construction and renovation projects. Exceptions to this are those projects with Type A activities within Risk Group 1 and 2 and Type B activities within Risk Group 1.
- A “Risk Assessment and Preventative Measures Checklist” will be completed for all Class III, Class IV projects (including hallways adjacent to Class III and IV areas). Project drawings, if available, will be forwarded to Infection Control four weeks prior to project start.
- IPC will review the checklist with stakeholder involvement and confirm the construction activity and risk group. When Class III and/or Class IV preventative measures are required, a Construction/Renovation Permit will be completed by IPC, and a copy forwarded to the Project Manager and/ or Plant and Property Manager/designate prior to commencement of project.
- The Project Manager and /or Plant and Property Manager/designate will communicate the IPC recommendations to the appropriate members of the Project Team.
- The IPC construction/renovation permit will become part of the construction documentation.
- The permit will be displayed at the entrance to the project zone.

Construction

Activities included in the CSA guidelines include (but are not limited to):

- Clients (particularly immunosuppressed) will be moved to an area away from the project zone if clean air quality cannot be ensured during project activity.
- Clients will not be transported through project zones. If client transport through the zone is unavoidable, it must be done as quickly as possible with the client and transport personnel wearing a high efficiency mask.
- Transportation of clean/sterile supplies will occur via routes separate from the project activities.
- The total negative pressure differential from all adjacent occupied areas into the construction area shall be maintained at a minimum of 7.5 Pa (0.03 WC). For projects using Preventive Measures III or IV, the pressure differential gauge shall be connected to a permanently mounted data recorder.
- If a HEPA filtered vacuum is being used as a construction air-handling unit (CAHU), it shall meet the requirements for CAHUs as specified in CSA Z317.13-12.
- Construction, maintenance, and repair area exhaust air shall not be discharged to areas occupied by Population Risk Group 3 or 4. Measures related to re-circulated air shall require approval from the multidisciplinary team.

- Air systems serving the project zone will be isolated and all supply, return and exhaust openings will be isolated to prevent dust or construction debris from entering the air system. Where this cannot or does not occur, all air systems must be cleaned after construction.
- When construction is completed, all ductwork must be cleaned in accordance with NADCA General Specification for the Cleaning of Commercial, Heating, Ventilation and Air Conditioning Systems and CSA Z 317. 13-12.
- Measures related to re-circulated air shall require approval from the multidisciplinary team. In such cases, the multidisciplinary team should arrange for on-site and in-place performance leak testing of the construction air-handling units.
- Water lines shall be flushed of waste before reuse (minimum ten minutes for each distal site), after new plumbing has been installed and before occupancy by patients.
- ICP measures shall be constantly monitored and reviewed at regular construction and project management meetings. Sign-off sheets indicate monitoring/completion of activity and review of indicators shall be used (readings of the negative pressure monitors, humidity, condition of site at close of day, confirmation HEPA air handling units are operating continuously). Documentation of monitoring activities shall be maintained and reviewed on a regular basis by the multidisciplinary team or ICP.
- Construction personnel will observe the appropriate precautions as outlined in the Risk Assessment and Prevention Measure Reference for Hospital Construction and Renovation when leaving the project zone.
- Materials for temporary or permanent installation in the building interior shall be protected from exposure to dust and moisture during delivery to the site, unloading, storage, and construction.
- Cleaning of the project zone will occur as specified by the CSA 317. 13-12 standard. (Refer to the Risk Assessment and Prevention Measure Reference for Hospital Construction and Renovation).
- Adjacent areas to the zone will also be maintained. This includes cleaning prior to the removal of barriers, and minor work performed after the removal of barriers.
- Removal of the dust barrier is accomplished by:
  - HEPA vacuuming surfaces,
  - taking down the barrier and vacuuming it again, and
  - rolling up the poly (construction side up) to contain the dust.
- Construction debris will be transported as specified in the Risk Assessment and Prevention Measure Reference for Hospital Construction and Renovation along pre-designated routes.
- Construction supplies and equipment shall be transported through the health care facility in covered containers to prevent contamination in other areas.

- Construction/renovation site will be monitored for compliance by Plant and Property personnel and IPC.
- When demolition activities such as soil excavation and building demolition occur outside, a risk assessment shall include consideration of:
  - Type of air filters in place and their efficacy (upgrading to VariCel or Bio Cel filters),
  - Air pressure of the building related to the outside environment,
  - Potential effects on water supply and other utilities, and Prevailing wind direction.
- Filter change frequency will have to be determined.
- The quality system ensures that any deviation from normal procedures (e.g., errors and incidents) are identified, investigated, and evaluated, and that corrective action is taken when necessary. This process shall be documented.
- Work areas are to be cleaned daily as follows:
  - Work areas swept at the end of each shift.
  - **Sweeping compound** shall be used for all sweeping of concrete areas and then washed with floor scrubber to reduce dust.
  - Vacuum cleaners must be **HEPA** filtered.
  - All hidden cavities including stud cavities and plumbing chases shall be HEPA vacuumed prior to enclosing.
  - Electrical and junction boxes shall be vacuumed out after drywall prime.
  - Pipes, structural elements, ducts, and other surfaces in ceiling spaces shall be dry wiped after they are installed.

Ceiling Access Exceptions

In Population Risk Group 1 or 2 areas, preventive measures I may apply to projects under the following conditions:

- the project requires only ceiling access for investigation or minor work, accomplished in ten minutes or less
- one ceiling tile, not stained
- the construction activity is Type B and involves only access or minor work above several ceiling tiles where dust migration can be controlled, for minor electrical work or the repair of ventilation components, telephone wires, or computer cables.

For these projects, access shall be for no more than ten minutes per ceiling tile with a HEPA vac running continuously at the point of removal of ceiling tile or hatch.

In Population Risk Group 3 or 4 areas, preventive measures II may be applied to projects under the following conditions:

a) the project requires only ceiling tile access for investigation or minor work (not stained);

b) the construction activity is;

   i. Type A or

ii. Type B and involves only access or minor work above several ceiling tiles or hatches in hard ceilings where dust migration can be controlled, including cutting of ceiling for minor electrical work or the repair of ventilation components, telephone wires, or computer cables.

NOTE: *Pulling of cables through walls or ceilings is a Type C activity and is not covered under this clause.*

For these projects, the following preventive measures II shall apply:

a) construction shall take place entirely inside a containment unit that is sealed tight to the ceiling
b) there shall be no clients in the room
c) a HEPA filtered vacuum shall be applied continuously at the point of ceiling tile or hatch removal
d) workers clothes shall be HEPA vacuumed before exiting the containment unit.

Post-Construction

Activities included in the CSA guidelines include (but are not limited to):

- The air system serving the project zone will be assessed at the end of the project to determine cleaning requirements prior to use.
- All water systems associated with the project will be thoroughly flushed prior to use. Disinfection will occur, as needed.
- Terminal cleaning of the project zone will occur prior to occupancy, as specified in the Risk Assessment and Prevention Measure Reference for Hospital Construction and Renovation.
- The Project Manager and/or Plant and Property Services Manager/designate and IPC will do a final site inspection of project zone prior to occupancy.

RISK ASSESSMENT AND PREVENTION MEASURE REFERENCE FOR HOSPITAL CONSTRUCTION AND RENOVATION

Construction Activity (see part A)	Population Risk Group (see part B)
Type A: Inspection, non-invasive activities	Group 1: Lowest Risk
Type B: Small scale, short duration, minimal dust generating activities	Group 2: Medium Risk
Type C: Activities generating moderate-high levels of dust, requires more than one work shift to complete	Group 3: Medium to High Risk
Type D: Activities generating high levels of dust, major demolition and construction activities, requiring consecutive work shifts to complete	Group 4: Highest Risk

If two types or two groups are selected, select the higher level

e.g., Type A and Type B ⟶ Select Type B

e.g., Group 1 and Group 2 ⟶ Select Group 2

PART A: TYPES OF CONSTRUCTION ACTIVITY

Construction activity type	Description
Type A	Inspection and non-invasive activities. These include but are not limited to, a) activities that involve a single controlled opening in a wall or ceiling for minor work or visual inspection, that is accessed by: i) removing no more than one ceiling tile; or ii) opening of an access panel on a wall or ceiling; b) painting (but not sanding) and wall covering; c) electrical trim work; d) minor plumbing work that disrupts the water supply to a localized patient care area (e.g., one room) for less than 15 minutes; and e) other maintenance activities that do not generate dust or require cutting of walls or access to ceiling (other than as specified in item (a) above).
Type B	Small-scale, short-duration (e.g., less than two hours) activities that create minimal dust. These include, but are not limited to, a) activities involving access to and use of chase spaces, b) cutting a small opening in a contained space where dust migration can be controlled (e.g., cutting of walls or ceilings to provide an access point for installing or repairing minor electrical work, ventilation components, telephone wires, or computer cables); c) sanding or repair of a small area of a wall; and d) plumbing work that disrupts the water supply of one or more patient care areas for less than 30 minutes

Construction activity type	Description
Type C	Activities that generate a moderate to high level of dust, cause a moderate service disruption, require demolition, require removal of a fixed facility component (e.g., a sink) or assembly (e.g., a countertop or cupboard), or cannot be completed in a single work shift. These include, but are not limited to: a) activities that require sanding of a wall in preparation for painting or wall covering; b) removal of floor coverings, ceiling tiles, and casework; c) new wall construction; d) minor ductwork; e) electrical work above ceilings; f) major cabling activities; and g) plumbing work that disrupts the water supply of one or more patient care areas for more than 30 minutes, but less than one hour.
Type D	Activities that generate high levels of dust, activities that necessitate significant services disruptions, and major demolition and construction activities requiring consecutive work shifts to complete. These include, but are not limited to, a) soil excavation; b) new construction that requires consecutive work shifts to complete; c) activities that involve heavy demolition or removal of a complete cabling system; or d) plumbing work that disrupts the water supply of more than one patient care area (e.g., two or more rooms) for one hour or more.

PART B: POPULATION RISK GROUPS AND GEOGRAPHICAL AREAS

Population Risk Group	Typical Areas
Group 1 Lowest Risk	Office areas Unoccupied wards and public areas Laundry and soiled linen cleaning areas Physical plant workshops and housekeeping areas
Group 2 Medium Risk	Patient care areas, unless listed in Group 3 or Group 4 Outpatient clinics (except oncology and surgery) Waiting rooms Autopsy and morgue Occupational therapy areas remote from patient care areas Physical therapy areas remote from patient care areas
Group 3 Medium to High Risk	Emergency (except trauma rooms) Diagnostic imaging Labour and birthing rooms (non-operating) Nurseries for healthy newborns Nuclear medicine Hydrotherapy Laboratories General medical and surgical wards Paediatrics Geriatrics Long-term care Food preparation, serving, and dining areas Respiratory therapy Clean linen handling and storage areas

Population Risk Group	Typical Areas
Group 4 Highest Risk	Intensive Care Units (ICU) Operating Rooms (including prep, induction, post-anaesthetic care unit (PACU), and scrub areas) Oncology units and outpatient clinics for cancer patients Transplant units and outpatient clinics for transplant patients Areas for patients with AIDS or other immunodeficiency diseases Dialysis units Neonatal Intensive Care Unit (NICU) Labour and delivery operating rooms Cardiovascular and cardiology patient areas Endoscopy Pharmacy admixture rooms Sterile supply and processing rooms Burn care units Trauma rooms Bronchoscopy Dental procedure rooms

NOTE: All corridors/hallways adjacent to these areas without a physical barrier should be considered part of the construction site

PART C: CONSTRUCTION ACTIVITY AND RISK GROUP MATRIX

Select Applicable Risk Group and Construction Activity:

	CONSTRUCTION ACTIVITY			
Risk Group	**Type A**	**Type B**	**Type C**	**Type D**
Group 1	☐ I	☐ II	☐ II	☐ III / IV
Group 2	☐ I	☐ II	☐ III	☐ IV
Group 3	☐ I	☐ III	☐ III / IV	☐ IV
Group 4	☐ *I - III	☐ III / IV	☐ III / IV	☐ IV

Shaded areas indicate that a construction/renovation permit from IP&C is required.

* When the population risk group is Group 4 and the construction activity is Type A, the Infection Prevention and Control Department shall be consulted to determine the appropriate preventive measure (I, II or III).

Recommendations for ICP Measures

CLASS I CONSTRUCTION ACTIVITY

Plant and Property Staff and Contractors:

a) Construction / Renovation Activities Dust Control *

- Immediately replace displaced ceiling tiles; and if necessary clean the work area with a HEPA filtered vacuum cleaner

b) Plumbing Activities

- Schedule water interruption during low activity (e.g., evenings if possible)
- Flush water lines prior to use
- Observe for discoloured water
- Ensure water temperature meets the standards set by facility
- Ensure gaskets and items made of materials that support the growth of Legionella, are not used
- Ensure faucet aerators are not installed or used
- Maintain as dry an environment as possible and report any water leaks that occur to walls and substructures

Medical / Nursing Staff:

a) Construction / Renovation Activities

- Minimize client's exposure to construction / renovation area

b) Plumbing Activities

- Report discoloured water and water leaks to Plant Services, and ICP

All site staff:

a) Plumbing Activities

- Report discoloured water and water leaks to Plant Services, and ICP

Note: Class II recommendations must be followed if dust is created during Type A construction activity.

CLASS II CONSTRUCTION ACTIVITY

Plant and Property Staff and Contractors:

a) Construction / Renovation Activities

Dust Control

- Immediately replace displaced ceiling tiles
- Execute work by methods to minimize dust generation

- Provide active means to minimize dust generation and migration into atmosphere
- Use drop sheets to control dust. “Control Cube” may also be utilized.
- Seal windows and unused doors with duct tape.
- Seal air vents in construction / renovation area.
- Place dust mat at entrance to and exit from work areas.
- Use dust capturing attachments to hose of the HEPA vacuum.
- Control dust by water misting work surfaces while cutting.
- Construction workers wear the appropriate personal protective equipment.
- Place supplies and equipment in covered containers during transportation through the healthcare facility.

Ventilation

- Disable the ventilation system in the construction / renovation area until project is completed.
- Monitor the need to change and / or clean filters in construction / renovation area.

Debris Removal and Clean up

- Appropriate containers supplied by contractor.
- Contain debris in covered container or cover with moistened sheet before transporting for disposal.
- Transport debris via designated route.
- Wipe wheels of bins/carts/etc. before entering occupied areas

b) Plumbing Activities

- Schedule water interruption during low activity (e.g., evenings if possible).
- Flush water lines prior to use.
- Observe for discoloured water.
- Ensure water temperature meets the standards set by facility.
- Ensure gaskets and items made of materials that support the growth of Legionella, are not used.
- Ensure faucet aerators are not installed or used.
- Maintain as dry an environment as possible and report any water leaks that occur to walls and substructures.

- Collection tanks and long pipes that allow water to stagnate should be avoided.
- Consider hyper-chlorinating or superheating stagnant potable water.

Housekeeping Services:

a) Construction / Renovation Activities

- Wet mop and vacuum area with HEPA filtered vacuum when all work is completed.
- Wipe horizontal work surfaces with a hospital approved disinfectant.
- Workers to wear the appropriate personal protective equipment if applicable.

b) Plumbing Activities

- Report discoloured water and water leaks to Plant Services, and ICP.

Medical / Nursing Staff:

a) Construction / Renovation Activities

- Minimize client's exposure to construction / renovation area
- Identify high-risk clients who may need to be temporarily moved away from the construction zone

b) Plumbing Activities

- Report discoloured water and water leaks to Plant Services, and ICP

CLASS III CONSTRUCTION ACTIVITY

Plant and Property Staff and Contractors:

a) Construction / Renovation Activities
*Ensure ICP consultation has been completed and permit approved.

Dust Control

- Erect an impermeable barrier from true ceiling (includes area above false ceilings) to the floor consisting of two layers of 6 mL polyethylene and a gypsum wallboard layer. When deemed appropriate by the multidisciplinary team, the composition of the barrier may be modified to suit time, space, or impact constraints.
- Place walk off dust mat at work areas entrance and exit.
- Ensure windows, doors, plumbing penetrations, electrical outlets and intake and exhaust vents are properly sealed with plastic and duct taped within the construction / renovation area.
- Air ducts and spaces above ceilings should be HEPA vacuumed if necessary.

- Use dust capturing attachments to hose of the HEPA vacuum.
- Control dust by water misting work surfaces while cutting.
- Construction workers to wear the appropriate personal protective equipment.
- Construction workers should be HEPA filter vacuumed before leaving the work site: or wear protective clothing that is removed each time; before entering client care areas.
- Do not remove dust barrier until the project is complete and the area has been cleaned thoroughly and inspected.
- Remove dust barrier carefully by the following methods:
  - HEPA vacuum surfaces
  - remove barrier and HEPA vacuum again
  - roll up poly construction side up.
- Place supplies and equipment in covered containers during transportation through the health care facility.

Ventilation

- Disable the ventilation system in the construction / renovation area until project is completed.
- Monitor the need to change and / or clean filters in construction / renovation/ area.
- Maintain negative pressure7.5 Pa (0.03 WC) within the construction zone by using portable HEPA equipped air filtration units.
- Ensure continuous monitoring of negative pressure by using differential gauge connected to an alarmed data recorder. The gauge must be located on the adjacent or exterior side of the barrier; no closer than five metres of the construction site entry.
- Air exhausted from construction, maintenance, and repair areas must be HEPA filtered, preferably directly outside and away from intake vents. Exhaust air shall not be discharged into Risk Group 3 or 4 areas. (Measures related to re-circulated air require approval from the MULTIDISCIPLINARY TEAM).
- If a HEPA filtered vacuum is used as a CAHU, it must meet the CAHU requirements specified in the CSA 317 standards.
- Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction project is complete.

Debris Removal and Clean up

- Appropriate containers supplied by contractor.
- Remove debris at the end of the workday via designated route.
- An external chute may need to be erected if the construction is not taking place on ground level.
- Vacuum work area with HEPA filtered vacuums daily or as needed.
- Contain debris in covered container or cover with moistened sheet before transporting for disposal. Wipe wheels of bins/carts/etc before entering occupied areas.

Housekeeping Services:

a) Construction / Renovation Activities

- Wet mop and vacuum area with HEPA filtered vacuum when all work is completed.
- Wipe exposed surfaces with a hospital grade disinfectant.
- Workers to wear the appropriate personal protective equipment if applicable.
- Increase frequency of cleaning in areas adjacent to the construction zone.

b) Plumbing Activities

- Report discoloured water and water leaks to Plant Services, and ICP.

ICP:

a) Construction / Renovation Activities

- Ensure high-risk clients who are in or adjacent to the construction area are moved.

b) Traffic Control

- In collaboration with the facility Project Manager designate a traffic pattern for construction workers that avoids client care areas, and a traffic pattern for clean or sterile supplies that avoids the construction area.

c) Plumbing Activities

- Consider hyper-chlorinating or superheating stagnant potable water.

Medical/Nursing Staff:

a) Construction/Renovation Activities

- Move high-risk clients who are in or adjacent to the construction area.
- Ensure clients do not go near the construction area.

CLASS IV CONSTRUCTION ACTIVITY

Plant and Property Staff and Contractors:

a) Construction / Renovation Activities
Ensure ICP consultation has been completed and permit approved.

Dust Control

- Before starting the construction project, erect an impermeable barrier from true ceiling (includes area above false ceilings) to the floor, which includes an anteroom to the construction zone.
- Place dust walk-off mat both inside and outside the anteroom.
- Ensure windows, doors, plumbing penetrations, electrical outlets and intake and exhaust vents are properly sealed with plastic and duct taped within the construction / renovation area.
- Air ducts and spaces above ceilings should be HEPA vacuumed if necessary.
- Use dust capturing attachments to hose of the HEPA vacuum.
- Construction workers to wear the appropriate personal protective equipment.
- Construction workers should be HEPA filter vacuumed before leaving the work site: or wear protective clothing that is removed each time when leave the work site.
- Do not remove dust barrier until the project is complete and the area has been cleaned thoroughly and inspected.
- Remove dust barrier carefully by the following methods:
  - HEPA vacuum surfaces
  - remove barrier and HEPA vacuum again
  - roll-up poly construction side up
- Place supplies and equipment in covered containers during transportation through the healthcare facility.

Ventilation

- Disable the ventilation system in the construction / renovation area until project is completed.
- Monitor the need to change and / or clean filters in construction / renovation area.
- Maintain negative pressure 7.5 Pa (0.03 WC) within the construction zone, and negative air pressure 2.5 Pa (0.01WC) within the anteroom by using portable HEPA equipped air filtration units.
- Ensure continuous monitoring of negative pressure by using differential gauge connected to an alarmed data recorder. The gauge

must be located on the adjacent or exterior side of the barrier; no closer than five metres of the construction site entry.

- Air exhausted from construction, maintenance, and repair areas must be HEPA filtered, preferably directly outside and away from intake vents. Exhaust air shall not be discharged into Risk Group 3 or 4 areas.
- Ensure ventilation systems are working properly in adjacent areas.
- Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction project is complete.
- All opened ductwork must be sealed and remain sealed until installation and completion of connections and/or construction.

Debris Removal and Clean up

- Appropriate containers supplied by contractor.
- Remove debris at the end of the workday via designated route.
- An external chute may need to be erected if the construction is not taking place on ground level.
- Vacuum work area with HEPA filtered vacuums daily or as needed.
- Contain debris in covered container or cover with moistened sheet before transporting for disposal.

Evaluation

- Evaluate ICP measures with other members of the planning team or delegate, to evaluate the effectiveness and identify problems at the end of the construction project.

b) Plumbing Activities

- If there are concerns about Legionella, consider hyper-chlorinating stagnant potable water or superheating and flushing all stagnant lines before restoring or re-pressurizing the water system.
- The water lines in the construction area and adjacent client care areas shall be flushed prior to reuse.

Housekeeping Services:

a) Construction / Renovation Activities

Dust Control

- Wet mop and vacuum area with HEPA filtered vacuum when all work is completed.
- Wipe horizontal work surfaces with a hospital approved disinfectant.
- Workers to wear the appropriate personal protective equipment if applicable.
- Increase frequency of cleaning in areas adjacent to the construction zone.

- In cooperation with ICP, and Occupational Health and Safety, ensure that the construction zone is thoroughly cleaned when work is completed.

Evaluation

- Provide feedback on ICP measures with other members of the planning team, to evaluate the effectiveness and identify problems at the end of the construction project.

b) Plumbing Activities

- Report discoloured water and water leaks to Plant Services, and ICP

ICP:

a) Construction / Renovation Activities

Risk Reduction

- Ensure high- risk clients who are in or adjacent to the construction area are moved
- Ensure that workers wear the appropriate personal protective equipment, if applicable

Traffic Control

- In collaboration with the facility Project Manager, designate a traffic pattern for construction workers that avoids client care areas, and a traffic pattern for clean or sterile supplies that avoids the construction area.

Evaluation

- Regularly visit the construction site to ensure preventive measures are being followed
- Evaluate ICP measures with other members of the planning team or delegate, to evaluate the effectiveness and identify problems at the end of the construction project

b) Plumbing Activities

- If there are concerns about Legionella, consider hyper-chlorinating stagnant potable water or superheating and flushing all stagnant lines before restoring or repressurizing the water system.

REFERENCES

CSA Z317.13-12. Infection Control During Construction, Renovation, and Maintenance of Health Care Facilities.

NADCS. (2004). General Specifications for the Cleaning of Commercial Heating, Ventilation, and Air Conditioning Systems.

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Risk Reduction Measures Construction Report

Plant and property to complete

Construction location	Project start date	Estimated duration

Name of Project Manager (PM)	Phone number

Contractor(s)	Phone number

Infection Prevention & Control contact	Phone number

Permit number: _____ Drawings/in-department description included: ☐ Yes ☐ No

Select applicable risk group and construction activity

	Construction activity			
Risk Group	**Type A**	**Type B**	**Type C**	**Type D**
Group 1	☐ I	☐ II	☐ II	☐ III / IV
Group 2	☐ I	☐ II	☐ III	☐ IV
Group 3	☐ I	☐ III	☐ III / IV	☐ IV
Group 4	☐ *I - III	☐ III / IV	☐ III / IV	☐ IV

Shaded areas indicate that a construction/renovation permit is required.

*When the population risk groups is Group 4 and the construction activity is Type A, the multidisciplinary team shall be consulted to determine the appropriate preventative measure (I, II, III).

Based on matrix construction activity, precaution will be class (please check): ☐ **I** ☐ **II** ☐ **III** ☐ **IV**

(See Risk Assessment and Prevention Measures Checklist for Hospital Construction and Renovation.)

Additional precautions:

Submitted by: _____ **(Plant and property)** **Date:** _____ **Phone:** _____

Reviewed and signed off by (**IP&C**): _____ Date: _____

Comments:

***Projects reviewed on the basis of available time, otherwise PMO will assume final review.**

Please complete the construction preventive measures exception on the next page

Risk Reduction Measures Construction Report

Risk reduction measures construction exception

This section is to be used if the preventive measures construction permit cannot be adhered to because:

- The facility design is such that the preventive measures cannot be met
- Unforseen circumstances to prohibit preventive measures

The preventive measures cannot be met because:

Alternate ways to ensure patient safety:

northern health
the northern way of caring

Risk Reduction Measures - Failure to Comply

Date	**To** (project leader)	**From**	**Location of project**

Permit date	**Permit #**	**Construction activity precautions** (Class: ☐ I ☐ II ☐ III ☐ IV)

Additional precautions

Site supervisor	**Other person(s) involved**

Breaches to permit

Actions taken

☐ Informed service department Date: _____

☐ Informed PM(s) Date: _____

☐ Other Date: _____

Resolved: ☐ Yes ☐ No Date: _____

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																				ELECTRICAL NOTE
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	
05.0 Emergency	Treatment Area	05.02.20	Patient Nutrition Station	FS049	0941459	ICE & WATER MACHINE/DISPENSER, COUNTERTOP	Countertop with 4" (102 mm) legs. Ice/water dispenser. To produce up to 257 lb (116.8 kg) of ice per 24 hr. Built in 10 lb (4.5 kg) ice storage. To form dry, cubelet ice. SS exterior. Water filter.	1	4	FS	Hoshizaki	DCM-271BAH	H9320-51	16.54	24.41	31.69	420	620	805	136.3	61.8	F	115	1	8.5	60		Plug	5-15	No														15A circuit breaker. Power cord: 6 ft (1.83 m), bottom. 6.9 kWh used per 100 lb.
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS003	0938523	DIETARY, COFFEE MACHINE	NESCAFÉ® ALEGRIA™ V-Café	1	4	FS		Nescafe Alegria										T																			
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS022	0943654	DIETARY, EXHAUST HOOD	Commercial Range hood. 30" wide, 304 stainless steel construction. HMI touchscreen display, Timerbox Pro, with Extended warranty, Manual Pull station, and NFPA101 Compliance. Wall mounted	1	4	FS	Halton	HHR1030 Standard	HHR1030-D-IF-DRD-CLE	30.00	19.38	10.50	762	492	267	53.4	24.2	W	120	1		60															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS025	0938962	DIETARY, REFRIGERATOR, REACH-IN	Single Door, Commercial, Upright	1	4	FS	True Food Service Equipment, Inc	STA1R-1S		27.50	33.75	77.75	699	857	1,975	0.0	0.0	F							Yes											
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS015	0938350	DIETARY, STEAM KETTLE	Domestic 1.7L (0.45 GAL) Stainless Steel Cordless Kettle	1	4	FS	Hamilton Beach	40887		10.00	9.00	7.00	254	229	178	4.0	1.8	T	120			60	1,500	Plug		No										
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS042	0938604	DIETARY, TOASTER	Domestic, 4 Slices	1	4	FS		ZZZ										T																			
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS009	0938529	DISHWASHER, COMMERCIAL	Commercial undercounter unit.	1	4	FS		LXeR advansys										F																			
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS050	0941705	DISPENSER, HOT WATER	Two gallon (7.6 L) hot water tank. Stainless steel exterior and tank. With drip tray and Hot Water filter system Bunn EQ-17-TL	1	4	FS	Bunn-O-Matic Corporation	HW2 SST	02500.6000	7.09	15.12	23.82	180	384	605	22.0	10.0	T	120	1		60	1,800	Plug											15 Amp. Attached power cord. Requires 2-wire grounded service.
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS017	0938564	OVEN, MICROWAVE, COMMERCIAL	Commercial grade microwave oven complete with programmable control	1	4	FS	Menumaster Commercial Microwave	PEM10WFC		22.01	19.02	13.86	559	483	352	41.0	18.6	T																	Grounded 3 prong plug. Electrical input @ 120V: 11.50 Amp.
07.0 Long-Term Care	Resident Bedroom and Support	07.01.12	Kitchen	FS010	0938531	RANGE, DOMESTIC, ELECTRIC	With single oven.	1	4	FS		ZZZ										F							Yes											
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.01	Department Receiving	FS044	0938607	DIETARY, CART, UTILITY	Three tier utility cart complete with caster.	1	4	FS	Cambro	BC340KD		40.00	21.25	37.50	1,016	540	953	39.0	17.7	F																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.01	Department Receiving	FS019	0938570	DIETARY, PLATFORM CART	Aluminum construction, 5" plate casters (2) swivel braked & (2) rigid, Weight Capacity:1200 lb, includes push handle.	1	4	FS	Eagle Group	1203	Eagle Group 1202	20.00	49.76	42.01	508	1,264	1,067			F																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.01	Department Receiving	FS034	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1	4	FS		BY MECHANICAL										W																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.02	Dry Store Room	FS031	0944463	SHELVING, EPOXY COATED STEEL, LOUVERED, FOOD SERV	Corrosion Resistant Adjustable Shelving, w/ Polymer Coated Open Grid Shelf Mats, w/ Corner Release, Shelf Mats Removable & Dishwasher-Safe, Antimicrobial, 600 Lb. Cap Per Shelf.	5	4	FS	Metro	MQ1872G - Max Q		72.00	18.00	61.20	1,829	457	1,554	23.5	10.7	F																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.03	Refrigerated Store Room	FS026	0940289	DIETARY, CONDENSING UNIT	Condensing unit sized to suite the walk in room. Remote, air cooled. Price included with ID #0938571 (FS020)	1	4	FS	Norbec	Panel Assembly Mnf		44.10	28.20	26.80	1,120	716	681	297.0	135.0	F	208	1		60													Max Fuse Size: 70 Amps
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.03	Refrigerated Store Room	FS027	0938577	DIETARY, EVAPORATOR COIL	Evaporator coils sized and balanced to match the compressor and must be capable of maintaining the specified temperature. Complete with vapour proof disconnect switch andwiring to junction box on top. Price included with ID #0938571 (FS020)	1	4	FS	Norbec	Panel Assembly MNF										O																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.03	Refrigerated Store Room	FS020	0938571	DIETARY, INSULATED PANEL ASSEMBLY	ULC listed pre-fabricated insulated wall and ceiling panels, 4" (100mm) thick with polyurethane insulation, Panels to have a tongue and groove config and fastened together with a mechanical cam-lock fastener, Finish to be SS. Complete with enclosure panels and SS tredplates on exposed exterior. Rooms complete with hinged door, Viewing window, LED light for 50ft candle lighting levels.	1	4	FS	Norbec	CUSTOM										F	120	1	15.0	60				Yes									
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.03	Refrigerated Store Room	FS041	0938601	DIETARY, MONITOR, TEMPERATURE ALARM	Hi-low temperature alarm, recessed in wall panels, with dry contacts for remote monitoring, rechargeable battery having operating range of -50C to +50C. Price included with ID #0938571 (FS020)	1	4	FS	Norbec	Panel Assembly MNF										W							Yes									
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.03	Refrigerated Store Room	FS031	0944463	SHELVING, EPOXY COATED STEEL, LOUVERED, FOOD SERV	Corrosion Resistant Adjustable Shelving, w/ Polymer Coated Open Grid Shelf Mats, w/ Corner Release, Shelf Mats Removable & Dishwasher-Safe, Antimicrobial, 600 Lb. Cap Per Shelf.	4	4	FS	Metro	MQ1872G - Max Q		72.00	18.00	61.20	1,829	457	1,554	23.5	10.7	F																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.04	Frozen Store Room	FS026	0940289	DIETARY, CONDENSING UNIT	Condensing unit sized to suite the walk in room. Remote, air cooled. Price included with ID #0938571 (FS020)	1	4	FS	Norbec	Panel Assembly Mnf		44.10	28.20	26.80	1,120	716	681	297.0	135.0	F	208	1		60													Max Fuse Size: 70 Amps
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.04	Frozen Store Room	FS027	0938577	DIETARY, EVAPORATOR COIL	Evaporator coils sized and balanced to match the compressor and must be capable of maintaining the specified temperature. Complete with vapour proof disconnect switch andwiring to junction box on top. Price included with ID #0938571 (FS020)	1	4	FS	Norbec	Panel Assembly MNF										O																	
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.04	Frozen Store Room	FS020	0938571	DIETARY, INSULATED PANEL ASSEMBLY	ULC listed pre-fabricated insulated wall and ceiling panels, 4" (100mm) thick with polyurethane insulation, Panels to have a tongue and groove config and fastened together with a mechanical cam-lock fastener, Finish to be SS. Complete with enclosure panels and SS tredplates on exposed exterior. Rooms complete with hinged door, Viewing window, LED light for 50ft candle lighting levels.	1	4	FS	Norbec	CUSTOM										F	120	1	15.0	60				Yes									
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.04	Frozen Store Room	FS041	0938601	DIETARY, MONITOR, TEMPERATURE ALARM	Hi-low temperature alarm, recessed in wall panels, with dry contacts for remote monitoring, rechargeable battery having operating range of -50C to +50C. Price included with ID #0938571 (FS020)	1	4	FS	Norbec	Panel Assembly MNF										W							Yes									
14.0 Nutrition & Food Services	Refrigerated, Frozen and Dry Storage Area	14.01.04	Frozen Store Room	FS031	0944463	SHELVING, EPOXY COATED STEEL, LOUVERED, FOOD SERV	Corrosion Resistant Adjustable Shelving, w/ Polymer Coated Open Grid Shelf Mats, w/ Corner Release, Shelf Mats Removable & Dishwasher-Safe, Antimicrobial, 600 Lb. Cap Per Shelf.	5	4	FS	Metro	MQ1872G - Max Q		72.00	18.00	61.20	1,829	457	1,554	23.5	10.7	F																	
14.0 Nutrition & Food Services	Food Production Area	14.01.05	Non Food Store Room	FS031	0944463	SHELVING, EPOXY COATED STEEL, LOUVERED, FOOD SERV	Corrosion Resistant Adjustable Shelving, w/ Polymer Coated Open Grid Shelf Mats, w/ Corner Release, Shelf Mats Removable & Dishwasher-Safe, Antimicrobial, 600 Lb. Cap Per Shelf.	5	4	FS	Metro	MQ1872G - Max Q		72.00	18.00	61.20	1,829	457	1,554	23.5	10.7	F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS005	0938526	DIETARY, COMBI-OVEN/STEAMER	Electric combination oven/steamer with automatic steam venting, browning function and self-adjusting flush mounted door handle. Control to include 2 speed fan and cool down function. Oven is to be constructed of 18 gauge stainless steel. Accessories to include mobile stand with slides, water filter, oven cleaning agents, quick disconnect water hose, safety door lock.	1	4	FS	Rational Canada Inc.	IcombiPro	10-half sized E	33.50	33.00	42.00	851	838	1,067			F							Yes									
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS054	0942543	DIETARY, FOOD PROCESSOR	3 qt (2.8 L) cutter bowl w/ handle and S-shaped blade. 1 hp, 1725 rpm motor. Control panel w/ on/off and pulse button. Two processing discs: 2 mm grating, 4 mm slicing. Stainless Steel Motor Shaft.	1	4	FS	Robot Coupe USA, Inc.	R2N		8.74	15.83	25.31	222	402	643	27.0	12.3	T	120	1	7.0	60		Plug	5-15P										
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS021	0938575	DIETARY, RANGE, 6 BURNERS WITH OVEN	Heavy duty range with convection oven complete with cast iron burners and grates, porcelain enameled oven interior, spring assisted oven door, and black epoxy coat sides.	1	4	FS	Garland Commercial Industries Inc.	M43RC		34.00	38.00	36.25	864	965	921			F							Yes									
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS034	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1	4	FS		BY MECHANICAL										W																	
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS040	0938623	DIETARY, STAINLESS STEEL TABLE, W/SINK	Custom Fabricated Stainless Steel, with splayed splash on back and sides if adjacent to wall, solid undershelf and drawer, overshelves	1	4	FS	Custom Fabricated	CUSTOM			30.00	34.00		762	864			F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS043	0938603	DIETARY, TOASTER, CONVEYOR	Stainless steel construction, conveyor toaster capable of toasting 6 slices per minute. Complete with variable speed control, power save mode and indicator light. Domestic	1	4	FS	Hatco Corporation	TQ-400		14.50	17.71	14.88	368	450	378	46.0	20.9	T	120	1	15.0	60		Plug	NEMA 5P										
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS012	0939026	EXHAUST HOOD, COMMERCIAL	Box type or island type high efficiency ventilator sized to suit equipment below (ensure minimum 200mm overhang on all sides), ULC listed and CGA approved, Meets NFPA-96 standards (most recent version), Stainless steel liquid tight construction, Easy access to all components, Fire dampers activated by thermostatic detection, Mechanical gas valve, Interconnection to BMS. Provide ss service wall.	1	4	FS	Halton	CaptureJet		144.00	59.06	24.02	3,658	1,500	610	112.0	50.9	W	120	1	15.0	60		Hard		Yes									
14.0 Nutrition & Food Services	Food Production Area	14.02.02	Main Cooking (including Bakery)	FS053	0940731	MIXER, TABLE-TOP, 5QT	With Fixed-Speed Motor, Gear-Driven Three-Speed Transmission, Includes: Stainless Steel 5.6-Liter Bowl, "B" Flat Beater, "D" Wire Whip & "E" Dough Hook.	1	4	FS	Hobart Food Equipment Group of Can	N50		10.39	15.00	17.00	264	381	432	44.5	20.2	T	120	1	10.0	60		Plug	5-15P										
14.0 Nutrition & Food Services	Food Production Area	14.02.03	Prepare Food Holding		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1		FS																													
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS057	0940521	DIETARY, CART, UTILITY	Utility Cart with three open shelves. Shelf size 24"W x 15-1/2"D, stainless steel angle frame with push handle. 20 ga. stainless steel legs. 300 lb. capacity, 3-1/2" swivel casters.	1	4	FS	Lakeside Manufacturing	311		16.26	27.52	32.13	413	699	816	29.0	13.2	F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS003	0938523	DIETARY, COFFEE MACHINE	NESCAFÉ® ALEGRIA™ V-Café	1	4	FS		Nescafe Alegria										T																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS055	0941590	DIETARY, REFRIGERATED, SLIDER TABLE	Stainless steel, type 304 with wrap around bumper, 6 - 5" swivel casters, 4 side brakes and 2 at centre	1	4	FS	Burlodge Canada Limited	BMWCST-TRD-1020		75.00	22.99	35.98	1,905	584	914			F	120	1	8.0	60													3/4 HP compressor
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS024	0938348	DIETARY, REFRIGERATOR, REACH-IN	Two door refrigerator, sliding glass door merchandiser.	1	4	FS	True Food Service Equipment, Inc	STR2R-2S		52.64	33.78	77.76	1,337	858	1,975	0.0	0.0	F							Yes										
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS030	0936262	DIETARY, SCALE, DIGITAL	LCD display, 10 lb. capacity in 0.2 increments	1	4	FS	Globe Food Equipment Company	GPS10		10.00	10.00	2.99	254	254	76	20.1	9.1	T	120	1	5.0	60		Plug	NEMA 1-15P										Includes AC adaptor and protective cover, include three (3) C Batteries, cUL, NSF, CE
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS056	0941593	DIETARY, SHELVING, GRAVITY FEED	Stainless steel, type 304, open style solid base, 4 independent moving shelves, 8" spacing between shelving in horizontal position, 5" swivel casters, 2 with brakes at back, wrap around bumper	1	4	FS	Burlodge Canada Limited	B2-FSGS-M-2620-4		28.50	25.98	69.02	724	660	1,753			F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS034	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1	4	FS		BY MECHANICAL										W																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS035	0940290	DIETARY, STAINLESS STEEL OVERCUPBOARDS	Custom Fabricated Stainless Steel. Wall mounted.	1	4	FS	Custom Fabricated	CUSTOM										W																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS038	0938612	DIETARY, STAINLESS STEEL TABLE	Custom Fabricated Stainless Steel Mobile Table, with solid undershelf and drawer	1	4	FS	Custom Fabricated	CUSTOM			30.00	34.00		762	864			F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS045	0938610	DIETARY, TABLE, WORK	Custom fabricated table complete with faucet and two sink compartments. Vegetable preparation with sink	1	4	FS	Custom Fabricated	CUSTOM			30.00	34.00		762	864			F																	
14.0 Nutrition & Food Services	Food Production Area	14.02.04	Meal Assembly	FS036	0938602	OVERSHELF, SS, FOOD SERVICE	Custom Fabricated Stainless Steel. Wall mounted.	1	4	FS	Custom Fabricated	CUSTOM										W																	
14.0 Nutrition & Food Services	Ware Washing Area	14.02.05	Cart Marshalling Area	FS018	0940292	DIETARY, CART, BULK FOOD	Mobile Bulk Cart. Includes heat and drain controls. Two Drawers (unheated), Heated plate shelf. Retractable condiment insert.	1	4	FS	Lakeside Manufacturing	Susie Q SKU 6755		32.00	38.00	35.00	813	965	889			F	120	1		60		Plug											
14.0 Nutrition & Food Services	Ware Washing Area	14.02.05	Cart Marshalling Area	FS016	0940291	DIETARY, CART, TRAY TRANSPORT	12 tray capacity, Temperature controlled. Stainless Steel Construction. Wrap-Around bumpers and non-marking castors.	1	4	FS	Burlodge Canada Limited	BLLKO.UNO.12		30.43	35.18	50.98	773	894	1,295	291.0	132.0	F	120	1		60		Plug											
14.0 Nutrition & Food Services	Ware Washing Area	14.03.01	Soiled Cart Receiving/ Sorting Room	FS033	0938596	DIETARY, SOILED TRAY RETRIEVAL CART	Mobile, NSF rated, stainless steel constructed soiled tray return cart built to suit design and meal delivery system	1	4	FS		ZZZ										F								No									
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS052	0940760	COLLECTOR, FOOD WASTE	Food Waste Collecting System, 2-Piece SS Tank, Adjustable SS Legs, Control Panel, Salvage Basin, Scrap Basket Two Water Saving Modes. LCD Readout. SS Construction. 2 Gal/Min during Pre-Flushing.	1	4	FS	Salvajor Company	S914		32.69	24.50	36.00	830	622	914	158.0	71.8	F	208	3	4.0	60		Hard											
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS002	0938521	DIETARY, CLEAN DISH TABLE	CUSTOM - Stainless steel construction with undershelf and 10" backsplash with 2" return to wall and overshelf	1	4	FS		CUSTOM										F																	
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS008	0938528	DIETARY, DISHWASHING	Commercial signle rack upright dishwasher, stainless steel construction, single point electrical connection	1	4	FS	Hobart Food Equipment Group of Can	AM16VL		29.25	25.25	69.00	743	641	1,753	494.0	224.1	F	208	1		60													
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS034	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1	4	FS		BY MECHANICAL										W																	
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS032	0938595	DIETARY, SOILED DISH TABLE	CUSTOM - Stainless steel construction complete with pre-rinse sink, washdown spray hose, 10 " backsplash with 2 " return to wall. Dishrack overshelf secured to wall.	1	4	FS		CUSTOM										F																	
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS037	0938605	DIETARY, TABLE, SOILED DISH W/POT WASHING SINKS	Custom fabricated pot wash table complete with double faucet and three sink compartments.	1	4	FS		CUSTOM										F																	
14.0 Nutrition & Food Services	Ware Washing Area	14.03.02	Dishroom	FS031	0944463	SHELVING, EPOXY COATED STEEL, LOUVERED, FOOD SERV	Corrosion Resistant Adjustable Shelving, w/ Polymer Coated Open Grid Shelf Mats, w/ Corner Release, Shelf Mats Removable & Dishwasher-Safe, Antimicrobial, 600 Lb. Cap Per Shelf.	1	4	FS	Metro	MQ1872G - Max Q		72.00	18.00	61.20	1,829	457	1,554	23.5	10.7	F																	
14.0 Nutrition & Food Services	Ware Washing Area	14.03.03	Clean Cart Holding		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1		FS																													
14.0 Nutrition & Food Services	Cafeteria (Staff Only)	14.03.04	Housekeeping Room	BB	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1		FS		BY MECHANICAL										W																	
14.0 Nutrition & Food Services	Cafeteria (Staff Only)	14.03.04	Housekeeping Room	BB	0939885	SINK, JANITOR	Base-Building Recommended Make and Model	1		FS	Zzz - Contractor	Base-Building										F																	
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	FS007	0940293	DIETARY, CONDIMENT COUNTER	Millwork counter, length to suit design (custom)	1	4	FS		CUSTOM										W																	
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	FS042	0938604	DIETARY, TOASTER	Domestic, 4 Slices	1	4	FS		ZZZ										T																	
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	FS049	0941459	ICE & WATER MACHINE/DISPENSER, COUNTERTOP	Countertop with 4" (102 mm) legs. Ice/water dispenser. To produce up to 257 lb (116.8 kg) of ice per 24 hr. Built in 10 lb (4.5 kg) ice storage. To form dry, cubelet ice. SS exterior. Water filter.	1	4	FS	Hoshizaki	DCM-271BAH	H9320-51	16.54	24.41	31.69	420	620	805	136.3	61.8	F	115	1	8.5	60		Plug	5-15	No														15A circuit breaker. Power cord: 6 ft (1.83 m), bottom. 6.9 kWh used per 100 lb.

Appendix 1H(I): Food Services List

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																	
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	FS051	0941824	MERCHANDISER, REFRIGERATED	Glass door merchandiser, swing door, counter top unit. High capacity, factory balanced refrigeration system that maintains cabinet temperatures of 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation. "Low-E", double pane thermal insulated glass door assembly with mitered plastic channel frame. The latest in energy efficient technology.	1	4	FS	True Manufacturing Co.	GDM-07-S-HC~TSL01		24.13	24.65	39.88	613	626	1,013			T	115	1	1.9	60		Plug	NEMA										5-15P NEMA config Cord and plug included.
14.0 Nutrition & Food Services	Storage and Supply Area	14.04.01	Lunch Room	FS017	0938564	OVEN, MICROWAVE, COMMERCIAL	Commercial grade microwave oven complete with programmable control	1	4	FS	Menumaster Commercial Microwave	PEM10WFC		22.01	19.02	13.86	559	483	352	41.0	18.6	T																Grounded 3 prong plug. Electrical input @ 120V: 11.50 Amp.
19.0 Supply Chain	Waste and Recycling Area	19.04.02	Organic Waste Holding		0938538	NOTE: NO EQUIPMENT BY COLLIERS REQUIRED		1	4	FS																												

Appendix 1H(II) Laundry List

TO DEPARTMENT	TO SUB DEPARTMENT	TO RM#	TO ROOM NAME	CONSTR #	ID/TAG	ITEM DESCRIPTION	SYNOPSIS / ADDITIONAL INFO	QTY	PC	FE	MANUFACTURER	MODEL	CATALOGUE #	INCH			MM			LB	KG	PLACEMENT	ELECTRICAL																		
														W	D	H	W	D	H				VOLT 1	PHASE 1	AMP 1	FREQ 1	WATT 1	CONN 1	PLUG 1	DATA 1	VOLT 2	PHASE 2	AMP 2	FREQ 2	WATT 2	CONN 2	PLUG 2	DATA 2	ELECTRICAL NOTE
04.0 Diagnostic Imaging	Triage and Waiting Area	04.03.03	Linen Cart Alcove	L010	0941707	CART, LINEN/SUPPLY	Customizable to accommodate various requirements Ergonomic design increases staff protection by avoiding injury Easy to assemble welded steel structure Durable construction withstands demanding environments	1	4	L	MED-I-PANT Inc. (MIP)	DC-048/KD		48.00	20.00	41.00	1,219	508	1,041			F																
05.0 Emergency	Clinical and Non-Clinical Support	05.02.21	Linen Alcove (2)	L010	0941707	CART, LINEN/SUPPLY	Customizable to accommodate various requirements Ergonomic design increases staff protection by avoiding injury Easy to assemble welded steel structure Durable construction withstands demanding environments	2	4	L	MED-I-PANT Inc. (MIP)	DC-048/KD		48.00	20.00	41.00	1,219	508	1,041			F																
07.0 Long-Term Care	Resident Bedroom and Support	07.01.14	Resident Laundry	BB	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1		L		BY MECHANICAL										W															
07.0 Long-Term Care	Resident Bedroom and Support	07.01.14	Resident Laundry	L001	0941708	DRYER, CLOTHES, DOMESTIC	Front Load Heavy Duty Unit	1	4	L	Encore	Encore 22lb Front Ld		27.00	29.00	42.50	686	737	1,080	158.0	71.7	F																
07.0 Long-Term Care	Resident Bedroom and Support	07.01.14	Resident Laundry	L007	0940623	TABLE, LAUNDRY SINK WITH OVERSHELF/CUPBOARDS	CUSTOM - Table with Laundry Sink and overshelf/cupboards	1	4	L		CUSTOM										F																
07.0 Long-Term Care	Resident Bedroom and Support	07.01.14	Resident Laundry	L004	0938598	TABLE, SORTING	Seamless 14 gauge type 304 stainless steel work surface. No casters. Height Adjustable: 22 to 34". Capacity: 1000 lbs (454.55 kg).	1	4	L	Global Medical Products Inc.	WT306F		30.00	60.00	34.00	762	1,524	864	72.0	32.7	F																
07.0 Long-Term Care	Resident Bedroom and Support	07.01.14	Resident Laundry	L002	0941709	WASHER, CLOTHES, DOMESTIC	Front Load Heavy Duty Unit	1	4	L	Encore	Encore 22lb Front Ld		27.00	30.12	43.23	686	765	1,098	299.0	135.6	F																
07.0 Long-Term Care	Clinical and Non-Clinical Support	07.02.06	Linen Cart Alcove	L010	0941707	CART, LINEN/SUPPLY	Customizable to accommodate various requirements Ergonomic design increases staff protection by avoiding injury Easy to assemble welded steel structure Durable construction withstands demanding environments	1	4	L	MED-I-PANT Inc. (MIP)	DC-048/KD		48.00	20.00	41.00	1,219	508	1,041			F																
16.0 Laundry and Linen	Clean Linen Marshalling and Sorting Area	16.01.01	Linen Sorting and Cart Mashalling Area	L003	0943802	CART, LINEN, EXCHANGE	3 shelves, solid. Convertible shelf. With sides and back enclosures. Card holder: 8-1/2x11" (216x279 mm). Corner bumpers. Four 6" (152 mm) casters, 2 fixed and 2 swivel.	4	4	L	Gsm See Gs Manufacturing	G360-22		62.00	24.00	70.00	1,575	610	1,778			F																
16.0 Laundry and Linen	Clean Linen Marshalling and Sorting Area	16.01.01	Linen Sorting and Cart Mashalling Area	L010	0941707	CART, LINEN/SUPPLY	Customizable to accommodate various requirements Ergonomic design increases staff protection by avoiding injury Easy to assemble welded steel structure Durable construction withstands demanding environments	4	4	L	MED-I-PANT Inc. (MIP)	DC-048/KD		48.00	20.00	41.00	1,219	508	1,041			F																
16.0 Laundry and Linen	Clean Linen Marshalling and Sorting Area	16.01.01	Linen Sorting and Cart Mashalling Area	BB	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1		L		BY MECHANICAL										W															
16.0 Laundry and Linen	Soiled Linen Room	16.01.02	Linen Storage	L006	0938626	SHELVING, WIRE	4 Tier Polymer Louverd Shelving Complete with Casters and plastic overlays on shelves. Overall dimension of unit to vary depending on the layout of the room.	2	4	L	Metro	1836NC		18.00	36.00		457	914		9.5	4.3	F																
16.0 Laundry and Linen	Grieving/Viewing Area	16.02.01	Soiled Linen Room	BB	0939028	DIETARY, SINK, WALL-MOUNTED	Base-Building Recommended Make and Model	1		L		BY MECHANICAL										W															
16.0 Laundry and Linen	Grieving/Viewing Area	16.02.01	Soiled Linen Room	L009	0941706	TRUCK/BIN, LINEN	Designed to offer increased load capacity while maintaining easy mobility	3	4	L	Techstar Plastics Inc.	NG033		48.00	31.00	34.50	1,219	787	876	80.0	36.3	F																
16.0 Laundry and Linen		STH-C02A	Alcove, Staging	L009	0941706	TRUCK/BIN, LINEN	Designed to offer increased load capacity while maintaining easy mobility	1	4	L	Techstar Plastics Inc.	NG033		48.00	31.00	34.50	1,219	787	876	80.0	36.3	F																
16.0 Laundry and Linen		STH-C03A	Alcove, Staging	L010	0941707	CART, LINEN/SUPPLY	Customizable to accommodate various requirements Ergonomic design increases staff protection by avoiding injury Easy to assemble welded steel structure Durable construction withstands demanding environments	2	4	L	MED-I-PANT Inc. (MIP)	DC-048/KD		48.00	20.00	41.00	1,219	508	1,041			F																

APPENDIX 1H (III) FOOD SERVICES SPECIFICATIONS

1 **SCOPE OF WORK**

1.1 Include detailed design, manufacturer, supply, installation, inspection and testing of:

.1 Food service equipment.

.2 Refrigerated and frozen storage room assemblies.

.3 Mechanical refrigeration systems for refrigerated and frozen storage room assemblies.

.4 Warewashing equipment.

1.2 Electrical work provided by Electrical Division:

.1 In liquid tight flexible conduit and concealed within building walls and/or ceilings wherever possible.

.2 From the building source or distribution point of power, through disconnect switches or starters to the terminals, connection box, circuit breaker panel or plug receptacles located on the equipment as per applicable codes.

.3 Inter-wiring of the kitchen ventilation and fire suppression system components including but not necessarily limited to the following; exhaust ventilator(s) (hood), surface fire suppression detector(s) in each hood, fire suppression building alarm fire and trouble interlocks as required, exhaust fans, makeup air units, cooking equipment shut down devices, and interlocks to Building Management Controls.

.4 All electrical control wiring required for the mechanical refrigeration systems including but not limited to inter-connections from remote condensing units, to the walk-in refrigerators and freezers.

.5 Electrical wiring for the walk-in refrigerator and freezer including power supply to interior lights, light switches, door heaters, temperature alarms, evaporator coils, drain line heaters, electric defrost and solenoid valves.

.6 Electrical inter-wiring of all walk-in refrigerator and freezer temperature alarms to building annunciator system, building security system and/or central refrigeration monitoring system as required.

.7 Electrical wiring for exhaust ventilator, control panel, exhaust and make-up air fans.

.8 Electrical inter-wiring between exhaust and make-up air fans, exhaust ventilator control panel, magnetic contractors and shunt trips etc. so as to shut down power to electric cooking equipment in the event of a fire condition in conjunction with the fire suppression system.

.9 Delayed vital power supply to all food service equipment as required to maintain food services during a power outage.

.10 Inter-wiring of the fire suppression system to the maintenance annunciator panel or building security system as required including building fire and trouble annunciation.

.11 Supply and installation of all electrical receptacles located in floors, ceilings or walls.

.12 Supply and installation of all electrical receptacles, junction boxes or sub-panels in millwork service counters.

.13 Supply and installation of low water cut-off devices for any equipment in which immersion type electric heating elements are utilized.

.14 Supply and installation of all motors integral with equipment complete with starters, internal thermal overload protection and disconnect switches.

.15 Supply and installation of all internal wiring on custom fabricated items in a concealed and well supported manner and terminated inside circuit breaker panels or junction boxes ready for final connection by the electrical trades. All equipment shall be inspected by the local hydro authority and carry CSA and ULC approval.

.16 Tag each multiple electrical wire or cable used in any custom fabricated piece of equipment to indicate the item serviced. When circuit breaker panels are used, identify each circuit.

.17 Supply and installation of cords and plugs on equipment as required and match the plug with the respective receptacle.

1.3 Mechanical work provided by Mechanical Division:

.1 Concealed within building walls and/or ceilings wherever possible.

.2 Supply, installation, rough-in, and connection of all domestic hot and cold water, drains, vents, as per code from building supply to the point of connection required for the complete operation of equipment.

.3 Supply and installation of shut off valves, back flow preventers, line strainers, shock absorbers, pressure, temperature and pressure gauges and control valves or devices.

.4 Supply and interconnection of hot and/or cold water lines to multiple components of food service equipment including but not limited to: dishwashers and booster heaters, hose reels etc.

.5 Supply and installation of drain lines, traps, vent piping, clean outs and grease traps, sediment interceptors, drains for floor pans, connected drains for equipment, floor drains with funnels for open drains on equipment, floor drains with funnels and drain lines for evaporator coils.

.6 Supply and installation of all floor drains for general drainage purpose, maintenance and cleaning, throughout the facilities.

.7 Supply and installation of all hand sinks, slop sinks, janitorial sinks, grease traps and general sanitizing stations.

.8 Supply and installation of all base building water heating equipment capable of supplying the volume, pressure and temperature of hot water required to properly operate all food and equipment.

.9 Connection of all equipment designated as "Owner Supplied".

.10 Disconnection and later reconnection of any equipment designated as “Existing Equipment To Be Relocated”.

.11 Roughing-in and capping off of mechanical services required for any equipment designated as "Future".

.12 Use chrome plated piping wherever exposed.

.13 Provision and installation of all faucets complete with aerators and replaceable seats, ready for connection by appropriate contractor.

.14 Supply and installation of chrome plated overflow assemblies, drain fittings and traps with tail pieces for all sink type assemblies.

.15 Supply and installation of chrome plated blowdown piping from items with relief or safety valves, extend piping to nearest hub or floor drain approximately 4" (100mm) above drain.

.16 Inter-piping of all hot food well drains to one common 1 1/2" (38mm) chrome manifold and extend to 4" (100mm) above floor drain or funnel floor drain. The drain(s) shall be trapped as required by local codes complete with clean out. Provide a separate extended shut off valve for each well.

1.4 HVAC/mechanical work Provided by Mechanical HVAC Division:

.1 Supply, installation and connection of all exhaust ductwork from exhaust fan(s) to foodservice equipment, exhaust ventilator(s) hood(s) or dishwashing and cart washing equipment per the current edition of the NFPA-96 as recognized by building codes, and per the requirements of the BC Gas Utilization Code.

.2 Supply and installation of all exhaust s.s. duct work leading to exhaust ventilator(s) hood(s) take-off collars and connect to collars. Use watertight duct work and weld all joints as per the current edition of NFPA Code - 96.

.3 Supply and installation of make-up air system including fan, s.s. duct work, distribution grills and/or connection to make-up air plenum on exhaust ventilator(s) (hoods), if specified.

1.5 Work provided by Other Trades

APPENDIX 1H (III) FOOD SERVICES SPECIFICATIONS

.1 Supply and installation of floors, floor leveling materials and floor finishes throughout the foodservice areas as well as those required for, but not limited to, prefabricated insulated walk-in type refrigerated and frozen room assemblies.

.2 Provision of all floor depressions required for foodservice equipment.

.3 Provision of sleepers with vibration isolation for refrigeration systems.

.4 Provision of all building floor slab depressions, slab insulation, flexcell expansion joints and slab ventilation system(s) for prefabricated, insulated walk-in refrigerated or frozen room assemblies where specified.

.5 Supply and installation of extruded styrofoam - Foamular 1000 or equal insulation in floor depressions or under concrete slab for all prefabricated, insulated walk-in type refrigerated and frozen room assemblies.

.6 Supply and installation of in-fill concrete topping inside prefabricated, insulated walk-in refrigerated and frozen room assemblies which have depressed prefabricated insulated floor panels or extruded styrofoam so as to make floor level with outside floors (allowing for floor finish thickness).

.7 Supply and installation of all floor tile or other specified flooring finishes inside prefabricated, insulated walk in type refrigerated and frozen room assemblies including coving up inside and outside of prefab walls.

.8 Supply and setting of sleeves in floors, walls and ceiling (as well as any related core drilling) for electrical, mechanical refrigeration, plumbing, gas and beverage lines etc.

.9 Supply and installation of structural supports or sleepers for roof top condensing units, condensers or evaporative condensers, exhaust and make-up air units etc as specified.

.10 Supply and installation of structural support beams to anchor hanging rods for roof panels of all prefabricated, insulated walk-in refrigerated and frozen room assemblies and exhaust hoods.

1.6 Work related to the pre-fabricated insulated walk-in refrigerated and frozen storage room assemblies and mechanical refrigeration systems shall be and include:

.1 Supply, installation and erection of all prefabricated insulated panels required to insulate building structural columns that occur within walk-in type refrigerated and frozen room assemblies.

.2 Supply and installation of internal and external bumpers as required.

.3 Supply and installation of low temperature LED lights with quick start.

.4 Supply and installation of stainless steel flashings as required to conceal openings in prefabricated insulated walk-in type panels.

.5 Supply and installation of stainless steel corner guards at all interior and exterior outside corners and insulated panels around building structural columns.

.6 Supply and installation of viewing windows (heated for freezers) on sliding and hinged doors.

.7 Supply and installation of removable enclosure panels from top of insulated walk in type refrigerated and frozen storage room assemblies to finished ceiling. Color and finish to match color and finish of room assemblies.

.8 Supply and installation of insulated liquid refrigerant supply, hot gas and suction return lines required to interconnect mechanical refrigeration system components including piping runs from indoor and/or outdoor air cooled condensing units, compressors, to evaporator coils within prefabricated, insulated walk-in type refrigerated and frozen room assembly required in order to form a complete operating mechanical refrigeration system.

1.7 Work related to the exhaust ventilators and fire suppression system shall be and include

.1 Supply, set-into-place and suspension of all exhaust ventilators, integral make-up air plenums supplied and installed with exhaust ventilator(s) or (hoods).

.2 Supply, and set-into-place exhaust ventilator(s) control panels complete with control relays as required for interlock to the building central alarm panel.

.3 Supply and installation of fire suppression systems complete with piping, bottles, Fenwal thermostatic detection devices or fusible links as specified, release mechanisms and all other necessary accessories and components to form a complete operational and NFPA and ULC approved system.

.4 Supply and installation of remote fire pull stations for the exhaust ventilator/fire suppression system.

.5 The supply and installation of remote fire suppression system shall be in accordance with all requirements and regulations of Underwriters' Laboratories of Canada, "N.F.P.A. Code 96", B.C. Building Code and other local municipal authority having jurisdiction.

.6 Supply and installation of removable s.s. panels from the top of exhaust hoods to the underside of the finished ceiling.

1.8 Codes and Compliance

.1 Conform to all laws, bylaws, rules, regulations and requirements of all authorities having jurisdiction.

.2 All electrical equipment must conform to the Canadian Hydro Electrical Code, the Electrical Inspection Department Bulletins, the Technical Safety B.C. requirements and the Canadian Standards Association. All equipment must have a C.S.A. approval label.

Equipment that is not C.S.A. approved will be rejected, removed from the site and substituted for at no additional cost to the Contract.

.3 Any plumbing or drainage systems shall conform to the Plumbing Code except as modified by regulations and bylaws of authorities having jurisdiction.

.4 Each piece of equipment shall be accompanied by a label or certificate of approval.

.5 All mechanical refrigeration system shall be supplied with safety relief valves, shut-off valves for each piece of equipment, refrigerant leak detectors and all other items as required by local regulations.

.6 All welded pressure vessels shall be constructed to ASME Code. The vessels shall bear the stamp and certificates framed under glass and hung adjacent to the vessel.

.7 Equipment design and fabrication must conform with the National Sanitation Foundation and Provincial as well as Local Municipal Health Department Regulations.

2 **DESIGN AND PERFORMANCE REQUIREMENTS**

2.1 Delivery and storage of equipment

.1 Coordinate deliveries of equipment in conjunction with construction activity and progress at the site and as dictated by the Owner.

.2 Obtain and/or hold equipment ready for delivery in accordance with an agreed schedule which will permit completion of the work at the specific date.

.3 Deliver, unpack and set in place all equipment in the designated position, ready for final connection of services, for units with electrical or mechanical connections.

.4 Supply to the Owner, in sufficient time, any information or items of service, articles, components or equipment which requires building in or which may overlap or impede the work of others.

.5 Provide all necessary information within adequate time and in proper sequence regarding the exact location of openings, chases and any attachments or other fittings required for foodservice equipment.

.6 Supply and deliver to the site in sufficient time all inserts, anchors, bolts, sleeves, ferrules and similar items for attaching to, or building into, masonry, concrete and other work for the proper anchorage and fixing of the equipment. Include necessary templates, instructions, directions and/or assistance in the location and installation of all items by other Sub-contractors.

2.2 Installation

.1 Caulk and seal equipment to walls, and adjacent equipment where required.

.2 Leave installed work neat, cleaned and polished, well fitted into position, level, and in proper operating condition.

.3 Promptly remove all rubbish and debris from the building and site as the work proceeds and on completion.

.4 Activate, test and adjust all equipment and apparatus installed under this Contract. Refinish and repair any painted and finished surfaces damaged during erection and installation. Hand over the completed installation in first class condition and working order.

.5 Ensure electrical equipment is accompanied by label or certification of approval by Canadian Standards Association, Hydro Electrical Power Commission or Local Authority.

.6 Finished work must be perfectly true and plumb with no warping, buckling or open seams. All edges, hidden or exposed must be ground smooth and rounded. Rivet heads, weld marks, or other imperfections are not acceptable.

.7 Cutting and repairs for the proper installation of services are part of the work in this Contract.

.8 Obtain permits or special inspections.

.9 Identify equipment with metal plates or labels permanently secured which include, where applicable:

- Manufacturer's name or recognized trademark
- Complete model identification
- Model, serial number and CSA U.L.C. and NSF identifications
- Electrical characteristics
- Direction of drive
- Controls
- Circuits, lines, etc.
- Specific operating instructions

.10 Identify equipment with temporary labels showing location and Item number per Specifications.

.11 After installation has been completed and all items checked and adjusted where necessary for satisfactory operation, arrange for inspection of equipment. If items are found unsatisfactory, make necessary corrections and adjustments.

.12 The foodservices sub-contractor will co-ordinate the removal, storage, relocation and installation of all foodservice equipment as required according to the program and/or project schedule as outlined by the architect, owner and/or General Contractor.

2.3 Protection and cleaning

.1 Protect properly and efficiently all work against any damage. Repair any damage to equipment and/or building. Cooperate at all times to keep the area clean and free of all rubbish and debris. At the end, clean all equipment to permit immediate use by the Owner without further cleaning.

.2 In areas where quarry tile is applied as a floor finish, ensure that no stainless steel is present if Muriatic Acid is being used to clean the tiles.

2.4 Maintenance manuals

.1 Supply three (3) sets of manuals, bound and labeled, incorporating operating and maintenance instructions, including spare parts list and optional accessories for all items specified.

.2 Identify each item, arrange in proper sequence and ensure that the numbers correspond to the specifications and drawings.

.3 Provide an itemized lead sheet at the front of the manual with a list of the contents and the name and phone number of the service company.

2.5 Demonstration

.1 After completion of installation, cleaning, testing and final inspection, instruct the Owner or their authorized personnel in the correct operation and maintenance of the equipment.

.2 A demonstration shall be made of each piece of equipment requested, and such demonstration shall be carried out by a competent representative of the manufacturer's equipment.

.3 The Contractor shall co-ordinate the schedule for equipment demonstrations with the Owner representative, with adequate time allowed for each demonstration.

.4 Submit three (3) weeks prior to completion of the installation, cleaning, final inspection and testing, a schedule of demonstration by the suppliers of purchased equipment. Indicate clearly the timing for each supplier to start up and demonstrate the proper use and maintenance of their equipment to the Owner.

3 **MATERIALS**

3.1 Materials for fixed surfaces shall be impervious to moisture, corrosion resistant, smooth and able to withstand regular cleaning and sanitizing.

3.2 Stainless steel, denoted by the abbreviation "s.s." in this specification shall be ASTM-A167-81A, (18-8 Analysis) type 304 cold rolled and annealed, No. 4 finish one side, 180 grit finish free of buckles, pits, warps and imperfections. Ensure that direction of grain matches throughout units.

3.3 Stainless steel tubing shall be 304, seamless and welded, No. 4 finish, 38mm sq. for all legs and bracing.

3.4 Nuts, bolts, screws, washers and other fastenings shall be type 304 stainless steel.

3.5 Galvanized steel sheet, generally referred to as Satincoat; zinc coated, 380 gms/sq. m. Where such material is used as an exposed surface, it shall be finished with one (1) coat of primer and two (2) coats of air dry enamel, silver gray unless otherwise specified.

3.6 Structural steel shall be new material, conforming to recognized standards, grade 300W, cleaned and primed.

3.7 Gauges of material refer to U.S. Standard Gauges.

.1 Gauges are as follows:
1.0 mm - 20 ga.

1.2 mm - 18 ga.

1.6 mm - 16 ga.

2.0 mm - 14 ga.

3.0 mm - 12 ga.

3.8 Sound deadening, 3mm thick rigid waterproof insulation, Component Hardware M75-1366 applied under working surfaces.

3.9 Electrical Components

.1 Electrical parts supplied under this Section shall be compatible with materials specified for use on this project. Receptacles shall be waterproof and have stainless steel cover plates and screws. Cords and caps shall be approved type, matching the receptacles for which they are intended, whether or not such receptacles are supplied by the Foodservice or Refrigeration Sub-contractor.

.2 Make receptacles, junction boxes and breaker panels easily accessible without dismantling equipment.

.3 Terminate wiring within equipment at load centre or junction boxes with wires identified by Item No. and load.

.4 Properly rate and ground all receptacles.

.5 Supply load centres with bolt on "qwik-gard" type circuit breakers properly rated and identified. Include two (2) 20 amp. spare breakers. Face of panel shall be easily accessible behind stainless steel hinged door of a compartment which must be insulated from local heat.

.6 Equip 3-phase motors with magnetic starters with thermal overload protection on each of the three phases.

.7 Equip single-phase motors of fractional horsepower rating and those ranging up to and including .746 Kw with manual starters with overload protection. Motors rated over .746 Kw must have magnetic starter with overload protection.

.8 Terminate wiring for motors in fused disconnect within 900mm of equipment to be controlled, between 1500mm and 1800mm above floor unless otherwise specified.

.9 Control circuits to be 120 V maximum.

.10 Provide all LED lighting fixtures for designated equipment with colour corrected lamps and controls or switches wired to an easily accessible common junction box for power connection.

.11 Fit all portable and mobile electrical equipment with cord and plug suited for the electrical characteristics and outlets specified for the equipment. Include grounding conductor in the cord.

3.10 Plumbing Components

.1 Plumbing components supplied under this section shall be compatible with materials specified for use on this project.

.2 All control valves and faucets, pipe fittings, waste and tail pieces etc., must be brass chrome plated, bright finish, new, best quality and comply with applicable codes.

.3 Valve handles must be of non-conductive materials.

.4 Faucets, Fisher or Encore, Inlet Size 12mm IPS.

- Deck Mount, Encore Model K57-4006, Inlet Centres 102mm, spout 152mm
- Deck Mount, Fisher Model 3500, Inlet centres 102mm, Spout 152mm.
- Deck Mount, Encore Model K61-8008 or Encore Model K61-8012, Inlet centres 203mm, or Gooseneck
- Deck Mount, Fisher Model 3300, Inlet centres 203mm, Spout 203mm, 279mm, or Gooseneck.
- Splash Mount, Encore K54-8008 or Encore Model K54-8012, Inlet centres 203mm, Spout 203mm or 279mm.
- Splash Mount, Fisher Model 3200, Inlet centres 203 mm, Spout 203mm or 279mm.
- Provide wrist action handle on all faucets unless specified otherwise, Encore Model K50-001.

.5 Pre-Rinse units, Pot Sink, 19mm IPS Encore Model KN53-5026-12, complete with K50Y-500 swivel arm support, K55-7012 add-on faucet and all attachments including wall brackets for splash mount units.

.6 Wastes, 38mm or 51mm IPS.

- Centre type, with removable basket strainers and tailpiece, Specialty Hardware model P1.
- Rotary type stainless steel, Specialty Hardware DSS8000 with strainer.
- Corner type, with stainless steel overflow, removable strainer and tailpiece.

3.11 Miscellaneous

.1 Casters to be black neoprene non-marking rubber tired, 60 shore hardness, doughnut shaped, ball bearing, equipped with brakes as noted, sized to suit specific usage, zinc finished. Plate type shall be securely bolted to frame. Shank casters shall be threaded type c/w bushing. Bushing shall be welded and upright. Bolts, nuts and lock washers shall be stainless steel. All casters supplied shall be made by the same manufacturer. Casters shall be supplied on each unit to suit its particular application so that it runs freely and handles easily, minimum of 4" diameter and 200 lbs. capacity per caster.

.2 Bumpers shall be Colson #6915 for wrap around type set into stainless steel channel and #6927 for corner type c/w a 1.6mm s.s. exterior casing. Secure bumpers on equipment at identical height and seal any exposed gap.

.3 Garbage containers shall be yellow Rubbermaid #2620 complete with lid and #2623 Dolly.

.4 Towel rack shall be K-Venience type.

.5 Cutting boards shall be white thermoplastic polyethylene, with a hardness of 65-70 durometer and all surfaces polished, as supplied by Rubbermaid Products Inc., Johnson Plastics or approved equal.

.6 All sealants shall be one-part silicone type, tackfree in less than one hour with complete cure achieved to 6mm depth in less than 24 hours. Sealant must not significantly alter its properties when set.

.7 Sealant to remain flexible and resistant to damage from all normal environments of a commercial kitchen. It must not support the growth of bacteria, mould or fungi or discolor.

.8 Sealant to be clear or as required to suit colour of surrounding materials.

3.12 Hardware

.1 Handles that are an integral part of doors shall be Component Hardware Model P44-1010 full grip stainless steel pulls.

.2 Handles that are an integral part of drawers shall be Component Hardware Model P44-1010 full grip stainless steel pulls.

.3 Catches shall be Component Hardware Model M32-2401, concealed magnetic catch with a 30 lb. pull.

.4 Door track hardware shall be Component Hardware Model B57-0144.

.5 Door guides shall be Component Hardware Model B62-1093 or equal.

.6 Door stops shall be Component Hardware Model B60-1086 or equal.

.7 Front door by-passing door locks shall be Component Hardware Model B58-5513 for non-heated cabinets and B58-5511 for heated cabinets.

.8 Back door by-passing door locks shall be Component Hardware Model B58-5523 for non-heated cabinets and B58-5521 for heated cabinets.

.9 Swing door hinge for refrigerator doors shall be Component Hardware Model R42-2840.

.10 Refrigerator door hardware: Self closing, heavy duty stainless steel offset pivot hinges with magnetic gaskets and 430 stainless steel door frame and tamper proof cylinder locks and two (2) keys per lock.

.11 Stainless steel drawer slides: Component Hardware Model S52 series for standard and refrigerated units.

.12 Drawer locks: Component Hardware Model P30 series, stainless steel face (drawers shall not be keyed alike). Supply two (2) keys per lock and hand over to the Owner or Consultant.

.13 Provide locks on all doors and drawers. Key each section of the foodservices areas with a different series of locks, two (2) keys per lock.

.14 Casters shall be cadmium plated, steel disc cushion non-marking rubber tired wheels with adjustable cup and cone ball bearings. Caster swivel with two rows of ball bearings running in hardened raceways. Capacity per caster, minimum 100 kg. All stem casters with expanding type fittings of size to suit tube. Plate casters mounted with stainless steel bolts and lock washers for easy replacement. All casters on mobile equipment lubricated for efficient use in varied temperatures of kitchen, walk-in refrigerators and freezers. Casters on mobile equipment equipped with cart-washable casters with grease nipples to assure adequate watertight lubrication.

.15 Pilaster strips, stainless steel 20mm wide with 13mm adjustment.

.16 Clips for shelves shall be die formed stainless steel.

3.13 Welding

.1 All welding shall conform to the requirements of CSA specifications and be performed by fabricators who are approved by the Canadian Welding Bureau and CSA specifications. Exposed welds shall be filed or ground smooth and flush and polished to match surfaces. All exposed welds shall be continuous.

.2 Electric seamless welding shall utilize low carbon filler rod, coated with non-carbonaceous flux, with sufficient chromium and nickel so that the deposited metal and the original metal have the same composition.

.3 Welds shall be free from pits, cracks, discolouration and other imperfections.

.4 Welded joints shall be butt fitted, properly jigged, continuous, ground smooth and polished for both exposed conditions as well as unexposed welds on underside of equipment.

.5 Where soldering is desirable, it shall be made with tin-lead solder. In no case shall soldering be relied upon for the stability of the seam or joint. Soldering shall serve only as a filler to prevent leakage and shall not be considered as a replacement for welding or brazing.

.6 Butt joints made by spot welding or riveting straps under seams and filling with solder, puddled welds and exposed screws are not acceptable.

3.14 Fabrication

.1 Before fabrication commences, check all dimensions and conditions at the building site, including means of access into and through the building to the area where equipment is to be set in place, for all conditions affecting the delivery and installation of the equipment.

.2 Fix and assemble work in the shop wherever possible. Execute the work in accordance with details and shop drawings which have been reviewed and accepted by the Consultant. Where complete or final shop fabrication is not possible, make a trial assembly in the shop prior to delivery.

.3 Workmanship shall be of the best grade modern shop and field practice for the manufacturers who specialize in this work.

.4 Fabricate and erect work square, plumb, straight and accurately fitted. Provide adequate reinforcing and anchorage in all places.

.5 Insulate where necessary to prevent electrolysis.

.6 All drillings to be reamed and exposed edges left clean and smooth.

.7 All straight lengths shall be one piece throughout, with all seams, including field joints, continuously welded. Radiused corners must be welded and polished to match original finish.

.8 Conceal joints and connections wherever possible. Intermediate joints between supports are not acceptable.

.9 Machine dressed work and finished work shall be free from drag, feathers or roughness of any kind. Remove machine marks by sanding

.10 Pop rivets shall not be used unless clearly noted on shop drawings, and then only if such drawings have been reviewed and accepted by the Consultant.

.11 The methods of construction, reinforcement and anchorage, as well as details of finish, fitting and jointing, and other data indicated on shop drawings shall be accurately followed. No deviations from shop drawings which have been reviewed and accepted will be permitted during the construction of equipment or installation.

.12 The gauge of metal and methods of construction shall in all cases be adequate for the various conditions to be met, with the requirements of the design details and Specifications considered as minimum. Finished equipment shall be rigid when assembled and installed.

.13 All fastenings and fittings shall be stainless steel, type 302 or 304 unless otherwise specified. All bolts and screws shall have truss heads or flat heads which are properly countersunk, at exterior and interior surfaces which are normally visible. Concealed fastenings shall be used throughout, unless otherwise approved by the Consultant.

.14 Sheet material for counter tops, tables, shelves and similar forms shall be straight lengths, in one continuous sheet if not over 3 metres long.

.15 Make provisions in the equipment for proper installation of services and connections. Cut and patch only when necessary. The completed installation shall be properly finished without rough edges or exposed openings.

.16 Allow for expansion and contraction of materials.

.17 Obtain samples and confirm sizes of trays, racks, pans and china to determine the exact requirements for openings in equipment.

3.15 S.S. work tables and counters

.1 2.0mm stainless steel continuous sheets all welded.

.2 Reinforcing shall be a minimum 3.0mm Satin Coat subtop arranged so that forms are concealed from normal view. Secure reinforcing to tops with stud welding and appropriate silicone.

.3 Table or counters up to 1800mm in length shall have a minimum of 4 legs.

.4 Tables with sinks shall have a marine edge unless otherwise specified.

.5 Worktable and counters with sink, work tops to slope towards sinks at a slope of 20mm per metre. For dish tables 8mm per metre toward dishwashing machine. Front edge level over full length.

.6 Edges shall be as shown and specified in the standard detail, SD 401.

.7 Kickplates, where specified, shall be of 1.6mm stainless steel and secured to equipment, easily removable.

3.16 Tops

.1 Stainless steel tops as specified under "Worktables and Counters".

3.17 Backsplash

.1 2.0mm stainless steel fully welded.

.2 Integral section of table or counter top turned up on a 19mm radius to the height specified, then boxed or splayed.

.3 Enclose, fill and weld all exposed ends and back. Exposed backs at upturns and splashbacks shall be faced with 1.2mm stainless steel back panel to bottom of splashback. Such panels shall be removable as required for access to mechanical and electrical parts. Seal backs to wall with clear silicone.

3.18 Legs and bracing

.1 1.6mm stainless steel wall, 41mm O.D. tubular.

.2 Provide framework for table tops to maintain a height of 900mm above finished floor.

.3 Leg spacing maximum 1600mm apart, 760mm front to back.

.4 Bullet feet, Component Hardware Model A10-0851. When table has service connections, dowel and secure to floor using Component Hardware Model A10-0854. Secure to one set of feet only when bridging a structural expansion joint.

.5 Braces shall be continuously welded to legs, polished with minimum reduction in volume.

.6 Cross brace legs in pairs and longitudinal brace at front, centre or back to suit requirements. All set at 250mm above floor.

.7 Legs shall be continuously welded to s.s. saddles of inverted U shape 100mm wide x 20mm deep x 2.75mm. Flanges angled back or rounded at each end.

3.19 Over cupboards

.1 1.2mm stainless steel all welded

.2 Top sloped at 30 deg., end gables boxed and bottom shelf fixed.

.3 Intermediate and adjustable shelves as specified under "Shelving".

.4 Doors as specified under "Doors" section.

.5 Secure units to wall with stainless steel fastenings.

3.20 Shelving

.1 1.6mm stainless steel all welded construction.

.2 Boxed edges on all four (4) sides. Notch corners to fit contour of legs as required for work tables.

.3 Shelves with sides or backs shall be turned up 50mm and set to backs or folded if away from walls.

.4 Shelves shall be easily removable and in sections capable of being pulled out through a single door opening.

.5 Overshelves to be boxed with backs set to walls and secured with stainless steel tubular brackets.

.6 Wire shelves to be 5mm O.D. on 25mm centres, set in a 10mm O.D. perimeter frame either stainless steel or heavy duty chrome plated finish as specified.

.7 Provide a removable bottom shelf in any counter or table set on an enclosed base with mechanical and electrical services.

.8 Removable bottom shelf in counters or tables with sink for access to clean-out valve on trap.

3.21 Angle Slides

.1 1.6mm stainless steel construction

.2 Slides shall be of 50mm x 50mm section, length to suit. Leading corners rounded, fully welded to supports on vertical edge (for fabrication) or secured by no less than four (4) s.s. screws (for millwork)

.3 Round exposed corners and provide back stops. Mount units in key hole slots to ease cleaning and removal.

.4 Back stops to be provided to limit travel.

.5 Verify tray, pan or basket size to ensure accurate fit.

3.22 Drawers

.1 Front shall be double pan construction with insulation equal to cabinet body. Where drawer fronts are shown to have a plastic laminate finish, the double pan construction shall be reversed so that the plastic laminate is contained by the outer edges of the back pan.

.2 Frames shall be 1.6mm. stainless steel channel, welded to drawer front.

.3 Pulls shall be formed of stainless steel and welded onto the top edge of drawers; profile shape and size as indicated on the Drawings. Where such formed pulls are not

indicated, recessed pulls shall be used, Component Hardware P63-1012 or approved equal.

.4 Slides for refrigerated cabinets shall be Component Hardware S52 series; for other drawers Component Hardware S26 series as specified under "Hardware".

.5 All slides to be installed so that drawers are self closing.

.6 Housing of 1.0mm stainless steel fully enclosed for drawers under worktables and open cabinets.

.7 Drawers shall accommodate one plastic pan Component Hardware S80 series or one stainless steel pan Component Hardware S81 series for 510 x 510 x 125mm insert.

.8 Provide rubber buttons at end of frames to cushion drawer.

.9 Locks as specified under "Hardware".

.10 Bread drawers shall have 510 x 510 x 250mm deep stainless steel removable pan.

3.23 Sink bowl

.1 All of 2.0mm stainless steel integrally welded into table or counter top.

.2 Interior corners radiused 19mm both vertically and horizontally, all welded and polished. Slope bottom to drain fitting.

.3 Undercoat with sound deadening compound when sinks are not exposed.

.4 Multiple sinks to have 18 ga. stainless steel apron to conceal gap between bowls.

.5 Faucets and drains as specified under "Hardware".

3.24 Hinged and sliding door

.1 Front and back of 1.6mm stainless steel.

.2 All welded, double pan type 19mm thick sound deadened with fibreglass insulation board.

.3 Hinges for cabinet doors shall be concealed, continuous stainless steel piano type secured to body with stainless steel screws.

.4 Sliding doors shall be top hung with a stainless steel track mounted above to allow self closing. Provide nylon rollers with ball bearing centre except for heated cabinets where stainless steel rollers shall be used. Doors must be removable without tools.

.5 Provide rubber buttons to cushion doors.

3.25 Unheated cabinets

.1 Stainless steel tops and backsplash. Top edges boxed, backs up and splayed unless otherwise noted.

.2 1.2 mm stainless steel body.

.3 Door to be hinged or sliding as required.

.4 Stainless steel pilasters for adjustable shelves c/w clips.

.5 1.6 mm stainless steel fixed bottom shelf and removable intermediate shelf.

.6 Legs as specified under "Legs and Bracing"

3.26 Heated cabinets

.1 Stainless steel tops and backsplash as for unheated cabinet.

.2 1.2 mm stainless steel body, fully insulated with 13 mm thick fibreglass and stainless steel 2B interior finish.

.3 Doors to be hinged or sliding and insulated as specified under the "Door" section.

.4 Stainless pilasters and clips.

.5 Removable and perforated intermediate shelf.

.6 Fixed bottom shelf.

.7 Legs as specified under "Legs and Bracing".

.8 Maintain a minimum temperature of 160 deg. F (71 deg. C) within the cabinet.

.9 Heater strip shall be chromolox type c/w thermostatic control and pilot light mounted in a recessed panel.

3.27 Steam tables and bain maries

.1 Stainless steel top and backsplash.

.2 Construction as per "Heated Cabinet" unless specified otherwise.

.3 Heating tank shall be an integral, all welded unit with the top. Cove all corners and slope bottom to drain equipped with overflow assembly.

.4 Perforated false bottoms shall be stepped in varying heights and easily removable in sections c/w finger holes.

.5 Insulate heating tank with 25 mm rigid fibreglass.

.6 Provide chromolox type immersion heater c/w a low water cut off and a minimum heating capacity of 3.0 Kw per sq. m. of bain marie surface or 1.3 Kw per standard full size pan section of steam table.

.7 Recess thermostatic controls and pilot lights into front of cabinet.

.8 Manifold all multiple drain outlets to a common and larger diameter header. Trap the header as required by local codes.

.9 Steam heated units shall have 19 mm diameter copper coil assembly to maintain a 95 deg. C water temperature within the tank.

.10 Provide recessed steam control valves and insulate all exposed steam piping within the cabinet.

3.28 Prefabricated, insulated walk-in type refrigerated and frozen room assemblies 2

.1 Materials

.1 Stainless steel sheet metal (min. 24 ga): to CSA G1110.6 1968 type 304 with No. 4 finish.

.2 Galvanized steel sheet metal: commercial grade to ASTM A526-M81 with galvanized zinc coating to ASTM A525-M80, designation Z275.

.3 Mild steel: cold rolled sheet to SAE 1010 to 1020 suitably prepared for the specified finish.

.4 Aluminum sheet metal: utility sheet with "stucco" pattern finish unless otherwise indicated.

.5 Sealant: silicone sealing compound, eg. Dow Corning Silastic 732 RTV silicone adhesive/sealant.

.6 Asphaltic paint: to CGSB 1-GP-108c, type 1.

.7 Insulation shall be foamed-in-place polyurethane injected into the panels to form a rigid wall without the use of wood or metal structural members. Insulation shall have a "K" thermal conductivity factor of not more than 0.86 watts per square metre per degree Kelvin for a temperature difference of 38°C (100°F) and shall be rated as self extinguishing, fire retardant type. Overall wall thickness shall be a minimum of 76mm (3"), having a density of 40 kg per cubic metre.

.8 Factory fabricate the exterior and interior walls, ceilings and floor panels using steel pressure dies and maintain uniformity.

.2 Construction

APPENDIX 1H (III) FOOD SERVICES SPECIFICATIONS

.1 All pre-fabricated insulated wall and ceiling panels shall bear a stamp indicating ULC approval.

.2 Panel sections shall consist of exterior and interior metal pans with die formed flanged edges. Section edges shall have a matching tongue and groove profile to ensure self-alignment and to provide a continuous foam-to-foam airtight contact, when panels are locked into place. Flexible vinyl gaskets may be used in addition to the continuous foam-to-foam airtight contact.

.3 Silicone between all panel joints to provide a clean finished appearance and to form air-tight vapour-proof joints. No wood framing to be used in wall or ceiling panels.

.4 Panel sections shall be of modular design, assembled with eccentric locking devices, or approved equal, actuated from the interior of any of the rooms and enabling sections to be erected within 38mm of any building room, column and ceiling.

.5 Steel for all panels to be painted shall be Satincoat or approved alternative, 0.595mm thick minimum. Paint shall be baked white enamel in two coats. All exterior panels not exposed to normal view to be 0.792mm core galvanized steel.

.6 Door panels shall be insulated and finished as per exterior and interior panels with a minimum 865 x 1980mm clear door opening. Ensure that doors will close and seal opening.

.7 Infitting flush hinged type doors (swing as indicated in item description) to fit door openings, insulated and finished same as panels, complete with 1015 high x 1.6mm thick stainless steel kick plates on both exterior and interior, as well as soft thermoplastic gaskets with magnetic steel core at top and both sides and adjustable rubber wiper gasket at bottom. Gaskets to be oil, fat, water and ultra violet resistant and to be replaceable.

.8 Door hinges shall be self-closing type, with stainless steel pin and nylon cam-type bearing, of satin finished aluminum.

.9 Latches to match hinges, for opening door by breaking force of trigger-action door closer and magnetic gasket. Latch to be capable of being locked with padlock and to have safety release handle. Adjustable sliding gasket on the bottom of each door. The magnetic force of the gasket must be sufficient to keep the door closed and airtight.

.10 Foot treadles to match hinges and latches, for opening door without use of hands.

.11 One trigger-action positive door closer, located on exterior, to assist in positive closing of door.

.12 Anti-condensation heater cables shall be supplied and installed on all walk-in doors at gasket contact area, in snap-on channel, providing sufficient heat to prevent condensation and frost formation. Heaters across sill shall be protected with removable 1.60 stainless steel cover plates or angles. Heaters shall be inter-wired at factory, terminating in a junction box located on top of prefabricated insulated refrigerated and frozen room assemblies, ready for connection by electrical trades.

.13 Provide appropriate number of fluorescent fixtures to ensure a 70 foot/candle (light intensity) at working level.

.14 Where 4' long double tube LED lights are specified for walk-in type refrigerated and frozen room assemblies provide CBM AW248 CWHO vapor proof type fixtures with electronic rapid start low temperature ballasts (-29 C) and standard 120 Volt switches. Double tube 4' long LED fixtures to operate on 120/60/1. Terminate wiring for lights in junction boxes located on top of the prefabricated insulated refrigerated and frozen walk - in type room assemblies, ready for final connection by electrical trades. Use three way switches if more than one door is specified.

.15 Provide and mount additional light fixtures for rooms with a floor area greater than 80 sq. ft. (7.43 metres square).

.16 Each door panel section shall have on the latch side, approximately 1676mm above the finished floor, an operating toggle switch and pilot light, inter-wired within the panel to an interior LED vapour proof light fixture complete with light tubes and suspended from ceiling panels.

.17 Wiring shall terminate in a junction box on top of the prefabricated walk-in room, ready for connection by electrical trades. Use three-way switches if more than one (1) door is specified.

.18 Provide L.E.D. readout thermometers to provide temperature readings from -40 C to +15 C and mount on latch side of door panel approximately 1525mm from floor. Cover sensing bulb with protective metal cover, same finish as walk-in.

.19 Two-way pressure relief port shall be installed in freezer door panel and refrigerator door panels in rooms operating at +2 C or less. Anti-sweat heater cables in frame of port to prevent intake and exhaust ports from freezing. Vent port to be pre-wired within panel.

.20 Where walk-in rooms are floor less, wall panels are to be fastened to screeds in lieu of floors; 76mm high screeds are to be of similar construction material and insulation to wall and ceiling panels. Screeds are to be installed plumb and level and secured to finished building floor.

.21 Supply and installation of an alarm system for each prefabricated walk-in refrigerated and frozen storage room. Install the removable alarm system

control box on the outside of each room. Supply and install inter-wiring from alarm system to junction box installed on top of each room. Alarm system shall be equipped with one contact for auxiliary remote alarm. Equip with temperature sensor, mounted inside prefabricated rooms and connect to the alarm system control box. Immerse capillary tube sensor in glycol bath. Run all wiring between the alarm system and junction box on top of prefabricated room through conduit and down inside of prefabricated wall panels to alarm system. Exposed wire is not acceptable and will be rejected.

.22 Removable closure panels shall be installed from lower edge of erected ceiling panels to finished building ceiling and cover strips or angles to extend from building floor to ceiling closure panels between exposed ends of walk-in boxes and building wall. Closure panels, cover strips or angles to match finish of exposed exterior wall panels. Provide removable ventilation panels in front of each condensing unit.

.23 Supply and installation of bumpers on all exposed exterior walls. Bumpers constructed of a solid hardwood base, 50mm X 200mm, clad with 1.6mm stainless steel. Fasten to pre-fabricated walk-in refrigerators and freezers with matching brackets mounted 300 mm from centre to finished building floor. Tops and vertical ends, where bumper makes contact with wall panels, are to be sealed.

.24 Supply and installation of a 1.6 mm stainless steel protective plate 300mm high at 100mm above the finished floor, No. 4 finish all around the interior of each prefabricated refrigerated or frozen storage room. Factory mount a 1.3mm galvanized steel reinforcement in the interior of the prefabricated walls.

.25 Supply and installation of 2.8mm stainless steel corner guards 150mm x 150mm x 1830mm H on all exposed exterior and interior corners.

.26 Openings through walls or ceilings for electrical, plumbing or refrigeration lines must be sleeved, fit with grommets and sealed with an approved sealant.

.27 Prefabricated walk-in refrigerated and frozen storage rooms covered under this section of the specification shall be fabricated to comply with Canadian Standards Association. The CSA label shall be affixed to the interior door jamb.

.28 Prefabricated insulated wall and ceiling panels specified for refrigeration systems for Facility Support Services or Food Services must meet the requirements of the B.C. Building code.

.3 Mechanical refrigeration systems

.1 Supply and installation of all mechanical refrigeration equipment and controls for refrigerators and freezers to form a complete and functional system.

.2 Each individual system shall be sized by the Foodservice Equipment Sub-contractor to suit the internal space, ambient temperatures and humidity levels

of surrounding areas, product type and load, heat infiltration and temperature of incoming product in order to maintain the specified holding temperatures. The Equipment Supplier (Refrigeration Sub-contractor) must verify all of this information with the Owner and/or the Consultant during the bidding period. Equipment sizes specified are to be used as a guideline only. Should an adjustment in the size of any refrigeration equipment be required, advise the Consultant during the bidding period so that an addendum may be issued.

.3 Design compressor and coil capacity on a 16 to 18 hour day compressor operation in 32.8 C ambient temperature maximum.

.4 Design refrigeration equipment for use with Freon R448A for refrigerators and freezers (high, medium, and low temperature applications).

.5 All condensing units 3/4 H.P. or greater if specified shall be Hermetic (digital scroll) complete with motor, air or water cooled condenser, receiver, compressor, suction and discharge valves, oil separator, high/low pressure controls and all other necessary components mounted in a flexible manner on a common base with all service valves and controls readily accessible and easily serviceable.

.6 Evaporator (coil) to be forced convection unit cooler type, made to be suspended from ceiling panels. Forced air discharge to be parallel to ceiling. Air circulation motor, multi-fin with tube type coil and grill to be assembled within protective housing. Expansion valve, with strainer, heat exchanger inlet and outlet service valve connections also to be contained within housing.

.7 Construct evaporator entirely of non-corrosive materials. Air circulation motors to be life-time sealed and entire unit-cooler assembly readily accessible for cleaning.

.8 Evaporator (coil) shall be equipped with mounting brackets, stainless steel drip pan, drain connection and required controls for a safe and satisfactory operation.

.9 Mechanical refrigeration systems used for freezer applications shall have an automatic electric system for defrosting including heaters and time control. Defrost to be time initiated and temperature terminated with built in fail safe control and fan delay switch.

.10 Thermostatic type expansion valves, all metal, moisture proof with gas charged bulb clamped to suction end of evaporator (coil). Freezers with 10 P.S.I. expansion valves.

.11 Equip each prefabricated walk-in refrigerated or frozen storage room with a room thermostat to control solenoid valve. Mount solenoid valves on liquid lines, close to the cooling unit to control flow of refrigerant.

.12 Condensate drain lines from evaporators (coils) to ensure a fall of 25mm in 610mm.

.13 Install a PVC sleeve in the walk-in refrigerator wall where any pipe passes through. The sleeve shall be larger than the penetrating pipe to allow for a "permagum" packing and vapour seal.

.14 All refrigeration piping shall be type "L" copper tubing hard drawn with "silfos" brazed joints, verified free of leaks. Completely dehydrate piping before charging with refrigerant.

.15 Joints at equipment on lines 16mm O.D. and smaller shall be made with flareless compression fittings, Swagelock or Imperial "Hy-Seal". Joints on lines larger than 16mm O.D. shall be wrought copper solder joint fitting, with adaptor fittings where screwed connections are necessary.

.16 Installation of piping shall conform to applicable requirements of ANSI code for Pressure Piping, Section on "Refrigeration Piping" and CSA Standard for "Mechanical Refrigeration Code". Refrigerant piping to obtain a pressure drop of less than 23 kPa per 50 metres in suction lines and 47 Kpa per 50 metres in liquid lines. To increase the velocity and assure proper oil return, install smaller diameter vertical risers on suction lines.

.17 All new refrigerant piping is to be pressure tested with dry nitrogen and properly evacuated before recharging with refrigerant.

.18 All refrigerant piping shall be properly identified as to service and direction of flow.

.19 Use ‘home-run” refrigerant piping design.

.20 Insulate suction lines with 16mm thick Armaflex, 19mm thick on freezer system; or approved equivalent fire retardant pipe covering, installed in strict accordance with the manufacturer's recommendations. Tape liquid and suction lines together.

.21 Testing and evacuation procedure shall conform to ANSI B31.5 and test pressure shall be in accordance with CSA Code.

.22 Evacuation shall be accomplished by the use of a vacuum pump to ensure removal of all moisture and non-condensable gases.

.23 Provide all refrigerant required for charging and placing the system in proper operation. Charging shall be done through a new filter dryer and completed by a licensed refrigeration contractor holding a valid ODP.

.24 If specified, equip all water cooled condensing units on a re-circulating building-chilled glycol water system with a three-way flow control valve. Balance control valve on the water line entrance and discharge valve filter before water flow

valve, thermometer on water entrance and discharge. Supply and install three (3) gauges to measure the pressure in the water circuit: one (1) before the filter; one (1) after the filter; one (1) at discharge end of condenser. Operating conductors shall be closed loop cooling, 8.9 C supply water, 15.5 C return water.

.25 Assume room temperatures are as follows: a) Refrigerated / Cooler Rooms: +2°C (+35°F) and b) Freezer Room: -23°C (-10°F)

3.29 Exhaust ventilators and hoods

.1 The basic requirements of the design, installation and use of exhaust systems components including ventilator(s) (hoods with or without dampers) exhaust ducts, air moving devices, fire suppression systems, and auxiliary equipment shall be supply and installed in accordance to the current edition of the NFPA-96 and NFPA-17a, and ULC standard ULC-S646-98.

.2 Fabricate hoods of 1.25 mm stainless steel type 304, No. 4 finish with joints and seams fully welded and liquid tight.

.3 Provide self-closing dampers if so listed by U.L.C. and approved by authorities having jurisdiction.

.4 Duct collars shall be 1.6 mm stainless steel all welded c/w 25 mm flanged perimeter connection.

.5 Lights shall be LED recessed vapour type fixtures c/w bulbs.

.6 Stainless steel removable enclosure panels shall be provided from top of ventilators to underside of finished ceilings.

.7 Provide a 1.25 mm stainless steel service chase approximately 300 X 200 mm to enclose services from top of service wall to underside of ventilators or hoods.

.8 Provide the required and engineered number of U.L.C. grease extractors for filter type exhaust hoods. Extractors constructed of stainless steel frame with stainless steel interior air baffles and strategic weep holes to allow drainage into grease trough.

.9 Grease trough shall be one piece, at back of hood and below extractors c/w a removable 150 x 150 x 100 mm grease container drawer.

.10 Support and hang ventilators and hoods by means of mild steel threaded rod, secured to structural ceiling member. Utilize turn-buckles to ensure a plumb and level installation.

3.30 Condensate Hoods

.1 Fabricate hoods of 1.25 mm stainless steel type 304, No. 4 finish with joints and seams fully welded and liquid tight.

.2 Provide removable s.s. condensate baffles.

.3 Duct collars shall be 1.6 mm stainless steel all welded c/w 25 mm flanged perimeter connection.

.4 Provide 13mm s.s. condensate drain coupling and condensate trough.

.5 Stainless steel removable enclosure panels shall be provided from top of condensate hoods to underside of finished ceilings.

.6 Support and hang condensate hoods by means of mild steel threaded rod, secured to structural ceiling member. Utilize turn-buckles to ensure a plumb and level installation, ready for duct connection.

3.31 Fire Suppression System

.1 The basic requirements for the design, installation and use of a pre-engineered fire suppression system shall be governed by the current edition of the NFPA-17a, NFPA-96, ULC listed, and acceptable to the local authorities having jurisdiction.

.2 The hood manufacturer shall supply a wet chemical fire suppression.

.3 Fire suppression system shall either be pre-piped with full coverage in each hood, plenum and duct collar by the hood manufacture or installed by a local certified fire suppression specialist . Each fire suppression drop shall extend from the roof of the hood and shall be chrome plated or stainless steel pipe or sleeve. The complete coverage of each hood will allow appliance(s) to be relocated and/or removed and/or added to any hood without requiring any changes to the overall capacity of the system or re-location of the fire suppression drops. (Exception: Appliances requiring specific nozzle location per the ULC listing. i.e. Salamander Broiler, Upright broilers).

.4 The hood manufacturer shall provide detector(s) factory installed in each hood and wired to a common junction box on top of each hood. The quantity and location of the detectors shall be in accordance with the ULC listing and the authority having jurisdiction.

.5 A fire condition shall cause the system to automatically discharge above the hazard areas and extinguish the fire.

.6 On discharge of the system, all fuel and power to cooking equipment shall be shut off automatically by means of a mechanical or electrical (if so specified) gas valve for gas equipment and/or under voltage shunt trip for electrical equipment.

.7 Provide mechanical or electrical, if so specified, remote fire pull stations at the kitchen exit(s).

.8 System discharge nozzles shall have grease caps.

.9 The hood manufacturer shall supply and install all field and factory piping in accordance with the ULC listing of the fire suppression system. Conceal all piping above the roof of the hood whenever possible. All exposed piping to be stainless steel or chrome plated and/or sleeved.

.10 The system shall be installed to the manufacturer's specifications, by qualified representatives and in strict accordance to all applicable codes.

.11 Supply and installation of the field piping from the hoods to the fire suppression system shall be by the hood manufacturer in accordance with the ULC listing. The hood manufacturer to supply all detection devices, release mechanisms and other accessories and components to form a complete operational and approved system.

.12 The hood manufacturer to supply and set-in-place manual remote pull station for the fire suppression system(s) as required by the local authorities having jurisdiction.

End of Section

Appendix 1J Door Operation Matrix

Note: The information listed below is intended to provide high-level design intent. Detailed design requirements will be confirmed during the design process and may exceed the requirements listed below.

	Room or Area Type	High Level Description of Functional Intent	Swing or Slider	Card Reader Placement	CCTV
Corridors & Departments	Exterior perimeter doors, non-entry	Secure, door positioning switch, card access as required		A	A - fixed
	Exterior perimeter doors, Main Building Entry and Emergency Entry	Door operator with motion sensor, to facilitate free flow during public hours, secure card access after hours from outside, free egressing from the inside. Provide video intercom and remote release	swing	A	C - fixed
	Department Boundary doors	Secure card access after hours, doors with operators and hold open during hours of operation		A	none
	Department Boundary doors - IPU, Emergency	Secure, locking capability after hours, card access, doors with operators. Provide video intercom and remote release.		A	A - fixed
	Double egress doors in corridors separating public areas from the remainder of the Building	Electric hold open to facilitate free flow, tied to fire alarm as required. If door has to remain closed, provide door operator with motion sensor		N/A	
	Doors separating Staff-only areas from the remainder of the Building	Secure, with card access for staff, door operator		A	A - fixed
	Double egress doors in corridors separating Staff & Patient areas from the remainder of the Building,	Door operator with motion sensor, hold open to facilitate free flow during public hours, secure card access after hours		C	none
	Exterior doors accessing patient and resident outdoor spaces from corridors and department areas	Secure card access with operator	swing	C	none
	Exterior doors accessing Staff outdoor spaces from corridors and department areas	Secure card access	swing	C	none
	Exit stair soors inside departments	Delayed egress, panic, key override/reset card reader both sides, audible alarm.		C	none
	Exit stair doors going into a department	Delayed egress, panic, key override/reset, card reader both sides		C	None
	LTC, Tub Room	Secure, with card access for staff, door operator		A	N/A
	Business Centres, all departments	Secure, with card access for staff		A	N/A
	Diagnostic Imaging, Typical Imaging Modalities, not including MRI	Secure, with card access for staff, door operator, remote release as required.	swing	A	N/A
	Exam Rooms, Consult Rooms Typical	Manual Latchset, locking capability from corridor, delayed door closer		N/A	N/A
	Exam Room Emergency	Manual Latchset, locking capability from corridor, delayed door closer	Slider	N/A	N/A
	Emergency, Trauma Resuscitation Room	Secure, with card access for staff, door operator, remote release as required.	Slider	A	N/A
	Medical Inpatient Room Isolation	Secure, with card access for staff, door operator, remote release as required, man trap function		A	N/A
	Medical Inpatient Room, IPU, LDRP	Manual Latchset, locking capability from hallway, patient lock release from side room		N/A	N/A
	LTC Resident rooms	Manual Latchset, locking capability		N/A	N/A
	Procedure & Therapy Rooms	Latchset, door operator with push button control, occupancy light		N/A	N/A
	Medication Rooms	Secure, with card access for staff, door operator push button on inside		A	A - fixed
	Clean Utility Rooms	Secure, with card access for staff, closer with hold open function		A	none
	Storage rooms (including equipment, linen, supply storage), medical records rooms	Secure, with card access for staff		A	none
	Housekeeping & Storage Utility Rooms	Secure, with card access for staff, delayed closer		A	N/A
	Soiled Utility Rooms	Secure, with card access for staff, delayed closer, hands free latchset		A	none
	Staff Lounges, Washrooms	Secure, with card access for staff, closer		A	none
	Meeting / Conference / Teaching Room (S/M)	Secure, with card access for staff, closer		A	none
	Staff Private Offices	door operator push button on inside; keyable		N/A	N/A

Appendix 1J Door Operation Matrix

Room or Area Type	High Level Description of Functional Intent	Swing or Slider	Card Reader Placement	CCTV
Lab, Confidential Garbage	Secure, with card access for staff		**A**	none
HIMS, Medical Records	Secure, with card access for staff		**A**	none
Biomedical Engineering, Workshop	Secure, with card access for staff		**A**	none
Biomedical Engineering, Parts Storage	Secure, with card access for staff		**A**	none
Facility Maintenance, Business Centre and Plan Room	Secure, with card access for staff, closer		**A**	none
Staff meeting rooms	Secure, with card access for staff		**A**	none
Staff Facilities, locker area	Secure, with card access for staff		**A**	none
Supply Chain, Loading Dock	Secure, with card access for staff, door operator		**C**	A
IMIT, Server Room	Secure, with card access for staff, closer		**A**	A - fixed
Laboratory, Biosafety Cabinet Station	Secure, with card access for staff, door operator, push button release as required.		**A**	none
Laboratory, Various Modalities	Secure, with card access for staff, door operator, push button release as required.		**A**	none
Biomedical, Food Services; Walk in Cooler Room	Manual latchset, lockable		**NA**	NA
Laboratory, Food Services; Walk in Freezer Room	Manual latchset, lockable		**NA**	NA
Materials Management, Flammable Storage, Clean	Secure, with card access for staff, closer		**A**	none
Materials Management, Flammable Storage, Contaminated	Secure, with card access for staff, closer		**NA**	NA
Staff Sleep Rooms	Secure, with card access for staff, closer		**A**	none

Door Typical - Card reader placement
(A) Single Card Reader on the Public side
(B) Single Card Reader on the Secure side
(C) Dual Card Readers on both the Public and Secure side
(D) Combination pin code / proximity card readers

CCTV Typicals - CCTV placement (PTZ - pan tilt zoon / Fixed - stationary camera typical use ID)
(A) Single CCTV camera on the Public side
(B) Single CCTV camera on the Secure side
(C) Dual CCTV camera's on both the Public and Secure side

Every Door with a Maglock will have key override both sides of door Every Door with a latch set to have key core capability
Man Trap function is defined as a vestibule with interlocked doors to prevent one door from opening before the other door is shut PTZ - Pan to Zoom camera
ID - Identification camera

TO DEPARTMENT	TO RM#	TO ROOM NAME	ITEM DESCRIPTION	SYNOPSIS/ADDITIONAL INFO	QTY	PLACEMENT
05.0 Emergency	05.02.05	Exam/ Treatment Room (2)	HEADWALL, PATIENT, RECESSED FLATWALL, VERTICAL	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	2	W
05.0 Emergency	05.02.08	Procedure Room	HEADWALL, PATIENT, RECESSED FLATWALL, VERTICAL	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	1	W
06.0 Medical Inpatient	06.01.01	Medical Inpatient Bedroom (6)	HEADWALL, PATIENT, RECESSED FLATWALL, VERTICAL	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	6	W
06.0 Medical Inpatient	06.01.04	Medical Inpatient Bedroom (Bariatric)	HEADWALL, PATIENT, RECESSED FLATWALL, VERTICAL	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	1	W
06.0 Medical Inpatient	06.01.09	Palliative Care Bedroom	HEADWALL, PATIENT, RECESSED FLATWALL, VERTICAL	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	1	W
06.0 Medical Inpatient	06.01.12	LDRP	HEADWALL, PATIENT, RECESSED FLATWALL, VERTICAL	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	1	W
08.0 HIMS	08.01.01	Medical Records	SHELVING, HIGH DENSITY	Deleted from Equipment List and categorized as Base-Building. Design Builder to coordinate with client & SOR with respect to configuration, quantity and layout.	1	F
05.0 Emergency	05.01.01	Triage/ Registration Station	WORKSTATION, SYSTEMS FURNITURE	Workstation, Systems Furniture (Panels etc): Millwork.	1	F
10.0 Registration	10.01.01	Registration Booth	WORKSTATION, SYSTEMS FURNITURE	Workstation, Systems Furniture (Panels etc): Millwork.	2	F

Notes:
1. This list includes base-building items removed from Appendix 1B(II) Furniture & Equipment List