

**SCHEDULE 3**  
**DESIGN AND CONSTRUCTION SPECIFICATIONS**

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## **SCHEDULE 3**

### **DESIGN AND CONSTRUCTION SPECIFICATIONS**

#### **PART 1. INTERPRETATION**

##### **1.1 Definitions**

Refer to Schedule 1 [Definitions and Interpretation] of this Agreement.

##### **1.2 Interpretation**

1.2.1 This Schedule is written as an output specification and defines what Project Co must achieve in the Design and Construction. Except as expressly stated otherwise, Project Co 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 Project Co or is stated in the imperative form.

1.2.2 Where “cost effective”, “appropriate”, “sufficient”, “minimize” and related and similar terms are used in the Design and Construction Specifications, they are to be construed and interpreted in terms whether they are cost effective, appropriate, sufficient, minimize, etc. from the perspective of a prudent public owner of a major public long term care facility who balances capital costs against maintenance, operations, clinical efficiency and other non-capital costs over the life of the facility.

1.2.3 The word “provide” is to be construed as including all necessary Design and Construction except to the extent the context or the express provision otherwise requires.

1.2.4 Unless expressly stated otherwise, each reference to a standard in this document will be deemed to mean the latest version of that standard as of the Financial Submission Date.

##### **1.3 Acronym List:**

1.3.1 ABHR – Alcohol-Based Hand Rub

1.3.2 AFUE - Annual Fuel Utilization Efficiency

1.3.3 ANSI - American National Standards Institute

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

1.3.5 ASME - American Society of Mechanical Engineers

1.3.6 ASPE - American Society of Plumbing Engineers

1.3.7 ASTM - American Society for Testing and Materials

1.3.8 BMS - Building Management System

- 1.3.9 CEC – Canadian Electrical Code
- 1.3.10 CISC – Canadian Institute of Steel Construction
- 1.3.11 CGA - Compressed Gas Association
- 1.3.12 CNLA – Canadian Nursery Landscape Association
- 1.3.13 CPTED - Crime Prevention Through Environmental Design
- 1.3.14 CPU – Central Processing Unit
- 1.3.15 CRTC – Canadian Radio-television and Telecommunications Commission
- 1.3.16 CSA - Canadian Standards Association
- 1.3.17 DDC - Direct Digital Controls
- 1.3.18 DISS - Diameter Index Safety System
- 1.3.19 DVC – Fire Alarm Control and Digital Voice Command Panel
- 1.3.20 FDA – Food and Drug Administration
- 1.3.21 HPDE - High Density Polyethylene
- 1.3.22 HVAC - Heating, Ventilating and Air-Conditioning
- 1.3.23 IEEE - Institute of Electrical and Electronic Engineers
- 1.3.24 IP – Internet Protocol
- 1.3.25 IT – Information Technology
- 1.3.26 IT/Tel – Information Technology / Telecommunication
- 1.3.27 LCD - Liquid-crystal-display
- 1.3.28 LPC – Local Proponent Controller
- 1.3.29 LPDE - Low Density Polyethylene
- 1.3.30 MPI – Master Painters Institute
- 1.3.31 NBC – National Building Code of Canada 2010
- 1.3.32 MNECB – Model National Energy Code for Buildings 1997
- 1.3.33 NBC – National Building Code of Canada 2010
- 1.3.34 NFPA - National Fire Protection Association
- 1.3.35 OS&Y - Open Stem and Yoke

- 1.3.36 PABX - Private Automated Branch Exchange
- 1.3.37 PC – Personal Computer
- 1.3.38 PoE – Power Over Ethernet
- 1.3.39 PVC – Polyvinyl Chloride
- 1.3.40 RSIC – Reinforcing Steel Institute of Canada
- 1.3.41 SMACNA – Sheet Metal and Air Conditioning Contractors National Association
- 1.3.42 STC – Sound Transmission Coefficient
- 1.3.43 TIAC – Thermal Insulation Association of Canada
- 1.3.44 TTMAC – Terrazzo and Tile Manufacturers Association of Canada
- 1.3.45 TVOC – Total Volatile Organic Compounds
- 1.3.46 ULC - Underwriters' Laboratories of Canada
- 1.3.47 UPS – Uninterruptible Power Supply
- 1.3.48 VFD - Variable Frequency Drive
- 1.3.49 VLAN – Virtual Local Area Network
- 1.3.50 VOC – Volatile Organic Compounds
- 1.3.51 VoIP – Voice Over Internet Protocol



## **PART 2. GENERAL**

### **2.1 Standards**

- 2.1.1 Project Co will undertake the Design and Construction:
- 2.1.1.1 in accordance with the standards set out in this Schedule;
  - 2.1.1.2 in accordance with the current version of the National Building Code 2010 and all applicable Laws;
  - 2.1.1.3 having regard for the concerns, needs and interests of:
    - 2.1.1.3(1) all persons who will be Facility Users;
    - 2.1.1.3(2) all Governmental Authorities; and
    - 2.1.1.3(3) the community;
  - 2.1.1.4 in accordance with Good Industry Practice; and
  - 2.1.1.5 to the same standards that an experienced, prudent, and knowledgeable long term owner of a first class health care facility in North America, whether to be operated publicly or privately, would employ.
- 2.1.2 If more than one of the above standards is applicable then the highest of such standard will apply.
- 2.1.3 If Project Co wishes to make reference to a code or standard from a jurisdiction outside of Canada, then Project Co will demonstrate to the Authority's satisfaction that such code or standard meets or exceeds the requirements of this Schedule.
- 2.1.4 Without limiting Section 2.1 of this Schedule, Project Co will undertake the Design and Construction in compliance with all applicable standards and practices whether listed in Appendix 3D [Reference Standards] or not, which is not intended to be an exhaustive list.

### **2.2 Project Overview**

- 2.2.1 The Project includes, in summary:
- 2.2.1.1 Residential Care Buildings comprised of include 21 Standard Care Homes and 1 Hospice House, clustered into Neighbourhoods;
  - 2.2.1.2 Neighbourhood Hubs to support each Neighbourhood;
  - 2.2.1.3 an Adult Day Program, a Community Centre and a Services Building (which components may be included within one building or separate buildings);
  - 2.2.1.4 the Hospital Link; and

2.2.1.5 related site improvements.

2.2.2 Refer to Appendix 3A [Functional Program] for a description of the program requirements for each of these Project elements.

## 2.3 Functional Program

2.3.1 Attached as Appendix 3A is the functional program and space considerations for the Facility (the “**Functional Program**”).

2.3.2 Project Co will design and construct the Facility:

2.3.2.1 so that it accommodates all of the spaces, activities, functions, design features and adjacencies described in the Functional Program; and

2.3.2.2 in accordance with the requirements of the Functional Program, subject to any adjustments or refinements made in accordance with Appendix 2B [User Consultation and Design Review].

2.3.3 Project Co will, for each room in the Facility, provide all equipment and features indicated on the applicable Room Data Sheet except for any Equipment that the Authority is responsible for providing under the terms of Appendix 2D [Equipment].

## 2.4 Additional Rooms and Spaces

2.4.1 Notwithstanding anything in the Functional Program, Project Co will design and construct the Facility 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 operation and maintenance of the Facility and for Project Co to perform the Services in accordance with this Agreement.

## 2.5 Indicative Design

2.5.1 The Authority’s consultants undertook an indicative design for the Facility (the “**Indicative Design**”). Drawings describing the Indicative Design have been made available to Project Co.

2.5.2 The Indicative Design is based on the Functional Program but also reflects consultations with Facility Users undertaken by the Authority’s consultants through Lean 3P workshops.

2.5.3 Project Co may use the Indicative Design as a basis for its design, but the Authority makes no representation as to the accuracy or completeness of any aspect of the Indicative Design and the Indicative Design may not reflect all of the requirements of this Schedule 3;

2.5.4 Project Co will be completely responsible for all aspects of the Design and Construction whether or not it uses all or any part of the Indicative Design, and Project Co will be responsible to independently verify the accuracy of any information contained in or inferred from the Indicative Design if Project Co uses any of such information in its design.

## **PART 3. DESIGN PRINCIPLES AND OBJECTIVES**

### **3.1 Guiding Principles**

3.1.1 Guiding principles for the Project include:

3.1.1.1 to provide a home-like environment, through a consistent resident and family centred approach with a focus on quality for those individuals requiring facility based care;

3.1.1.2 to provide programming and services for seniors with extraordinary behaviors, short term rehabilitation, and day programs.

### **3.2 Project Design Objectives**

3.2.1 Project Co will apply the following overall objectives as further described in Sections 3.3 to 3.8 (collectively the “**Project Design Objectives**”) in undertaking the Design:

3.2.1.1 care philosophy,

3.2.1.2 Evidence Based Design;

3.2.1.3 site development;

3.2.1.4 sustainability;

3.2.1.5 optimized outcomes; and

3.2.1.6 adaptability, flexibility and expandability.

3.2.2 In addition to the descriptions of these objectives in this Section 3, specific requirements related to these objectives are included in Sections 4 – 8 of this Schedule and guiding design principles are set out in the Functional Program in Section 7.

3.2.3 The Project Design Objectives are integrated objectives and Project Co will apply them on an integrated basis throughout the Design and Construction.

### **3.3 Care Philosophy**

3.3.1 The Authority believes that individuals in Swift Current long term care facilities should receive dignified, person centered support and services that are delivered by well trained staff in a purposefully designed supportive environment. Core to the model is resident focused care. There is a very strong desire to having residents “age in place” and not be moved to another Residential Care Building as their conditions or needs change, whenever possible.

3.3.2 The Authority has established the following visions and goals for the Project:

3.3.2.1 Initial Vision / Goals:

- 3.3.2.1(1) During several Lean work sessions held during August and September, 2013 teams of staff created the following sets of visions and goals set out in Sections 3.3.3 - 3.3.5 for the care areas to be provided on-site.

3.3.3 Standard Residential Homes

3.3.3.1 Vision:

- 3.3.3.1(1) Create a home for the resident that is comfortable and supports independence

3.3.3.2 Goals:

- 3.3.3.2(1) safe environment;
- 3.3.3.2(2) familiar environment;
- 3.3.3.2(3) warmth;
- 3.3.3.2(4) individuality;
- 3.3.3.2(5) connection with family;
- 3.3.3.2(6) provision of thoughtful care;
- 3.3.3.2(7) acceptance of individuality; and
- 3.3.3.2(8) supportive of resident choices.

3.3.4 Hospice House (includes palliative, respite and rehabilitative clients)

3.3.4.1 Vision:

- 3.3.4.1(1) Create a community that provides individualized care and supports the goals and dignity of each client and family.

3.3.4.2 Goals:

- 3.3.4.2(1) to provide individuals the opportunity to achieve maximum recovery allowing them to return to the community;
- 3.3.4.2(2) to honor end-of-life and support palliative resident's right to dignified death;

- 3.3.4.2(3) to provide support and rest to individuals and their caregivers who live independently in the community.
- 3.3.5 Adult Day Program
  - 3.3.5.1 Vision:
    - 3.3.5.1(1) To provide a home away from home that offers flexibility and individualized care that promotes independence.
  - 3.3.5.2 Goals:
    - 3.3.5.2(1) access to health prevention and promotion;
    - 3.3.5.2(2) opportunity to socialize and be active;
    - 3.3.5.2(3) open-minded and tolerant;
    - 3.3.5.2(4) client centered decision-making;
    - 3.3.5.2(5) an environment of choice; and
    - 3.3.5.2(6) respectful of family input.

### 3.4 Evidence Based Design

- 3.4.1 The Design of the Facility will include an interior design that aligns with the Project Design Objectives as outlined in Section 3.2 and gives priority consideration to family and resident centred design, and safety for residents and staff.
- 3.4.2 In undertaking the Design of the Facility, Project Co will apply Evidence Based Design methodologies to achieve the Project Design Objectives. **“Evidence Based Design”** means that decisions about the Design of the Facility will be based on 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 resident and staff workflow outcomes and productivity.
- 3.4.3 The Design will include elements of “Eden Alternative” and “Green House” concepts, as outlined in Appendix 3A [Functional Program]. There will be a focus on improving operational efficiencies using Lean methodology and tools throughout planning and design. Improving resident safety, accessibility, privacy and infection control will also be an operational focus.

- 3.4.4 A key requirement for the efficient and safe movement of residents, providers, staff, equipment and materials is the linkage of the Facility to Cypress Regional Hospital via the Hospital Link. Operational efficiencies will be gained when the Facility is designed to be able to utilize Cypress Regional Hospital's care facilities and support departments without adding undue pressure, excessive travel distances or handling frequency. These services and departments include resident access to diagnostic imaging and lab services, doctor's access between facilities and some supplemental support for food service, materials management, environmental services and maintenance. The Authority will utilize Lean tools to optimize the use of staff and services between Cypress Regional Hospital and the Facility.

### 3.5 Site Development

- 3.5.1 The Site is approximately 15 acres in area and is illustrated in Appendix 2G [Site Plan]. Project Co will locate the Facility within the boundaries of the Site.
- 3.5.2 Project Co will design the Facility:
- 3.5.2.1 to respond to the key concepts outlined in the Swift Current Integrated Facility Master Plan;
  - 3.5.2.2 so that it is an integrated part of the Swift Current Integrated Facility Campus, and
    - 3.5.2.2(1) facilitates the delivery of clinical and non-clinical support services within the Swift Current Integrated Facility Campus, for example, through the provision of efficient physical links to the Cypress Regional Hospital and the Recreational Facility; and
    - 3.5.2.2(2) enables connectivity of the Facility with the surrounding neighbourhood and contributes to the liveability and sociability of the community; and
  - 3.5.2.3 to have a strong urban presence and a distinctive residential architectural character, reflecting the Authority's values and role as the major centre for long term care in the community.
- 3.5.3 Refer to Schedule 2 [Design and Construction Protocols] for information regarding the Site Reports.
- 3.5.4 Project Co will perform further site specific geotechnical investigations including subsurface drilling and sampling, material testing, exploratory excavations, and pre-construction monitoring, if required, prior to construction.
- 3.5.5 Project Co will address the design principles outlined in the Functional Program in the Design of the Site. Refer to Appendix 3A [Functional Program].

- 3.5.6 Project Co will design and construct a Hospital Link as indicated on the Site Plan and as described in Section 5.9 of this Schedule. Refer also to Section 7.1 of Schedule 2 [Design and Construction Protocols].

### **3.6 Sustainable Design**

- 3.6.1 Project Co will:
- 3.6.1.1 design and construct the Facility using design methods, building materials, operational practices, energy and life cycle considerations that promote environmental quality and economic vitality throughout the Construction and Operating Periods, including by minimizing the Authority's operating costs (for example in relation to utilities and carbon taxes);
  - 3.6.1.2 give priority to efficient use of resources, protection of health and indoor environmental quality;
  - 3.6.1.3 consider efficiencies and innovations that may be possible through integration of systems within the Swift Current Integrated Facility Campus to minimize operational costs for the Authority;
  - 3.6.1.4 apply a total systems approach to minimize energy consumption and incorporate energy consumption management techniques that are targeted to stabilize and optimize energy flows; and
  - 3.6.1.5 include benign characteristics such as energy neutral, water balanced, toxin free, with minimal and well-managed waste.
- 3.6.2 Project Co may design the Facility to include the use of alternate energy sources such as passive solar, on site power generation, such as alternate heating and cooling sources, such as ground source heat pumps.
- 3.6.3 Project Co will use the following standards and guidelines as references in undertaking the sustainable Design and Construction initiatives:
- 3.6.3.1 US Green Building Council – LEED for Health Care;
  - 3.6.3.2 LEED Canada for New Construction and Major Renovations 2009
  - 3.6.3.3 The Green Guide for Health Care;
  - 3.6.3.4 Green Globes – Environment Assessment for New Buildings;
  - 3.6.3.5 BOMA (Building Owner and Managers Association) Go Green Program;
  - 3.6.3.6 ASHRAE Green Healthcare Construction Guidance Statement, Jan 2002;
  - 3.6.3.7 Sustainable Health Care Architecture –by Robin Guenther and Gail Vittori;
  - 3.6.3.8 Canadian Building Green Hospitals Checklist - Canadian Coalition for Green Health Care;

- 3.6.3.9 Natural Resources Canada Energy Innovators Initiative;
- 3.6.3.10 Building Materials for the Environmentally Hypersensitive, CMHC;
- 3.6.3.11 ASHRAE Proposed Standard 189- Standard for the Dosing and High Performance Green Buildings; and
- 3.6.3.12 ASTM E917.24401-1 Life Cycle Cost Assessment Methodology.

### **3.7 Optimized Outcomes**

#### **3.7.1 Project Co will:**

- 3.7.1.1 recognize the value to the Authority of Lean healthcare in supporting the delivery of Authority activities, and accordingly will allow the findings from such methodologies to play a key role in influencing Design decisions;
- 3.7.1.2 wherever appropriate, apply standardization to reduce errors and improve quality of service delivery, for example by assisting caregivers in quickly accessing equipment. In order to optimize caregiver performance, the design of Residential Care Buildings will contain standardized room types and room details (including controls and control locations);
- 3.7.1.3 design workplaces to support innovative and collaborative methods of working, help incorporate the Authority's technologies, respond to diverse work styles (such as open office and job-sharing), and optimize flexibility and space utilization. A key element to the development of an integrated workplace is the provision of physical environments that support multi-disciplinary teams. Accordingly, Project Co will design workplaces to:
  - 3.7.1.3(1) include generic, acuity adaptable rooms and spaces, where appropriate;
  - 3.7.1.3(2) provide floor lay-outs that accommodate teams as well as individuals, and that support mobile employees who require flexibility and use portable technology;
  - 3.7.1.3(3) provide space saving strategies, and lay-outs and furniture that facilitate change; and
  - 3.7.1.3(4) provide flexibility to incorporate technology such as telehealth, Barco system, bedside charting, chronic disease management strategies.
- 3.7.1.4 design the Facility to promote staff efficiency, including as follows:
  - 3.7.1.4(1) design Residential Care Buildings and their placement on the Site in relation to other Residential Care Buildings to provide sight lines that allow staff to monitor more than one Residential Care Building;



- 3.7.1.4(2) design Neighbourhoods to promote ease of staff movement to enable staff coverage of more than one Residential Care Building;
- 3.7.1.4(3) design the Facility to provide for efficient movement of materials with less handling;
- 3.7.1.4(4) provide unobtrusive audio and visual technology to support staff monitoring of activities in more than one Residential Care Building (which technology may be integrated with other technology, such as nurse call and wander guard); and
- 3.7.1.4(5) minimize travel distance from Residential Care Building to Residential Care Building.

3.7.2 **Interior Design Elements (Home-Like Environment)** – Project Co will design the Residential Care Buildings to provide a positive, home-like environment that contributes to the well-being of residents, staff and visitors, including so that:

- 3.7.2.1 materials selected enhance the interior as a whole, finishes are more desirable and calming (wood, floor patterns, art, fireplace/hearth, finishes, textures);
- 3.7.2.2 placement of rooms and common areas reflect a typical home;
- 3.7.2.3 elder-friendly design features (such as handrails along corridor walls) are integrated into the home-like environment;
- 3.7.2.4 the interior is interesting and easy to move around in, the interior and detailing is of high quality residential standard, and the treatment of clinical items such as hand wash sinks and rails for ceiling lifts are de-institutionalized; and
- 3.7.2.5 the outdoor patio and yard space are well-oriented to the interior residential spaces, with direct access so residents can watch activity – visitors driving up; handibus arrival; delivery trucks; kids playing at a playground;

3.7.3 **Interior Design Elements (Sight Lines)** – Project Co will design each Residential Care Building to have clear lines of sight throughout resident common areas, including so that:

- 3.7.3.1 the layout of the building and the use of materials maximizes opportunities for clear sight lines and visual monitoring by staff of common spaces throughout the building interior, including the entire exterior patio, all resident bedroom doors or resident bedroom entrance areas and building entrances from the kitchen; and

3.7.3.2 the design of the building and placement of high-use staff locations, particularly the kitchen and dining areas, maximizes ease of staff oversight of residents and supports staff/resident interaction.

3.7.4 **Interior Design Elements (Travel Distances)** – Project Co will design the Facility so that the layout of the Facility and each Building provides for reduced travel distances and ease of movement by staff and residents throughout common areas; and to facilitate the delivery of efficient and effective workflow and processes and elimination of waste, within both resident and staff service delivery. In particular, Project Co will design the Facility so that:

3.7.4.1 the design of each Building and the layout of kitchen and common social spaces (throughout the Building interior and the exterior patio) minimizes distances from the centre-point of the kitchen to:

3.7.4.1(1) the furthest resident bedroom door; and

3.7.4.1(2) the access to the exterior patio;

or uses other strategies, that justify longer distances, to provide for ease of movement and to facilitate the delivery of efficient and effective workflow and processes;

3.7.4.2 the design of each Building, layout of kitchen and common social spaces, and placement of high-use staff locations (including the kitchen, dining, clean utility, soiled utility and resident laundry) maximizes ease of movement by residents (including those who use in walkers and wheelchairs) and staff, including opportunities for rest areas.

3.7.5 **Exterior Building Design Elements** – Project Co will design the Facility so that the exterior building and site design demonstrates an innovative and distinctive architecture, and so that the Residential Care Buildings relate to each other and create a residential campus environment. In particular, Project Co will design the Facility so that:

3.7.5.1 there are clear ideas behind the design of each Building individually and that reflects the vision of a residential campus as a whole;

3.7.5.2 the exterior design of the Buildings demonstrates architecture that is interesting and diverse to create a campus with a neighbourhood character that is not identical;

3.7.5.3 the design and location of the corridor links between buildings is complimentary to the design of the individual houses and the campus as whole;

3.7.5.4 the siting of the Buildings responds to the activity generated on the adjacent roads;

- 3.7.5.5 the Design has sufficient variety to create interest both in terms of the overall form and massing externally and the spaces internally;
  - 3.7.5.6 the Design creates microclimates to take advantage of sunlight and shelters from prevailing winds;
  - 3.7.5.7 there are visually interesting views from the interior and exterior spaces;
  - 3.7.5.8 the height, volume and profile of the Buildings relate to each other and the surrounding environment, the front elevations of the Buildings are varied through building form, materiality, texture, colour and/or landscape to give identity to each Building.
  - 3.7.5.9 there are clear ideas behind the design that reflect the vision of the Swift Current Integrated Facility Master Plan and any relevant design guidelines; and
  - 3.7.5.10 the exterior design and street appearance demonstrates architecture that enhances the neighbourhood context.
- 3.7.6 **Outdoor Spaces (Integration and Connectivity)** – Project Co will design the Facility so that the relationships between the Residential Care Buildings, outdoor spaces and corridor links are clear, understandable and complementary, including so that:
- 3.7.6.1 routes are well planned pedestrian circulation paths with rest areas positioned along pathways, providing easy connectivity between the Residential Care Buildings, resident outdoor spaces and passenger pick-up/drop-off locations;
  - 3.7.6.2 the placement of Buildings, fenestration, patios and outdoor spaces minimizes views into resident rooms, including by exceeding the minimum requirements for building separation;
  - 3.7.6.3 the design demonstrates an apparent connection or integration so the outdoor green spaces are viewed as being complementary;
  - 3.7.6.4 the hard and soft landscape around the Buildings contributes positively to the residential nature of the Facility;
  - 3.7.6.5 pedestrian access routes are obvious, pleasant and suitable for wheelchair users and people with other disabilities; and
  - 3.7.6.6 there are feature outdoor green spaces proximate to groups of houses, which include gardens, landscaping, covered areas, benches and patio areas that are experientially varied – sounds (water, leaves, trees), textures, filtering of light.

3.7.7 **Outdoor spaces (Site Circulation)** – Project Co will design the Facility so that vehicle and pedestrian routes are clear, complementary and optimize the overall Site, including so that:

- 3.7.7.1 vehicular access has minimal interference with pedestrians and bicycles;
- 3.7.7.2 parking and on-site roads are provided such that the Facility's outdoor site utilization is optimized and there is good access to public transit and pick-up points; and
- 3.7.7.3 distance from the front door of Residential Care Buildings to the centre-point of a parking cluster is minimized.

### 3.8 **Adaptability, Flexibility and Expansion**

3.8.1 The Functional Program accounts for projections to the year 2025. Future expansion of the Residential Care Buildings, support spaces and the Services Building does not need to be considered for in the planning and siting of the Buildings.

3.8.2 Project Co will design resident rooms to accommodate the needs of a bariatric resident, couples, residents on ventilator, residents with severe behavior problems or other residents that may require a larger space to meet their needs. Refer to the Functional Program for additional specific requirements.

3.8.3 Project Co will design and construct the Facility to accommodate future changes as follows:

- 3.8.3.1 to accommodate the rapid cycle of innovation and change to support development and implementation of new work processes and technology change (i.e. electronic health records, telehealth, portable medical gases, full vented residents);
- 3.8.3.2 to accommodate program, service, work and equipment change with minimized utility infrastructure and Facility impact, including down time, and so that residential areas are acuity adaptable; (i.e. front lobe dementia, younger clients);
- 3.8.3.3 to support future expansion of components, and capacity as a whole, including loose fit design to optimize functionality within a given floor area, and multi-use adaptable space;
- 3.8.3.4 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. Refer to Part 7;
- 3.8.3.5 to provide unitized prefabricated modular resident rooms and washrooms where possible; and

- 3.8.3.6 to rigorously control and record placement of in-floor reinforcing steel, radiant heating and cooling tubes, etc., to maximize the potential for and ease of future floor penetrations.

## **PART 4. SITE DEVELOPMENT REQUIREMENTS**

### **4.1 Exterior Spaces for Residents, Staff and Visitors**

- 4.1.1 Project Co will integrate the Facility design with the surrounding neighbourhood with respect to the Site context, the Facility siting, and to plan a seamless integration of the Facility with the Swift Current Integrated Facility Campus in accordance with the Swift Current Integrated Facility Master Plan.
- 4.1.2 Minimize or reduce the negative micro-climatic effects, including snowfall patterns, arising from the location and configuration of parking, walkways and Buildings, including effects of building entrance orientation on resident, staff and visitor comfort and safety.
- 4.1.3 Integrate the existing site topography and minimize its impact on site circulation, Building locations and configuration.
- 4.1.4 Articulate the exterior of the Facility to create an architecturally interesting and refined residential structure. Consider emphasizing the modular requirements of the program in the massing and materials to achieve articulation, visual interest, and human scale.
- 4.1.5 Provide an urban, pedestrian-oriented environment by creating a fine-grained road/pedestrian/open space network that contributes to smaller, human scaled blocks and increased access/permeability.
- 4.1.6 Provide exterior public spaces that:
  - 4.1.6.1 welcome and engage visitors, residents, and staff;
  - 4.1.6.2 provide protection from sun, wind, rain and polluted air produced by roadways and parking areas;
  - 4.1.6.3 offer solitude and privacy as well as areas for groups of family and friends to sit comfortably;
  - 4.1.6.4 have visual appeal throughout the year;
  - 4.1.6.5 are safe, with adequate lighting and seating for visitors and residents waiting for transportation;
  - 4.1.6.6 provide paving with a smooth surface, tight joints and a maximum slope of:
    - 4.1.6.6(1) 1:20 where travel is uni-directional; or
    - 4.1.6.6(2) otherwise a maximum slope of 1:50;
  - 4.1.6.7 locate trees, lighting and other elements to support way-finding through the Site, with particular emphasis on Building entrances;
  - 4.1.6.8 incorporate principles of CPTED.

- 4.1.7 Exterior Therapeutic and Social Spaces – Provide exterior spaces including but not limited to a patio, yard and raised garden beds for wheelchair gardening at each Residential Care Building, a central common courtyard at the Community Centre and a waiting area at the main entrance to the Community Centre and Adult Day Program. These spaces must:
- 4.1.7.1 be accessible, adjacent to the Residential Care Buildings and Community Centre and be clearly identified on interior and/or Site signage;
  - 4.1.7.2 be designed to provide a suitable environment that takes resident vulnerabilities such as dementia, sensitivity to sunlight and physical strength into consideration;
  - 4.1.7.3 offer views of plants that reflect seasonal change;
  - 4.1.7.4 have hard surfacing patios (such as concrete, composite wood decking) that are typically at grade and have a direct, accessible connection to interior spaces as specified, providing space for wheelchairs, seating, barbecues, raised planter boxes etc.;
  - 4.1.7.5 have soft and hard landscaping yards surrounded by secured fence that are intended to be used by residents with direct access to the space;
  - 4.1.7.6 be designed to accommodate spaces for a minimum of 8 m<sup>2</sup> of (wheelchair accessible) raised planter beds; these will be provided by the Authority.
- 4.1.8 Design and construct the Standard Residential Home yards in accordance with the following design requirements:
- 4.1.8.1 each yard will be highly visible to staff from inside the applicable Standard Residential Home and secured from public access. Provide a patio for each yard. The Authority prefers that the patio be designed to capture different microclimates;
  - 4.1.8.2 provide a minimum of 65 m<sup>2</sup> of deck/ patio near the lounge area, constructed of concrete, composite wood/ recycled plastic members. Gaps/control joints must not exceed 10 mm;
  - 4.1.8.3 patios/ decks must have a minimum depth of 2.4 m. Provide adequate space for wheelchair movements;
  - 4.1.8.4 provide a minimum of 20 m<sup>2</sup> of deck/ patio with overhead protection from sun, rain and wind to improve thermal comfort of residents using the space;
  - 4.1.8.5 yards must be a minimum of 125 m<sup>2</sup> with direct access from patio/deck (the yard area includes the patio/deck, covered area and raised planters);
  - 4.1.8.6 the patio must allow space and natural gas hookup for barbecue;

- 4.1.8.7 yards must include areas of turf and planting beds containing shrubs and/or perennials. Locate any trees in yards so that mowing operations are simplified;
  - 4.1.8.8 enclose yards with a visually transparent, decorative, metal fence with a height of 1.8 m. Provide a locked access gate for mowing equipment, with hardware on the outside connected to release with fire alarm;
  - 4.1.8.9 open space adjacent to yards must include trees and shrub planting to provide visual interest and screen adjacent buildings or parking areas;
  - 4.1.8.10 design layout of yards and patios/ decks with the goal of improving the thermal comfort of residents with respect to microclimate;
  - 4.1.8.11 planting in yards will ensure that filtered light reaches adjacent interior spaces;
  - 4.1.8.12 yards must accommodate a minimum of 5 m<sup>2</sup> of (wheelchair accessible) raised planter beds; these will be provided by the Authority; and
  - 4.1.8.13 Exterior furnishings will be provided by the Authority.
- 4.1.9 Design and construct the Hospice House yard in accordance with Sections 4.1.8.1, 4.1.8.3, and 4.1.8.6 to 4.1.8.11 and the following additional design requirements:
- 4.1.9.1 yard must include direct and accessible walkway from deck/ patio to Site's pathway system; and
  - 4.1.9.2 provide a minimum 10 m<sup>2</sup> deck/ patio near the lounge area, constructed of concrete, composite wood/ recycled plastic members (gaps/control joints must not exceed 10 mm).
- 4.1.10 Design and construct the Adult Day Program yard in accordance with Sections 4.1.8.3, 4.1.8.4 and 4.1.8.6 to 4.1.8.11 and the following additional design requirements:
- 4.1.10.1 yard will be highly visible to staff from inside the Facility and secured from public access from areas adjacent to the Building exterior;
  - 4.1.10.2 yard will include a minimum of 65 m<sup>2</sup> patio/ deck constructed of concrete, composite wood/ recycled plastic members. Gaps / control joints must not exceed 10 mm;
  - 4.1.10.3 design must accommodate spaces for a minimum of 8 m<sup>2</sup> of (wheelchair accessible) raised planter beds; these will be provided by Authority; and
  - 4.1.10.4 yard must be a minimum of 350 m<sup>2</sup> with direct access from patio/deck (yard area includes the patio/deck, covered area and raised planters).
- 4.1.11 Design and construct the Community Centre central courtyard in accordance with the Sections 4.1.8.3, 4.1.8.4 and 4.1.8.6 to 4.1.8.11 and the following design requirements:



- 4.1.11.1 the central courtyard will be adjacent to and accessible from the Community Centre.
  - 4.1.11.2 the central courtyard will be highly visible to staff from inside the Community Centre activity room;
  - 4.1.11.3 the central courtyard will include a minimum of 260 m<sup>2</sup> patio to accommodate 130 people seated at temporary tables and chairs. Patio area will be constructed of concrete, wood or composite wood/ recycled plastic members. Gaps / control joints must not exceed 10 mm;
  - 4.1.11.4 provide a patio, with overhead protection from sun, rain and wind capable of accommodating 18 people sitting at permanent tables and chairs. Provide one permanently fixed trash container and 2 benches;
  - 4.1.11.5 the central courtyard must include areas of turf and planting beds containing shrubs, perennials and trees. Planting must define the space and create privacy for users;
  - 4.1.11.6 walkways to and within the central courtyard must be wheelchair accessible;
  - 4.1.11.7 design layout of the central courtyard and patio with the goal of improving the thermal comfort of residents with respect to microclimate. Overhead protection will improve the thermal comfort of patio users;
  - 4.1.11.8 the central courtyard will include a small playground area complete with safety surfacing and header, provided by Project Co. The play area will include play equipment suited to ages 2-12 and have a minimum capacity of 10 children, supplied and installed by the Authority.
- 4.1.12 Waiting Areas
- 4.1.12.1 The Design will provide waiting areas for those transitioning from building activities to leaving the Facility and vice versa. Waiting areas will be adjacent to the Community Centre and convenient to the drop off zone and will accommodate seating for six and additional spaces for six wheelchairs.
  - 4.1.12.2 Waiting areas will include benches and trash containers, and planting that provides shade, separation from other areas, wind abatement and visual interest.
  - 4.1.12.3 Paved areas will be accessible and transitions from building and drop-off areas will be smooth so as not to cause impediment.
- 4.1.13 Tree and Shrub Planting - Provide tree and shrub planting that incorporate the following design requirements:
- 4.1.13.1 planting will reflect the character and climatic demands of the Swift Current region;

- 4.1.13.2 select all plant material for the Site with consideration for potential allergic reactions and avoid any potential allergic reaction causing species such as those that:
  - 4.1.13.2(1) produce an excessive amount of pollen or seed “fluff”;
  - 4.1.13.2(2) have toxic leaves or berries; and
  - 4.1.13.2(3) have skin irritants.
- 4.1.13.3 planting will provide visual separation the street, screening of unwanted views, shading and seasonal and visual interest; and
- 4.1.13.4 plant design will take into account the mature height and width of the plant material such that sight lines are maintained and areas are screened over time and mature plant size does not interfere with walks, door movement, eaves, downspouts or any other architectural feature.

## 4.2 Circulation and Adjacencies (Pedestrian and Vehicular)

- 4.2.1 Circulation will co-ordinate the movements of vehicles, pedestrians and wheelchairs. The Design will emphasize safety, while providing opportunities for interaction and social contact.
- 4.2.2 Pedestrian Walkways
  - 4.2.2.1 Integrate pedestrian circulation throughout the Site that minimizes conflict with vehicles zones.
  - 4.2.2.2 Design pathways to provide universal access to all entrances and exits, parking, Residential Care Buildings, yards and city walks.
  - 4.2.2.3 The City intends to provide a perimeter walking path on the east and north sides of the Site. Provide connections to this walking path from internal walkways at several logical locations.
  - 4.2.2.4 Provide a 30 meter linear pathway loop with direct and accessible connection to the Hospice House.
  - 4.2.2.5 Ensure that walkway lighting levels correspond with the use of a given area and proximity to resident rooms.
  - 4.2.2.6 Design pathways and sidewalks to provide maximum amount of natural visual surveillance by staff in the Residential Care Buildings.
- 4.2.3 Vehicular access & parking design principles:
  - 4.2.3.1 Integrate vehicular circulation with layout of pedestrian zones throughout the Site to provide visible connections, promote safe travel, and minimize conflict between vehicles and other modes of travel. The driveways will provide

connections between the surrounding roads and major entrances to the Residential Care Buildings.

- 4.2.3.2 Provide a total of 175 vehicle parking stalls which include 151 standard stalls and 24 handicapped spaces as follows:
  - 4.2.3.2(1) Provide two visitor stalls near each Standard Residential Home, three near the Hospice House, and five near the Community Centre.
  - 4.2.3.2(2) Provide one handicap stall near each Standard Residential Home, one near the Hospice House, and two near the Community Centre.
  - 4.2.3.2(3) Visitor and Handicapped parking spaces will be located at a maximum distance of 40 m from the main entrance to each Residential Care Building, Community Centre entrance and Adult Day Program entrance, when measured from the centre front edge of the parking stall to the entrance, along the barrier-free path of travel.
  - 4.2.3.2(4) Provide a minimum of 15 stalls at the Community Central and Services Building with accessible weather-proof power source for block heaters.
- 4.2.3.3 Design access roadways and drive lanes to support level of use planned for each portion of the Site.
- 4.2.3.4 Design parking for maximum access to the Community Centre and Adult Day Program, including a drop-off area for a minimum of 2 cars at each front entrance to these Buildings, which are designed to provide weather protection to residents and visitors entering and leaving the Facility.
- 4.2.3.5 Visitor parking and handicapped stalls will be clearly marked with signs.
- 4.2.3.6 Provide tree and shrub planting in parking areas to screen parking from adjacent roadways. Placement of planting will not impede views at vehicle entry points and pathway crossings and be in compliance with CPTED guidelines.
- 4.2.4 Bicycle access & storage design principles:
  - 4.2.4.1 Provide well-lit secure bicycle locking/parking facilities for a minimum of ten (10) bicycles.
  - 4.2.4.2 Locate racks near staff/main entries where there is good visibility from interior spaces. Distribute about the Site in consultation with the Authority.

#### 4.2.5 Site Wayfinding and Exterior Signage design principles:

- 4.2.5.1 Provide continuity of treed walkways for consistent sun/shade protection where desirable.
- 4.2.5.2 Provide visually connected pathways and integrated outdoor amenity spaces.
- 4.2.5.3 Design pedestrian pathways to ease wayfinding and create an amenable environment for pedestrians through the use of coordinated methods of wayfinding which inform people of routes through the Site to specific buildings and entries or to the major streets. Encourage pedestrians to avoid unsafe vehicle roads by providing well-signed alternative pedestrian routes. Utilize paving patterns or markings which can easily be differentiated from vehicular paving by pedestrians where they cross vehicular traffic.
- 4.2.5.4 Design and locate signage to satisfy Authority's requirements for Site identification and coordinate with existing signage on the Site for consistency. Provide a minimum of four (4) large illuminated signs identifying the Residential Care Buildings accessible from each site entry point.
- 4.2.5.5 Provide additional signs identifying individual Neighbourhoods and Buildings. Design and construct signage to withstand the typical weather conditions experienced at the Site, and provide for signage after dark so they are legible at a distance of 100 m for the major signs, and 10 m for all others.
- 4.2.5.6 Signage should clearly indicate public/visitor, staff and barrier-free/physician parking.

#### 4.2.6 Site Access for the Disabled design principles:

- 4.2.6.1 The primary pedestrian systems, public open spaces, primary private walkways and principal entrances to the Buildings will be accessible to the physically challenged.
- 4.2.6.2 Use appropriate signage, markers, or other levels of wayfinding along access routes to indicate to the physically challenged the route terminus points or any required route changes to ensure convenient universal access throughout the Site.

### 4.3 Site Infrastructure

- 4.3.1 Design and construct all infrastructure as required to conform to all applicable City servicing requirements and Saskatchewan Ministry of Environment Sewage, Water Works and Stormwater Design Guidelines and to service the Facility with reliable infrastructure.

#### 4.3.2 Municipal Off-Site Services Infrastructure

- 4.3.2.1 Provide off-site infrastructure as may be required by the City and other Governmental Authorities and as required to support the Facility.
- 4.3.2.2 Sanitary Sewers
- 4.3.2.2(1) Project Co will connect the Facility sanitary sewer to the existing offsite sanitary services and design the connections to meet or exceed the quality requirements of the existing municipal off-site services.
- 4.3.2.2(2) Sanitary sewer mains will not be connected directly to the sewer main in Douglas Drive.
- 4.3.2.3 Storm Sewers and Drainage
- 4.3.2.3(1) Storm sewers and drainage networks will be of a size, grade and depth to safely collect and convey all storm water around the Site.
- 4.3.2.3(2) Project Co will connect the Facility storm sewer to the existing offsite storm services and design the connections to meet or exceed the quality requirements of the existing municipal off-site services
- 4.3.2.3(3) The release of stormwater into the MR2 stormwater channel is permitted provided the release is designed in accordance with the requirements of the City and Section 11.16 of this Schedule.
- 4.3.2.4 Watermain and Appurtenances
- 4.3.2.4(1) Project Co will confirm capacities of the existing offsite water system for design purposes.
- 4.3.2.5 Road Works
- 4.3.2.5(1) Provide off-site access to the Site from Saskatchewan Drive and Woodrow Lloyd Place, as per City requirements.
- 4.3.2.5(2) Project Co will provide a traffic impact study if required by the City or Province and provide any additional improvements required by the City.
- 4.3.2.5(3) The location of connections to existing off-site roadways will be as approved by the City and construction will meet or exceed the quality requirements for the corresponding municipal off-

site roadway. Provide a minimum number of access points will be permitted onto Saskatchewan Drive as follows:

- 4.3.2.5(3)(a) the south access will be in the location of the existing access to the Cypress Regional Hospital parking lot.
- 4.3.2.5(3)(b) the north access adjacent to the MR2 stormwater channel will be a right in – right out only access.
- 4.3.2.5(3)(c) Should Project Co require a midpoint access onto Saskatchewan Drive, the access will be permitted as a permanent, full access within limits to be determined in consultation with the City.

#### 4.3.2.6 Street Lighting

- 4.3.2.6(1) Provide street lighting as required within the boundaries of the Site and as required on the east side of Woodrow Lloyd Place.

#### 4.3.2.7 Electrical, Telecommunications, Gas Services

- 4.3.2.7(1) Design and construct all electrical, telecommunication and gas services to meet the needs of the Facility. Co-ordinate with utility service providers as required.

### 4.3.3 On-Site Services Infrastructure

- 4.3.3.1 Provide on-site service infrastructure as required to meet the needs of the Facility. All on-site servicing will meet or exceed the quality requirements for the corresponding municipal off-site services.

#### 4.3.3.2 Sanitary Sewers

- 4.3.3.2(1) The sanitary sewers will be of a diameter, grade and depth to safely convey all effluent from the Site. The sanitary sewer system includes the pipes, manholes, and all other required appurtenances to comply with applicable municipal and provincial standards.
- 4.3.3.2(2) The sanitary sewerage system will be of sufficient capacity to carry peak flows plus infiltration.
- 4.3.3.2(3) Sanitary design flows will be based upon the final Design and confirmed by Project Co.

#### 4.3.3.3 Storm Sewers and Drainage

- 4.3.3.3(1) The storm sewers and drainage network will be of a size, grade and depth to safely convey all storm water.
  - 4.3.3.3(2) The 1 in 5 year storm return frequency will be used for the design of the minor storm sewer and drainage system.
  - 4.3.3.3(3) The 1 in 100 year storm return frequency will be used for the design of the major storm sewer and drainage system.
  - 4.3.3.3(4) Stormwater release rates will be in accordance with the allowable rates identified in Section 11.16 of this Schedule into the MR2 stormwater channel on the north side of the Site, as approved by the City.
  - 4.3.3.3(5) Utilize mosquito control best management practices in the design and construction of storm water features.
- 4.3.3.4 Watermain and Appurtenances
- 4.3.3.4(1) The watermain system (watermain and appurtenances) will be capable of providing adequate domestic and firefighting capacity for the Facility and redundancy for the Facility.
  - 4.3.3.4(2) The watermain system includes the pipes, valves, pumps, controls, and all other required appurtenances to comply with applicable municipal and provincial standards.
  - 4.3.3.4(3) The watermain system will include backflow preventers to protect the municipal system and on Site facilities from contaminants.
  - 4.3.3.4(4) Locate on-site hydrants in accordance with the requirements of applicable codes and as approved by the City Fire Chief.
- 4.3.3.5 Road Works
- 4.3.3.5(1) Design and construct on-site roadway, including the pavement, curbs and gutters, sidewalks, walkways, signage, pavement markings, and traffic calming devices, that are handicapped accessible and wheelchair friendly, and that provide safe passage between parking areas, loading areas, emergency vehicle areas and drop off areas.

#### 4.3.3.6 Site Lighting

- 4.3.3.6(1) On-site roadways, parking areas, Community Centre courtyard and sidewalks/walkways from the parking areas to the Building entrances/exits will be lit during darkness to ensure safe vehicle and pedestrian traffic in respect to collisions, personal safety, and building access and egress. Lighting will be sympathetic to the proposed Buildings on the site and designed to not spill into neighbouring residential areas.
- 4.3.3.6(2) 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 designed according to functional and security needs (including CPTED), and reflecting the hierarchy of pedestrian corridors.
- 4.3.3.6(3) Light fixtures within the reach of pedestrians will be vandal resistant.

#### 4.3.3.7 Electrical, Telecommunications, Gas Services

- 4.3.3.7(1) Provide electrical, telecommunications, and gas services as required to support the Facility.

#### 4.3.3.8 Landscaping

- 4.3.3.8(1) Provide landscaping for the complete Site that contributes to the creation of a liveable, healthy and responsive community.
- 4.3.3.8(2) Use deciduous trees and evergreen trees that provide seasonal interest in association with ground covering shrub plantings. Use a variety of plant material to reflect seasonal change.
- 4.3.3.8(3) Use large numbers of single species to help unify the urban character, create recognizable spaces, contribute to site orientation and create a strong sense of place.
- 4.3.3.8(4) Use of indigenous flora will be considered a priority, in terms of minimizing maintenance and expressing the Swift Current eco-region context.
- 4.3.3.8(5) Use flowering and fruiting trees to promote natural avian habitat.
- 4.3.3.8(6) 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.



- 4.3.3.8(7) Provide elements of healing gardens to stimulate senses of sight, smell and touch.
- 4.3.3.8(8) Unify the ground plane treatment through the use of common paving materials, tree grates, lighting and other landscape furniture items.
- 4.3.3.8(9) Provide and coordinate design for street furniture, including benches provided at regular intervals for ease of use, particularly for the infirm. Select products on the basis of safety, comfort, design, durability and required maintenance and materials that relate to the Facility architecture and landscape design.
- 4.3.3.8(10) Utilize a variety of scales, locations and orientations to cater to varied outdoor activities and varied experiences of the residents, staff and visitors.
- 4.3.3.8(11) Where possible use landscape features for the enjoyment of staff and visitors.
- 4.3.3.8(12) Minimize grade changes for drop curbs and raised crossings. Drop curbs aligned to pedestrian crossings.

## **PART 5. ARCHITECTURAL REQUIREMENTS**

### **5.1 Location and Siting**

- 5.1.1 Locate and orient Buildings to take advantage of site slope, including the potential to provide views of exterior landscaping to the Residential Care Buildings on three sides of each Building.
- 5.1.2 Site the Facility to provide emergency, staff and visitor vehicular access off of Saskatchewan Drive and Woodrow Lloyd Place.
- 5.1.3 Site the Buildings to allow gravity feed of waste water to sewer main.
- 5.1.4 Site the Services Building to minimize its visual and traffic impacts on the remainder of the Facility and on adjacent developments on and off of the Swift Current Integrated Facility Campus.
- 5.1.5 Site the Residential Care Buildings with a minimum distance of 6 metres between Buildings.

### **5.2 Building Form and Character**

- 5.2.1 Design the general character of the Facility's exterior appearance to be "Residential" in character.
  - 5.2.1.1 The Facility will be highly articulated to break down its scale, utilizing such components as pitched roofs, glazing, canopy and shading systems.
  - 5.2.1.2 Roof top mechanical/electrical equipment will be screened and incorporated in architectural elements.
  - 5.2.1.3 Where retaining walls are necessary, they will be consistent in materials and quality to that of the Facility.
  - 5.2.1.4 Use wood as a featured material in both the interior and exterior of the Facility.
  - 5.2.1.5 Each Residential Care Building will have varied identifiable characteristics. Several key features should be given serious attention. These include massing, roof design, exterior wall treatment, colour and exterior features.
  - 5.2.1.6 The Design will be compatible with the exterior finishes, colours and character of the adjacent buildings, in accordance with the Swift Current Integrated Facility Master Plan.

## 5.2.2 Exterior Design Features

### 5.2.2.1 Massing

5.2.2.1(1) Residential Care Buildings with similar massing and elevations will require adequate separation from each other. Reverse plans, different finishes and colors are not sufficient separation.

### 5.2.2.2 Roof Design

5.2.2.2(1) Flat roofs are not permitted on the Standard Residential Homes.

5.2.2.2(2) The eave overhang should not be less than 450 mm. Overhangs above clerestory windows are not a requirement.

5.2.2.2(3) Where asphalt shingles are used, architectural asphalt shingles are preferred. Tile roofs (except spanish design), wood shingle or shake roofs, and prefinished metal roofs are also acceptable.

5.2.2.2(4) Chimneys and furnace flue pipes in prominent locations will be enclosed with siding or other feature materials. Decorative chimney caps are encouraged.

## 5.2.3 Exterior Building Materials and Colour

5.2.3.1 Exterior materials will include high quality finish materials with colour to reinforce entry areas, vertical circulation elements or significant areas in the Facility.

5.2.3.2 Exterior materials will be high quality and durable. Exterior materials may include wood cladding and soffits (subject to compliance with NBC requirements), cement board, stone, or metal cladding, EIFS stucco, architectural concrete, clear glass and brick masonry.

5.2.3.3 Accent panels and build outs such as columns, quoins, or accent bands in stucco, brick or stone will be required with stucco siding.

5.2.3.4 The front face of all Buildings will have a minimum of two different exterior cladding materials, one of which is an accent. Accent materials should be used to highlight entrances or as larger accent panels with or without windows.

5.2.3.4(1) The recommended minimum accent area on the front face of Residential Care Buildings is 25% of the wall area.

- 5.2.3.4(2) The recommended minimum accent area on the front face of Community Centre, Adult Day Program and Services Building is 45% of the wall area.
- 5.2.3.4(3) The recommended minimum accent area on the front face of connecting corridors and Hospital Link is 25% of the wall area.
- 5.2.3.5 When posts or columns are used, they will be built as an aesthetic feature in good proportions relative to the whole elevation.
- 5.2.3.6 Facade transparency and views into resident activity areas should be provided, especially at grade levels; accordingly, use of mirrored or highly reflective glass is discouraged. Views into resident bedrooms from the exterior is discouraged. Refer to landscape screening requirements.
- 5.2.3.7 All gutters and downspouts should match or compliment the fascia, wall or trim colour.
- 5.2.3.8 Colour schemes are to be coordinated both within the Residential Care Building elevation and with neighboring Residential Care Buildings. All materials must be considered, including the exterior finish, trim, roof, doors, windows and fencing.

### **5.3 Building Configuration and Global Circulation**

- 5.3.1 Building entrance vestibules - Project Co will design entrance vestibules to all Residential Care Buildings and Adult Day Program of a size to accommodate Facility Users who are waiting for transportation.
  - 5.3.1.1 All direct entries into the Buildings from the exterior will be protected from snow and rain by canopies, building overhangs or the like.
  - 5.3.1.2 Use oversized entrance vestibules with waiting space for seating, in wheelchair and standing users, and effective sheltering of the Building interior.
  - 5.3.1.3 Entrance vestibules will provide complete transparency from the exterior, from the interior immediately in front of the vestibule, and from habited spaces adjacent to at least one long side of the vestibule.
  - 5.3.1.4 Entrance vestibules will be configured and sized with adequate distance between the sets of doors to allow wheelchairs to fit lengthwise into the vestibule without interfering with door swings, a minimum depth of 2400 mm.

- 5.3.1.5 At all entrances to Residential Care Buildings, Adult Day Program and main entrance to the Community Centre, provide automatic doors activated by handicapped accessible push-button controls located on the inside and outside of both sets of doors. Doors will be configured for push-pull manual operation in addition to automatic operation. Equip the interior vestibule doors with locking door security and elopement security system. Exterior doors to vestibules will remain unlocked.
- 5.3.1.6 In order to accent and feature the entry, columns, generous overhangs, verandas, dormers and build outs are encouraged.
- 5.3.1.7 The preferred materials for veranda railings, deck railings, guard rails and handrails are vinyl, prefinished aluminum, or prefinished steel materials. Unpainted pressure treated wood railings and pickets are not acceptable.
- 5.3.1.8 Provide pedestrian interest and comfort at entries through specifically designed seating, signage, lighting and features that signal the Facility's use.
- 5.3.1.9 Vestibules will facilitate ease of cleaning mud, sand and dirt.
- 5.3.1.10 Vestibules will accommodate storage of outer clothing and footwear.
- 5.3.2 Provide a barrier-free interior floor connection between the connecting corridors and the Residential Care Buildings. Residential Care Buildings may be at different slab elevations provided the elevation difference is accommodated in the connecting corridors and maintains barrier-free access to all spaces.
- 5.3.3 Building layout and fenestration will consider existing distant views and preserve such views where feasible.
- 5.3.4 Corridors (minimum clear width):
  - 5.3.4.1 Provide minimum 2700 mm wide global circulation corridors and corridors accessing resident care areas.
  - 5.3.4.2 Provide minimum 3000 mm wide circulation corridor for the Hospital Link.
  - 5.3.4.3 Provide minimum 2000 mm wide corridors accessing workshop type spaces.
  - 5.3.4.4 Provide minimum 1500 mm wide corridors in all other areas.
  - 5.3.4.5 Design corridor ceiling space to accommodate all mechanical and electrical services. Corridor ceilings to be accessible type.
  - 5.3.4.6 Corridors in resident care areas will have alcoves for storage of equipment. Disperse alcoves allowing corridors to be kept clear of equipment and supplies.
  - 5.3.4.7 Global circulation corridors will have recessed rest areas (minimum of 1000 mm deep x 5200 mm long) at maximum 24 m intervals, measured from mid-point to mid-point, to promote resident mobility and activity, designed to

accommodate both public, resident and staff pedestrian and cart or other transportation device traffic.

- 5.3.4.8 Height of drinking fountains, handrails, and wall mounted lighting fixtures will comply with applicable accessibility standards referenced in Section 2.1 of this Schedule.

**5.4 Quality of Space/Interior Design**

- 5.4.1 Maximize opportunities for the building occupants to have a connection between indoor spaces and the outdoors through the introduction of natural light and views into regularly occupied area of the Facility.

5.4.1.1 Provide:

5.4.1.1(1) a minimum daylight factor of 2% (excluding all direct sunlight penetration) or at least 250 Lux (25 foot candles); and

5.4.1.1(2) a maximum of 5000 Lux (500 foot candles) in a clear sky condition on March 21 or September 21 at 9:00 am and 3:00 pm,

in at least 75% of regularly occupied spaces, demonstrated through computer simulations, calculations, measurements or a combination of the three options.

- 5.4.1.2 Provide direct line of sight to the outdoor environment for building occupants via vision glazing between 0.76 metres and 2.3 metres above the finished floor in 90% of all regularly occupied areas.

- 5.4.1.3 Areas directly connected to perimeter windows must have a glazing-to-floor area ratio of at least 0.07.

- 5.4.1.4 Provide sunlight redirection and/or glare control devices to each window to ensure daylight effectiveness.

- 5.4.1.5 Overhead type daylighting includes clerestorey glazing and solar tubes. Skylights are not permitted.

- 5.4.1.6 Provide direct and borrowed light in accordance with IHSC Light Measurement Methodology and the following chart:

<b>Daylight Standards and Views</b>				
	<b>Location</b>	<b>Daylight Standards Required</b>		<b>Exterior Views Required</b>
		<b>Direct Natural Light</b>	<b>Borrowed Natural Light</b>	
<b>Standard Residential Homes</b>	Kitchen	Desirable	Yes	Yes
	Dining	Desirable	Yes	Desirable

<b>Daylight Standards and Views</b>				
<b>- 10 Beds</b>	Lounge	Yes		Yes
<b>Hospice House - 15 Beds</b>	Kitchen	Desirable	Yes	Yes
	Dining	Desirable	Yes	Desirable
	Lounge	Yes		Yes
<b>Adult Day Program</b>	Common Area	Yes		Yes
	Activity Area	Desirable	Yes	Desirable
	Zen Room	Yes		Yes

<b>Daylight Standards and Views (cont)</b>				
	<b>Location</b>	<b>Daylight Standards Required</b>		<b>Exterior Views Required</b>
		<b>Direct Natural Light</b>	<b>Borrowed Natural Light</b>	
<b>Community Centre</b>	Community Room	Yes	Yes	Yes
	Lobby	Yes		Yes
	Open Office	Desirable	Yes	Desirable
	Family Dining / Kitchen	Yes	Yes	Yes
<b>Services Building</b>	Staff / Work Area / Lounge	Desirable	Yes	No
<b>Neighbourhood Hubs</b>	Staff / Work Area / Lounge	Yes	Yes	Yes
	Activity Area	Yes		Yes
<b>Connecting Corridors / Hospital Link</b>		Desirable	Yes	Yes

- 5.4.2 Maximize opportunities for resident empowerment through control of lighting, sound, décor (personalization) and daylight.
- 5.4.3 Employ materials and detail surfaces to absorb and minimize sound transmission throughout resident care and staff work areas.
- 5.4.4 Conceal and make discreet the clinical infrastructure from view of visitors and residents wherever possible.
- 5.4.5 Create visual interest within Resident Care Buildings by varying colours, textures and lighting.
- 5.4.6 Avoid 'blank' hallways with solid-coloured end walls wherever possible; provide views and/or direct or borrowed natural light at ends of hallways.
- 5.4.7 Create a 'residential' feel by using elements such as colours, textures, design features, and proportions familiar to the common perception of residential environments.
- 5.4.8 Balance the openness required for resident monitoring with privacy considerations, confidentiality of resident information and the security needs of staff at all hours of the day.

- 5.4.9 Design workplaces so that they are flexible and adaptable to change in program or personnel and promote resident and staff safety.
- 5.4.10 Design of workspaces will be ergonomic and conducive to workflow and processes.
- 5.4.11 Provide rest stops and intuitive meeting points, for residents and visitors to pause, rest, and consult. Install windows in long hallways to create a visual effect that shortens hallways to encourage older adults to move around.
- 5.4.12 Include suitable spaces throughout the Facility for the display of two- and three-dimensional art complete with wall backing for mounting and donor recognition systems with appropriate lighting, power, and data connectivity.
- 5.4.13 Design the Facility to support effective care for bariatric residents and consider the design recommendations for a bariatric friendly facility that are set out in "Planning and Design Guidelines for Bariatric Healthcare Facilities" published by the American Architectural Institute, latest edition. Refer to the Functional Program for specific rooms requiring bariatric services.
- 5.4.14 When installing fixed lift systems, take care to minimize visual impact of the tracks on the physical environment, especially where home-like environments are essential. Use of recessed tracks, concealing or masking wall mounted rails for traveling gantry lifts with crown moldings or indirect ceiling light coves is suggested.
- 5.4.15 Design the Facility to be elder-friendly.
- 5.4.16 Design the Facility with respect for the economy and culture of the region by using wood panelling, exposed wood structure and wood feature strips where consistent with the overall Project Design Objectives.
- 5.4.17 Calming and Restorative Design
  - 5.4.17.1 The Facility interior will be calming and restorative, and will include extensive day lighting of public and resident spaces.
  - 5.4.17.2 Exterior views from resident waiting and relaxation areas are to be of the surrounding landscape, where snow-cover will not be disturbed during winter months.
- 5.4.18 Provide convenient exterior access for residents from all resident living and waiting areas.
- 5.4.19 Exterior access from the Standard Residential Homes will include access to the Site through the main entrance, the secure patio/yard and at all points required by the National Building Code for emergency egress.
- 5.4.20 Exterior access from the Hospice House will include access to the Site through the main entrance, each palliative resident room, the secure patio/yard and at all points required by the National Building Code for emergency egress.



## 5.5 Wayfinding and Signage

### 5.5.1 Overriding Principles

- 5.5.1.1 Provide a simple configuration of the Facility circulation systems and functions so that way finding is inherently easy.
- 5.5.1.2 Locate major destinations, such as Residential Care Building entrances, along primary circulation paths for easy access, make waiting areas as open as possible to build confidence in way finding and design waiting areas to be distinct from circulation.
- 5.5.1.3 Provide significant recognizable, easily named and identified elements in key and easily found locations that can become 'meeting points' for residents and visitors.
- 5.5.1.4 Minimize signage within each Residential Care Building to support the residential-like atmosphere
- 5.5.1.5 Provide all signage required for building operations.
- 5.5.1.6 Design signage such that the materials, colours, letter fonts, sizes and other aesthetic and functional considerations, such as braille, conform to the overall wayfinding design system.
- 5.5.1.7 Provide signage that is resistant to graffiti and physical damage.
- 5.5.1.8 Use international symbols where and as applicable.
- 5.5.1.9 Orient all building plan directories to reflect the direction from which they are viewed.
- 5.5.1.10 Provide signage that directs visitors to all resident destinations and all other rooms within. Prioritize resident destinations over non-resident destinations.
- 5.5.1.11 Provide signage that is clearly visible day or night.
- 5.5.1.12 Avoid multi-layered naming hierarchies and complex numbering systems.
- 5.5.1.13 Provide wall space located in proximity to the main visitor entrance(s) where the Authority may construct a feature to recognize donors and other supporters of the Facility (approximately 3000 mm wide x 2000 mm high).

### 5.5.2 Design Requirements

- 5.5.2.1 Design the internal directional signs to include:
  - 5.5.2.1(1) a main directory, installed at the main public entrance to the Facility, that indicates the relation of each Residential Care Building to the overall Site and the location of every entrance that is accessible to the public;

- 5.5.2.1(2) a continuous 'trail' of wayfinding signage from the main entrances to each of the Residential Care Buildings or activity rooms listed on the directories;
- 5.5.2.1(3) installation of signage at each point at which a directional decision is required;
- 5.5.2.1(4) consistent terminology; and
- 5.5.2.1(5) door signage:
  - 5.5.2.1(5)(a) to indicate restrictions on entry and warn of hazards;
  - 5.5.2.1(5)(b) to identify every space (e.g. rooms, alcoves, corridors) in the Facility;
  - 5.5.2.1(5)(c) that is located in a consistent location for every room in the Facilities; and
  - 5.5.2.1(5)(d) for each door frame with a lamacoid number plate approximately 25 mm high by 50 mm long, attached to the head of the door frame on the hinge side.
- 5.5.2.2 Project Co will review the door numbering system with the Authority and number rooms in accordance with the following:
  - 5.5.2.2(1) Determine room numbers early in design and maintain numbering following occupancy. Follow the same numbering system on Design and Construction documentation for all disciplines (architectural, mechanical, electrical, etc.).
  - 5.5.2.2(2) Provide door signage that is consistent with the following room numbering protocol:
    - 5.5.2.2(2)(a) each room has a unique identifier number, for use on the door frame lamacoid number plates;
    - 5.5.2.2(2)(b) rooms are numbered in a manner that reflects normal movement through the applicable building;
    - 5.5.2.2(2)(c) labelling anticipates a person attempting to follow numbering along corridors in sequence;

- 5.5.2.2(2)(d) blocks of numbers are periodically skipped to allow for future expansion of the numbering system if rooms are added through renovations;
- 5.5.2.2(2)(e) corridors require unique numbers which are two digits; and
- 5.5.2.2(2)(f) resident rooms will not receive signage other than the lamacoid number plates.

5.5.2.3 External directional signage will:

- 5.5.2.3(1) follow a clear hierarchy and reinforce the Facility identity;
- 5.5.2.3(2) clearly indicate access to the Community Centre and Adult Day Program;
- 5.5.2.3(3) clearly indicate access to each Neighbourhood;
- 5.5.2.3(4) clearly indicate access to each Standard Residential Home and the Hospice House;
- 5.5.2.3(5) be well illuminated, reflective or high contrast and easily visible at night;
- 5.5.2.3(6) include a minimum of four (4) backlit illuminated signs at the primary Site entry locations, clearly identifying the names of the buildings accessible from the road access point.
- 5.5.2.3(7) ensure that illuminated external Facility signage:
  - 5.5.2.3(7)(a) clearly identify the Facility;
  - 5.5.2.3(7)(b) minimize light spillage; and
  - 5.5.2.3(7)(c) indicate the accesses, parking and restrictions for various vehicle types, as required.

## 5.6 Building Envelope

- 5.6.1 Design construction assemblies to utilize "PERSIST" (Pressure Equalized Rain Screen Insulated Structure Technique) building envelope technology. Provide a continuous air space of minimum 25 mm clear width. This system also provides a warm attic on the pitched roof portions of the building.
- 5.6.2 Complete all Design and Construction so as to prevent the accumulation and stagnation of rain, snow, ice and dirt on the horizontal and vertical surfaces of the envelope appropriate for the climate in which the Building is situated.

- 5.6.3 Design construction assemblies to prevent the ingress of moisture or water vapour from the exterior into the Building and the passage of air through the building envelope from the interior spaces to the exterior and vice versa.
- 5.6.4 Construction assemblies will prevent the ingress of moisture through foundation walls below grade and floor slabs, both subject and not subject to hydrostatic pressure.
- 5.6.5 Create comfortable, liveable interior environments by providing protection such as insulation to resist the transfer of heat through exterior walls and roofs.
- 5.6.6 Provide resistance to the propagation and spread of fire for exterior walls and interior walls designated as fire-resistance rated separations where appropriate.
- 5.6.7 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 50 year lifespan.
- 5.6.8 Ensure continuation of the air barrier, vapour barrier, thermal barrier and rain barrier across the entire envelope, including foundations, walls and roofs.
- 5.6.9 Design building envelope details to avoid thermal bridging.
- 5.6.10 Utilize a building envelope consultant throughout Design and Construction.
- 5.6.11 Design exterior finishes to be a combination of material as defined in Section 5.2 for a residential appearance with maintenance free characteristics.

## **5.7 Interior Building Components**

- 5.7.1 Design and build the Facility's interior walls and partitions in accordance with the following:
  - 5.7.1.1 The interior walls and partition systems will:
    - 5.7.1.1(1) provide acoustic separations as required for the specific functions to be carried out in the spaces affected. Refer to Appendix 3C [Sound Transmission Ratings]; and
    - 5.7.1.1(2) provide separations required for fire safety and protection.
  - 5.7.1.2 Seismic resistance capabilities will conform to the requirements of CSA S832-06 Guidelines for Seismic Risk Reduction of Operational and Functional Components of Buildings.
  - 5.7.1.3 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:
    - 5.7.1.3(1) suitable for cleaning, maintenance and infection prevention and control;

- 5.7.1.3(2) permanence and durability, including impact resistance;
  - 5.7.1.3(3) aesthetic and design qualities will provide a residential environment for the benefit of residents, staff and public;
  - 5.7.1.3(4) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality;
  - 5.7.1.3(5) flexibility to permit adaptability of the internal spaces, if required to suit future process revisions;
  - 5.7.1.3(6) provide fittings, attachments and internal bracing/backup as required to accommodate and support wall mounted equipment in resident rooms and living rooms;
  - 5.7.1.3(7) wall finishes will be washable. If near plumbing fixtures, wall finishes will be smooth and moisture resistant;
  - 5.7.1.3(8) wall finishes in wet areas (e.g., bathrooms, showers, housekeeping closets) will be water-resistant and provide durable and scrubbable surface;
  - 5.7.1.3(9) wall bases in areas that require frequent wet cleaning (e.g., resident bathrooms, spas, housekeeping closets, soiled and clean utility rooms, public bathrooms) will be continuous and coved with the floor, tightly sealed to the wall, and constructed without voids that can harbor insects or moisture;
  - 5.7.1.3(10) wall protection and corner guards will be durable and scrubbable.
- 5.7.2 Design and build the Facility's ceilings in accordance with the following:
- 5.7.2.1 The ceiling system will be part of the definition of interior spaces and may be accessible or inaccessible in total or in part.
  - 5.7.2.2 Accessible ceiling systems may provide access to the ceiling spaces throughout the system or at specific and particular locations:
    - 5.7.2.2(1) accessible ceiling systems are not permitted in resident rooms and washrooms;
    - 5.7.2.2(2) accessible ceiling systems will be of cleanable type if used in clean utility, soiled utility and laundry room.
  - 5.7.2.3 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 conform to the sound transmission ratings specified in Appendix 3C. [Sound Transmission Ratings].

- 5.7.2.4 Ceiling systems may form a component of fire resistance rated separations for areas requiring such separation.
- 5.7.2.5 Ceiling height will not be less than 2.7 m above the finished floor in all areas except for the following:
- 5.7.2.5(1) ceiling heights in corridors, storage rooms and toilet rooms will be not less than 2.4 m except that ceiling heights in small, normally unoccupied spaces such as storage closets may be reduced to a minimum of 2.1 m;
  - 5.7.2.5(2) building components and suspended tracks, rails and pipes located in the traffic path of normal traffic will not be less than 2.2 m above the finished floor;
  - 5.7.2.5(3) ceiling heights in residential bed rooms will not be lower than 2.4 m and will not be higher than 2.7 m; and
  - 5.7.2.5(4) rooms containing ceiling mounted equipment will have ceiling heights as required to ensure proper functioning of the ceiling mounted equipment.
- 5.7.2.6 Reinforce ceilings in residential bed rooms to allow for the use of “Super Poles” (floor to ceiling grab bars) adjacent to the bed.
- 5.7.2.7 For consistency with existing products and materials, all components including tiles and suspension systems will be of an imperial dimension standard.
- 5.7.2.8 Design and select ceiling systems and ceiling finishes to comply with the following criteria as may be relevant to the particular or specific functions of the space:
- 5.7.2.8(1) suitable for cleaning, maintenance and infection control;
  - 5.7.2.8(2) flexible and permit access to the spaces above in corridor or service locations;
  - 5.7.2.8(3) compatible with mechanical, plumbing, electrical, communications services and fixtures;
  - 5.7.2.8(4) low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality;
  - 5.7.2.8(5) aesthetic and design qualities will provide a healing environment for the residents, staff and public.

### 5.7.3 Floor Finishes

- 5.7.3.1 The floor and floor systems form a part of the interior space. Project Co will provide flooring that is complementary and integral to the functional and aesthetic requirements of the interior space.
- 5.7.3.2 Project Co will select floor finishes to suit types and concentration of pedestrian and/or vehicular/wheel traffic to be anticipated.
- 5.7.3.3 Flooring designs and patterns may comprise a component of the “way-finding” system of the Facility. Refer to Section 5.5.
- 5.7.3.4 Floors in resident care areas must be washable and able to withstand routine low level hospital disinfection.
- 5.7.3.5 Project Co will seal penetrations to prevent the entrance of air, insects and rodents.

### 5.7.4 Project Co will design and select floor finishes complying with the following criteria as may be relevant for the particular or specific functions to be carried out in the spaces affected:

- 5.7.4.1 ergonomic comfort, suitable for cleaning, maintenance and infection prevention and control, including the frequency and quality of joints and ease of replacement if and when required;
- 5.7.4.2 imperviousness to concentrations of moisture anticipated to be existing on the floors and duration of that moisture;
- 5.7.4.3 permanence and durability and resistance to concentrated service traffic both pedestrian and vehicular traffic;
- 5.7.4.4 aesthetic and design qualities will provide a healing environment for the benefit of residents, staff and public;
- 5.7.4.5 low VOC emissions so as to minimize adverse impact on indoor air quality and indoor environmental quality;
- 5.7.4.6 use patterns and textures compatible with the requirements for pedestrian safety and elder friendly design. Refer to Section 3.4;
- 5.7.4.7 use slip-resistant flooring in wet areas such as kitchens, shower and bath areas, laundry rooms, ramps and entries from exterior to interior space;
- 5.7.4.8 for resident washroom/shower floors, provide a positive slope of not less than 2% to drains and be flush-walk-in without ridges for water retention or tripping hazards. Ensure that shower floor areas are sloped toward the shower drain assembly at a minimum pitch of 2% and a maximum pitch of 3%.

- 5.7.4.9 flooring surfaces will provide smooth transitions between differing flooring materials;
  - 5.7.4.10 design threshold and expansion joint covers to accommodate rolling traffic and prevent tripping; and
  - 5.7.4.11 avoid the use of highly polished flooring or flooring finishes that create glare. Transitions of colour will be designed to be elder and dementia friendly.
  - 5.7.4.12 use of carpet tile is permitted only in dens and zen rooms, and the sitting area in the lounges, subject to approval of the Authority.
- 5.7.5 Doors and Door Hardware
- 5.7.5.1 Door Type: Doors to all rooms containing bathtubs, showers and toilets for resident use will be hinged or sliding.
  - 5.7.5.2 Door openings: Door openings will be determined based on the intended function on either side of the doors to allow proper clearance for movement of people and equipment associated with those rooms, such as lifts, equipment, beds, ambulation of residents, wheelchairs and carts.
  - 5.7.5.3 Provide double doors into rooms to or from which large pieces of equipment will be moved during the lifetime of the Facility and where such equipment cannot pass through 1200 mm single door openings.
  - 5.7.5.4 Doors to bariatric resident bedrooms and washrooms will be comprised of one full door of at least 1200 mm in width and one small door leaf of at least 248 mm in width.
  - 5.7.5.5 No door or door leaf will be less than 2150 mm high, unless specifically required for access to services or other purposes where height is restricted.
  - 5.7.5.6 Door Hardware: Lever hardware will be selected for ease of use by residents with mobility limitations.
  - 5.7.5.7 Exterior doors that may be left open will have insect screens.
  - 5.7.5.8 All interior and exterior doors used by residents will open with ease and little resistance.
  - 5.7.5.9 Provide an appropriate controlled-egress system on all required exit doors and doors leading to other areas of the Facility for prevention of resident elopement from the home. Refer to Functional Program for locations.
  - 5.7.5.10 For entrance doors into or between Residential Care Buildings or activity areas through which carts or wheelchair traffic is anticipated on a routine basis, provide doors that are automatically activated by an electronic device or manual push button, located to allow convenient access. For all other doors through which carts, wheelchairs, walkers, or frequent resident 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.

- 5.7.5.11 In areas where security is considered paramount, such as areas for residents with dementia and secure entrances, ensure safety and security through the appropriate location, configuration, materials, construction, and detailing of doors and hardware in accordance with Saskatchewan Ministry of Health Standards.

## 5.7.6 Door and Security Methodology

- 5.7.6.1 Residential Care Buildings will have the following basic security requirements:

- 5.7.6.1(1) Main entrance exterior door will be non-locking with barrier free power operator.
- 5.7.6.1(2) Main entrance interior vestibule door will have card reader, resident elopement (no alarm) and barrier free power operator. Resident elopement to override card reader.
- 5.7.6.1(3) Entrance door from the connecting corridors into the Residential Care Buildings will have card reader, resident elopement (no alarm) and barrier free power operator. Resident elopement to override card reader.
- 5.7.6.1(4) Exterior door to patio will have keyed lock and barrier free power operator. Staff will control the door access in inclement weather, etc.
- 5.7.6.1(5) Exterior gate from patio to yard will have magnetic lock with keyed access and be connected to the fire alarm system to release upon alarm.
- 5.7.6.1(6) Doors from resident common areas into clean utility, soiled utility and resident laundry rooms will be keyed locks or pin-pad card reader access as determined by the Authority.
- 5.7.6.1(7) Doors from connecting corridor areas into clean utility, soiled utility, housekeeping rooms, general storage rooms and staff rooms will have mechanical pin-pad locks.

## 5.7.7 Infection Prevention and Control

- 5.7.7.1 Design the Facility to mitigate and prevent, where possible, the spread of infection including via contaminated surfaces and airborne pathogens, in

accordance with CAN/CSA Z317.13-07 Infection control during construction, renovation, and maintenance of health care facilities.

- 5.7.7.2 Select appropriate materials and use simple detailing leading to quality workmanship and ease of accessibility for routine cleaning and maintenance. Use of copper-base containing materials is encouraged.
- 5.7.7.3 Design the Facility to mitigate the spread of airborne infections during an outbreak by creating outbreak control zones as follows:
  - 5.7.7.3(1) outbreak control zones will be no more than 1000 m<sup>2</sup> in area and contain no more than 10 resident rooms in the Standard Residential Home and 15 resident rooms in the Hospice House;
  - 5.7.7.3(2) outbreak control zones will be bounded by construction that allows the mechanical ventilation systems to be isolated from other zones relative to adjacent floor areas (corridors); and
  - 5.7.7.3(3) coordinate outbreak control zones with the mechanical requirements described in Parts 7 and 10 of this Schedule.
- 5.7.7.4 Design the Facility to consider ease of infection control in future alterations, modifications and additions.
- 5.7.7.5 Prepare a workflow pattern and risk assessment in collaboration with the Authority to address placement of hand wash sinks and alcohol-based hand rub dispensers.
- 5.7.7.6 Locate hand wash sinks in accordance with the following design principles:
  - 5.7.7.6(1) provide hand wash sink in accordance with CSA Z8000-11;
  - 5.7.7.6(2) locate sinks at all entrances to the Facility so that visitors stop, take notice, and access them (stations should have at least one antiseptic hand rub dispenser mounted for convenient access for visitors);
  - 5.7.7.6(3) locate hand wash sinks in recessed alcoves, where ever possible, to reduce corridor obstructions and enhance residential character;
  - 5.7.7.6(4) design hand wash stations with finishes that enhance the residential character of the home, and
  - 5.7.7.6(5) locate sinks at other locations determined in consultation with the Authority.
- 5.7.7.7 Design hand wash sinks in accordance with the following design principles:

- 5.7.7.7(1) all materials used to construct hand wash sinks will be capable of sustaining regular cleaning/disinfection with hospital-approved cleaners and disinfectants;
  - 5.7.7.7(2) sink size will be sufficient to prevent recontamination (from splashing) during use. Cup or bar sinks are not of sufficient size for hand washing;
  - 5.7.7.7(3) lavatories and hand-washing stations will be securely anchored to withstand an applied vertical load of not less than 250 pounds (113.4 kg) on the fixture front;
  - 5.7.7.7(4) sink and spout will be designed to minimize splashing and aerosolization;
  - 5.7.7.7(5) sink spouts will be free of aerators/modulators/hose sprays;
  - 5.7.7.7(6) finishes around plumbing fixtures will be smooth and water resistant;
  - 5.7.7.7(7) sink will not be equipped with an overflow;
  - 5.7.7.7(8) sink will not be equipped with open grid strainers. Stoppers and mechanical waste fittings will not be used;
  - 5.7.7.7(9) anti-splash fittings at outlets will not be used as they easily become contaminated with bacteria;
  - 5.7.7.7(10) controls (water taps) will be hands free. Taps such as gooseneck taps will not swivel. Electric eye technology (triggered by hand, not body placement) will have a backup that allows for operation during power interruptions, and have means adjacent to the sink for users to adjust water temperature and length of time the water flows;
  - 5.7.7.7(11) sinks will be equipped with cast brass P-traps with cleanouts, which are both chrome plated where exposed;
  - 5.7.7.7(12) hand-washing stations will include liquid or foam soap dispensers; and
  - 5.7.7.7(13) provide hand washing sinks that are separate from food preparation sinks in any areas where food is prepared.
- 5.7.7.8 Provisions for hand drying are required at all hand-washing stations;
- 5.7.7.8(1) Hand-washing stations will include an electric hand drying device that does not require hands to connect with the dispenser;

- 5.7.7.8(2) Dispensers will be paper units enclosed to protect against dust or soil and to ensure single unit dispensing;
  - 5.7.7.8(3) Hand towels will be directly accessible from sinks.
- 5.7.7.9 Alcohol-based Hand Rub Dispensers
- 5.7.7.9(1) Design the Facility to accommodate alcohol-based hand rub dispensers. Placement to be in accordance with CSA Infection Prevention and Control Guidelines and subject to prior approval by the Authority.
- 5.7.7.10 Grab Bars
- 5.7.7.10(1) Install grab bars in all resident toilets, showers, tubs and spa rooms, in accordance with barrier-free guidelines;
  - 5.7.7.10(2) For wall-mounted grab bars, provide a minimum clearance of 38 mm from the walls;
  - 5.7.7.10(3) Grab bars will be of sufficient size and design to support the full weight of a resident, not less than a sustain concentrated loads of 1.3 kN applied vertically or horizontally;
  - 5.7.7.10(4) Flip-down grab bars will be approx. 650 mm in length and installed a minimum 800 mm clear apart, centered on toilet and 720 mm from the floor to the top of the support;
  - 5.7.7.10(5) Grab bars will have a finish color that has a value that contrasts with the adjacent wall surface;
  - 5.7.7.10(6) Grab bars will return to the wall or floor with eased corners if a mitered corner condition exists;
  - 5.7.7.10(7) Walls where grab bars are mounted will be reinforced with backing capable of sustaining loads imposed upon them.
- 5.7.7.11 Wall Protection
- 5.7.7.11(1) Walls and wall corners that will be subject to continual scrapping by wheelchairs and portable equipment will have treatment or coverings that protect the wall surface, for example, handrails, corner guards and bumper rails.
  - 5.7.7.11(2) Handrails will comply with barrier free guidelines.
  - 5.7.7.11(3) All stairs and ramps will have handrails.
  - 5.7.7.11(4) Where corridors are defined by walls, provide handrails on both sides of all corridors normally used by residents.

- 5.7.7.11(5) Provide a handrail for each corridor wall length exceeding 300 mm.
- 5.7.7.11(6) Provide a minimum clearance of 50 mm between the handrail and the wall.
- 5.7.7.11(7) Handrails and fasteners will be completely smooth and free of rough edges.
- 5.7.7.11(8) Handrails will return to the wall with eased corners if a mitered corner condition exists.

#### 5.7.7.12 Casework, Millwork and Built-ins

- 5.7.7.12(1) In resident use areas, corners will be rounded or eased.

#### 5.7.7.13 Window Treatments

- 5.7.7.13(1) Window treatments such as blinds, sheers or other resident-controlled window treatment within Residential Care Buildings, used to control light levels and glare, will be supplied and installed by the Authority.
- 5.7.7.13(2) Project Co will provide wall backing suitable for the installation of window coverings.

#### 5.7.7.14 Equipment & Storage

- 5.7.7.14(1) Provide storage shelves that are:
  - 5.7.7.14(1)(a) cleanable with Authority approved detergents and disinfectants;
  - 5.7.7.14(1)(b) not located under sinks;
  - 5.7.7.14(1)(c) 200 – 250 mm above the floor to permit routine cleaning; and
  - 5.7.7.14(1)(d) 450 – 500 mm from ceiling to ensure adequate functioning of fire sprinklers.
- 5.7.7.14(2) If open shelving is provided for storage, the bottom shelf of such shelving will be a solid surface to prevent contamination from the floor.

### 5.7.8 Ergonomic Design

#### 5.7.8.1 Project Co will:

- 5.7.8.1(1) provide detailed design features which expressly facilitate the physical activities of the staff and residents to increase their

safety, efficiency and general well-being, and assist in eliminating ergonomic risk factors;

5.7.8.1(2) ensure all resident care and treatment spaces (including washrooms) accommodate lifting and transfer devices; and

5.7.8.1(3) provide ergonomics design, consistent with Good Industry Practice, of all work spaces including millwork, furniture, lighting, and finishes to eliminate strain and injury to health care workers.

#### 5.7.9 Elder-Friendly

5.7.9.1 Project Co will comply with “Code Plus, Physical Design Components for an Elder Friendly Hospital, January 2006”, 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 elder friendliness.

#### 5.7.10 Colour and Finishes

5.7.10.1 Project Co will:

5.7.10.1(1) provide doors and frames in non-resident areas painted the same colour as the walls to prevent residents from accidentally entering areas;

5.7.10.1(2) provide finishes that reduce reflected noise on walls and ceilings, and that increase sound absorbency, in “high” use areas of the Building to minimize noise;

5.7.10.1(3) provide color palettes appropriate for the emotional and psychological needs of residents;

5.7.10.1(4) provide natural color palettes that contribute to the creation of a residential environment;

5.7.10.1(5) provide distribution of ambient full-spectral color within typical staff and resident environments; and

5.7.10.1(6) avoid glare-creating finishes.

#### 5.7.11 Safety and Security

5.7.11.1 Project Co will design a safe and secure environment for all residents and staff. Controls must be provided at all doors which exit from the resident areas so that access into the Building can be controlled when necessary.

5.7.11.1(1) Provide access control at the main public entry of the Community Centre, at all main entrances to the Residential

Care Buildings, all exterior entrances to the Neighbourhood corridors, staff spaces accessible from the corridors (lounges, offices, washrooms), and all support service spaces accessible from the corridors.

- 5.7.11.1(2) Provide resident elopement system in areas where residents with dementia may reside, such as Residential Care Buildings; and
- 5.7.11.1(3) Provide internal only telephones located in main lobbies and resident waiting areas.

5.7.11.2 Provide a door access control system:

- 5.7.11.2(1) that conforms to all relevant provincial and municipal codes and regulations;
- 5.7.11.2(2) is "ON" at all times;
- 5.7.11.2(3) for all exits from resident areas which prevents unauthorized entry or exiting;
- 5.7.11.2(4) with electro-magnetic locking devices (or alternative means of achieving the same result) on all doors leading to stairways, secured areas and to the outside, subject to compliance with the Saskatchewan Fire Code and NBC;
- 5.7.11.2(5) with electro-magnetic hold-open devices on doors that are required under the Saskatchewan Fire Code to be equipped with self-closing hardware. Project Co will consult with City Fire Department if as required;
- 5.7.11.2(6) with a 15 second delay on mag locks and panic hardware and so that a notification is sent to the caregiver during such delay;
- 5.7.11.2(7) with electrically operated door alarms connected to the staff control station located in the kitchen and a visual indicator by the door. Provide a manual reset switch at each door equipped with such an alarm.

5.7.12 Art Works

- 5.7.12.1 As part of the Authority's future art program, the Authority intends to procure various art works for display within the Facility.
- 5.7.12.2 Project Co will:
  - 5.7.12.2(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;

- 5.7.12.2(2) provide lighting to enhance the display of all art works;
- 5.7.12.2(3) consider the development of major public pathways as galleries with hanging and display systems that can accommodate complete size and spacing flexibility in mounting, with appropriate wall backing.

## 5.8 Residential Personal Spaces

### 5.8.1 Resident Home Lounge Areas

#### 5.8.1.1 Design Objectives

- 5.8.1.1(1) Provide an environment that is small enough to be perceived as 'home' by residents, while being of sufficient size to permit reasonable operational efficiency.
- 5.8.1.1(2) Utilize interior design features that provide a residential, non-institutional appearance (i.e. wall colours, floor coverings, millwork etc.) in common and personal areas.
- 5.8.1.1(3) Provide comfortable residents' lounges that are designed so that residents can interact in a relaxed atmosphere with other residents, family members and visitors. Design lounges for conversation, reading, and other social activities. The lounge should also allow for a contemplative view of the natural world. Provide a scenic view from the lounge and/or the dining area.
- 5.8.1.1(4) Maintain a comfortable temperature in the resident seating areas located near the windows by ensuring the cold air vents do not blow near such seating areas.
- 5.8.1.1(5) Design program and activity areas to accommodate a variety of resident focused activities, including hobbies and crafts, exercise and social and recreation activities, and to support social functions that promote resident quality of life.
- 5.8.1.1(6) Refer to the Functional Program for additional information.

#### 5.8.1.2 Design Standards

- 5.8.1.2(1) Provide at least one lounge area in each Residential Care Building that is a minimum of 22 m<sup>2</sup>.
- 5.8.1.2(2) Ensure the size of the resident lounge space will accommodate resident mobility issues, including significant numbers of residents in wheelchairs, broda chairs, or electric wheelchairs that may require a larger space.



- 5.8.1.2(3) Provide a nurse call system device in each lounge and program/activity area. Where the lounge and the program activity space are integrated, only one nurse call device is required in that area.
  - 5.8.1.2(4) Provide windows with a direct view to the exterior from lounges within each Residential Care Building. Maximize the glazing to achieve multiple vistas and maximize supervision of exterior spaces.
  - 5.8.1.2(5) Provide for a variety of sizes and designs for family and residents, from private nooks for intimate conversations to larger common areas for group activities.
  - 5.8.1.2(6) In each lounge area and dining area, provide convenient access to a barrier-free washroom (with a toilet, sink and overhead lift) that is separate from and not located in a resident room and is within 6 meters of the resident lounge area or dining room, as applicable. Access to the washroom will be from a hallway and the door will not be viewable from occupied areas. Washroom will have a single track overhead lift.
  - 5.8.1.2(7) Provide stand-alone hand washing sinks in accordance with IPC requirements, in or adjacent to lounge areas and dining areas for use by staff and residents, but not for use for food preparation.
  - 5.8.1.2(8) Provide task lighting for activities such as reading in all Lounges and program/activity areas.
- 5.8.2 Resident Kitchen and Dining
- 5.8.2.1 Design Objectives
    - 5.8.2.1(1) In Standard Residential Home and Community Centre kitchens, provide counter heights, depths and lengths consistent with the design set out in Appendix 3B [Lean 3P Workshop – Kitchen and Bath Designs], including variable height of resident counters and work areas. The Design must include separate preparation and clean up areas with separate sinks. Provide the ability to restrict resident access to the kitchen in a non-overt manner.
    - 5.8.2.1(2) Refer to the Functional Program for additional information.

- 5.8.2.1(3) All dining areas for use by residents will incorporate design features that promote a "home-like" ambience and that reinforce "familiar" eating patterns associated with smaller social gatherings. Minimize noise in dining areas through the provision of finishes that reduce reflected noise and increase sound absorption. Design the dining area to reflect and respond to the changing physical needs of residents.
- 5.8.2.1(4) The physical needs of residents must also be considered when planning physical space in dining area(s) (i.e. wheelchair-accessible seating arrangements to turn wheelchairs easily). Provide adequate space for residents to access and leave their tables without disturbing other residents and space for caregivers to assist residents who cannot feed themselves.
- 5.8.2.1(5) Design kitchens to provide maximum sight lines to the front entrance, living and dining areas and outdoor secure spaces.
- 5.8.2.1(6) Upper cabinets that restrict viewing to surrounding bedrooms or dining/living areas are not permitted.
- 5.8.2.1(7) Design kitchens to accommodate resident participation in food preparation as part of resident program activities. Design supplies and storage area to accommodate this arrangement.

#### 5.8.2.2 Design Standards

- 5.8.2.2(1) Dining area tables should accommodate no more than four (4) persons to encourage socialization and interaction between residents at mealtimes. The space requirements should reflect the possibility of all four residents being in wheelchairs or in Broda Chairs, which take up additional room.
- 5.8.2.2(2) Each kitchen will include a induction stove with double oven, commercial grade range hood, double door fridge with ice & water dispenser, commercial grade microwave, dishwasher with sanitizing cycle, double compartment sink, food prep sink, plumbing-in coffee machine and counter space for other equipment.
- 5.8.2.2(3) Provide emergency shut-offs to range, cooktop and oven.
- 5.8.2.2(4) All lower cabinets will have drawers (except under sinks), suitable for storage of small appliance, dishes, glassware, utensils and dry goods. All cabinets to be lockable.

- 5.8.2.2(5) Provide wheelchair-accessible counter space for residents to assist in the preparation of food from inside of kitchen.
- 5.8.2.2(6) Provide resident dining countertops on the exterior side of the kitchen islands. Countertops:
  - 5.8.2.2(6)(a) in Standard Residential Home and Community Centre kitchens will be at 813 mm (32") and 915 mm (36") heights to accommodate residents in wheelchairs and Broda chairs; and
  - 5.8.2.2(6)(b) in the Hospice House and Adult Day Program kitchens will be 736 mm (29") in height and a minimum of 3600 mm in length to accommodate four residents in wheelchairs.
- 5.8.2.2(7) Hand sinks must be provided either in the kitchen or immediately adjacent to the kitchen. Hand sinks can be located in the kitchen only if it is accessible upon immediately entering the kitchen. Staff must be able to access the hand wash area without having to cross through the kitchen.
- 5.8.2.2(8) Hand wash sinks must be handicap-accessible to allow for residents to work in the kitchen if desired. Hand wash sinks may be included in the 736 mm or 813 mm height resident dining countertops, as applicable.
- 5.8.2.2(9) Provide hands-free, hard wired, electric paper towel dispensers adjacent to all hand sinks.
- 5.8.2.2(10) Provide half doors/gates to all kitchen entrances that can be closed to prevent elder access during high-intensity meal preparation.
- 5.8.2.2(11) Provide space for staff office functions, including telephone and nurse call consoles, computer dock station, printer and lockable storage for files, charts, basic office supplies and medications.
- 5.8.2.2(12) All kitchen construction and equipment will conform to the latest edition of the Public Eating Establishment Regulations.
- 5.8.2.2(13) The following storage areas are recommended:

- 5.8.2.2(13)(a) A minimum of 0.338 m<sup>3</sup> per resident of refrigerated storage maintained at a temperature of 4 degrees Celsius or less for perishable foods such as dairy products, meats and vegetables.
  - 5.8.2.2(13)(b) A minimum of 0.281 m<sup>3</sup> per resident of frozen food storage maintained at a temperature of -18 degrees Celsius.
  - 5.8.2.2(13)(c) Storage space for non-perishable foods in close proximity to the kitchen and receiving area.
  - 5.8.2.2(14) Surfaces that come in contact with food will be constructed of non-corrosive material and free of cracks, crevices, and similar separations that could collect food and other matter.
  - 5.8.2.2(15) Walls, ceilings, and floors will have impervious, smooth surfaces that can be easily cleaned.
  - 5.8.2.2(16) Floor surfaces will be of non-slip material that can be easily cleaned and support the ease of movement of resident equipment such as wheelchairs, walkers, etc. The floor surface will also support the health and safety requirements of staff.
  - 5.8.2.2(17) Provide integral coved base to all kitchen cabinets.
  - 5.8.2.2(18) Provide adequate facilities for the collection and disposal of garbage.
  - 5.8.2.2(19) In the kitchen and dishwashing area, provide air-conditioning and make-up air systems designed in accordance with the latest edition of American Society of Heating, Refrigeration and Air Conditioning Engineers Handbooks, Standards and Regulations.
- 5.8.3 Resident Bedrooms
- 5.8.3.1 Design Objectives
    - 5.8.3.1(1) Design resident bedrooms to meet each resident's need for comfort and safety, promote resident independence and dignity, provide for resident privacy and accommodate activities including sleeping, grooming, dressing, talking on the telephone, watching television, reading, contemplating, private visits and watching activities or nature outside the Facility.

- 5.8.3.1(2) Provide a separate barrier-free en suite washroom, a separate entrance to the corridor and an X-Y gantry resident lift system with full coverage of the room and en suite washroom. Resident lift system will provide 100% coverage to safely lift resident with the sling, from any point in the washroom or bedroom.
- 5.8.3.1(3) Design the bedroom of sufficient size to enable a caregiver or specialized equipment to access the bed from three sides and enable the resident to have a few pieces of familiar furniture in the room, such as a dresser, easy chair, small entertainment unit or desk, shelving, bookcases, and tack boards to allow residents to display and store personal items. Ensure there is wall space in the room to accommodate resident pictures and art.
- 5.8.3.1(4) Refer to the Functional Program for additional information.
- 5.8.3.2 Design Standards
- 5.8.3.2(1) For standards resident rooms, provide a minimum of 18.0 m<sup>2</sup> of floor space, excluding the space for the washroom.
- 5.8.3.2(2) For bariatric rooms (one per house), provide a minimum of 27.0 m<sup>2</sup> of floor space, excluding the space for the washroom.
- 5.8.3.2(3) Provide a clothes wardrobe with at least 0.74 m<sup>2</sup> of floor space, a minimum clear dimension of 610 mm deep by 1200 mm wide and include an adjustable height clothes rod and adjustable shelf and a minimum of two drawers. Movable wardrobes in the Standard Residential Home bedrooms will be securely fastened to the wall to ensure resident and staff safety. Wardrobe units must have lockable drawers and doors. All bedrooms in the Hospice House may utilize either fixed millwork style or mobile wardrobes and entertainment units/desks.
- 5.8.3.2(4) The entrance into each bedroom area will be wheel chair accessible and door may swing either into or out of the bedroom (i.e. doorway width will be at least 1100 mm of clear space).
- 5.8.3.2(5) For some residents, a secondary position for the bed location is to have one long side against the wall. The bed location should permit an easy view to the exterior, the TV and

persons entering the room. A direct view of the resident from the hallway is to be avoided.

- 5.8.3.2(6) Every bed location will have sufficient space to permit placement of a stretcher along one side for lateral transfer of the resident from the bed to the stretcher by at least two staff members without substantial rearrangement of furniture.
- 5.8.3.2(7) The placement of furniture in the room must provide for ease of movement of wheelchairs and scooters to all areas of the room.
- 5.8.3.2(8) Each standard resident room and bathroom will be provided with an X-Y gantry lift system with a minimum 550 lbs patient lift. Bariatric resident rooms and spas will be designed with a minimum 1000 lbs lift. Project Co will supply and install all patient lifts, patient lift motors and all tracks required for the patient lifts. Refer Appendix 2D [Equipment and Furniture].
- 5.8.3.2(9) Provide the ability to install a super-pole or other transferring assistive device in all resident bedrooms.
- 5.8.3.2(10) Each bedroom area will have at least one operable window that provides a direct view to the outdoors or to other naturally lit spaces from both a sitting and lying-in-bed position. The window will be equal to or greater than 10% of the floor area of the bedroom to ensure that sufficient natural lighting is available for the bedroom. The window sill height will be: approximately 600 mm above the floor to allow views to outside by residents who are seated or in lying in bed; and should be large enough to accommodate small plants or other small resident item such as pictures, etc. Window openings will be no greater than 150 mm. Windows will have insect screens. .
- 5.8.3.2(11) There will be no direct view of the toilet in the en suite washroom from the outside corridor when the washroom door is open.
- 5.8.3.2(12) To accommodate couples, each pair of resident rooms will have the ability to be connected with hotel style double doors. Provide one pair of rooms per house with adjoining hotel style double doors. All other paired rooms will have framing behind drywall to accommodate future installation of doors. Doorway width will be at least 1100 mm of clear space.

- 5.8.3.2(13) Each bedroom will have a memory box, with a non-breakable or tempered glass window, that contains "cueing" features, (for example, a room number, the resident(s) name(s), and/or pictures), to be located outside each bedroom next to the door to assist residents in finding their way to and easily identifying their bedrooms.
- 5.8.3.2(14) Where a bedroom has a vestibule area, it will be large enough to permit the unobstructed passage of a wheelchair, a walker or any specialized program equipment. There will be a minimum width of 600 mm between the door handle and the bedroom wall, which is adjacent to the door.
- 5.8.3.2(15) Bedroom flooring will be a non-glare, non-slip, homogeneous sheet type flooring. Select colours and patterns that will not have negative impacts on residents with dementia or poor eye sight.
- 5.8.3.2(16) Each resident bedroom will have controls for temperature, in accordance with Section 10.6 (23 00 00 – Heating, Ventilating and Air Conditioning).
- 5.8.3.2(17) Provide light control for overhead light at the bed wall reachable by the resident.
- 5.8.3.2(18) Provide:
- 5.8.3.2(18)(a) wiring for a phone jack, cable television service and internet. Refer to electrical requirements in Part 8 of this Schedule.
  - 5.8.3.2(18)(b) additional power outlets for other electrical equipment (e.g. lamps, computer, stereo, TV, Internet) installed every 1.83 m or as per building code-requirements, whichever is more stringent, and
  - 5.8.3.2(18)(c) wall area with solid backing sufficient to accommodate a wall mounted big screen TV.
- 5.8.3.2(19) Provide a nurse call system device located within easy reach of the resident, including when the resident is lying or sitting up in bed. Provide a minimum 3 m long cord.
- 5.8.3.2(20) Light switches in resident bedrooms should be clearly visible and easy to access from the entry point to the room. Light switches should not be located behind curtains or doors or a considerable distance from the entry point to the room.

- 5.8.3.2(21) Provide a reading light accessible from the bed. Select lighting fixtures to facilitate a home-like environment.

#### 5.8.4 Resident Washroom

##### 5.8.4.1 Design Objectives

- 5.8.4.1(1) The Design must achieve the key dimensions set out in Appendix 3B [Lean 3P Workshop – Kitchen and Bath Designs] in order to facilitate resident care.
- 5.8.4.1(2) Refer to the Functional Program for additional information.
- 5.8.4.1(3) Design the washroom:
  - 5.8.4.1(3)(a) to be barrier-free and designed to promote resident privacy, dignity and independence;
  - 5.8.4.1(3)(b) to allow for the easy, effective and safe assistance and delivery of care by caregivers; and
  - 5.8.4.1(3)(c) to have an entrance from within the bedroom.

##### 5.8.4.2 Design Standards

- 5.8.4.2(1) Provide each resident room with a barrier-free 3 piece (including shower) washroom that is accessed from within the bedroom.
- 5.8.4.2(2) Provide a 1500 mm turning circle within the bathroom for a wheelchair or a walker.
- 5.8.4.2(3) Each washroom will have sufficient space to enable independent and/or assisted transfer from the front and both sides of the toilet. Minimum clear space to each side of the toilet is 600 mm to accommodate assisted transfers from wheelchairs.
- 5.8.4.2(4) Design the washroom toilet to provide the following minimum clearance:
  - 5.8.4.2(4)(a) 780 mm from centre of the bowl to one side wall;
  - 5.8.4.2(4)(b) minimum 1150 mm from centre of the bowl to opposite wall; and
  - 5.8.4.2(4)(c) 914 mm from front edge of the bowl to opposite wall.



- 5.8.4.2(5) Toilet bowl rim will be 420 mm in height.
- 5.8.4.2(6) Provide a nurse call system device accessible from the toilet while in a sitting position without having to reach forward or backward. The device will not be located behind the toilet.
- 5.8.4.2(7) Provide pull down grab bars on each side of the toilet for residents who can assist themselves. Refer to Appendix 3B [Lean 3P Workshop - Kitchen and Bath Designs].
- 5.8.4.2(8) Install securely fastened grab bars beside and behind the toilet within easy reach of the resident.
- 5.8.4.2(9) Toilet paper holder will be no farther than 610 mm from toilet and recess mounted.
- 5.8.4.2(10) Design washrooms doors such that an open washroom door will not block the bedroom entranceway and will not swing into another door in the bedroom, such as the bedroom door itself or a clothes closet door.
- 5.8.4.2(11) Doors that open into the washroom will be equipped with appropriate hardware to allow the door to be opened out into the bedroom in an emergency situation.
- 5.8.4.2(12) Washroom door hardware will be non-lockable.
- 5.8.4.2(13) If the entrance to the washroom is a sliding entrance door, the quality of the tracks and the weight of the door must be designed to ensure the door movement is safe and easy. The door handles must be easy to grip and should be placed far enough away from the door frame to ensure that the resident's fingers will not be harmed when opening and closing the door. Any sliding entrance doors must not be pocket sliding doors but must be exterior sliding doors against a wall to provide opportunity to clean around the sliding door. Sliding doors will not incorporate floor tracks which may hinder wheelchair maneuverability and/or constitute additional housekeeping requirements. Architectural detailing or built-in fascia will be provided to conceal the overhead track hardware.
- 5.8.4.2(14) Sinks in each washroom will be mounted between 736 mm (29") and 865 mm (34") from the floor, be hands-free and positioned so that it meets the barrier-free needs of the resident using the washroom. Counter space must be

designed to provide easy, accessible placement of personal grooming items.

- 5.8.4.2(15) Provide an accessory shelf adjacent to the sink and mirror, at wheelchair accessible height.
- 5.8.4.2(16) Avoid sharp edges on counters, cabinets and corners in washrooms.
- 5.8.4.2(17) Provide soap dispenser and an electronic hard wired paper towel dispenser by the sink.
- 5.8.4.2(18) Provide a mirror located over the sink and of a sufficient size to accommodate residents of differing height including people in wheelchairs. Angled or tilt-able mirrors are discouraged.
- 5.8.4.2(19) Shower area will be barrier free, roll-in style with no curb, sloped to floor drain.
- 5.8.4.2(20) Provide shower with telescoping shower head, horizontal and vertical grab bars and flip-down shower seat. Shower heads will be equipped with a shut off valve to accommodate staff (e.g washing hair) to turn water off and on without shutting the main valve off.
- 5.8.4.2(21) Provide washroom surfaces that are easily cleaned and floor coverings that are slip-resistant.
- 5.8.4.2(22) Design bariatric washrooms to accommodate bariatric residents but also the needs of typical residents.
- 5.8.4.2(23) The exhaust and air exchange rates in washrooms will exceed the requirements of the National Building Code regulations to ensure appropriate ventilation in washrooms and to keep odors to a minimum.
- 5.8.4.2(24) Provide a night-light outlet in the bathroom near the door way, so the light is visible from the bedroom area.
- 5.8.4.2(25) There should be an illuminated light-switch for the washroom located in the bedroom on the wall by the washroom entrance.

## 5.8.5 Kanban Storage

### 5.8.5.1 Design Objectives

- 5.8.5.1(1) Refer to Appendix 3B [Lean 3P Workshop – Kitchen and Bath Designs] for Kanban design developed in the Lean 3P workshops.

5.8.5.1(2) Refer to the Functional Program for additional information.

5.8.5.1(3) Design the Kanban to be:

5.8.5.1(3)(a) barrier-free accessible from the resident washroom; and

5.8.5.1(3)(b) accessible from the corridor by staff for servicing and restocking, with all doors lockable.

#### 5.8.5.2 Design Standards

5.8.5.2(1) Provide storage space in the lower cabinets for one wheelchair and two linen hampers, at floor level (not on a raised base). The wheelchair storage section of Kanban need only be accessible from the corridor side. Wheelchair to be a standard collapsible wheelchair with the foot rests removed. Linen hamper size to be a minimum 550 w x 360 d 2 x 640 mm high.

5.8.5.2(2) Provide space for individual storage of a resident's personal toiletry items at wheelchair accessible height, accessible from the washroom.

5.8.5.2(3) Provide a lockable medicine box, secured inside the Kanban. Box to be approximately 300 mm x 200 mm x 150 mm high.

5.8.5.2(4) Provide adjustable shelving in the upper cabinet area suitable for the two bin style of material replenishment system in the Kanban.

## 5.9 Hospital Link

5.9.1 Project Co will design and construct the Hospital Link:

5.9.1.1 to connect into:

5.9.1.1(1) the north entrance of the Cypress Regional Hospital at Vestibule 1P008;

5.9.1.1(2) the Facility at the Services Building;

5.9.1.1(3) the Recreation Facility in the future (at the main floor level of the Recreation Facility, tentatively set at elevation 736.0),

(refer to Appendix 2G [Site Plan] for layout of the Hospital Link)

5.9.1.2 to be fully weather enclosed, heated, permanent construction;

- 5.9.1.3 so that Link Parts B and C are of non-combustible construction;
- 5.9.1.4 to include firewalls with double doors and appropriate hardware, as required where the Hospital Link crosses property lines;
- 5.9.1.5 with a flat roof to accommodate a drift load from the adjacent two storey Recreation Facility directly connected to the Hospital Link on the west side based on a minimum 5 m height above the Hospital Link roof. The roof drainage will be accommodated either by scupper it to the east or connect into the storm system with roof drains;
- 5.9.1.6 so that the east side of the Hospital Link is glazed to as large an extent as possible with a good quality curtain wall system and the west side of the Hospital Link is a steel stud infill wall system with a temporary metal cladding;
- 5.9.1.7 to include weld plates to the east exterior foundation wall of Link Part B, to accommodate a future brick angle as requested by the City for incorporation of future finishes;
- 5.9.1.8 to have complementary exterior finishes to the Cypress Regional Hospital, the Recreation Facility and the Facility, including maximum permissible glazing in accordance with NBC. Refer to the Swift Current Integrated Facility Master Plan;
- 5.9.1.9 to accommodate both public, resident and staff pedestrian and cart traffic;
- 5.9.1.10 to have a minimum corridor width of 3000 mm wide with appropriate rest stops for residents and carts, as described in Section 5.3.4, with a clear ceiling height of 2700 mm, and with adequate space for mechanical and electrical services to be run in the accessible ceiling space;
- 5.9.1.11 so that interior finishes are of the same quality, durability and style as the corridors connecting components of the Facility;
- 5.9.1.12 to provide barrier free access with no stairs permitted;
- 5.9.1.13 so that the connection to the Cypress Regional Hospital includes all work required for a complete building envelope connection and includes a set of double doors with appropriate hardware;
- 5.9.1.14 so that all work in the Cypress Regional Hospital conforms to the requirements of CSA Z317.13-12 - Infection Control During Construction, Renovation, and Maintenance of Health Care Facilities; and
- 5.9.1.15 so that the Hospital Link has stand-alone HVAC components. Fire protection will be tied into the system within the new construction. Utilize the Hospital Link ceiling space to run the oxygen line from the Cypress Regional Hospital to the Hospice House.

## PART 6. STRUCTURAL REQUIREMENTS

### 6.1 Structural Engineering

#### 6.1.1 Overview:

6.1.1.1 The fundamental principle for the Facility is that every Building and portion thereof be designed and constructed to sustain all live, dead, seismic, and wind loads and other environmental effects in accordance with the accepted engineering practices and standards as prescribed in this schedule.

#### 6.1.2 Design the Facility in accordance with the structural design standards set out below:

6.1.2.1 Building structures will comply with the latest requirements of the National Building Code. All building structures will conform to the requirements for a 'Normal' importance category.

6.1.2.2 Design requirements and design loads must be evaluated relative to the expected function of the specific structural element(s). Design requirements and loads contained in the NBC and in this Schedule 3 will be increased, where required, to suit any specialized conditions.

#### 6.1.3 Sustainable Design, Life Cycle, and Durability design principles:

6.1.3.1 The Buildings will meet or exceed the requirements of CSA S478-95, Guideline on Durability in Buildings for a Long Life Category Design Service Life (50 to 99 years). This includes all primary structure and all secondary structure supporting cladding systems.

6.1.3.2 Design of the building structure and structural components will minimize effects of corrosion and deterioration due to environment and use in accordance with the following:

6.1.3.2(1) provide adequate concrete crack control joints and expansion/contraction joints and caulk exposed joints;

6.1.3.2(2) provide concrete mixes proportioned to CSA A23-1/A23-2 durability requirements for exposure class;

6.1.3.2(3) reinforce concrete for crack control and repair exposed cracks;

6.1.3.2(4) chamfer corners of exposed concrete where possible;

6.1.3.2(5) hot-dip galvanize exterior exposed steel;

6.1.3.2(6) provide embedded steel protection angles and skid plates for loading docks and garbage compactors, and

- 6.1.3.2(7) use pressure treated wood product when in direct contact with concrete or masonry.
- 6.1.3.3 Where possible, use locally sourced, sustainably harvested, and high recycled content materials.
- 6.1.3.4 The cast-in-place concrete, on average, will include a minimum of 30% recycled content, including the use of supplementary cementitious materials.
- 6.1.3.5 Reinforcing material will contain a minimum of 98% recycled content.
- 6.1.3.6 Rolled structural steel material will contain a minimum of 80% recycled content.
- 6.1.4 Flexibility for future change design principles:
  - 6.1.4.1 Use the minimum live loads required by this Schedule except where the specific use and occupancy of a space requires a higher live load.
  - 6.1.4.2 Design the Buildings to readily accommodate renovations for changes in tenancy use and occupancy and changing technology, equipment, medical techniques, and building services.
  - 6.1.4.3 Design the superstructure using a framing system that results in minimum total thickness of floor or roof structure for the particular column/wall gird and provides maximum ceiling space flexibility for the placement of mechanical and electrical services.
  - 6.1.4.4 Place the lateral-load resisting elements in areas which are least likely to interfere with future program changes.
  - 6.1.4.5 Accommodate the need for future access, and installation and removal of equipment.
- 6.1.5 Building Type
  - 6.1.5.1 Structural building materials may be either combustible or non-combustible in nature, unless expressly stated otherwise.
    - 6.1.5.1(1) Only non-combustible materials will be used in the construction of the Hospital Link.
  - 6.1.5.2 The following restrictions are placed on the choice of structural building material and structural systems to meet the required function of the spaces:
    - 6.1.5.2(1) Column free spaces are required for the community room, shipping/receiving, and transportation device in the Community Centre. Refer to the Functional Program and Indicative Design.

### 6.1.6 Substructure

- 6.1.6.1 All permanent structures will be founded on frost protected foundations.
- 6.1.6.2 The substructure must be designed to support vertical and horizontal loads imposed by the superstructure above, to conform to the Site Reports recommendations, and to meet the serviceability and strength requirements in the NBC.
- 6.1.6.3 Foundations must be designed to limit settlement of the structure and differential settlement between components of the structure to within acceptable structural design limitations, but not exceeding those specified in the Site Reports.

### 6.1.7 Coordination

- 6.1.7.1 The structural members must be coordinated with the architectural finishes to have adequate thickness, cover and reinforcing to satisfy the fire protection and durability requirements.
- 6.1.7.2 All structural members must be coordinated with other disciplines to avoid utility interferences and to ensure adequate architectural headroom and clearances.
- 6.1.7.3 Coordinate structure with equipment requirements for slab depressions and cast-in hardware. Provide adequate depth of slab depressions to avoid the need for ramps.

### 6.1.8 Design Loads

- 6.1.8.1 Design the Buildings for the actual live loads anticipated and comply with the minimum live load requirements of the National Building Code, or the minimum live loads listed below:

<b>Table 1: Minimum Live Loads</b>		
Use	Minimum specified uniform load	Minimum specified concentrated load *
Main (Ground) Floor (including corridors & links)	4.8 kPa	9 kN
Upper Floors	3.6 kPa	9 kN
Decks / Patio Areas	4.8 kPa	9 kN
Mechanical and Electrical Equipment areas	3.6 kPa	9 kN
Loading Dock and Material Management	12 kPa	To suit anticipated wheel loads from trucks, vehicles, and equipment.
Storage Areas (normal shelving)	4.8 kPa	9 kN

\* over any 750 mm x 750 mm area

- 6.1.8.2 Design the structure for the anticipated concentrated loads from equipment, fixtures, and machinery, whether floor, wall, or ceiling-mounted, including resident lifting devices and by the delivery of supplies.
- 6.1.8.3 Design the Buildings for the actual superimposed dead loads and to comply with the minimum superimposed dead load requirements in the National Building Code. The total superimposed dead load will include the minimum superimposed dead load components listed below:
- 6.1.8.3(1) All floor areas will be designed for a minimum specified superimposed dead load allowance for partitions of 1.0 kPa.
- 6.1.8.3(2) All suspended floors or roofs will be designed for a minimum specified uniform allowance for mechanical and electrical services of 0.25 kPa, except for floors or roofs directly above mechanical or electrical areas which will be designed for a minimum load allowance of 0.50 kPa.
- 6.1.8.4 Design roofs for the minimum snow, rain, and wind loads required by the National Building Code and the local building by-laws. Provide a minimum net uplift wind load of 1.0 kPa. Notwithstanding other requirements, the minimum live load for design of roofs will be 1.0 kPa and roofs will be designed to accommodate concentrated loads from equipment, machinery and features, whether roof or ceiling-mounted, including resident lifting devices.
- 6.1.9 Deflection Limitation:
- 6.1.9.1 Design the structure to minimize the effects of deflection and long-term creep.
- 6.1.9.2 Design the structure to meet the following maximum deflection requirements (as described in CSA S16.1, Limit State Design of Steel Structures, and CSA A23.3, Design of Concrete Structures).
- 6.1.9.2(1) Concrete Structures
- 6.1.9.2(1)(a) Live load deflection: Span/360
- 6.1.9.2(1)(b) Total long-term incremental deflection (after attachment to non-structural elements):  
Span/480
- 6.1.9.2(2) Steel Floor Structures
- 6.1.9.2(2)(a) Live load deflection: Span/360
- 6.1.9.2(2)(b) Total load deflection (including effects of shrinkage of concrete topping slabs):  
Span/240



## 6.1.9.2(3) Steel Roof Structures

6.1.9.2(3)(a) Live load deflection:  $\text{Span}/360$ 6.1.9.2(3)(b) Total load deflection:  $\text{Span}/240$ 

## 6.1.9.2(4) Wood Floor and Roof Structures

6.1.9.2(4)(a) Live load deflection:  $\text{Span}/360$ 6.1.9.2(4)(b) Total load deflection:  $\text{Span}/240$ 6.1.9.2(5) Wind storey drift:  $\text{Height}/500$ 6.1.9.2(6) Seismic storey drift:  $\text{Height}/40$ 

6.1.9.3 In addition to the above design deflection limits, the structure must conform to specific deflection requirements for specialty equipment, as recommended by the supplier or manufacturer.

6.1.9.4 Notwithstanding the above deflection limits, the deformations of the structure under service loads must be compatible with the architectural finishes and cladding system.

## 6.1.10 Vibration Limitation:

6.1.10.1 Design the structural system to minimize the effects of floor vibration due to use, occupancy, and equipment. Vibration will be limited to acceptable levels for the use and occupancy of the floors.

6.1.10.2 Floor system vibration characteristics will comply with Commentary D of the National Building Code or other industry accepted methods.

6.1.10.3 Floor structural systems will be selected and designed 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.

6.1.10.4 Machinery that could be a source of vibration will be mounted using vibration isolation techniques.

## 6.1.11 Exposed Concrete Finishes:

6.1.11.1 Prior to construction, identify the various surfaces intended to have exposed concrete and clarify the proposed finish for each in the relevant Submittal.

## 6.1.12 Resident Lift Support:

6.1.12.1 Resident lift devices will be supported, anchored, and braced to resist the gravity, operational, and seismic loads in a manner appropriate for the functional and service requirements of the equipment.

- 6.1.12.2 Design of resident lift device supports, anchorage, and bracing will be carried out by a qualified professional engineer registered in the Province of Saskatchewan.
- 6.1.12.3 Allow for resident lift support above all resident beds and washroom spaces in Residential Care Buildings and other spaces identified in the Functional Program (refer to the Equipment List, for lift types).
- 6.1.12.4 All resident lift devices are to be hung from the structure. Columns or posts within the resident spaces is not permitted.
- 6.1.12.5 Performance Criteria
  - 6.1.12.5(1) Design all resident lift supports for a bariatric resident weight of 250 kg (550 lbs), which corresponds to a maximum point load at the supports of 545 kg (1200 lbs). Support rails will be clearly marked with the maximum allowable resident weight. Refer to Functional Program for locations of bariatric lifts.
  - 6.1.12.5(2) Ensure drilled insert-type anchors used for support and bracing of resident lifts are rated by the insert manufacturer for seismic and cyclic loading applications.
  - 6.1.12.5(3) for wood floor and roof construction provide structural blocking during Construction for lift and rail attachment points and coordinate the attachment points and weight capacity to suit the specific lift configuration and owner requirements for each location.

## **PART 7. MECHANICAL REQUIREMENTS**

### **7.1 Mechanical Engineering**

- 7.1.1 Project Co will design the Facility in accordance with the general mechanical design principals set out below:
- 7.1.1.1 HVAC, plumbing, fire protection, speciality systems and medical gas systems will be designed to provide a healing, comfortable and productive environment for the Facility Users.
  - 7.1.1.2 The mechanical, plumbing, fire protection, speciality systems and medical gas systems will:
    - 7.1.1.2(1) minimize impact on the physical environment, through energy efficiency, optimization of resource use, and simplification of the systems;
    - 7.1.1.2(2) be developed to provide reliability of continual operation, and adequate standby capacity and redundancy; and
  - 7.1.1.3 Provide water, sanitary, storm and gas utilities as required and sized to suit the consumption and discharge needs of the Facility.
  - 7.1.1.4 All pipes, ducts and fittings will be insulated to conserve energy, prevent condensation, attenuate noise and prevent accidental burns.
  - 7.1.1.5 Water, glycol and other fluids used within mechanical systems will be treated to prevent corrosion, algae growth, build-up of deposits, disease, bacteria and to prolong the equipment life.
  - 7.1.1.6 All mechanical, HVAC, plumbing, fire protection, speciality systems and medical gas systems will:
    - 7.1.1.6(1) be vibration isolated to minimize noise and vibration through the structure or other components of the Facility; and
    - 7.1.1.6(2) comply with standard acoustic requirements as per CSA.
  - 7.1.1.7 Provide required mechanical services for all residential laundry facilities.

**PART 8. ELECTRICAL REQUIREMENTS****8.1 Electrical Engineering**

- 8.1.1 Design the Facility in accordance with the general electrical design principals set out below:
  - 8.1.1.1 Provide lighting that is energy efficient, functional, easily maintainable, and compliments the overall aesthetics of the Facility.
  - 8.1.1.2 Provide electrical systems which promote energy efficiency and meet or exceed the recommended practices of outlined codes and standards.
  - 8.1.1.3 Provide communications systems which can be expanded to incorporate future technologies.
  - 8.1.1.4 Integrate communications systems where this integration provides both an efficiency and operational advantage.
  - 8.1.1.5 Provide a safe environment for both staff and residents by integrating the overall building security design to include door monitoring, access control and lighting.

## **PART 9. FACILITIES CONSTRUCTION SUBGROUP SPECIFICATIONS**

### **9.1 Procurement and Contracting Requirements (Division 1) – NOT USED**

### **9.2 Minimum Material Requirements**

- 9.2.1 The intent behind the minimum material requirements is to set out the minimum standards of materials to be used in the Facility that the Authority will accept. Project Co may choose to use materials that exceed these minimum requirements.
- 9.2.2 List of minimum material requirements is as identified in the Table of Contents.

### **9.3 03 31 00 – Structural Concrete**

#### **9.3.1 Basic Requirements**

- 9.3.1.1 Cast-in-place and precast concrete design and construction that meets or exceeds current Canadian standards and practices, as set out in this section, may be considered for building elements and systems, where appropriate.

#### **9.3.2 Overriding Principles**

- 9.3.2.1 Design and construct cast-in-place concrete of appropriate properties for the intended use in accordance with the requirements of all applicable codes and specifications.
- 9.3.2.2 Design concrete material and mix proportions to provide high sulphate resistant performance for concrete in contact with soil or ground water, as required by the Site Reports.

#### **9.3.3 Quality Requirements**

- 9.3.3.1 Ensure inspection and testing of cast-in-place concrete and concrete materials by a testing laboratory in accordance with CAN/CSA A23.1-09. Non-destructive Methods for Testing Concrete will comply with CAN/CSA A23.2-04.
- 9.3.3.2 Ensure inspection and testing of precast concrete materials and workmanship by the precast concrete contractor in accordance with CAN/CSA-A23.2-04. Maintain plant records and ensure quality control as required by CSA A251 and in accordance with this Agreement.
- 9.3.3.3 Performance Criteria
- 9.3.3.3(1) Concrete floors will be finished with a smooth, dense, steel trowel finish with a Class A Flatness Classification in accordance with CSA A23.1. Project Co will not use overlay toppings to level floors.

- 9.3.3.3(2) Repair cracks in concrete floors and walls to suit the floor finish and long-term serviceability requirements of the floor.
- 9.3.3.3(3) Water-proof the foundation walls for below-grade occupied spaces to prevent groundwater ingress. Design construction joints with purpose-made water stops. Install a perimeter draining system around the exterior of the earth-retained building foundation.

#### **9.4 03 20 00 – Concrete Reinforcing**

##### 9.4.1 Basic Requirements

- 9.4.1.1 Reinforcement of concrete elements will be proportioned to meet or exceed strength design requirements, durability, serviceability, and the minimum steel area requirements based on the element type as outlined in CAN/CSA A23.3.

##### 9.4.2 Overriding Principles

- 9.4.2.1 Design the fabrication and setting of reinforcement within the tolerances set out in CAN/CSA A23.1.
- 9.4.2.2 Place, support, and secure reinforcement against displacement to CAN/CSA A23.1 and to design requirements.

##### 9.4.3 Quality Requirements

- 9.4.3.1 For reinforcement from Canadian manufacture, provide a certified copy of the mill test reports for reinforcing steel showing physical and chemical analysis.
- 9.4.3.2 For reinforcement from other than Canadian manufacture, provide test data from a Canadian Testing Laboratory proving that each size and grade of reinforcement meets the standards set out in these Design and Construction Specifications. The acceptability and use of non-Canadian manufacture reinforcement is at the sole discretion of the Authority.
- 9.4.3.3 Project Co will ensure that the welding of reinforcement is performed by individuals certified by the Canadian Welding Bureau under the requirements of W186.

#### **9.5 03 35 10 – Concrete Floor Finishing**

##### 9.5.1 Overriding Principles

- 9.5.1.1 Provide a durable concrete floor finish, including the use of sealers and hardeners as required to meet the anticipated use and occupancy.

## 9.5.2 Quality Requirements

9.5.2.1 Adhere to all manufacturer guidelines and recommendations for the use, application, and maintenance of sealers, hardeners, and the like.

9.5.2.2 Rout and repair cracks that appear in surface no sooner than 28 days after casting of concrete.

## 9.6 04 20 00 - Masonry Units

### 9.6.1 Basic Requirements

9.6.1.1 Masonry design and construction that meets or exceeds current Canadian standards and practices, as set out in this section, may be considered for building elements and systems, where appropriate.

9.6.1.2 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.

9.6.1.3 Masonry construction may be considered for interior walls and wall systems when priorities include permanence and maintenance, sound transmission control, fire resistance, separation requirements and security.

### 9.6.2 Concrete Masonry Units

#### 9.6.2.1 Overriding Principles

9.6.2.1(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.

9.6.2.1(2) Concrete unit masonry for interior applications may be considered as an integrally finished material, as a base for applied finish or as a structural backing to other finish systems.

9.6.2.1(3) Painted or unpainted concrete unit masonry will not be considered an acceptable exposed finish in residential or public areas.

#### 9.6.2.2 Quality Requirements

9.6.2.2(1) Masonry design and construction will comply with all applicable codes and standards including, CSA S304.1-04, the National Building Code, and the standards listed in Section 2.1.

9.6.2.2(2) Concrete unit masonry practices and work standards will comply with Canadian Masonry Contractors Association (CMCA) Masonry Practices Manual, CSA-S304.1-04, and CSA-A371-04.

### 9.6.2.3 Materials

Masonry materials will comply with the following requirements:

- 9.6.2.3(1) Concrete Block Masonry Units will comply, at a minimum, with CSA A165. Series 04 and Classification: H/15/D/M.
- 9.6.2.3(2) Bullnose corner blocks to be used on exposed corners.
- 9.6.2.3(3) Cavity Weeps/Vents: Preformed plastic or galvanized steel, 100 mm long.
- 9.6.2.3(4) Mortar: to minimum CSA A179-04.
- 9.6.2.3(5) Mortar Colour Admixtures: Metallic oxide pigments. Colour will be selected from manufacturer's standard range. Pigments will not exceed 10-15% by weight of cement content.
- 9.6.2.3(6) Masonry cement is not permitted.
- 9.6.2.3(7) Grout: to minimum CSA A179-04.
- 9.6.2.3(8) Connectors: to minimum CSA A370-04.
- 9.6.2.3(9) Flashings: Modified Bitumen Base Flashing: SBS modified sheet membrane, minimum 1.0 mm thick self-adhering type or minimum 3.0 mm thick torch-applied type.

### 9.6.3 Brick Masonry

#### 9.6.3.1 Overriding Principles

- 9.6.3.1(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.
- 9.6.3.1(2) No brick masonry below grade for exterior applications.
- 9.6.3.1(3) Brick masonry in interior applications will have integral finish and construction compatible to the maintenance and infection control requirements of the Authority.



#### 9.6.4 Stone Masonry

##### 9.6.4.1 Overriding Principles

9.6.4.1(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.

##### 9.6.4.2 Quality Requirements

9.6.4.2(1) 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.

### 9.7 05 00 00 - Metals - Structure

#### 9.7.1 Basic Requirements

9.7.1.1 Structural steel, steel deck, and cold-formed steel stud design and construction that meets or exceeds current Canadian standards and practices, as set out in this section, may be considered for building elements and systems, where appropriate.

#### 9.7.2 Performance Criteria

9.7.2.1 Design structural steel, steel deck, and cold-formed steel stud systems to comply with the deflection and vibration criteria outlined in this document.

9.7.2.2 Erection tolerances for steel construction will be in accordance with CSA S16-09 Clause 29.7 except the maximum out-of-plumbness of exterior columns will be +/- 20 mm over the full height of the building.

9.7.2.3 For steel floor and roof construction, consider the deflection of steel beams, joists, and girders due to the wet weight of concrete topping slabs. Vary topping slab thickness as required to maintain floor levelness tolerances. Consider the additional concrete ponding weight in the Design of the structure.

9.7.2.4 Finish concrete topping slabs with a smooth, dense, steel trowel finish with a Class A Flatness Classification in accordance with CSA A23.1. Thin overlay toppings to level floors will not be used.

9.7.2.5 Pay particular attention to crack control of concrete topping slabs on steel deck and implement, as a minimum, the following details and procedures:

9.7.2.5(1) minimize wet weight deflections of steel decking and supporting structure;

- 9.7.2.5(2) where practical, place concrete in alternate bays. Avoid placing large areas at one time;
  - 9.7.2.5(3) use concrete topping with a low design slump. Add super-plasticizer to increase slump for placing and finishing;
  - 9.7.2.5(4) use 14mm or larger aggregate topping mix;
  - 9.7.2.5(5) reinforce topping slabs with a minimum 10M at 350 mm centres each way chaired a minimum 20 mm above steel deck;
  - 9.7.2.5(6) provide extra topping slab reinforcement around openings, columns, and at corners; and
  - 9.7.2.5(7) wet cure topping slabs for a minimum of three days using soaked burlap covered with polyethylene or similar methods.
- 9.7.2.6 Repair cracks in concrete topping slabs to suit the floor finish and long-term serviceability requirements of the floor.
- 9.7.2.7 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.
- 9.7.2.8 Steel floor/roof decking plus the concrete topping slab thickness will satisfy the requirements of a ULC-rated assembly meeting the NBC fire rating requirements. Spray on or applied fireproofing material will not be used to achieve required floor deck fire rating.
- 9.7.2.9 Structural steel floor/roof framing and supporting members will be fire-proofed to meet the NBC fire rating requirement.
- 9.7.2.10 Give preference to spray-on fire proof applications to floor/roof beams, joists, and girders for ease of attachment of future services, equipment and fixtures.
- 9.7.3 Quality Requirements
- 9.7.3.1 Project Co will ensure any person performing welding is certified by the Canadian Welding bureau to the requirements of CAN/CSA W47.1.
  - 9.7.3.2 Structural Steel and Steel Joists
    - 9.7.3.2(1) Workmanship will be carried out by an approved testing laboratory using testing procedures as specified in CSA S16-09 to verify soundness of representative shop and field welds will be used.
    - 9.7.3.2(2) Material quality including sourcing and welding quality to be controlled by an independent testing agency.

### 9.7.3.3 Load Bearing Steel Studs

- 9.7.3.3(1) All load bearing steel stud construction will be designed by a professional engineer registered in the Province of Saskatchewan.
- 9.7.3.3(2) Load bearing steel stud design and construction will comply with CSA-S136-12.
- 9.7.3.3(3) Manufacturer will be certified in accordance with CSSBI Standard 30M-06 and CSA-A660-04.
- 9.7.3.3(4) Fabricator and erector will be experienced in the type of work undertaken.
- 9.7.3.3(5) Conform to the Association of Wall and Ceiling Contractor's Specification Standards Manual (AWCC).
- 9.7.3.3(6) Limit maximum deflection under specified wind loads to L/360, unless a smaller maximum deflection is specifically required due to wall finishes.
- 9.7.3.3(7) Design components to accommodate erection tolerances of the structure.
- 9.7.3.3(8) Design wind bearing stud end connections to accommodate floor/roof deflections and to ensure that studs are not loaded axially.
- 9.7.3.3(9) Design steel studs to take into account the anchorage of other materials being supported including: sub-girts supporting metal cladding and composite panels, soffit finishes and the provision of lateral support at window heads.

### 9.7.3.4 Miscellaneous Metals

- 9.7.3.4(1) Primers and paints of miscellaneous metals will conform to Master Painters Institute (MPI) Architectural Specification Standards Manual.

## 9.8 06 11 00 – Wood Framing

### 9.8.1 Basic requirements

- 9.8.1.1 Wood and procedures required in the construction process and as integral components of the building fabric, including fabrication, assemblies, surfaces and finishes, will conform to requirements outlined in Section 2.1. and to those set out in this division.
- 9.8.1.2 Timber is acceptable product for building structure, where combustible construction is allowed.

- 9.8.2 Overriding Principles
  - 9.8.2.1 Design and construction of wood framing will adhere to Part 9 of the National Building Code of Canada.
- 9.8.3 Quality Requirements
  - 9.8.3.1 Exterior exposed wood and wood in direct contact with concrete, masonry, and soil will be pressure treated.
  - 9.8.3.2 Members will be aligned, level, or plumb within a tolerance of 1 to 500.

## **9.9 06 40 00 – Architectural Woodwork**

- 9.9.1 Basic requirements
  - 9.9.1.1 Wood and plastic products and procedures required in the construction process and as integral components of the building fabric, including fabrication, assemblies, surfaces and finishes, will conform to requirements outlined in Section 2.1 and to those set out in this division.
  - 9.9.1.2 Urea formaldehyde will not be used.
  - 9.9.1.3 Provide finish carpentry and architectural woodwork, including cabinets, casework, frames, panelling, trim, installation of doors and hardware, and other wood-related products and applications. as required for wood products exposed to view in finished interior and exterior installations.
  - 9.9.1.4 Provide plastic laminate surfacing and/or solid polymer fabricated surfacing as required to create surfaces that require antiseptic or clean characteristics, special or regular maintenance, and resistance to caustic action of chemicals or agents used by the Authority.
  - 9.9.1.5 Provide acrylic plastic products as required for wall cladding, wall protection, corner protection, casework finishing, trims, ornamental elements, and other applications to achieve a quality of interior finish suitable for use by residents and staff.
- 9.9.2 Performance Criteria
  - 9.9.2.1 Finish carpentry and architectural woodwork
    - 9.9.2.1(1) Design, fabrication, materials, installation, and workmanship of finish carpentry and architectural woodwork will conform to quality standards outlined in the Architectural Woodwork Manufacturer's Association of Canada (AWMAC) Quality Standards Manual (latest edition) for minimum "Custom Grade," and Door and Hardware Institute (DHI) standards.

9.9.2.1(2) VOC emission levels will be in accordance with CaGBC (Canada Green Building Council) to minimize adverse impact on indoor environmental and air quality.

9.9.2.1(3) Adhesives will be non-toxic, non-solvent glue in compliance with AWMAC Quality Standards Manual, Canadian 'Eco-Logo' program, and CaGBC (Canada Green Building Council).

#### 9.9.2.2 Countertops

Countertops will meet the following requirements:

9.9.2.2(1) Type 1: High pressure plastic laminate, general purpose grade, standard duty, minimum 1.06 mm thick complete with PVC edging, or Type 2: High pressure plastic laminate, general purpose grade, standard duty, minimum 1.06 mm thick complete with laminate edging.

9.9.2.2(2) Core: western softwood plywood to CSA 0151-M1978, good one side, solid two sides, for use as plastic laminate cores, minimum 19 mm thick. Liner grade backer sheet to underside of all countertops. Use marine-grade plywood substrate for countertops.

9.9.2.2(3) Solid surface countertops: Solid surface material (SSM) will consist of reacted monomers and resins, mineral fillers and pigments manufactured in sheets of 13 mm nominal thickness. SSM will be solid, non-porous, homogeneous, hygienic, renewable, and, when applicable, may feature inconspicuous hygienic seams. SSM will be free from conspicuous internal strengthening fibers. SSM must meet or exceed performance standards set forth in ISSFA -2-01.

#### 9.9.2.3 Casework

##### 9.9.2.3(1) Plastic Laminate Casework Exposed Parts

9.9.2.3(1)(a) Core for doors: plywood.

9.9.2.3(1)(b) Core for all other panel products: hardwood plywood.

9.9.2.3(1)(c) Laminate grade: general purpose grade, standard duty, minimum 1.06 mm thick.

9.9.2.3(1)(d) Plastic laminate to both sides of doors and drawer fronts.

9.9.2.3(1)(e) Edge banding for doors and drawer fronts: minimum 3 mm PVC edge to match faces.

- 9.9.2.3(2) Plastic Laminate Casework Semi-Exposed Parts
- 9.9.2.3(2)(a) Core for doors: approved particleboard, medium- density fibreboard, or otherwise engineered core.
  - 9.9.2.3(2)(b) Core for all other panel products: hardwood plywood.
  - 9.9.2.3(2)(c) Liner grade: minimum thickness of 0.76 mm, used on the following: semi-exposed shelves, interior portions of case bodies, all surfaces of drawer boxes.
  - 9.9.2.3(2)(d) Semi-exposed surface of casework doors and fronts same as exposed face.
  - 9.9.2.3(2)(e) Edge banding: minimum 1 mm PVC edge, colour to match door face.
- 9.9.2.3(3) Prefinished Casework
- 9.9.2.3(3)(a) Design in compliance with AWMAC custom grade for clear finish, equivalent to 'Nova' by States Industries or 'Multi-core' by Longlac Wood Industries.
  - 9.9.2.3(3)(b) Core: manufacturer's option and in accordance with AWMAC Manual.
  - 9.9.2.3(3)(c) AWMAC Veneer Grade: minimum B grade all sapwood (white). Species: Birch.
  - 9.9.2.3(3)(d) Semi-exposed parts: in compliance with AWMAC grade for this casework type.
  - 9.9.2.3(3)(e) Edging: minimum 3 mm PVC: colour to match panel.
- 9.9.2.3(4) Hardware (Institutional grade):
- 9.9.2.3(4)(a) Conform to ANSI / BMHA A156.9-2001, American National Standard for Cabinet Hardware.
  - 9.9.2.3(4)(b) Hinges: minimum 125 degree opening; concealed hinge; swing free; self-closing; nickel plated steel hinge arm and hinge cup.
  - 9.9.2.3(4)(c) Pulls: Stainless steel "D" pull, 101 mm c.c., brushed nickel finish.

- 9.9.2.3(4)(d) Drawer Slides: minimum 45 kg. load capacity; steel track; full extension, steel ball bearings.
- 9.9.2.3(4)(e) Door Locks/Catches: Provide locks to all units, disk tumbler cam type. Each room to be keyed alike. Vandal resistant elbow catch for each pair of lockable doors.
- 9.9.2.3(4)(f) Shelf Pilaster and Brackets: Steel standards, zinc coated; 13 mm adjustable standards; recess mounted. Aluminum standards are not acceptable.
- 9.9.2.3(4)(g) Grommets: minimum size to be 60 mm diameter, 22 mm depth. Provide at reception desks and countertop areas where electrical, telephone and data outlets are located below.

#### 9.9.2.4 Millwork

- 9.9.2.4(1) Kitchen millwork and casework may not be substituted for pre-manufactured furniture and modular furniture assemblies. Other millwork and casework may be substituted for pre-manufactured furniture and modular furniture assemblies if they meet the performance criteria set out in this Section 9.9.2.

### 9.10 07 13 00 - Sheet Membrane Waterproofing

#### 9.10.1 Damp proofing

- 9.10.1.1 Foundation wall surfaces will have damp proofing coverage that is sufficient to repel and prevent moisture ingress.

#### 9.10.2 Waterproofing

- 9.10.2.1 Provide waterproofing to prevent moisture ingress to occupied spaces below grade.
- 9.10.2.2 Use sheet membrane waterproofing to prevent water ingress over suspended slabs and decks and associated walls over habitable spaces where water collection is anticipated.
- 9.10.2.3 Provide waterproof membranes in exterior walls as part of the building envelope and integral with rain screen or cavity wall assemblies.
- 9.10.2.4 Waterproofing materials will meet the following requirements:

- 9.10.2.4(1) Primer will comply with CGSB 37-GP-9Ma.
- 9.10.2.4(2) Waterproofing membrane: Pressure sensitive sheet consisting of rubberized asphalt 1.5 mm thick bonded to 250 micrometre thick polyethylene; conforming to the following properties:
  - 9.10.2.4(2)(a) Colour: Black;
  - 9.10.2.4(2)(b) Thickness (total): 1.8 mm;
  - 9.10.2.4(2)(c) Water vapour transmission: ASTM E96-95 Method B 0.003 metric perms;
  - 9.10.2.4(2)(d) Tensile strength: ASTM D2523-78, 13,800 kPa;
  - 9.10.2.4(2)(e) Softening point: ASTM D36-95 38oC; and
  - 9.10.2.4(2)(f) Pliability: ASTM D146-90 – 0-25oC.
- 9.10.2.4(3) Slip Sheet: waterproofing membrane specified above but with the polyethylene bond breaker sheet left intact and not stripped from membrane.
- 9.10.2.4(4) Mastic: for sealing joints and edges of membrane use rubberized asphalt, or similar material specified for membrane, in gun grade.

## 9.11 07 21 00 – Thermal Protection

- 9.11.1 Provide thermal insulation as part of the building envelope to prevent the transfer of heat both from the interior to the exterior and vice versa, dependent on seasonal conditions, and to resist the absorption of water.
- 9.11.2 Provide thermal protection materials of a type and quality that will provide consistent environmental quality to enclosed spaces.
- 9.11.3 Minimum insulation values will be R20 (U-Value 0.05) for exterior walls and R30 (U-Value 0.033) for roof areas.
- 9.11.4 Insulation for sloped roofs will be polyisocyanurate core, reflective foil-faced to CAN/ULC S704. Aged RSI value of 1.0325/25mm thickness (R5.9/in).
- 9.11.5 Provide insulation for SBS modified bituminous roofing that meets the following requirements:
  - 9.11.5.1 First 2 layers: polyisocyanurate core, reflective foil-faced to CAN/ULC-S704. Aged RSI value of 1.0325/25mm thickness (R5.9/in).



- 9.11.5.2 Top layer: Rigid expanded polystyrene (EPS) insulation to CAN/ULC S-701, type 1, sloped 2%, minimum thickness at drains 25 mm. Insulation value RSI 0.65/25mm thickness.
- 9.11.6 Insulation for EIFS system will be rigid expanded polystyrene (EPS) insulation to CAN/ULCS701, Type 1. Insulation value RSI 0.65/25mm thickness.
- 9.11.7 Insulation for masonry cavity wall and below grade will be polystyrene, extruded-expanded type conforming to CAN/ULC-S701, type 3 or 4, thermal resistant not less than RSI 0.87/25mm (R5/in).
- 9.11.8 Insulation for fibre-cement paneled wall system will be polystyrene, extruded-expanded type conforming to CAN/ULC-S701, type 3 or 4, thermal resistant not less than RSI 0.87/25mm (R5/in).
- 9.11.9 Insulation fasteners will be cadmium coated screws, anchors and washers of sizes and type required to securely fasten rigid board to various substrates such as concrete, wood and masonry.
- 9.11.10 Batt and blanket mineral fibre will be to CAN/ULC-S702-97, Type 1, EcoLogo certified with minimum 50% recycled content, formaldehyde free.

## **9.12 07 24 00 - EIFS**

- 9.12.1 Exterior insulation and finish system to be a site applied cladding system with vertical drainage compartments to allow moisture to be drained to the exterior.
- 9.12.2 Provide continuity of thermal barrier, air barrier, and vapour retarder at building enclosure elements. Provide for weather tightness and resistance to imposed wind and suction loads.
- 9.12.3 Use polymer based air barrier/base coat, fiber reinforced product with a thickness of 3mm.
- 9.12.4 Use adhesive, as recommended by manufacturer, that is EcoLogo certified with a VOC content of 5% or less by weight.
- 9.12.5 Use glass fibre woven reinforcing mesh, made from twisted multi-end strands, treated, alkali resistant, compatible with chemical bonding system base coat and finish coat, weight intermediate - 380g/m<sup>2</sup>.
- 9.12.6 Use a modified polymer finish coat system of acrylic resins in dispersion, silica aggregate, integral mineral pigmentation and additives.
- 9.12.7 Accessories: corner beads, casing beads, stop beads, starter strips and accessories, as recommended by exterior insulated wall system manufacturer to suit system components.
- 9.12.8 Acceptable manufacturers offering equivalent products:
  - 9.12.8.1 Dryvit Systems Canada Dual Barrier with Moisture Drainage.

9.12.8.2 Sto Corporation, Sto Classic NEXT System.

9.12.8.3 Imasco Minerals Inc., Basic Drainage System

### **9.13 07 28 00 – Air Barriers and Vapour Retarders**

#### 9.13.1 Vapour Retarders

9.13.1.1 Provide a continuous vapour retarder membrane to prevent water vapour transmission and condensation in wall assemblies, roofing assemblies, and under concrete slabs-on-grade within the building perimeter. Vapour retarders will meet the requirements set out in Sections 9.13.1.2(1) – 9.13.1.4.

9.13.1.2 Sheet Retarder Type 1: self-adhering vapour retarder membrane, modified bitumen or rubberized asphalt laminated to a high-density polyethylene film; for horizontal applications above grade. Acceptable products:

9.13.1.2(1) Air Shield; manufactured by W.R. Meadows;

9.13.1.2(2) Vapour-Bloc SA; manufactured by BAKOR;

9.13.1.2(3) Lastobond P; manufactured by Soprema;

9.13.1.2(4) CCW-705; manufactured by Carlisle; or

9.13.1.2(5) Perm-A-Barrier Wall Membrane; manufactured by Grace Construction Products.

9.13.1.3 Sheet Retarder Type 2: to ASTM E1745 class A, for horizontal use below grade, under concrete slabs, complete with manufacturer's compatible joint tape and mastic. Acceptable products:

9.13.1.3(1) Florprufe 120; manufactured by Grace Construction Products;

9.13.1.3(2) Perminator 15 mil; manufactured by W.R. Meadows; or

9.13.1.3(3) Stego Wrap 15 mil; by Stego Industries, LLC.

9.13.1.4 Sheet Retarder Type 3: For vertical and horizontal applications above grade, used on interior walls and ceilings, 0.15mm (6 mil) thickness, 15 ng/(Pa.s.m<sup>2</sup>) maximum. Acceptable products:

9.13.1.4(1) 5000 Series Polyethylene Vapour Barrier; manufactured by Ralston Industrial Products; or

9.13.1.4(2) CGSB Vapour Barrier Poly; manufactured by Layfield Poly Films, Ltd.

### 9.13.2 Air barriers

9.13.2.1 Design air barrier assemblies to limit air ex-filtration and infiltration through materials of the assembly, joints in the assembly, joints in components of the wall assembly and junctions with other building elements including the roof. Air barriers will meet the requirements set out in 9.13.2.3 and 9.13.2.4

9.13.2.2 Air barrier assemblies will prevent air leakage caused by air pressure across the wall and roof assembly, including interruptions to the integrity of wall and roof systems such as junctions with dissimilar constructions.

9.13.2.3 Sheet Seal Type 4: self-adhering, rubberized asphalt integrally bonded to high density polyethylene film. Acceptable products:

9.13.2.3(1) Air Shield; manufactured by W.R. Meadows;

9.13.2.3(2) BAKOR also makes a Blueskin VP100 and VP160, these are air barriers only, and are vapour permeable;

9.13.2.3(3) Blueskin (SA or SA LT); manufactured by BAKOR;

9.13.2.3(4) CCW-705; manufactured by Carlisle;

9.13.2.3(5) Perm-A-Barrier Wall Membrane; manufactured by Grace Construction Products; or

9.13.2.3(6) Sopraseal Stick 1100; manufactured by Soprema.

9.13.2.4 Sheet Seal Type 5: woven or non-woven polyolefin fabric, water vapour permeable, for use as an air barrier and secondary weather resistant barrier in above grade applications for wood or metal stud wall construction with blanket insulation. Acceptable products:

9.13.2.4(1) PinkWrap; manufactured by Owens-Corning;

9.13.2.4(2) Tyvek Commercial Wrap; manufactured by DuPont Weatherization Systems; or

9.13.2.4(3) Weathermate Plus Housewrap by DOW.

### 9.14 07 31 00 - Asphalt Shingles

9.14.1 Conform to applicable code for CAN/ULC-S107, Class A rating for shingle types specified.

9.14.2 Perform work in accordance with CRCA Roofing Specifications Manual.

9.14.3 Glass Fibre Asphalt Shingles: CSA-A123.5 and ASTM D3018/D3018M, Type I - self-sealing, glass reinforced felt base, and surfaced with mineral granules; weight 146 kg/sq m; staggered edge butt type.

- 9.14.4 Roll Roofing: CAN/CSA-A123.2, Type M - Mineral Surfaced ; asphalt saturated roll roofing; 6.75 kg/sq m; surfaced on weather side with mineral granules of colour as selected.
- 9.14.5 Eave Protection: CGSB 37-GP-56M, Sheet barrier of rubberized asphalt bonded to sheet polyethylene, 1 mm (40 mil) total thickness, with strippable treated release paper.
- 9.14.6 Nails: Standard round wire shingle type hot dipped zinc coated steel type, of sufficient length to penetrate 19 mm into roof sheathing.
- 9.14.7 Staples: Standard wire shingle hot dipped zinc coated steel type, of sufficient length to penetrate into roof sheathing.
- 9.14.8 Ridge Vents: Plastic, formed with vent openings that do not permit direct water or weather entry; flanged to receive shingles.

### **9.15 07 46 15 – Steel Siding and Roofing**

- 9.15.1 Sheet steel will meet the requirements set out in this Section 9.15: Exposed to exterior, minimum grade A, Z275 coating designation, factory precoated with fluorocarbon paint finish, 2 coat system dry paint film thickness of 0.025 mm conforming to film test procedures described in CSSBI Bulletin No. 5. Factory preformed prepainted metal, to profile chosen by designer.
  - 9.15.1.1 Exterior wall profile materials: factory preformed prepainted metal, Z275 galvanized sheet steel conforming to ASTM A653M Grade 230, having a minimum nominal core thickness 0.76 mm.
  - 9.15.1.2 Exterior roof profile materials: factory preformed, prefinished, standing seam metal, Z275 galvanized sheet steel conforming to ASTM A653M Grade 230, having a minimum nominal core thickness 0.61 mm.
  - 9.15.1.3 Roof panel support system: Hidden fastener, purpose-made, thermally responsive full height clip system, full insulation depth, full thermal expansion and contraction of the exterior roof sheet.
  - 9.15.1.4 Subgirts, if required, will be fabricated from a minimum 1.22 mm (.050") thick Z275 Galvanized steel.
  - 9.15.1.5 Clips will be fabricated from a minimum of 1.22 mm (.050") steel, with minimum Z275 galvanized coating.
- 9.15.2 Provide rigid board insulation as per Section 9.11 - 07 21 00 – Thermal Protection
- 9.15.3 Provide air barrier sheet seal type 4 as per Section 9.13 - 07 28 00 – Air Barriers and Vapour Retarders.
- 9.15.4 Provide deck sheathing to ASTM C1177/C1177M, water resistant silicone treated core, glass mat facing gypsum sheathing, minimum thickness will be 12 mm.

- 9.15.5 Exterior corners will be of same the profile, material and finish as adjacent siding material.
- 9.15.6 Accessories: cap flashings, drip flashings, internal corner flashings, copings and closures for head, jamb, sill and corners, of same material and finish as exterior siding or roofing, brake formed to shape.
- 9.15.7 Provide sheet metal, preformed eaves troughs and down spouts, and formed metal gutters, of same material and finish as exterior siding or roofing, brake formed to shape.
- 9.15.8 Metal roofing systems, if used, will provide clear internal paths of drainage to allow any trapped moisture to drain to the exterior and avoid the staining of architectural finishes, forming of puddles, forming of icicles and dripping on pedestrians. Building design and roof systems will ensure that entrance ways are protected from sliding snow and ice and will ensure that there are no accumulations of snow or ice in roof valleys.

#### **9.16 07 46 16 – Mineral-Fibre Cement Siding**

- 9.16.1 Siding will meet the requirements of this Section 9.16: Non-asbestos fibre cement siding consist of cement, fly ash and cellulose fiber formed under high pressure into boards with integral surface texture, in compliance with ASTM C1186 Type A Grade II:
  - 9.16.1.1 Lap siding: minimum 7.5 mm thick x minimum 145 mm high, manufacturers standard finish and colour range.
  - 9.16.1.2 Vertical siding: minimum 7.5 mm thick, 1220 mm x 4880 mm scored sheets with stucco type finish. Colour as selected by the Authority from manufacturer's standard colour range.
  - 9.16.1.3 Trim: minimum 7.5 mm thick, colour to be as selected by the Authority from manufacturer's standard colour range.
- 9.16.2 Accessories
  - 9.16.2.1 Provide trims, vertical panel joints, horizontal panel joints, outside corners, wall abutments, door and window headers and window sills.
  - 9.16.2.2 Exposed trim, closures, and cap pieces will be of the same material, colour and finish as siding.
  - 9.16.2.3 Fasteners and retaining clips will be of a corrosion resistant finish in accordance with siding manufacturers recommendations.
  - 9.16.2.4 Sealants will be paintable and 100% acrylic latex complying to ASTM C920.
  - 9.16.2.5 Sheet metal flashing will be a minimum 26 gauge pre-finished galvalume material.
  - 9.16.2.6 Provide preservative treatment to all field cuts and drilled holes.

## 9.17 07 50 00 – Membrane Roofing

- 9.17.1 Materials and workmanship for roofing will conform to the Saskatchewan Roofing Contractors Association (SRCA) latest standards and five (5) year Guarantee, as published in the Canadian Roofing Contractors Association (CRCA) Roofing Specifications Manual.
- 9.17.2 Roof materials will comply with CRCA Roofing Specifications Manual “Acceptable Materials List,” including:
- 9.17.2.1 Flexible membrane – SBS modified (two-ply system) to CAN/CGSB-37-GP-56M, ASTM D6162, ASTM D6223, ASTM D6164, ASTM D6222, ASTM D6223;
- 9.17.2.1(1) Provide minimum 2.5 mm thick, SBS modified bitumen pre-manufactured sheet, with manufacturer's standard internal reinforcement, compatible with substrates and adjoining membranes, fully adhered, with granule top surface. Roofing cap sheet: light colour cap sheets.
- 9.17.2.2 Flexible membrane – Elastomeric or Thermoplastic (single-ply system) in compliance with ASTM D6878;
- 9.17.2.2(1) For Thermoplastic Polyolefin (TPO) roofing, provide minimum 80 mil (2.0 mm), thermoplastic membrane with fiberglass reinforcement.
- 9.17.3 Inspect quality of roofing as required by the SRCA.
- 9.17.4 Provide a complete horizontal barrier to weather and climate using one of the following construction systems as applicable to the installation required:
- 9.17.4.1 built-up bituminous or non-bituminous exposed or protected roofing systems,  
or
- 9.17.4.2 roofing systems including sheet metal, shingles and roof tiles.
- 9.17.5 Roofing systems will include:
- 9.17.5.1 vapour and thermal barriers that meet the following requirements:
- 9.17.5.1(1) vapour barrier: one ply self-adhesive polyester reinforced 3.5 mm thickness, or 2 ply #15 organic felts fully mopped.
- 9.17.5.1(2) thermal barrier: ASTM C1177/C1177M, water resistant silicone treated core, glass mat facing gypsum sheathing, minimum thickness will be 12 mm.

- 9.17.5.2 flashings and sheet metal that meet the following requirements:
- 9.17.5.2(1) flexible flashing and air seal membrane: for SBS modified roofing system, provide minimum 2.5 mm thick, SBS modified bitumen pre-manufactured sheet, with manufacturer's standard internal reinforcement, compatible with substrates and adjoining membranes.
  - 9.17.5.2(2) galvanized steel sheet metal flashings: commercial quality sheet in compliance with ASTM A653-M11, with Z275 designation zinc coating.
  - 9.17.5.2(3) prepainted galvanized sheet metal flashings: commercial quality in compliance with ASTM A653-M11 with Z275 zinc coating prepainted with baked on enamel with colours of proven durability for exterior exposure, to CSSBI Technical Bulletin No. 7, 5000 series.
- 9.17.5.3 rigid board thermal insulation as per Section 9.11 - 07 21 00 – Thermal Protection
- 9.17.5.4 roofing specialties and accessories required for completion;
- 9.17.5.5 interior access systems to roof areas; and
- 9.17.5.6 roof drainage, including roof drains, overflow scuppers and downspouts.
- 9.17.6 Design sheet metal flashings to divert water away from membrane flashing termination and protect the membrane from deterioration due to the elements and mechanical damage. The roofing membrane will be continuous under the metal.

## **9.18 07 81 00 - Fire and Smoke Protection**

- 9.18.1 Spray-applied cementitious fire proofing will conform to standards of Warnock-Hersey (WH) Certification Listings.
- 9.18.2 Integrate barriers into vertical and horizontal space separations to protect against the spread of fire and smoke, and apply protection to exposed building elements (structural and non-structural) susceptible to fire and subsequent damage.
- 9.18.3 Protect penetrations of vertical and horizontal fire-resistance rated separations.
- 9.18.4 Fire-stopping and smoke seal systems will consist of asbestos-free materials and systems, capable of maintaining an effective barrier against flame, smoke, and gases in compliance with requirements of CAN/ULC-S115 and not to exceed opening sizes for which they are intended.
- 9.18.4.1 Firestop system rating: 60 minutes, 90 minutes as required.

- 9.18.5 Fire-stopping materials will:
- 9.18.5.1 be compatible with substrates;
  - 9.18.5.2 allow for movement caused by thermal cycles; and
  - 9.18.5.3 prevent the transmission of vibrations from pipe, conduit or duct to structure and structure to pipe, conduit or duct.
- 9.18.6 When more than one product is required for an assembly, all products will be compatible and from the same manufacturer.
- 9.18.7 Fire stopping sealants and coatings will be silicone-based and guaranteed not to re-emulsify if exposed to wetting or standing water; acrylic-based coatings and sealants are not acceptable.
- 9.18.8 Install firestops and smoke seals at:
- 9.18.8.1 penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls;
  - 9.18.8.2 top of fire-resistance rated masonry and gypsum board partitions;
  - 9.18.8.3 intersection of fire-resistance rated masonry and gypsum board partitions;
  - 9.18.8.4 control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls;
  - 9.18.8.5 penetrations through fire-resistance rated floor slabs, ceilings and roofs;
  - 9.18.8.6 openings and sleeves installed for future use through fire separations;
  - 9.18.8.7 around mechanical and electrical assemblies penetrating fire separations; and
  - 9.18.8.8 rigid ducts. For rigid ducts greater than 129 cm<sup>2</sup>, fire stopping will consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

## **9.19 07 92 00 - Sealants**

- 9.19.1 Project Co will apply sealant materials to achieve:
- 9.19.1.1 seals to the building envelope systems or around openings in the building envelope systems as required to prevent water ingress;
  - 9.19.1.2 seals around and over cavities in or behind surface elements to allow effective infection control;
  - 9.19.1.3 sealed joints between dissimilar or similar materials to allow a smooth or even transition; and



- 9.19.1.4 sealed expansion or controls joints in the building envelope systems or structural systems to allow movement.
- 9.19.2 Exterior sealants will completely and continuously fill joints between dissimilar and/or similar materials.
- 9.19.3 Interior sealant (at frames such as those at doors, windows and skylights) will be of one component, acrylic emulsion type, completely filling joints between dissimilar materials.
- 9.19.4 Silicone caulking to washroom plumbing fixtures will be mildew-resistant and impervious to water.
- 9.19.5 Sealants applied to expansion and control joints in concrete floors requiring self-levelling properties will be two-component epoxy urethane sealants for horizontal surfaces.
- 9.19.6 Sealants for exterior vertical expansion and control joints in masonry or wall cladding will be non-sag sealant.
- 9.19.7 Sealants will allow for minimum 25% movement in joint width.
- 9.19.8 In corridors and other traffic areas used by laundry carts, supply carts, material handling equipment, etc., sealant will be traffic bearing type and suitable to support imposed load without deformation or failure.

## **9.20 08 11 00 – Doors and Frames**

- 9.20.1 Basic requirements
  - 9.20.1.1 Except where wire glass is required in accordance with the National Building Code, construct interior windows and sidelights of tempered glass. Exterior glazing in doors and sidelights will be laminated.
  - 9.20.1.2 Installation methods and locations for doors, frames, and hardware will conform to Door and Hardware Institute (DHI) standards.
  - 9.20.1.3 Size, fabricate and install doors to suit the intended function of spaces or rooms requiring acoustic or visual privacy, security, movement of equipment, special HVAC requirements, fire-resistance rated separations or other closures. Refer to Section 5.7.5.
- 9.20.2 Other Requirements
  - 9.20.2.1 Acoustic requirements for doors will have an STC rating corresponding to that of the wall or partition in which the door is located.
  - 9.20.2.2 Resident room doors will have hardware that allows the doors to stay in an open position and facilitate casual observance of residents by the staff.
  - 9.20.2.3 Apply door sizes and designs consistently to rooms of similar use, location, and configuration.

- 9.20.2.4 Ensure doors will not swing into corridors in a manner that may obstruct traffic flow or reduce the corridor width, except doors to spaces that are used infrequently and not subject to occupancy, such as small closets.
  - 9.20.2.5 Doors may swing into resident washrooms, provided they are equipped with appropriate hardware to allow the door to be opened out into the room in an emergency situation.
  - 9.20.2.6 Sliding barn style doors are permitted for use on resident washrooms. Pocket doors are not permitted.
  - 9.20.2.7 Provide doors with appropriate hinges, edge protection, and face protection to minimize damage and resultant disruptive maintenance.
  - 9.20.2.8 Provide doors and frames with a suitable finish that prevents dirt and fingerprint accumulation and can be easily cleaned and disinfected.
  - 9.20.2.9 The extent of glazing in a door, or the size and quantity of sidelights, will be consistent and balanced between the nature of observation required and the privacy requirements of the occupants of the room. Where possible and appropriate, the preference is to provide glazing in an adjacent sidelight rather than within the door itself.
  - 9.20.2.10 Glazing in doors and sidelights will allow resident observation and operational safety of the spaces they serve. Provide blinds or window coverings suitable and appropriate for the level of privacy intended and required. Blinds will be integral with the window air space. Sidelights are not permitted in resident rooms.
  - 9.20.2.11 Doors and door frames will have the capability to withstand the varying and high levels of humidity and impact that occur typically within a long term care facility and maintain their inherent aesthetic and functional capacities.
  - 9.20.2.12 Exterior door glazing will be sealed units in thermally-broken frames to prevent heat loss.
- 9.20.3 Hollow Metal Doors and Frames:
- 9.20.3.1 Materials and manufacture of metal doors and frames will conform to the requirements of the Canadian Steel Door Manufacturer's Association (CSDMA).
  - 9.20.3.2 Fire door and frame components and assemblies will be labeled and listed by an organization accredited by Standards Council of Canada.
  - 9.20.3.3 Sheet steel will be ASTM A653M commercial quality steel, cold rolled, zinc coated to ZF075 coating designation.
  - 9.20.3.4 Provide doors constructed of sheet steel, with seamless construction with no visible seams or joints on faces at vertical edges.

- 9.20.3.5 Exterior doors will be a minimum of 1.6 mm face sheet steel, flush faced construction, internally steel stiffened with continuous vertical steel stiffeners at 150 mm O.C. spot welded to both face sheets; fill voids with glass fibre insulation.
- 9.20.3.6 Interior doors will be a minimum 1.2 mm face sheet steel, flush faced construction, honeycomb core material consisting of rigid pre-expanded resin impregnated Kraftpaper having maximum 25 mm hexagonal shaped cells.
- 9.20.3.7 Exterior door and window frames to be a minimum 1.6 mm thick steel, welded type construction, thermally broken.
- 9.20.3.8 Interior door and window frames for openings:
- 9.20.3.8(1) less than 1200mm wide will be a minimum of 1.6 mm thick steel, welded type construction; and
  - 9.20.3.8(2) greater than or equal to 1200mm wide will be a minimum 2.0 mm thick steel, welded type construction.
  - 9.20.3.8(3) Provide drywall returns on frames.
- 9.20.3.9 Pressed metal frames will have:
- 9.20.3.9(1) fully welded construction;
  - 9.20.3.9(2) thermally-broken door frames for exterior applications; and
  - 9.20.3.9(3) anchors to each jamb to suit wall type and receive the frame.
- 9.20.3.10 Reinforcement for hardware will be carbon steel, welded in place, prime painted, and will have the following minimum thicknesses:
- 9.20.3.10(1) hinge, pivot and panic bar reinforcements: 3.5 mm;
  - 9.20.3.10(2) lock face, flush bolts, concealed bolts: 2.5 mm;
  - 9.20.3.10(3) concealed or surface closer reinforcements: 2.5 mm; and
  - 9.20.3.10(4) other surface hardware reinforcements: 2.5 mm
- 9.20.4 Wood Doors
- 9.20.4.1 Wood doors will conform to the Quality Standards for Architectural Woodwork (latest edition) published by the Architectural Woodwork Standards Edition 1 (2009).
- 9.20.4.2 Size and construct wood doors and provide hardware and finishes to suit the intended function and aesthetics of the Facility and its programs.

- 9.20.4.3 Construction, finish, and installation will attempt to minimize the requirement for maintenance and resulting disruption to hospital operations.
- 9.20.4.4 Solid core wood doors will be flush Custom Grade quality, solid wood core, 7 ply construction. Particleboard cores or structural composite lumber core (SCLC). Door Thickness: minimum 45 mm. Hollow core wood doors are permissible for resident washroom doors provided they are protected in accordance with Section 9.20.2.7.
- 9.20.4.5 Fire rated wood doors will be tested in accordance with CAN/ULC S104 or NFPA 252 to achieve rating. Fire Rating will be a minimum of 20 minute fire rating. Provide mineral core doors for fire ratings over 20 minutes.
- 9.20.4.6 Install finish hardware securely to resist loosening over time. Fasten finish hardware to solid wood backing, except where hardware is designed to be through-bolted.
- 9.20.4.7 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.
- 9.20.4.8 Face veneer will be rotary cut stain grade white birch veneer premium Grade A, stain grade, with AWMAC No. 3 edge and finished to suit the intended use.
- 9.20.4.9 Reinforcement will be SLM, as required for hardware installation, as indicated in Architectural Woodwork Standards Edition 1, 2009 edition.

## **9.21 08 35 13 – Accordion Folding Doors**

- 9.21.1 Accordion folding doors will be dual wall construction, perimeter sealed and acoustically lined, factory finished with natural hardwood veneer, with panels connected continuously along the top and bottom by a steel hardware hinge system. Individual hinges will be riveted to those adjoining and contain stops to maintain a uniform extended position.
- 9.21.2 Perimeter seal of extruded vinyl sweep strips threaded through flutes of 18 gauge steel will securely connect all adjoining panels top and bottom.
- 9.21.3 Field Sound Transmission Class: 33
- 9.21.4 Doors will be suspended by nylon wheels from heavy duty aluminum overhead track.
- 9.21.5 Aluminum lead post will incorporate a dual ball bearing roller system at top with faces matched to door body panels. Provide an interlocking aluminum jamb molding with adjustable strike plate and gasketed sound seal for mounting to wall.
- 9.21.6 Hardware to include molded rigid PVC handle with finger recess and thumbturn deadlatch on both sides.

## 9.22 08 36 00 – Sectional Overhead Doors

- 9.22.1 Sectional overhead doors will be 45 mm thick insulated flush panel doors of roll formed pre-painted hot dip galvanized steel sections. Exterior and interior facing 0.48 mm steel, with rigid polyurethane insulation core, CFC-11 free.
- 9.22.2 Provide full glazed aluminum sash panels with insulated sealed tempered (clear) glazing.
- 9.22.3 Provide standard or high lift hardware, 75 mm size 2.75 mm core thickness hot-dip galvanized steel track for 50,000 cycle torsion spring lifting and include ancillary hardware items.
- 9.22.4 Provide centre mounted electric operators with adjustable safety friction clutch; brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear driven limit switch; enclosed magnetic cross line reversing starter; mounting brackets and standard three button (open-close-stop) momentary pressure type, control for each electric operator.

## 9.23 08 51 00 – Aluminum Windows and Doors

- 9.23.1 Size, configure and construct windows to suit rooms that require daylight, views and/or natural ventilation.
- 9.23.2 Resident rooms will have aluminum or PVC type windows that meet the following requirements:
  - 9.23.2.1 provide restrictions on operable windows or vents that open from the inside to inhibit possible resident escape or suicide, operable to a maximum of 150 mm;
  - 9.23.2.2 locate window sills no higher than 813 mm above the finished floor; and
  - 9.23.2.3 provide insect screens on operable windows that may be left open.
- 9.23.3 Community Centre, Adult Day Program, Services Building and connecting corridors will have aluminum windows and doors.
- 9.23.4 Consider providing clerestory windows or 'borrowed light' through interior windows to occupied rooms that do not have exterior windows. The intent is to bring light to areas that do not have direct access to windows and consequently create a more comfortable and less a closed-in atmosphere. Solar tubes are permitted. Skylights are not permitted.
- 9.23.5 Coordinate glazing heights with adjacent wall protection, handrails and other accessories to achieve functional and aesthetic cohesiveness.
- 9.23.6 Performance Criteria
  - 9.23.6.1 Aluminum Entrances and Storefronts

- 9.23.6.1(1) Aluminum entrances and storefront framing and doors may form part of the exterior envelope of the Buildings or provide glazed interior partitions as appropriate.
- 9.23.6.1(2) Provide aluminum doors within aluminum entrances and storefront.
- 9.23.6.1(3) Frames will be thermally-broken, flush glazed, aluminum sections, to accept insulating glass units.
- 9.23.6.1(4) Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as calculated in accordance with the National Building code to a design pressure of 1.27 kPa as measured in accordance with ASTM E330.
- 9.23.6.1(5) Air Infiltration: Limit air leakage through assembly to 0.0003 cu m/s/sq m of wall area, measured at a reference differential pressure across assembly of 75 Pa as measured in accordance with AAMA 501 ASTM E283.
- 9.23.6.1(6) Air and Vapour Seal: Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.
- 9.23.6.1(7) Water Leakage: There must be no water leakage, when measured in accordance with AAMA 501.1 with a test pressure difference of 136.85 N/sq m.
- 9.23.6.1(8) Frames will incorporate 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.
- 9.23.6.1(9) Aluminum swing entrance doors will be heavy-duty commercial or institutional grade and may be automatically operated, motion-detector controlled, with longer opening times for the elderly.
- 9.23.6.1(10) Aluminum finish for exposed aluminum surfaces will be applied in the manufacturing process and be permanent and resistant to corrosion caused by weather exposure and climate.

#### 9.23.6.2 Automatic Swing Doors

- 9.23.6.2(1) Provide automatic swing doors for interior and exterior locations as set out in this Schedule 3.
- 9.23.6.2(2) Door equipment will accommodate medium to heavy pedestrian traffic and up to 98 kg weight of doors.
- 9.23.6.2(3) Directional motion sensor control device, if used, will be unaffected by ambient light or ultrasonic frequencies.
- 9.23.6.2(4) All in-swing doors that are required exits will be equipped with an emergency breakaway switch that internally cuts power to the operator. No external power switch will be allowed.
- 9.23.6.2(5) Provide longer hold-open times to accommodate resident mobility issues.

#### 9.23.6.3 Aluminum Curtain Walls

- 9.23.6.3(1) Provide vertical glazed aluminum curtain wall systems including standard and high performance thermally broken tubular aluminum sections with self supporting framing, shop fabricated, factory prefinished, vision glass, glass spandrel infill, related flashings, anchorage and attachment devices.
- 9.23.6.3(2) Aluminum curtain walls will conform to the Aluminum Association Standards (AAS) and the American Architectural Manufacturers Association (AAMA) field testing specifications.
- 9.23.6.3(3) Curtain wall framing will incorporate a drained and vented system with a complete 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.
- 9.23.6.3(4) Windows will conform to the following requirements of CAN/CSA-A440 Windows:
  - 9.23.6.3(4)(a) Air infiltration: fixed rating.
  - 9.23.6.3(4)(b) Water infiltration: B7 rating.
  - 9.23.6.3(4)(c) Wind load resistance: C5 rating.
  - 9.23.6.3(4)(d) Intermediate mullions and horizontals will be designed to withstand loading in accordance with NBC.
  - 9.23.6.3(4)(e) Condensation resistance temperature index for framing: minimum 78.

- 9.23.6.3(5) Design the curtain wall framing to incorporate a thermal-break system.
- 9.23.6.3(6) Provide aluminum finish for exposed aluminum surfaces that is permanent and resistant to corrosion resulting from weather exposure and climate.
- 9.23.6.3(7) The assembly will resist 1-in-100 year climatic events (with a safety factor).

#### 9.23.6.4 Glass and Glazing

- 9.23.6.4(1) Glass and glazing materials and workmanship will conform to the Insulating Glass Manufacturers Association of Canada (IGMAC) Guidelines and the Glazing Contractors Association of B.C. (GCA) Glazing Systems Specifications Manual.
- 9.23.6.4(2) Project Co may provide exterior and/or interior glass and glazing as integral components of the exterior building envelope, interior partitions and screens, exterior and interior doors, handrail balustrades, skylights and decorative and ornamental glazing.
- 9.23.6.4(3) Use laminated safety glass in entry doors and sidelights.
- 9.23.6.4(4) Mirrors: Mirror placement will allow for convenient use by both wheelchair occupants and ambulatory persons. Top and bottom edges of mirror will be at levels usable by individuals either standing or sitting.
  - 9.23.6.4(4)(a) Full wall unframed mirrors will be 6 mm thick minimum float glass backed with electrolytically-applied copper plating. All edges will be ground smooth and polished.
  - 9.23.6.4(4)(b) Wall mounted posture mirrors will be 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 will be galvanized steel.

#### 9.23.6.5 Aluminum Door Finish Hardware

- 9.23.6.5(1) Finish hardware materials and workmanship will conform to quality standards of the Door and Hardware Institute (DHI).
- 9.23.6.5(2) Select finishes to provide maximum longevity and preservation of the finish.



- 9.23.6.5(3) Hardware, where applicable, will be ULC-listed for fire rating for all functions up to 2-hour doors.
- 9.23.6.5(4) Hardware will be heavy-duty commercial quality. Locksets and latchsets will be fully mortised type and lever handles will be solid material.
- 9.23.6.5(5) Keying: Refer to Section 9.25.
- 9.23.6.5(6) Door access control system hardware suitable for residents with dementia will suit the purposes unique to those areas as per Section 5.7.6.

## 9.24 08 53 00 – PVC Windows

- 9.24.1 Project Co will provide PVC windows in accordance with the following requirements:
  - 9.24.1.1 Plastic (PVC) Windows: in compliance with ASTM D4726 , hollow tubular sections of extruded polyvinyl chloride (PVC) with integral ultra-violet resistant colour coating, factory fabricated, vision glass, related flashings, anchorage and attachment devices.
  - 9.24.1.2 System Design: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall to CSA A440 – Windows, as calculated in accordance with the National Building Code, as measured in accordance with ASTM E330.
  - 9.24.1.3 Composite unit windows will meet or exceed requirements of CSA-A440, and the following performance requirements:
    - 9.24.1.3(1) Air Tightness Rating, Fixed Windows: Fixed.
    - 9.24.1.3(2) Air Tightness Rating, Operable Windows: A3.
    - 9.24.1.3(3) Water Tightness Rating: B3.
    - 9.24.1.3(4) Wind Load Resistance Rating: C3.
    - 9.24.1.3(5) Forced Entry: F2, pass test for resistance to forced entry.
    - 9.24.1.3(6) Insect Screens: S2
    - 9.24.1.3(7) Glazing: clear.
    - 9.24.1.3(8) Overall Window U-Value: maximum 2.20 W/m<sup>2</sup> °C.
  - 9.24.1.4 Deflection: Limit member deflection to 1/200 flexure limit of glass of the longer dimension with full recovery of glazing materials.

- 9.24.1.5 Assembly: Design assembly to accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
- 9.24.1.6 Design windows to equalize both positive and negative pressure between outside air and cavities surrounding insulating glass units, and cavities surrounding operable sash.
- 9.24.1.7 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- 9.24.1.8 Air and Vapour Seal: Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior surface of air barrier and vapour retarder.
- 9.24.1.9 Insect Screen Frame: Rolled aluminum frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.
- 9.24.1.10 Insect Screens: CAN/CGSB 79.1, woven glass fibre mesh; 14/18 mesh size.

## **9.25 08 70 00 – Finish Hardware**

- 9.25.1 Finish hardware supplier will be an established contract builders hardware firm who will have in its employ one or more AHCs (Architectural Hardware Consultant) who are members in good standing of the Door and Hardware Institute (DHI) and who will be responsible for the complete hardware contract.
- 9.25.2 Finish door hardware will include hinges (1-1/2 pairs per door leaf), lock/latch sets, panic devices, stops, holders, door closers, deadbolts, cylinders, flush bolts, kick plates, weatherstrip and thresholds.
- 9.25.3 Provide only ULC or cUL listed and labelled hardware for fire rated doors.
- 9.25.4 For products requiring electrical connection, provide hardware listed and classified by testing firm acceptable to the Governmental Authority having jurisdiction, as suitable for the purpose specified or indicated.
- 9.25.5 For mounting heights for hardware from finished floor to centre line of hardware item, refer to CSDMA recommendations.
- 9.25.6 Copper-based products are desirable.
- 9.25.7 Locks and Latches:
  - 9.25.7.1 Provide mortise and bored type locks listed in BHMA's Directory of Certified Locks and Latches.
  - 9.25.7.2 Project Co will provide locks and latches that meet the following requirements:

- 9.25.7.2(1) Bored latches: to ANSI/BHMA A156.2, series 4000 bored lock, grade 1, designed for passage function.
- 9.25.7.2(2) Mortise locks and latches: to ANSI/BHMA A156.13, series 1000 mortise locks, grade 1, designed for function to Authority's requirements.
- 9.25.7.2(3) Mortise body to have adjustable bevel front to conform to shape of door edge.
- 9.25.7.2(4) Lever handles: plain design with end return towards door, solid lever.
- 9.25.7.2(5) Roses and escutcheons: round roses for bored latches, rectangular escutcheons for mortised locksets.
- 9.25.7.2(6) Normal strikes: manufacturer's standard wrought box type, lip projection curved to protect jamb.
- 9.25.7.2(7) Finish: satin chrome.
- 9.25.7.2(8) Product manufacturers: Corbin, Sargent, Schlage or Yale.

#### 9.25.8 Door Hanging Devices:

- 9.25.8.1 Project Co will provide door hanging devices that meet the following requirements:
  - 9.25.8.1(1) Butts and Hinges: in compliance with ANSI/BHMA A156.1, designated by letter A and numeral identifiers listed in standard, satin chrome finish.
  - 9.25.8.1(2) Interior: full mortised, steel, 5 knuckle, bearing type, 114 mm x 114 mm, A8112.
  - 9.25.8.1(3) Exterior: full mortised, stainless steel, 5 knuckle, bearing type, 114 mm x 114 mm A5111.
  - 9.25.8.1(4) Pins: Non-rising on in-swing doors, non-removable on outswing doors, button type.

#### 9.25.9 Exit Devices:

- 9.25.9.1 Products will conform to ANSI/BHMA A156.3, grade 1, modern with push pad or modern narrow stile with push pad as required, functions as specified in design, and satin stainless steel finish.
- 9.25.9.2 Project Co will provide exit devices that meet the following requirements:
  - 9.25.9.2(1) for exterior doors, narrow style rim;

- 9.25.9.2(2) for interior single doors and active leaf of interior double doors, narrow style mortised; and
- 9.25.9.2(3) for inactive leaf of interior double doors, narrow style surface vertical rod.
- 9.25.9.3 Project Co will provide auxiliary items that meet the following requirements:
  - 9.25.9.3(1) door coordinator with carry bar, bar type with filler piece; and
  - 9.25.9.3(2) removable mullion.
- 9.25.9.4 Exit devices on exterior doors will be electrically equipped to automatically lock, using one of the following features, when the exterior doors are locked down from a central point in the administration area. Refer to ANSI/BHMA A156.25.
  - 9.25.9.4(1) Provide fail-secure exterior trim or automatic latch retraction.
  - 9.25.9.4(2) To address fire exit requirements and to allow the exit of residents that do not require wander guard monitoring, mag locks and panic hardware will be installed with a 15 second delay (during which delay a notification is sent to the care giver).
- 9.25.9.5 Use products from one of the following manufacturers: Corbin, Sargent, Schlage, Yale or Von Duprin.
- 9.25.10 Door Closers and Accessories:
  - 9.25.10.1 Project Co will provide door closers and accessories that meet the following requirements:
    - 9.25.10.1(1) Door closers: conform to ANSI/BHMA A156.4, surface mount, modern type with cover, designated by letter C and numeral identifiers listed in standard, size in accordance with ANSI/BHMA A156.4, table A1, painted aluminum finish.
      - 9.25.10.1(1)(a) In-swing doors will be parallel arm mount.
      - 9.25.10.1(1)(b) Out-swing doors will be hinge side mount.
    - 9.25.10.1(2) Overhead stops: conform to ANSI/BHMA A156.8, concealed slide stop – C51541 or surface mount stop – C52541, satin stainless steel finish.
    - 9.25.10.1(3) Closer/holder release devices: conform to ANSI/BHMA A156.15, finish to match satin chrome. Devices tied into fire alarm will release holder upon activation of the fire alarm. 24 volt with a maximum of two devices tied into one transformer.

9.25.10.1(4) Door coordinator with carry bar, bar type with filler piece for double doors.

9.25.10.1(5) Provide drop plate as required to coordinate with overhead holders/stops.

9.25.11 Low Energy Swing Door Operators:

9.25.11.1 Provide doors with a power mechanism that opens and closes the door upon receipt of an actuating signal and does not generate more kinetic energy than specified in ANSI/BHMA A156.19. Closing of doors is linked to and integral with power operator mechanism.

9.25.11.2 Operator type: provide electro-mechanical, surface-mounted to door frame header, connected to door with pivoting linkage arm.

9.25.11.3 Motor: provide electric, permanent magnet, minimum 1/12 HP (60W) DC motor, equipped with circuit protection, connections for power and control wiring, and suited to building's electrical service at point of installation.

9.25.11.4 Provide semi-concealed, readily accessible, "on-off" switch. Gears will be in an air-tight, gasketed gear box concealed within operator enclosures.

9.25.11.5 Equip operators with a clutch mechanism as required to meet performance and regulatory requirements.

9.25.11.6 Provide manufacturer's standard, surface mounted enclosure, designed to prevent entry of dust. Enclosure will allow ready access for adjustments, servicing and maintenance of operator and controls. Enclosures finish: clear anodized aluminum.

9.25.11.7 Provide solid state, low voltage electronic controls. Swing doors controls will include provision for time delay from 1-30 seconds before closing, and individually adjustable closing and opening speeds.

9.25.11.8 Provide recessed international symbol of accessibility (ISA) and the following clearly legible wording under ISA's: "PUSH TO OPEN", on push plates or on identification plates adjacent to activating device.

9.25.11.9 Push plates and identification plates will be stainless sheet steel, satin finish. Letters on plates will be recessed, in colour matching symbol of accessibility, in upper case, and Helvetica medium font. Identification plates will be minimum 100 mm x 100 mm. Push buttons will be red, in stainless steel cover plate.

9.25.11.10 Materials for fastening metals to metals: provide aluminum, nonmagnetic stainless steel, finished to match adjacent material.

9.25.11.11 Materials for fastening metals to concrete and masonry: provide stainless steel or carbon steel, hot dip galvanized to comply with CAN/CSA-G164-M92.

9.25.11.12 Provide tamper-resistant exposed fasteners for mounting devices and to replace batteries in exterior locations and interior public spaces.

9.25.12 Auxiliary Locks and Associated Products:

9.25.12.1 Project Co will provide auxiliary locks and associated products that meet the following requirements:

9.25.12.1(1) Products will conform to ANSI/BHMA A156.5, grade 1, satin chrome finish.

9.25.12.1(2) Latch bolt, keyed outside with thumb-turn inside. Key into keying system.

9.25.12.1(3) Bored dead bolt, keyed both sides. Key into keying system.

9.25.12.1(4) Mortised dead bolt, operated by key from inside only. Key into keying system.

9.25.12.1(5) Cylinders: types as required to accommodate lockset, exit device or bolt. Key into keying system.

9.25.13 Electric Strikes and Stand-alone Card Reader System:

9.25.13.1 Project Co will provide electric strikes and a stand-alone card reader system that meet the following requirements:

9.25.13.1(1) Electric strike: conform to ANSI/BHMA A156.31, semi-rim mounted, continuous duty, fail secure, 12 or 24 volts as specified in design. Provide manufacturer's wiring and devices required for complete installation.

9.25.13.1(2) Card Reader System: will include all required hardware and software to fully monitor and control the designated door. System will utilize 26 bit, Corporate 1000 cards and will be capable of expansion.

9.25.13.1(3) Exterior grade proximity card reader for 26 bit, Corporate 1000 cards.

9.25.13.1(4) Provide one terminal for programming cards.

9.25.14 Architectural Door Trim:

9.25.14.1 Project Co will provide architectural door trim that meets the following requirements:

9.25.14.1(1) Door Protection Plates: conform to ANSI/BHMA A156.6, kick plate, 1.27 mm thick stainless steel, 305 mm in height x door width less 20 mm, satin finish.

9.25.14.1(2) Push Plates: conform to ANSI/BHMA A156.6, 1.27 mm thick stainless steel, 100 mm x 400 mm, satin finish.

9.25.14.1(3) Pull Units with Plate: conform to ANSI/BHMA A156.6, stainless steel, 200 mm centre to centre pull bar of 19 mm diameter rod, 100 mm x 400 mm plate size, satin finish.

#### 9.25.15 Auxiliary Hardware:

9.25.15.1 Project Co will provide auxiliary hardware that meets the following requirements:

9.25.15.1(1) Products will conform to ANSI/BHMA A156.16, to match satin chrome finish.

9.25.15.1(2) Stop, wall mounted: convex bumper pad.

9.25.15.1(3) Stop, floor mounted: domed with bumper pad.

9.25.15.1(4) Lever extension flush bolt: 305 mm long latch bar.

9.25.15.1(5) Provide a door silencer for metal door frames.

9.25.15.1(6) Dustproof strike: non-locking, to suit bolt specified.

#### 9.25.16 Weatherstripping and Door Seals:

9.25.16.1 Project Co will provide weatherstripping and door seals that meet the requirement of this Section 9.25.16:

9.25.16.2 Products will conform to ANSI/BHMA A156.22.

9.25.16.3 Head and jamb seal: extruded aluminum frame and retainer, solid closed cell neoprene insert, clear anodized finish.

9.25.16.4 Adjustable jamb and jamb seal (for sound attenuation): extruded aluminum frame and solid closed cell neoprene insert, screw attachment and adjustment, clear anodized finish.

9.25.16.5 Door bottom seal with rain drip: extruded aluminum frame and contact type vinyl insert, clear anodized finish.

9.25.16.6 Automatic door bottom seal (for sound attenuation): heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene seal, closed ends, adjustable, automatic retract mechanism when door is open, clear anodized finish.

9.25.16.7 Door sweep: extruded aluminum frame and closed cell neoprene sweep, clear anodized finish.

9.25.16.8 Astragal: overlapping, extruded aluminum for regular double doors, steel for fire resistance rated double, both edges radiused and smooth, 3 mm x 45 mm x height of doors less depth of rebate.

9.25.17 Thresholds:

9.25.17.1 Thresholds will conform to ANSI/BHMA A156.21, barrier-free, width as required by design x full width of door opening, extruded aluminum, mill finish, serrated surface, with thermal break of rigid PVC, scribed to frame profile.

9.25.18 Keying:

9.25.18.1 Provide cylinders that are master keyed and construction master keyed.

9.25.18.2 Implement 4-level system.

9.25.18.3 Determine detailed requirements for master keying system upon consultation with the Authority during the User Consultation Process, prior to finalizing keying schedule.

9.25.18.4 Project Co will provide new key fittings to the Authority for control by the Authority.

9.25.18.5 Project Co will turn over keys from the factory to the Authority.

9.25.18.6 Provide all keys as required to meet keying system requirements.

9.25.18.7 Form keys from nickel silver.

**9.26 09 00 00 - Interior Finishes - General**

9.26.1 Basic Requirements

9.26.1.1 In areas where finishes and systems of installation will occur and water is anticipated to be present as part of cleaning or other procedures, water may collect and exist provided it does not cause damage to the finishes or substrate.

9.26.1.2 For areas in which wear is a concern, such as areas with anticipated pedestrian or wheeled traffic, finish materials will be durable to withstand damage and easily replaceable in sections if damage does occur.

9.26.1.3 Infection prevention and control will be a priority in the selection of finishes for all resident care areas.

9.26.1.4 Acoustic characteristics of finish materials will be a priority consideration.



- 9.26.1.5 The appearance of finishes and colours will create and promote a natural healing environment, prevent glare and minimize artificial lighting requirements.
- 9.26.1.6 Selection of materials will promote sustainability by, for instance, having low-emissivity or comprising of renewable resources.

## **9.27 09 21 00 – Gypsum Board Assemblies**

### 9.27.1 Interior Wall Framing Performance Criteria

- 9.27.1.1 Materials and workmanship for interior walls, including steel studs and furring and gypsum board ceiling suspension systems, will conform to 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 (latest edition).
- 9.27.1.2 System design and components will meet seismic restraint code requirements.
- 9.27.1.3 Prefabricated steel studs for interior partitions and furring will be non-load bearing, with no axial load other than its own weight, the weight of attached finishes, and lateral loads of interior pressure differences and seismic loads.
- 9.27.1.4 Steel stud framing construction will accommodate electrical, plumbing and other services in the partition cavity, and support fixtures, wall cabinets and other such wall-mounted items with reinforcement and backing.
- 9.27.1.5 Design will consider 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.
- 9.27.1.6 Studs and Tracks: Interior non-load bearing walls will conform to CAN/CGSB-7.1 M86, be minimum 0.50 mm galvanized sheet steel in conformance with ASTM A653M-11, with Z180 zinc coating.
- 9.27.1.7 Furring: provide a of minimum 0.60 mm thick galvanized sheet steel that conforms to ASTM A653M-11, Z180 zinc coating.
- 9.27.1.8 Resilient Furring: provide a minimum 0.60 mm thick galvanized steel, pre-punched for fasteners, 35 mm face width, 16 mm high.
- 9.27.1.9 Suspended ceiling and soffit system components: Carrying channels galvanized cold rolled steel to conform to ASTM C645.

### 9.27.2 Gypsum Board Performance Criteria

- 9.27.2.1 Materials and workmanship for gypsum board and accessories will conform to the Association of Wall and Ceiling Contractors (AWCC) Wall & Ceiling Specification Standards Manual (latest edition).

- 9.27.2.2 Gypsum board will conform to ASTM C36, regular and Type "X" Gypsum Board; maximum permissible length and width; end square cut, taper edges; paper/paper faces, thickness of gypsum board will be no less than 16 mm.
  - 9.27.2.3 Ceiling board to ASTM C36; sag resistant non-rated; maximum permissible length and width; ends square cut, taper edges; paper/paper faces, thickness 12.7 mm
  - 9.27.2.4 Mould-resistant gypsum board will conform to ASTM C630, ASTM C1177, CSA A82.27M, and the following requirements: inorganic coated glass fibre mattes embedded into face and back of mould-resistant gypsum core, mould resistant to ASTM D3273, 1220 wide x maximum practical length, ends square cut, edges tapered. Standard gypsum and type X ULC fire rated, non-combustible core in compliance with ASTM E136 will be used behind all plumbing fixtures in resident washrooms. Acceptable product: GP Gypsum DensArmor Plus Interior Guard;
  - 9.27.2.5 Exterior sheathing will be glass mat surfaced gypsum sheathing board that conforms to ASTM D 3273, fire rated type X board that conforms to ASTM C 1396.
  - 9.27.2.6 Exterior Sheathing: roof underlay will conform to ASTM C 472.
  - 9.27.2.7 Except as set out in Section 9.27.2.4, use glass mat water-resistant gypsum panels (tile backer board) behind ceramic wall tile in showers, behind sinks, or other wet areas. Project Co may use reinforced cementitious board or cementitious backer unit (CBU) as an alternative to glass mat water-resistant gypsum backing panels.
  - 9.27.2.8 For STC ratings, refer to Appendix 3C [Sounds Transmission Ratings].
  - 9.27.2.9 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.
  - 9.27.2.10 Recessed wall fixtures such as cabinets or electrical, telephone and television outlets and medical gas outlets, which perforate the gypsum board surface, will not be located back-to-back. Cut any opening for fixtures to the proper size and seal piping penetrations appropriately.
  - 9.27.2.11 Seal conduit/duct/piping penetrations with tape and fill at the plenum barrier.
  - 9.27.2.12 The entire perimeter of a sound insulating assembly will be made 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 specified STC requirements.
- 9.27.3 Accessories:
- 9.27.3.1 Project Co will provide accessories that meet the following requirements:

- 9.27.3.1(1) Screws will conform to ASTM C1002-07a, modified as required for fastening to 1.22 mm and thicker steel studs.
- 9.27.3.1(2) Corner beads will conform to ASTM C1047-05, galvanized sheet steel, beaded angle, knurled and perforated, 32 mm wide flanges, for joint compound filling, metal and paper flange combination, beaded angle.
- 9.27.3.1(3) Edge beads will conform to ASTM C1047-05, galvanized sheet steel to ASTM A653M-11, Z180 zinc coating, beaded edge, knurled and perforated flange 32 mm wide.
- 9.27.3.1(4) Control Joints will conform to ASTM C1047-05, pre-formed galvanized metal or plastic "V" type, perforated flanges.
- 9.27.3.1(5) Joint treatment material, joint tape and topping compound will conform to ASTM C475-94.

## 9.28 09 30 00 – Ceramic Tile

### 9.28.1 Ceramic Tilework Performance Criteria

- 9.28.1.1 Materials and workmanship for ceramic tilework will conform to the Terrazzo Tile and Marble Association of Canada (TTMAC) Specification Guide 09 30 00 Tile Installation Manual (latest edition).
- 9.28.1.2 In order to reduce opportunities for the spread of infection, minimize use of ceramic tile in interior applications in resident and other service areas.
- 9.28.1.3 Floor tile installed on wet and exterior surfaces will have the following static coefficients of friction as per the American Society for Testing and Materials International (ASTM):
  - 9.28.1.3(1) Level Surfaces: Not less than 0.50 for wet and dry conditions.
  - 9.28.1.3(2) Ramp Surfaces: Not less than 0.60 for wet and dry conditions.
- 9.28.1.4 Project Co will provide tile and mortar that meet the following requirements:
  - 9.28.1.4(1) Porcelain floor tile will conform to CAN/CGSB-75.1-M88, Type 4, Class MR1, unglazed, rectified edge, minimum size 900 cm<sup>2</sup>. Colour as selected from manufacturer's standard colour range.
  - 9.28.1.4(2) Unglazed mosaic porcelain floor tile will conform to CAN/CGSB-75.1-M88, Mohs rating 6, Class TYPE 2, MR1. Colour as selected from manufacturer's standard colour range.

- 9.28.1.4(3) Glazed ceramic wall tile will conform to CAN/CGSB 75.1, Type 5, Class MR4, faces glazed, cushioned edges on all 4 sides, minimum size 115 cm<sup>2</sup>. Colour as selected from manufacturer's standard colour range.
- 9.28.1.4(4) Thin-set mortar will conform to ANSI A118.4 when combined with acrylic mortar admix, Shear Bond Strength: 440 psi (7 day), Compressive Strength: 3000 psi (7 day).
- 9.28.1.5 Provide exterior tiles that are frost-resistant and have a moisture absorption rating of 3.0% or less.
- 9.28.1.6 Provide control joints and expansion joints in conformance with the recommendations of the TTMAC Tile Installation Manual.
- 9.28.1.7 Provide a waterproof membrane under ceramic floor tile in showers and other wet areas. The membrane may be trowel-applied, built-up, liquid-applied or sheet-applied.
- 9.28.1.8 Provide crack isolation membranes to resist crack transmission from the substrate due to lateral movement and designed 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.
- 9.28.1.9 Set and grout ceramic tile with epoxy setting and grouting materials.
- 9.28.1.10 Provide wall tile adhesive that is Organic Tile, meets or exceeds ANSI A136.1, and is type 1, low VOC, solvent free, non-flammable and nontoxic.
- 9.28.1.11 Provide cement that conforms to CAN/CSA-A5-93.
- 9.28.1.12 Provide floor transition strips with prefabricated edge protection profile for porcelain or ceramic floor tile to other floor surfaces in accordance with the following:
  - 9.28.1.12(1) Type One: floor finishes with +/- 1.5mm difference in elevation, stainless steel.
  - 9.28.1.12(2) Type Two: floor finishes with a 2 ~ 6mm difference in elevation, stainless steel.
- 9.28.1.13 Provide bullnose edge profile tile for all ceramic wall tile vertical outsides corners.

## **9.29 09 51 00 - Acoustic Panel Ceilings**

- 9.29.1 Acoustic Panel Ceilings Performance Criteria
  - 9.29.1.1 The Design will control interior sound levels to facilitate a comfortable and healing environment for residents and a safe working environment for Facility staff.

- 9.29.1.2 Install acoustic ceiling tiles in a suspension system to provide levels of sound attenuation to suit the intended function of the room.
- 9.29.1.3 For ceiling tiles in a suspension system, provide accessibility to the ceiling spaces where access is required to mechanical, electrical or other service systems.
- 9.29.1.4 Project Co may install special surface-treated ceiling tiles, such as wood, mylar or metal-faced tiles, where maintenance and ease of cleaning are priorities as well as the accessibility and acoustic requirements.
- 9.29.1.5 Design standard acoustical panels and tiles for installation within the normal occupancy condition range of 15°C - 29°C and maximum 70% relative humidity. When the service use temperature and RH are expected to exceed these ranges, use of acoustical units specifically designed for such applications will be considered.
- 9.29.1.6 In any area where lay-in ceiling panels frequently need to be removed for plenum access, provide tiles with scratch-resistant surfaces.
- 9.29.1.7 Ceilings installed in food preparation areas will be capable of being cleaned without undue wear on the tile.
- 9.29.1.8 Project Co will provide acoustic ceiling panels that meet the following requirements:
  - 9.29.1.8(1) Ceiling units will conform to CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units, and conform to ASTM E 126498(2005).
  - 9.29.1.8(2) Acoustic Ceiling Panels will be mineral fibre, non-directional fissured, flat lay in tiles, white in colour for maximum reflectance.
  - 9.29.1.8(3) Minimum NRC – Noise Reduction Coefficient of 0.70
  - 9.29.1.8(4) Minimum CAC – Ceiling Attenuation Class of 35.
  - 9.29.1.8(5) Minimum LRC – Light Reflectance Coefficient of 0.80.
  - 9.29.1.8(6) Rating of tiles will conform to CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials.
- 9.29.1.9 Provide suspended acoustic panel ceiling tile that is compatible size to suit lay in light fixtures and mechanical diffusers. Typical sizing is imperial measurement grid of 610 mm x 610 mm or 610 mm x 1220 mm.
- 9.29.1.10 Support system will conform to CSA B111-1974(R2003), Wire Nails, Spikes and Staples. Provide a suspension system made of commercial quality cold rolled steel zinc coated, shop painted satin sheen, white and die cut interlocking components main and cross tee of double web.

9.29.1.11 Fire-rated Suspension System: Fire rated to ULC design, exposed T bar grid including wall mounting, blue steel retainer clips.

9.29.1.12 Hangers will be 2.6 mm steel wire galvanized.

### 9.30 09 65 00 - Resilient Flooring

#### 9.30.1 Flooring Performance Criteria

9.30.1.1 Flooring Types - All rooms, except wet rooms, will have flooring that meet the following requirements:

9.30.1.1(1) Linoleum composed of natural ingredients which are mixed and calendared onto a jute backing in conformance with CSA A1256.1. ASTM F2034-03 e1; 2.5 mm total thickness; 2.0 m sheet width; 6 dB impact sound reduction.

9.30.1.1(1)(a) Use Forbo Marmoleum with Topshield 2 or Authority approved equivalent.

9.30.1.1(2) Homogeneous single layered vinyl sheet flooring to EN 649, 2.0 mm wear layer thickness, 2.0 m sheet width.

9.30.1.1(2)(a) Use Tarkett IQ Granit or Authority approved equivalent.

9.30.1.1(3) Heterogeneous resilient sheet wood look flooring to ASTM F 1303, Type I, Grade 1, Class A Backing; ISO 10582, Type I; UV-cured Polyurethane finish, 0.55 mm wear layer thickness, 2.0 mm total thickness, minimum 1.83 m sheet width.

9.30.1.1(3)(a) Use Armstrong Rejuvenations Timberline, Johnsonite Acczent Wood or Authority approved equivalent.

9.30.1.1(4) Rubber sheet without backing to ASTM F1859, 100 percent rubber composition, colour and pattern through total thickness, 3.0 mm wear layer thickness, 1.22 m sheet width.

9.30.1.1(4)(a) use Noraplan Environcare or Authority approved equivalent.

9.30.1.1(5) All joints will be hot welded seams with matching colour rods.

9.30.1.1(6) All installs will have a 150 mm covered rubber base, unless noted otherwise.

- 9.30.1.1(7) Flooring adhesive will be a water soluble, low odour product.
- 9.30.1.1(8) Where there is no product to butt against, edging will be finished with vinyl finishing strip as per manufacturers specifications.
- 9.30.1.1(9) Flooring will not be finished with sealer and/or wax, but must be finished with high speed buffing as per manufacturers specification.
- 9.30.1.2 Flooring Types - Kitchen, laundry, soiled utility, clean utility and housekeeping rooms will have flooring that meets the following requirements:
- 9.30.1.2(1) Heterogeneous slip resistant resilient sheet wood look flooring with aluminum granules particulate suspended evenly throughout the product thickness, to ASTM F 1303, Type I, Grade 1, Class A Backing; ISO 10582, Type I; 2.0 mm total thickness, 2.0 m sheet width.
- 9.30.1.2(1)(a) Use Johnsonite Acczent Wood Safe-T or Authority approved equivalent.
- 9.30.1.2(2) All joints will be hot welded seams with matching colour rods.
- 9.30.1.2(3) All installs will have a 150 mm integral coved base. Cove will be capped.
- 9.30.1.2(4) Flooring adhesive will be a solvent based, low odour product.
- 9.30.1.2(5) Where there is no existing product to butt against, edging will be finished with vinyl finishing strip.
- 9.30.1.3 Flooring Types - Resident washrooms and spa rooms will have flooring that meets the following requirements:
- 9.30.1.3(1) Homogeneous slip resistant vinyl resilient sheet flooring with studded surface, to ASTM F 970; 2.0 mm total thickness, 2.0 m sheet width.
- 9.30.1.3(1)(a) Use Johnsonite Granit Multisafe, Altro Aquarius, Altro Marine 20 or Authority approved equivalent.
- 9.30.1.3(2) All joints will be hot welded seams with matching colour rods.
- 9.30.1.3(3) All installs will have a 150 mm integral coved base. Cove will be capped.
- 9.30.1.3(4) Flooring adhesive will be a solvent based, low odour product.

- 9.30.1.3(5) Where there is no existing product to butt against, edging will be finished with vinyl finishing strip.
- 9.30.1.4 Flooring Types - Other Flooring
- 9.30.1.4(1) There may be floor surfaces that require specialized application such as Stonehard, poured epoxy, painted concrete or special vinyl. Review these applications on a per application basis.
- 9.30.1.5 Materials and workmanship for flooring will conform to the National Floor Covering Association (NFCA) Specification Standards Manual. US Federal Specification RR-T-650d.
- 9.30.1.6 In selecting flooring materials, consider cleaning and maintenance, pedestrian and rolling traffic, acoustics, infection control, and aesthetics.
- 9.30.1.7 Provide suitable heavy-duty materials for flooring on which wheeled or service vehicle traffic is anticipated and wear and damage may result.
- 9.30.1.8 For flooring in resident and staff areas where cart or stretcher traffic is expected or where cleaning on a regular or emergency basis is necessary, provide flooring of a quality suitable for those purposes.
- 9.30.1.9 Flooring in public, staff, and resident washrooms will be impervious to water and have a slip-resistant finish.
- 9.30.1.10 Resilient tile products will be considered for flooring in service corridors and service areas.
- 9.30.1.11 Resilient Flooring
- 9.30.1.11(1) Slip-resistant sheet vinyl will have a static coefficient of friction of 0.6 on level surfaces and 0.8 on ramps.
- 9.30.1.11(2) Exposed surface will provide anti-bacterial activity against gram-positive and gram-negative micro-organisms. Weld all seams. Wet areas surfaced in sheet flooring will have integral cove bases.
- 9.30.1.11(3) Linoleum sheet flooring will be a homogenous sheet linoleum of primarily natural materials, consisting of linseed oil, wood flour, and resin binders mixed and calendared onto a natural jute backing. Weld all seams. Wet areas surfaced in sheet flooring will have integral cove bases.
- 9.30.1.11(4) Rubber flooring tile will be formulated with 100% virgin elastomers, reinforcing agents, soil-resisting agents, and migrating waxes compounded to create durability, excellent cleaning characteristics, and exceptional slip resistance. Stud



designs will have chamfered edges with a sharply-defined edge at the top for higher slip resistance, easier cleaning, superior maintenance and low vibration design to minimize vibration and noise. Areas surfaced with resilient tile flooring will have rubber bases.

9.30.1.11(5) Provide tactile warning strips and stair nosings to assist the visually impaired.

9.30.1.11(6) Adhesive for resilient flooring will meet or exceed EPA standards for acceptable VOC concentration and emission rates.

### **9.31 09 68 00 - Carpet and Carpet Tiles**

#### 9.31.1 Carpets and Carpet Tiles Performance Criteria

9.31.1.1 Carpet tile is permitted only as set out in Section 5.7.4.12.

9.31.1.2 Carpeting will be certified under CCI/CRI Indoor Air Quality Program and will have CRI/IAQ label and number certifying that the carpeting passed a VOC emission rate of less than 0.6 mg/m<sup>2</sup>/h4.

9.31.1.3 Carpet will maintain static generation at less than 3.5 KV at 21 °C and 20% relative humidity throughout the life of the product.

9.31.1.4 Design carpet to accept wheelchair traffic.

9.31.1.5 Carpet tile must have the Environmentally Preferable Product (EPP) designation from an independent third party.

9.31.1.6 Carpet tile will meet the following requirements: minimum 18 ounce face weight, 100% nylon, level loop, 100% solution dyed, modular size of 610 mm x 610 mm.

9.31.1.7 Texture retention, stain resistance, flame spread and smoke spread ratings will conform to the National Building Code.

9.31.1.8 Backing will contain anti-microbial characteristics to ensure mould and water resistance.

9.31.1.9 Carpet adhesive will be mill applied water based or releasable pressure sensitive type adhesive. Adhesive to meet or exceed the VOC and emission standards for South Coast Air Quality Management District Rule #1168. Carpet adhesive will have a certification number indicating that, with respect to VOC emissions, it meets or exceeds requirements of Indoor Air Quality Testing Program of the Canadian Carpet Institute or the Carpet and Rug Institute (U.S).

9.31.1.10 Provide cementitious underlayment that meets the following requirements: self-levelling and trowel grade, premixed, polymer-modified, containing no

gypsum, not softened by water after final set. Minimum compressive strength 10 MPa at 8 hours and 20 Mpa at 7 days.

- 9.31.1.11 Provide underlayment bond coat that is compatible with releasable pressure sensitive tile to substrate.
- 9.31.1.12 Provide carpet edge guard that meets the following requirements: non-metallic, extruded or molded heavy-duty rubber "T" shaped cap insert and minimum 50 mm wide, aluminum anchorage flange, profiled to accept cap.
- 9.31.1.13 Provide rubber base that meets the following requirements: conform to CAN/CSA A126.5, continuous top set, complete with premoulded end stops and external corners, type 1 rubber, coved, 3.17mm thick, 150 mm high.

### **9.32 09 72 00 - Special Wall Coverings**

#### 9.32.1 Special Wall Coverings Performance Criteria

- 9.32.1.1 Materials and workmanship will conform to the Master Painters Institute (MPI) Architectural Painting Specification Manual (latest edition).
- 9.32.1.2 Consider providing wall coverings on interior walls to satisfy aesthetic considerations beyond the application of paint and create a healing environment in resident areas, a comfortable working environment in staff work areas, and a safe and inviting environment in public areas.
- 9.32.1.3 Wall coverings will not be used in areas that may have excessive moisture present or require high and frequent maintenance.
- 9.32.1.4 Sealers and adhesives will be non-toxic, water-based type and meet requirements of Canadian "Eco Logo" program or equivalent. TVOC emissive content will not be more than 20 grams per litre.

### **9.33 09 84 00 - Acoustic Treatment**

#### 9.33.1 Acoustic Treatment Performance Criteria

- 9.33.1.1 Provide acoustic treatment where sound attenuation, soundproofing or other sound control measures are necessary to create a healing environment for residents and a safe and comfortable environment for staff and where confidentiality is paramount.
- 9.33.1.2 For STC ratings, refer to Appendix 3C [Sound Transmission Ratings].
- 9.33.1.3 Sound control will include:
  - 9.33.1.3(1) attenuation of sound within public, resident and staff environments;
  - 9.33.1.3(2) sound isolation between the exterior and interior spaces;

- 9.33.1.3(3) sound isolation between interior spaces within the Facility at both horizontal and vertical separations; and
- 9.33.1.3(4) sound and vibration isolation of building service noises and sound isolation of building service rooms.
- 9.33.1.4 Partition and ceiling construction will provide approximately the same degree of sound control through each assembly. If Project Co uses a partition for sound isolation, the sound control construction will extend from slab to slab.
- 9.33.1.5 For optimum sound isolation, ensure that the integrity of gypsum board partitions and ceilings (mass) are not violated by vent or grille cut-outs or by recessed cabinets, light fixtures, etc.
- 9.33.1.6 Where penetrations are necessary, minimize placing penetrations back-to-back or next to each other. Stagger electrical boxes and medical gas outlets, preferably by at least one stud space. Use mineral fibre insulation to seal joints around all cut-outs such as electrical, TV and telephone outlets, plumbing escutcheons, recessed cabinets and bathtubs.
- 9.33.1.7 Minimize constructions, such as ducts, rigid conduits, or corridors, that act as speaking tubes to transmit sound from one area to another. Common supply and return ducts will have sound attenuation liners at the diffuser and/or grill to maintain assemblies' STC. Seal conduits.
- 9.33.1.8 To isolate structure-borne vibrations and sound, install 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 and isolate them from the structure with resilient gaskets and sealant where they pass through walls, floors, or other building surfaces.
- 9.33.1.9 Use acoustic screens, vibration isolators and carefully selected exterior equipment to prevent exterior noise that neighbors may find offensive.

#### **9.34 09 91 00 - Painting and Protective Coatings**

- 9.34.1 Painting and Protective Coatings Performance Criteria
  - 9.34.1.1 Materials and workmanship will conform to Master Painters Institute (MPI) Architectural Painting Specification Manual (latest edition). Use only MPI approved products from MPI Approved Product Lists corresponding to the specified finishing systems.
  - 9.34.1.2 Use only materials having a minimum MPI "Environmentally Friendly" E2 rating based on VOC (EPA Method 24) content levels.
  - 9.34.1.3 All paint products will be low or no VOC except paint products to be applied to areas and materials required to have high strength coatings, such as soiled utility rooms and housekeeping rooms.

- 9.34.1.4 Select MPI approved products that participate in the Environmental Choice Program (ECP), including:
  - 9.34.1.4(1) ECP-12-89, Solvent-borne Paints.
  - 9.34.1.4(2) ECP-07-89, Water-borne Surface Coatings.
- 9.34.2 Exterior Surfaces: Unless otherwise indicated, finishes will be as follows:
  - 9.34.2.1 Metal (Ferrous):
    - 9.34.2.1(1) One coat zinc chromate primer.
    - 9.34.2.1(2) Two coats exterior alkyd enamel.
  - 9.34.2.2 Galvanized Steel:
    - 9.34.2.2(1) One coat galvanized metal primer or pretreatment (vinegar pickling) for galvanized steel.
    - 9.34.2.2(2) Two coats exterior alkyd enamel.
  - 9.34.2.3 Woodwork, Natural:
    - 9.34.2.3(1) One coat (dip application) clear primer - sealer wood preservative.
    - 9.34.2.3(2) Two coats colour toned Rez. (where pre-finished, in colour selected by the Authority).
  - 9.34.2.4 Woodwork, Painted:
    - 9.34.2.4(1) One coat clear primer - sealer wood preservative.
    - 9.34.2.4(2) One coat undercoat enamel, exterior.
    - 9.34.2.4(3) One coat exterior alkyd enamel.
  - 9.34.2.5 Woodwork, Varnished:
    - 9.34.2.5(1) One coat oil stain (if requested by the Authority).
    - 9.34.2.5(2) Three coats exterior spar varnish (first and second coat thinned as necessary).
    - 9.34.2.5(3) Note: for open grain wood, apply one coat of paste filler before finish.
  - 9.34.2.6 Concrete, Concrete Block, Etc., Painted:
    - 9.34.2.6(1) One coat pigmented latex sealer and block filler.

- 9.34.2.6(2) Two coats PVA masonry paint.
- 9.34.2.7 Asphalt, Line Marking:
  - 9.34.2.7(1) One coat white Alkyd paint, especially formulated for asphalt.
- 9.34.3 Interior Surfaces: Unless otherwise indicated, finishes will be as follows:
  - 9.34.3.1 Metal (Ferrous):
    - 9.34.3.1(1) One coat zinc chromate primer,
    - 9.34.3.1(2) Two coats interior alkyd enamel.
  - 9.34.3.2 Hot Ferrous Metal (valve bodies, strainers, etc., on high temperature lines):
    - 9.34.3.2(1) One coat primer, heat resistant, aluminum alkyd.
    - 9.34.3.2(2) Two coats interior alkyd enamel.
  - 9.34.3.3 Galvanized Iron (including exposed duct):
    - 9.34.3.3(1) One coat galvanized metal primer or pre-treatment for galvanized iron.
    - 9.34.3.3(2) Two coats interior alkyd enamel.
  - 9.34.3.4 Woodwork, Painted:
    - 9.34.3.4(1) Knotted and stopped.
    - 9.34.3.4(2) One coat Latex Wood Primer.
    - 9.34.3.4(3) Two coats Enviroguard.
  - 9.34.3.5 Woodwork – Enameled:
    - 9.34.3.5(1) Knotted and stopped.
    - 9.34.3.5(2) One coat primer.
    - 9.34.3.5(3) One coat enamel undercoat.
    - 9.34.3.5(4) One coat semi gloss enamel finish.
  - 9.34.3.6 Woodwork – Urethaned:
    - 9.34.3.6(1) One coat natural stain compatible with urethane.
    - 9.34.3.6(2) One coat thinned Diamond Elite - water based urethane.

- 9.34.3.6(3) One coat Diamond Elite, gloss.
- 9.34.3.6(4) One coat Diamond Elite clear finish, semi gloss.
- 9.34.3.7 Plywood Walls – Painted:
  - 9.34.3.7(1) One coat primer.
  - 9.34.3.7(2) One coat enamel undercoat.
  - 9.34.3.7(3) One coat alkyd eggshell enamel finish.
- 9.34.3.8 Plywood Walls – Enameled:
  - 9.34.3.8(1) One coat primer.
  - 9.34.3.8(2) One coat enamel undercoat.
  - 9.34.3.8(3) One coat semi gloss enamel finish.
- 9.34.3.9 Wood Paneling, Etc. (Open Grain) – urethaned:
  - 9.34.3.9(1) One coat natural stain compatible with urethane.
  - 9.34.3.9(2) One coat thinned Diamond Elite - water based urethane.
  - 9.34.3.9(3) Two coats Diamond Elite - water based urethane clear finish, semi gloss.
- 9.34.3.10 Wood Paneling, Etc. (Close Grain) – urethaned:
  - 9.34.3.10(1) One coat of natural stain compatible with urethane.
  - 9.34.3.10(2) Diamond Elite - water based urethane.
  - 9.34.3.10(3) Two coats Diamond Elite - water based urethane clear finish semi gloss.
- 9.34.3.11 Gypsum Board – Painted:
  - 9.34.3.11(1) One coat Latex sealer.
  - 9.34.3.11(2) Two coats Lifemaster 2000, General Paint 2000.
- 9.34.3.12 Gypsum Board - Enameled - High Humidity Area-Shower Rooms, Laundry Rooms, etc.:
  - 9.34.3.12(1) One coat zinc sulphate solution.
  - 9.34.3.12(2) One coat Kem E70WG12 primer,

9.34.3.12(3) One coat Kem Save Lite F80WG18 wet wall enamel.

9.34.3.13 Gypsum Board – Epoxy Paint:

9.34.3.13(1) One coat sealer.

9.34.3.13(2) Two coats semi-gloss epoxy paint.

9.34.3.14 Hardwood Floors – Varnished:

9.34.3.14(1) Three coats polyurethane floor varnish.

9.34.3.15 Concrete Floors – Painted:

9.34.3.15(1) Two coats alkali resistant floor enamel.

9.34.4 Use exterior paints and painting of a quality to protect the substrate materials from weather and climate conditions.

9.34.5 Provide a visually harmonious and aesthetically coordinated appearance across all areas of the Facility.

9.34.6 Exterior and interior finish materials will have surface finishes either as manufactured and integral to the finish material or as applied to the surface of the finish material by paint or special coating.

9.34.7 For exterior and interior materials subject to corrosion from exposure to moisture or other corrosive agents and where painting is deemed to be insufficient protection, provide a special protective coating. Such materials include exterior and interior structural, galvanized, and miscellaneous steel.

9.34.8 In resident, staff, and public interior areas, indoor air quality will be a priority, and paints and paint materials will have a minimal volatile organic compound level.

9.34.9 Interior paint materials will be of a quality to withstand regular or repeated cleaning as the function of the area dictates.

9.34.10 For painted resident areas, use paint with a semi-gloss finish.

9.34.11 Paint handrails, doors and frames a contrasting colour from walls in consideration of the visually impaired.

9.34.12 Use lead-free and mercury-free materials.

## **9.35 10 11 00 - Visual Display Surfaces**

9.35.1 Tackboards and Whiteboards Performance Criteria

9.35.1.1 Provide tackboard surfaces of a type and quality to allow pin penetration of the surface materials and have reasonable resistance to deterioration.

- 9.35.1.2 Provide whiteboard surfaces of a type to allow use of felt-type writing instruments and allow erasing and cleaning with minimal effort.
- 9.35.1.3 Provide tackboards and whiteboards complete with manufactured frames and accessory trays.
- 9.35.1.4 Provide whiteboard writing surfaces that meet the following requirements:
  - 9.35.1.4(1) porcelain ceramic on steel surface;
  - 9.35.1.4(2) magnetic;
  - 9.35.1.4(3) scratch and abrasion-resistant; and
  - 9.35.1.4(4) maximum contrast, glare control, and reflectivity.
- 9.35.1.5 Provide lamination adhesive for tackboards and whiteboards that is non-toxic and water-based.

### **9.36 10 26 00 - Wall Protection**

- 9.36.1 Wall Guards and Corner Guards, Handrails, Wall Protection, Door Edge and Door Frame Protection
  - 9.36.1.1 Wall protection
    - 9.36.1.1(1) Apply wainscoting style sheet wall protection, minimum 0.04" thick with simulated wood grain pattern and suede finish, to wall areas where impact damage is anticipated. All trim and sheet material will be a system.
    - 9.36.1.1(2) Provide wall protection that is high impact stain-resistant, conforms to ASTM G22-97 with anti-microbial additives and is PVC and BPA free.
    - 9.36.1.1(3) Apply sheet wall protection to faces of doors where impact damage is anticipated and may complement the installation of door edge and frame protection.
  - 9.36.1.2 Wall and corner guards
    - 9.36.1.2(1) Provide protection of walls and exposed wall corners in resident areas, service areas and other areas as required to prevent damage due to impact from traffic such as wheelchairs, walkers, equipment and service vehicles.
    - 9.36.1.2(2) Secure wall and corner guards to reinforcing and backing in the walls. Provide wall and corner guards sufficient to withstand expected impact loads.
  - 9.36.1.3 Handrails



- 9.36.1.3(1) Provide handrails in corridors and other ambulatory resident areas appropriate for the residents requiring support.
- 9.36.1.3(2) Handrails will match the wainscoting system, be of wood or have a wood grain appearance with suede finish and meet NBC requirements including 50 mm offset complete with a return to wall single piece end cap.
- 9.36.1.3(3) Provide wall protection handrails and corner guard products that:
  - 9.36.1.3(3)(a) are stain-resistant to pen marks, paint, and graffiti;
  - 9.36.1.3(3)(b) will withstand commercial cleaners without fading or staining; and
  - 9.36.1.3(3)(c) contain anti-microbial additives to retard mildew and bacterial growth.
- 9.36.1.4 Door Edge and Door Frame Protection
  - 9.36.1.4(1) Protect door edges and door frames in resident room areas from damage such as impact caused by the regular movement of wheelchairs.
  - 9.36.1.4(2) Protect door edges and door frames in service corridors and service areas from damage such as impact caused by regular and non-regular service vehicles.
  - 9.36.1.4(3) Provide bumper guards, crash rails, handrails, and corner guards that are high impact-resistant extrusion, conform to ASTM D4226 and contain anti-microbial additive.

### **9.37 10 28 00 - Washroom Accessories**

- 9.37.1 Provide accessories for washroom functions in public, resident and staff washrooms as required. Determine type, size, and number of accessories based on the numbers and categories of users.
- 9.37.2 Staff and public washroom accessories will include:
  - 9.37.2.1 soap dispensers;
  - 9.37.2.2 toilet paper dispensers;
  - 9.37.2.3 electronic hard wired paper towel dispensers;
  - 9.37.2.4 paper towel disposals;
  - 9.37.2.5 mirrors;

- 9.37.2.6 handicap grab bars (with integral tactile grip finish);
  - 9.37.2.7 coat hooks;
  - 9.37.2.8 sanitary napkin dispensers;
  - 9.37.2.9 sanitary napkin disposals; and
  - 9.37.2.10 baby change tables.
- 9.37.3 Resident washroom accessories will include:
- 9.37.3.1 soap dispensers;
  - 9.37.3.2 toilet paper dispensers;
  - 9.37.3.3 electronic hard wired paper towel dispensers;
  - 9.37.3.4 paper towel disposals;
  - 9.37.3.5 mirrors;
  - 9.37.3.6 handicap grab bars (with integral tactile grip finish); and
  - 9.37.3.7 coat hooks.
- 9.37.4 Shower rooms and showers in washrooms will include:
- 9.37.4.1 shower curtain track or rod (for staff showers only);
  - 9.37.4.2 handicap grab bars; and
  - 9.37.4.3 fold-down shower seat.
- 9.37.5 Recessed dispensers (such as those for paper towels, soap, and waste receptacles) will not be used.
- 9.37.6 Accessories will be commercial grade and free from imperfections in manufacture and finish.
- 9.37.7 Washroom accessory and installation will allow cleaning and maintenance of the accessory and surrounding wall area.
- 9.37.8 Fittings will have concealed fastening for security and discouragement of tampering.

**9.38 10 51 00 - Metal Lockers**

- 9.38.1 Provide individual and shared storage facilities in designated staff areas for Facility staff and in accessible secure areas suitable for residents to secure personal effects.
- 9.38.2 Storage facilities may be metal lockers and metal locker systems of sizes, numbers, and groupings as determined in consultation with the Authority.

- 9.38.3 Sheet metal will be galvanized steel conforming to ASTM A653 with ZF001 (A01) zinc coating.
- 9.38.4 Finish for steel surfaces will be polyester baked enamel.
- 9.38.5 Provide single, double, or multiple-tier metal lockers for staff use complete with provision for locking with padlock, number plates and hanging hooks.
- 9.38.6 Provide single, double, or multiple-tier metal lockers for resident or visitor use complete with coin and key-operated locks.

**9.39 10 56 00 - Storage Shelving Systems**

- 9.39.1 Provide storage systems for materials in designated storage areas.
- 9.39.2 Project Co may provide adjustable shelving systems specifically manufactured for storage purposes, such as plywood or steel-slotted angle industrial shelving for bulk materials or plastic laminate-faced plywood for clean storage.

**9.40 11 31 00 - Residential Appliances**

- 9.40.1 Refer to Attachment B [Equipment Data Sheets] of Appendix 2D [Equipment] for appliance specifications.

**9.41 11 73 00 - Resident Lifts**

- 9.41.1 Refer to Attachment B [Equipment Data Sheets] of Appendix 2D [Equipment].
- 9.41.2 Resident room/bathroom X-Y gantry lift system will be minimum 550 lbs capacity.
- 9.41.3 Bariatric resident room and spa X-Y gantry lift system will be minimum 550 lbs capacity.
- 9.41.4 Resident/Public bathroom single track lift system will be minimum 550 lbs capacity.
- 9.41.5 Provide appropriate structural support and electrical power.
- 9.41.6 Coordinate lifts with layout of washroom walls, doors and lighting.

**9.42 12 20 00 - Window Coverings**

- 9.42.1 Window coverings will be supplied and installed by the Authority.
- 9.42.2 Project Co will provide appropriate backing to all window locations.
- 9.42.3 Project Co will provide access to the Authority for installation of window coverings.

**9.43 12 93 00 - Exterior Site Furnishings**

- 9.43.1 Basic Requirements
  - 9.43.1.1 Site furnishings, supplied and installed by the Authority, will consist of benches, garbage containers, bicycle racks, tables and chairs, play

equipment and umbrellas. Specific furniture requirements are set out in this Schedule dealing with each outdoor space.

9.43.1.2 Select products on the basis of:

9.43.1.2(1) safety, comfort and design;

9.43.1.2(2) relation to the building architecture and landscape design, durability and required maintenance;

9.43.1.2(3) accessibility and features designed for those with reduced mobility.

9.43.1.3 Site furnishings will be commercial grade.

9.43.2 Performance Criteria

9.43.2.1 Metal will be stainless steel or cast aluminum or steel with powder coat finish.

9.43.2.2 Wood will be IPE or other long wearing species.

9.43.2.3 Wood alternates for slats or seats will be recycled plastic.

9.43.2.4 Play components, supplied and installed by the Authority, to be CAN / CSA Z614-07 (2012) approved for safety. Manufacturers must be a member of IPEMA (International Play Equipment Manufacturers Association).

9.43.2.5 Project Co will provide safety surface of sand, pea gravel or engineered wood fibre mulch with subsurface drainage. Depth must match design fall height per CSA standards.

#### **9.44 13 17 00 - Therapeutic Tubs**

9.44.1 Refer to Attachment B [Equipment Data Sheets] of Appendix 2D [Equipment] for tub specifications.

### **PART 10. MECHANICAL AND ELECTRICAL SUBGROUP SPECIFICATIONS**

#### **10.1 21 13 00 - Fire Suppression**

10.1.1 Basic Requirements:

10.1.1.1 Design the sprinkler system and equipment to suit the occupancy classification that it protects.

10.1.1.2 Provide on the sprinkler system take-off from water supply an approved detector type double check valve assembly with approved listed OS&Y gate valves on both sides complete with tamper switches, flush and test connections, pressure reducing valves, alarm check valves, dry alarm valves, drain valves, sprinkler pumps and controls, excess pressure pump,

fire department Siamese connection, water motor gong, air compressors and all necessary equipment to provide a complete system. Locate siamese connections where required and as directed by the Governmental Authority having jurisdiction.

- 10.1.1.3 If a fire pump is required, provide an emergency power supply and a transfer switch which is part of the fire pump controller. Mount the package in a separate mechanically attached enclosure to form one assembly, specifically approved for the purpose as a complete unit.
  - 10.1.1.4 Sprinklers subject to freezing temperatures will be supplied by a dry system.
  - 10.1.1.5 Provide quick response sprinklers throughout the Facility, with temperature ratings to suit the specific hazard area.
  - 10.1.1.6 All sprinkler heads in areas subject to damage, such as in the Hospice House, will be of a type that will protect the residents and staff from harm and will be vandal proof.
  - 10.1.1.7 Provide a standpipe system as per code and as requested by any Governmental Authority.
  - 10.1.1.8 All connections for standpipe and Siamese will be Western Canada Thread 2 ½ inch and/or 5 inch Stortz.
  - 10.1.1.9 Locate each fire extinguisher per relevant codes, as approved for the hazard and classification of the space it serves and to the satisfaction of the City inspection department. Provide a Class 'K' fire extinguisher within 5 m of each residence range.
- 10.1.2 Performance Criteria:
- 10.1.2.1 Size all fire protection systems hydraulically to NFPA standards. Obtain a water flow data from the applicable Governmental Authority before proceeding with Design.
  - 10.1.2.2 Ensure all equipment and installation are in accordance with manufacturers' requirements.
  - 10.1.2.3 Provide only ULC approved equipment.
  - 10.1.2.4 Ensure a qualified contractor licensed and regularly engaged in such installations will install all fire protection systems and equipment.
  - 10.1.2.5 Provide backflow protection on all fire protection systems in accordance with CSA requirements.
  - 10.1.2.6 Locate zone shut-off valves so they are visible and accessible from the floor. Do not conceal shut-off valves from view or locate in janitor rooms, storage rooms or stairwells. Monitor all valves controlling water flow.

- 10.1.2.7 Install fire department connections at a location approved by the applicable Governmental Authority. Provide one connection at the main sprinkler tree and multiple connections at outlying buildings as directed by the applicable Government Authority.
- 10.1.2.8 Install standpipe system in semi or fully recessed cabinets consisting of valve only.
- 10.1.2.9 Install fire extinguishers in a semi or fully recessed cabinet to the satisfaction of the City inspection department.

## **10.2 22 10 00 - Plumbing Piping - Site Services:**

- 10.2.1 Provide materials that conform to CSA standards.
- 10.2.2 Provide individual water, fire protection, gas, sanitary and storm services as required and sized to suit the usage needs of the Facility. Provide a separate incoming domestic water line for redundancy. Provide a separate line from a city service line that is opposite to that from which the primary water line is serviced.
- 10.2.3 Provide domestic water service connections. The supply into the Site will have a water meter and reduced pressure backflow preventer and supply will have independent shut-off valves. Inform the Authority of the projected domestic water supply load.
- 10.2.4 Basic Requirements:
  - 10.2.4.1 Provide utilities-commission approved meters for domestic water and natural gas. Refer to Appendix 2C [Energy] for a description of the required sub-metering program.
  - 10.2.4.2 Design the HVAC, plumbing, fire protection, and medical gases systems to:
    - 10.2.4.2(1) minimize disruption to the operation of the Facility during maintenance or repairs; and
    - 10.2.4.2(2) ensure that resident rooms do not need to be entered when performing maintenance or repairs.
  - 10.2.4.3 All isolation, maintenance, balancing and other service valves located in the corridor ceiling spaces or the adjacent mechanical rooms will be accessible from standing or when using a maximum 8-foot tall ladder.
  - 10.2.4.4 Clearly label all systems. Labelling will include painting and labelling of all pipes, ceiling identification dots, valve tagging, directional arrows, color coding bands and emergency valve identification signage.
  - 10.2.4.5 Design and install all fixtures and equipment to manufacturer's specifications and standards.
  - 10.2.4.6 Provide all fixtures and equipment from manufacturers with supply and/or service forces located in close proximity (e.g. Alberta, Saskatchewan).

Replacement and maintenance parts must be stocked locally or readily available.

- 10.2.4.7 Ensure delivery of water supplies at the required pressures to all water outlets.
  - 10.2.4.8 Provide durable materials to allow for 24 hour a day operation with minimal downtime.
  - 10.2.4.9 Consideration should be given to easy access and serviceability and avoiding interference with other services.
  - 10.2.4.10 Provide floor drains on all mechanical floors and showers. Floors will slope to all drains.
  - 10.2.4.11 Provide backflow preventers on the incoming water service as well as at equipment source connections where required by code.
  - 10.2.4.12 Provide interceptors as required by the applicable Governmental Authority guidelines to intercept oil, grease, dirt and solids.
  - 10.2.4.13 Provide a domestic water strainer at the incoming service into the building.
  - 10.2.4.14 If a water booster pump is required, ensure it is designed with 100% redundancy and emergency power capability to provide uninterrupted water service and pressure in the event of malfunction, maintenance, or power loss.
- 10.2.5 Performance Criteria:
- 10.2.5.1 Design all drainage systems such that the system connects to the Site services. Designs will utilize gravity drainage where possible.
  - 10.2.5.2 In the case where pipe foundations are used to support the structure, support all under-slab piping hung from the concrete slab above. Provide hangers and rods of sufficient strength and installed at intervals sufficient to carry the pipe and load, at the required slope. Hangers and rods will be corrosion resistant. Install light-weight fill above all piping that is supported (hung) from the concrete slab above.
  - 10.2.5.3 If a pumping system is required for subsurface, storm, or sanitary drainage, then the design will include 100% redundancy with equipment on emergency power such that the system does not flood the mechanical space in which it is housed. The sump will have twin compartments, a settling and a pumping compartment, and will be sized to prevent short cycling of the pump. Provide alarm points for high water and pump failure.
  - 10.2.5.4 Insulate storm drainage, domestic water piping, and exposed p-traps throughout as per TIAC quality standards. Where piping and / or piping components are subject to freezing, provide insulation and heat tracing on

life-safety systems. Provide monitoring and an alarm to detect heat trace system malfunction or service disruption. Ensure that heat trace systems on life-safety systems are on emergency power.

- 10.2.5.5 Design all plumbing drainage to limit or remove blockage, such as clothing, from the piping system.
- 10.2.5.6 Provide flushing and disinfection of domestic water systems. Provide independent testing of piping systems once flushing and cleaning has been completed.
- 10.2.5.7 Provide automatic trap primers in drains.

### **10.3 22 11 00 - Domestic Hot and Cold Water Systems:**

#### 10.3.1 Basic Requirements:

- 10.3.1.1 All piping 75mm and smaller will be copper pipe, Type L with wrought or cast couplings and fittings conforming to ASTM B88-03. All hot water recirculating pipe will be copper pipe, Type K. Joints are to be made with 95-5 tin-antimony or tin-silver solder.
- 10.3.1.2 All valves will be rated for 860 kPa WSP or 1380 kPa non-shock WOG with bronze body.
- 10.3.1.3 Drain valves and blow off valves will be rated for 4,137 kPa WG 19mm ball valves with bronze body.
- 10.3.1.4 Hose-bibbs will be rated for 1,380 kPa non-shock bronze body and 19mm garden hose thread.
- 10.3.1.5 Storm and sanitary piping below grade will be cast iron or PVC to SDR standards acceptable to the authority having jurisdiction. ABS piping is not acceptable.
- 10.3.1.6 Storm and sanitary piping above grade will be as per smoke and fire ratings of the NBC 2010. ABS piping is not acceptable.
- 10.3.1.7 Domestic hot and cold water demand will be calculated in accordance with ASPE Plumbing Engineering Design Handbook.
- 10.3.1.8 Provide a central domestic hot water storage tank in the Support Services Centre of sufficient size to supply the hot water demand for the site. Allow for 20% expansion.
- 10.3.1.9 Domestic hot water will be of adequate temperature to serve the needs of the Facility at not less than 60°C. Provide mixing valves where temperatures are required to be less than 60°C at point of use.
- 10.3.1.10 Provide domestic hot water and cold water systems for each Residential Care Building, the Services Building, Adult Day Program and Community



Centre, each supplying sufficient hot and cold water to serve the needs of each space with isolation valves for each building located in a reasonably accessible location.

- 10.3.1.11 Design domestic hot water systems with sufficient capacity and recovery rate.
  - 10.3.1.12 Design domestic hot water system with a circulation system to ensure timely delivery of hot water at every hot water outlet on demand, in accordance with CSA 317.1-09.
  - 10.3.1.13 Provide a soft water system with sufficient capacity to service the hot water requirements for the laundry rooms, dishwashers and spa tubs located throughout the Facility.
  - 10.3.1.14 Design domestic water systems to prevent growth and spread of legionella bacteria within the tanks, piping, fixtures, or any other component. Acceptable design methods include eliminating dead-leg piping and minimizing uncirculated piping by connecting the circulation system as close as possible to fixtures.
  - 10.3.1.15 Insulate all piping as per TIAC. Insulation will meet fire and smoke ratings as per CAN/ULC-S102. Insulation thickness will be as per ASHRAE 90.1.
- 10.3.2 Performance Criteria:
- 10.3.2.1 Provide two distribution systems, one for high temperature and one for tempered domestic hot water. Distribute:
    - 10.3.2.1(1) high temperature, softened domestic hot water at 60°C to each laundry area, spa room tub and dishwasher; and
    - 10.3.2.1(2) tempered domestic hot water to resident suites and public areas through mixing valves at a temperature not less than 43°C and not greater than 48°C.
  - 10.3.2.2 Recirculate domestic hot water from the distribution system(s) back to the generating equipment.
  - 10.3.2.3 Monitor hot water supply temperatures via the BMS system and provide alarm outputs when the temperature exceeds the design setpoint.
  - 10.3.2.4 The domestic hot water generating equipment will meet the energy efficiency requirements of ASHRAE 90.1.

#### **10.4 22 40 00 - Plumbing Fixtures:**

- 10.4.1 Basic Requirements:
  - 10.4.1.1 Provide plumbing fixtures suitable for use in a long term care facility. Select fixtures with proven acceptable performance from previous installations.

- 10.4.1.2 Barrier-free plumbing fixtures and fittings will be suitable for use in a long term care facility.
- 10.4.1.3 Provide anti-splash fittings (i.e. Laminar flow) that do not retain air in all areas.
- 10.4.1.4 Fixtures will not have an overflow.
- 10.4.1.5 For public washrooms, provide elongated and low-consumption toilets that have an open front seat with dual flush tank operation and are suitable for the intended use.
- 10.4.1.6 For washrooms in resident rooms, provide elongated and low-consumption toilets that have an open front seat with manual flush tank operation and are not less than 420 mm from the floor or more than 430 mm.
- 10.4.1.7 Provide wall-hung and low-consumption urinals for public washrooms. They will have electronic hands-free flush valve operation.
- 10.4.1.8 Provide public washroom lavatory fixtures made of an impervious, durable material. They will have electronic hands-free type faucets with single temperature supply. Lavatories will not have an overflow.
- 10.4.1.9 Provide resident washroom lavatory fixtures made of an impervious, durable material. They will have electronic hands-free type faucets with single temperature supply. Lavatories will not have an overflow.
- 10.4.1.10 Provide staff hand wash sinks made of stainless steel or suitable material. They will have electronic hands-free type faucets with single temperature supply and gooseneck spouts. Hand wash sinks will not have an overflow.
- 10.4.1.11 Showers will have pressure compensated thermostatically controlled valves. Shower heads will be equipped with a shut off valve to turn water off and on without shutting the main valve off.
- 10.4.1.12 Showers will have a single floor drain in the middle of the shower area and the floor is to slope to the drain with a minimum 2% slope. There will be no shower base.
- 10.4.1.13 Plumbing fixtures will be products that will prevent undue harm or damage to the building and/or occupants.
- 10.4.1.14 Toilets should be of a type suitable for use with portable bariatric commode chairs if required.
- 10.4.1.15 Provide suitable quantities of janitors' sinks, hose bibs and eye wash stations to provide sufficient service to the Facility.
- 10.4.1.16 Provide for eyewash stations in the soiled utility rooms and the maintenance shop. Provide for emergency shower in the maintenance shop.

- 10.4.1.17 Provide for spa tubs to be located in each spa room of the Residential Care Buildings and in the Adult Day Program. Refer to Attachment 2 [Equipment Data Sheets] to Appendix 2D [Equipment and Furniture] for spa tub type.
- 10.4.1.18 Provide 20mm exterior non-freeze hose bibs to allow for manual watering of grounds. Provide for connection to landscape irrigation complete with required backflow. Refer to Section 11.7 (32 84 10 – Landscape Irrigation) and Section 11.7.1.3 for requirements.

10.4.2 Performance Criteria:

- 10.4.2.1 Provide isolation valves for all individual rooms for all plumbing services. Clearly identify all valves.
- 10.4.2.2 For sinks in island type counter tops, provide accessible cleanouts as required by the plumbing code. Provide accessible clean-outs for all other sinks and lavatories (and future sinks and lavatories) above the flood-level rim of the sink.
- 10.4.2.3 Construct working mock-ups of all sinks with gooseneck faucets for the Authority's review.
- 10.4.2.4 Select toilets with special attention to reducing spread of infection. Size flush tanks suitably for the water consumption of the bowl. Toilet bowls will not splash or spray water onto the toilet rim or anywhere outside of the toilet bowl and will be designed to minimize the aerosolization of the toilet contents.
- 10.4.2.5 Hardwire all electronic sensor-activated fixtures.
- 10.4.2.6 Provide pressure reducing valves with 100% redundancy in accessible locations if system pressure exceeds acceptable delivery pressure.

**10.5 22 60 00 - Medical Gas Systems:**

10.5.1 Basic Requirements:

- 10.5.1.1 Provide medical gases for each resident room of the Hospice House. In each resident room, provide oxygen, medical air and medical vacuum outlets at the bed head location.
- 10.5.1.2 Project Co will design and construct the Facility so that oxygen, medical air and medical vacuum are supplied:
  - 10.5.1.2(1) from the main medical gas system located within the Cypress Regional Hospital through the Hospital Link; or
  - 10.5.1.2(2) from oxygen tanks, an air compressor or vacuum pump (as applicable) located in the Services Building.

Project Co is responsible to independently verify whether using the supply of medical gases from the Cypress Regional Hospital medical gas systems will be adequate for the purposes of the Facility.

- 10.5.1.3 All pipe and pipe fittings will be in accordance with ASTM 88, de-greased copper Type 'L'.
- 10.5.1.4 Service Outlets:
  - 10.5.1.4(1) Provide recessed service outlets boxes designed for concealed piping and fabricated for straight insertion of secondary equipment.
  - 10.5.1.4(2) Each recessed wall outlet will have a permanently marked, colour-coded non-interchangeable index system so 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.
  - 10.5.1.4(3) Provide 2-part DISS type outlet connections for each medical gas.
  - 10.5.1.4(4) Incorporate the service outlets into a head board for each bed.
- 10.5.1.5 Ball type shut off valves will be U.L. listed with a label showing the appropriate gas service & pressure rating. Valves will swing out during installation and have a quarter turn from full open to close.
- 10.5.1.6 House the zone shut off valves in a single box with multiple shut off valves with tube extensions, lexan glass door with hinges and pull out opening ring. Provide pressure / vacuum gauges for each service.
- 10.5.2 Performance Criteria:
  - 10.5.2.1 Install all medical gas piping in the Facility in accordance with CSA standards. All medical gas piping connection from the Cypress Regional Hospital will be certified to CSA Z305.1-92.
  - 10.5.2.2 Design the system such that the zone shut off system is located within the central area of the Hospice House.
  - 10.5.2.3 Identify all medical gas piping in normally inaccessible areas (e.g. behind walls and boarded ceilings).
  - 10.5.2.4 Provide a BMS alarm interface signal to the central DDC system for critical alarms such as low or high pressure.
  - 10.5.2.5 All on-site storage of medical gases will conform to CSA Standards.

- 10.5.2.6 All piping, valves and filters will be factory cleaned and capped or sealed to prevent contamination.
- 10.5.2.7 All local valve boxes and alarm panels will conform to CSA Standards.
- 10.5.2.8 Provide a combination area alarm/zone valve panel to monitor all medical gas functions. Locate panel in area that receives 24 hour continuous human monitoring.
- 10.5.2.9 Connect combination area alarm/zone valve panel to the BMS in compliance with all applicable codes.
- 10.5.2.10 Ensure all medical gas systems are certified in accordance with CSA standards by an independent testing agency.
- 10.5.2.11 Clean all medical gas outlets and piping systems in accordance with CSA standards.
- 10.5.2.12 All systems components requiring electrical power will be on emergency power.
- 10.5.2.13 Provide medical gas outlets that conform to CSA and the Facility requirements.

## **10.6 23 00 00 - Heating, Ventilating and Air Conditioning**

### **10.6.1 Heating Basic Requirements**

- 10.6.1.1 Provide a central heating plant located in the Services Buildings to service the entire Facility. Provide sufficient back-up capacity so that there is no noticeable difference in operation in the event of failure of a boiler or other lead equipment.
- 10.6.1.2 Supply sufficient space heating capacity to meet the required indoor design temperatures outlined in CSA Standards while using the January 1% outside design temperature outlined in the National Building Code.
- 10.6.1.3 Size the heating equipment to meet the maximum simultaneous demand for all systems served by the heating plant. Heating equipment must be capable of controlling and responding to periods of low usage.
- 10.6.1.4 The distribution system will utilize a primary /secondary pumping arrangement with variable speed pumps.
- 10.6.1.5 Supply the Services Building, Community Centre and Adult Day Program buildings on one heating supply zone. Supply all Residential Care Buildings from a separate heating supply zone. Each zone will be complete with duty/standby variable speed pumps. .

## 10.6.2 Heating Performance Criteria

- 10.6.2.1 Provide hot water heating for the Services Building, Adult Day Program and Community Centre. Heating will be as unobtrusive as possible. Provide high output cabinet unit heaters in vestibules and at entrances. Horizontal unit heaters may be used in open areas such as storage and maintenance shops.
- 10.6.2.2 Provide heating in corridors connecting Residential Care Buildings such that the heating units will not obstruct or be prone to damage by wheelchair traffic.
- 10.6.2.3 Provide in-slab heating for all the Residential Care Buildings with the following criteria:
- 10.6.2.3(1) locate zone manifolds for in-slab heating in locations that are not accessible to residents or staff (such as mechanical rooms);
  - 10.6.2.3(2) provide sufficient zones for optimal resident comfort;
  - 10.6.2.3(3) provide separate temperature control and thermostats for:
    - 10.6.2.3(3)(a) those areas with southern exposure as opposed to northern exposure; and
    - 10.6.2.3(3)(b) each resident room,
 for control of the in-slab heating;
  - 10.6.2.3(4) ensure thermostats are not located next to an area with very different temperature from the area in which it controls;
  - 10.6.2.3(5) utilize a four-way control valve from the heating mains complete with duty/standby variable speed pumps on the downstream side of the four-way valve.
- 10.6.2.4 Boilers will operate at a minimum AFUE efficiency of 85% at all firing rates.
- 10.6.2.5 Provide adequate expansion compensation for heating piping throughout the system. Location of anchors and guides, design of expansion compensation loops and selection of expansion compensation devices will be based upon a thorough review of piping layout and piping stress analysis.
- 10.6.2.6 Equip all high points in piping with air removal devices such as air collection chambers and air vents.

- 10.6.2.7 Install equipment and piping with adequate service space, access panels and the ability to remove equipment from the building for servicing or replacement.
  - 10.6.2.8 Provide isolation valves, unions and bypass piping to allow for equipment isolation and removal without unduly affecting the system operation or major drain down.
  - 10.6.2.9 Provide balancing valves, flow-measuring devices, temperature and pressure sensors throughout the system to facilitate system balancing.
  - 10.6.2.10 Select pumps to operate at the system fluid temperature without vapour binding and cavitation, be non overloading in parallel or individual operation, and operate within 25% of the mid point of published maximum efficiency curve.
  - 10.6.2.11 Pipes will conform to ASTM. A53, schedule 40, black steel, plain ends for 65 mm and larger, threaded for 50 mm and smaller. Grooved piping may be used.
  - 10.6.2.12 Valves will be cast iron for 65 mm and larger and bronze for 50 mm and smaller.
  - 10.6.2.13 Pump construction and installation will permit complete pump servicing without breaking piping or motor connections.
  - 10.6.2.14 Locate services that require regular maintenance access above non-critical spaces such that there is minimal to no disruption to the residents or services.
  - 10.6.2.15 Insulate all heating water piping, equipment and accessories to TIAC and ASHRAE Standards.
  - 10.6.2.16 Utilize screw fittings for 50 mm piping and smaller and welded or grooved fittings for 65mm piping and larger.
- 10.6.3 Air Conditioning Design Principles:
- 10.6.3.1 Design space cooling system with a capacity sufficient to meet the required indoor design temperatures outlined in CSA Standards while using the July 2.5% outside design wet and dry bulb temperatures outlined in the National Building Code.
  - 10.6.3.2 Utilize 100% outdoor air for free cooling as the first means of space cooling.
  - 10.6.3.3 Each Residential Care Building will be zoned such that control will be of like areas, for example, south zone, east zone, west zone, interior, etc..
  - 10.6.3.4 Provide a central cooling system for the air handling equipment that ventilates the Services Building, Adult Day Program, corridors and Community Centre buildings.

#### 10.6.4 Air Conditioning Performance Criteria

- 10.6.4.1 Ensure no air within the air conditioning system, outside of the central air handling equipment, drops below its dew point temperature.
- 10.6.4.2 CFC and HCFC based refrigerants will not be used in the refrigeration equipment.
- 10.6.4.3 Locate condensing units to ensure minimum disturbance to residents for visual and/or sound.
- 10.6.4.4 Install refrigeration piping in an orderly manner. Insulate piping in accordance with TIAC.
- 10.6.4.5 Provide all necessary refrigeration components to provide a complete and working system.
- 10.6.4.6 Install equipment and piping with adequate service space, access panels and the ability to remove equipment from the building for servicing or replacement.
- 10.6.4.7 Locate services that require regular maintenance access above non-critical spaces such that there is minimal to no disruption to the residents or services.

#### 10.6.5 Ventilation Design Principles:

- 10.6.5.1 Design the heating, ventilation and air conditioning (HVAC) system in accordance with CSA Z317.2-10, with exceptions as indicated:
  - 10.6.5.1(1) to provide a comfortable internal environment for the residents and staff and meet the required environmental conditions for the equipment; temperature in all resident areas is to be maintained within 22 degrees Celsius to 25 degrees Celsius;
  - 10.6.5.1(2) to maintain appropriate pressure relationships between various areas of the Facility and provide necessary air filtration, cleansing and exhaust to control the transmission of infection from one Residential Care Building to another;
  - 10.6.5.1(3) and all components in accordance with ASHRAE Standards;
  - 10.6.5.1(4) to provide the minimum filtration levels as described in ASHRAE Standards;
  - 10.6.5.1(5) to provide each resident bedroom with ventilation as per the National Building Code to ensure no cross contamination;



- 10.6.5.1(6) to provide steam generated humidification on each air handling system to meet the minimum requirements of ASHRAE Standards; and
  - 10.6.5.1(7) the following rates will be used for determining air flow for the resident rooms: four air changes per hour with two air changes per hour of outside air; or six air changes per hour if 100% outside air is not used; or if 100% outside air is used then three and a half air changes per hour may be used.
- 10.6.5.2 Design the heat recovery unit to provide the required ventilation rates for outside air and exhaust air in accordance with ASHRAE Standards.
- 10.6.5.3 Ensure the ventilation rates for all spaces in the Facility meet the design requirements described in ASHRAE. If a space is not listed, ventilation rates will comply with the applicable standards and codes.
- 10.6.5.4 Provide factory fabricated air handling equipment to ensure the highest construction standard. No Site built-up units will be allowed.
- 10.6.5.5 Design for exhaust air from areas of high humidity and where required by the National Building Code and authorities having jurisdiction.
- 10.6.5.6 Provide for exhaust connections from clothes dryers.
- 10.6.6 Ventilation Performance Criteria
  - 10.6.6.1 The Facility design will incorporate a strategy to install and remove major building equipment such as fans, etc.
  - 10.6.6.2 Locate fans, common filters and other equipment in mechanical rooms. Allow for adequate clearance for service access. Provide second stage filtration on the downstream side of the supply air fan of each air handling system. Ensure that installation is located to avoid wetting from the humidifier.
  - 10.6.6.3 Fans, common filters and other equipment for Adult Day program, Services Building, Community Centre and their connecting corridors will be independent of fans, common filters and other equipment for Residential Care Buildings and Neighbourhood Hubs and their connecting corridors.
  - 10.6.6.4 Locate all supply air, return air and general exhaust air systems in interior mechanical rooms free from exposure to the elements.
  - 10.6.6.5 Design the fresh air intakes, cooling coil drain pans, air handling units, duct mounted humidifiers, 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.

- 10.6.6.6 Locate fresh air intakes so that intakes do not entrain contaminants from outdoor sources. Locate all intakes in areas not accessible by the public.
- 10.6.6.7 All supply, return, and exhaust air will be fully ducted to the space being served.
- 10.6.6.8 Locate services that require regular maintenance access such that there is minimal to no disruption to the residents.
- 10.6.6.9 Provide ventilation requirements, fuel filling and exhaust for emergency generator as per manufacturers recommendations and to applicable codes.
- 10.6.6.10 Provide a free standing range hood to match the kitchen range vented to the exterior.
- 10.6.7 Sound Attenuation and Vibration Isolation Design Principles:
  - 10.6.7.1 Design all mechanical systems to prevent sound and vibration transmission between spaces and from mechanical equipment to the spaces, and to maintain sound to levels as per design standards. Design mechanical systems located at or near a building exterior to minimize sound transmission to the neighbouring residential community.
  - 10.6.7.2 Provide vibration isolation devices on all equipment with rotating components.
  - 10.6.7.3 All hung equipment will utilize spring isolators designed for the weight and vibration characteristics of the equipment.
  - 10.6.7.4 Provide flexible connectors on all pump, duct and wiring connections to isolated equipment.
  - 10.6.7.5 Performance Criteria
    - 10.6.7.5(1) Utilize fibre-free internal insulation.
- 10.6.8 Testing, Adjusting, Balancing (TAB)and Commissioning:
  - 10.6.8.1 Without limiting Project Co's obligations under Schedule 2 [Design and Construction Protocols], Project Co will:
    - 10.6.8.1(1) demonstrate to the Authority that the mechanical and electrical systems are substantially operational by testing, adjusting, balancing and commissioning the systems in accordance with CAN/CSA Z317.1-09, CAN/CSA Z317.2-10 and CAN/CSA Z318.0-05 Commissioning of Health Care Facilities; and
    - 10.6.8.1(2) retain complete records of all TAB and commissioning data and provide the Authority with a copy of the final documents for review.

**10.7 25 00 00 - Integrated Automation**

## 10.7.1 Controls Design Principles:

10.7.1.1 Provide a Building Management System (BMS) that will perform the following functions:

- 10.7.1.1(1) automatically operate, monitor and manage the building mechanical systems to provide a high level of occupant comfort and maintain a healthy and productive environment without disruption to the residents and staff;
- 10.7.1.1(2) display building related alarms at the management control centre;
- 10.7.1.1(3) provide a form of external monitoring for the Authority including all associated hardware and software;
- 10.7.1.1(4) meter and trend data related to flow of electrical power, natural gas and domestic water to the Facility as required to monitor energy performance; and
- 10.7.1.1(5) interface with the building electrical and communication systems including fire alarm, lighting, UPS and emergency power systems for monitoring, control and alarming.

10.7.1.2 Ensure that the BMS system:

- 10.7.1.2(1) is non-proprietary and designed with open protocol;
- 10.7.1.2(2) will optimize the system performance under all operating conditions to minimize the Facility energy usage;
- 10.7.1.2(3) configuration will accommodate future technological changes;
- 10.7.1.2(4) architecture will permit expansion;
- 10.7.1.2(5) controls system are designed to allow monitoring and operation of the entire building from a single location or remote Internet connection;
- 10.7.1.2(6) is completely integrated (front-end and back-end) with Native BacNET DDC system;
- 10.7.1.2(7) is an independent system separate from the building fire alarm and other control systems;
- 10.7.1.2(8) is capable of expanding in scope and size with future Facility renovations; and

10.7.1.2(9) is comprised of complete package from one manufacturer, not a composite system from several manufacturers.

## 10.7.2 Performance Criteria

- 10.7.2.1 Zoning for HVAC systems will be based on occupancy, room location within the building, room orientation and thermostatic room loads. Provide for individually zoned heating and proportionally modulated temperature control for each resident bedroom.
- 10.7.2.2 Hardwire fail-safe components to provide reliable operation in all circumstances.
- 10.7.2.3 The BMS will meter and trend all data related to the flow of services into and out of the Buildings including domestic water, various medical gas lines, natural gas and electricity.
- 10.7.2.4 The BMS will monitor, control, indicate alarms and provide trending where applicable for all connected sensors and control points.
- 10.7.2.5 Connect the BMS to emergency power.
- 10.7.2.6 The BMS will monitor critical alarms for essential Building and life safety systems. These alarms will notify the Authority as well as the building's master control centre. These critical alarms include:
- 10.7.2.6(1) fire alarm system for alarm, supervisory and trouble;
  - 10.7.2.6(2) all temperature alarms resulting from set point deviations;
  - 10.7.2.6(3) medical gas system high and low pressure alarms; and
  - 10.7.2.6(4) all alarms relating to the fire protection system.
- 10.7.2.7 The BMS system will control all public area lighting such as parking lots, walkways, exterior signage, and corridor and lobby lights located in areas not occupied 24 hours per day. Exterior lighting will include an input for photocell over-ride.
- 10.7.2.8 The BMS documentation will include a detailed narrative description of the sequence of operation of each system.
- 10.7.2.9 User interface will be graphical in nature with animated graphics to indicate equipment operation. Graphics will be grouped in systems and in departments.

## 10.8 26 05 00 - Electrical General

### 10.8.1 Basic Requirements

- 10.8.1.1 Provide complete and fully operational electrical systems with redundancy.

- 10.8.1.2 Install electrical systems in compliance with C22.1-12 Canadian Electrical Code, 2012 and all Sask Power requirements and regulations.
- 10.8.1.3 Provide all electrical systems and equipment required for the function of each identified program and configure system and equipment with due regard for the details of delivery of the programs. Coordinate all electrical or systems interfaces with all other divisions that will provide devices identified in this Schedule.
- 10.8.1.4 Design and install systems and equipment using the latest equipment and technology available by the manufacturers at time of construction.

#### 10.8.2 Performance Criteria

- 10.8.2.1 Design the installation to occupy available space economically, leaving space for future additions, and to facilitate easy access to other systems and equipment, including mechanical equipment, building systems access ways and architectural building components which may require periodic inspection or maintenance.
- 10.8.2.2 Incorporate redundancy into systems and equipment such that the failure of a single piece of major equipment or major conductor will not impair the operation of the Facility.
- 10.8.2.3 Design and construct the protection, grounding and/or isolation, insulation and control of all circuits and systems to address the functional requirements of the locations in which they are installed.

### 10.9 26 05 19 - Wiring Methods and Materials

#### 10.9.1 Basic Requirements

- 10.9.1.1 Wiring methods and materials will result in safe reliable and flexible electrical power, control, communication, data and life safety systems in the Facility.
- 10.9.1.2 All wiring and cables will be neatly run and properly supported in such a way that it is protected from damage and is not in conflict with mechanical or architectural components of the Buildings.
- 10.9.1.3 Apply common industry wiring methods for installation in wood frame construction where inaccessible drywall ceilings and partitions are provided throughout the Standard Residential Homes, Hospice House and Adult Day Program areas. In the Community Centre and Services Building, wiring methods will accommodate additions, removals and relocations within the Facility for the projected working life of the Buildings.
- 10.9.1.4 All goods and materials for the Facility will be new and carry a CSA approval seal. Equipment and materials will be CSA certified. Where there is no alternative to supplying equipment that is not CSA certified, obtain special

approval from the Authority and the Sask Power Electrical Inspections Department.

## 10.9.2 Performance Criteria

- 10.9.2.1 All conductors will be copper, minimum No. 12 gauge. All conductors #12 AWG to #8 AWG will be rated for minimum 600-volt RW90 XLPE. Conductors #6 AWG and larger will be rated for minimum 1000 volt RW90 XLPE. All conductors from variable frequency drives will be rated for minimum 1000 volt RW90 XLPE. Conductors and conducting components larger than 100 amps may be aluminum.
- 10.9.2.2 Feeders for electrical equipment will run in conduit. Teck90 armoured cable may be run only where building construction does not allow access for installation of junction boxes and pull boxes.
- 10.9.2.3 Branch circuit wiring will be run in non-metallic-sheathed cable in the wood frame construction unless otherwise noted herein.
- 10.9.2.3(1) Hospice House: Branch circuit wiring will be run in AC90 ISO BX armoured cable in the resident rooms, palliative care rooms and therapy rooms of the Hospice House identified as Intermediate Care Areas (as defined in the Canadian Electrical Code, Section 24 – Patient Care Areas).
- 10.9.2.3(2) If a Building is constructed of non-combustible steel structure frame, branch circuit wiring will be run in conduit or AC90 BX armoured cable.
- 10.9.2.4 Provide 2-hour rating for essential life-safety equipment to maintain protection of conductors feeding fire alarm equipment, and fire pump if required.
- 10.9.2.4(1) Run electrical cables listed by the ULC-S139, "Fire Test for Evaluation of Integrity of Electrical Cables"; or
- 10.9.2.4(1) provide the 2-hour protection to conductors using construction methods as allowed by the National Building Code with approval by the local Government Authority having jurisdiction.
- 10.9.2.5 Size all wiring in compliance with the Canadian Electrical Code. Voltage drop will not exceed 3% for feeders or branch circuit wiring and will be within 5% from the supply side of the consumer's service (or equivalent) to the point of utilization.
- 10.9.2.6 Conceal wiring and wiring support systems from public view unless otherwise approved by the Authority.

- 10.9.2.7 Protect all wiring from mechanical damage throughout each wiring system. Prevent entry or accumulation of moisture into any wire, cable or wire way.
- 10.9.2.8 Separate wiring for systems of different voltages and from different sources of supply and ensure they are not run in common systems. Prevent interference between wiring of power supply systems and wiring of data and communication systems by maintaining adequate separation and shielding throughout.
- 10.9.2.9 Consider ease of maintenance and continuous service to the clinical operations such that maintenance and repair of the wiring systems do not cause or require major service disruptions in the building.
- 10.9.2.10 Clearly label all conductors and cables at both ends.
- 10.9.2.11 Identify all pull boxes, junction boxes and conduits with purpose-manufactured durable and clearly legible marking to identify the function and voltage of the system.
- 10.9.2.12 Enclose outlet boxes in plastic pan when installed in a wood framed ceiling or wall where boxes pierce a plastic vapour barrier. Seal around pan and plastic vapour barrier with acoustic sealant to ensure vapour tight installation.
- 10.9.2.13 For outlet boxes in partitions between sleeping rooms, provide a separation between boxes for sound transmission control.
- 10.9.2.14 Install fire stopping at all fire separations and at any locations required by any applicable code or by the applicable Governmental Authority.

## **10.10 26 05 26 - Grounding and Bonding**

### 10.10.1 Basic Requirements

- 10.10.1.1 Ground electrical equipment and wiring in accordance with C22.1-12 Canadian Electrical Code, CAN/CSA Z32-09 Electrical Safety and Essential Electrical Systems in Health Care Facilities, and the requirements of applicable Governmental Authorities.
- 10.10.1.2 Grounding and bonding in all resident rooms, palliative rooms and therapy rooms in Intermediate Care areas of the Hospice House will comply with CAN/CSA Z32-09 and C22.1-12 Canadian Electrical Code, Section 24 - Patient Care Areas.

### 10.10.2 Performance Criteria

- 10.10.2.1 All conductors and all conducting components of electrical equipment which form part of the grounding and bonding systems in the Facility will be of non-alloyed copper.
- 10.10.2.2 Provide solid or low resistance system grounding.

- 10.10.2.3 Provide equipotential grounding systems and equipment for all Intermediate Care areas.
- 10.10.2.4 Provide resident care environment bonding point at each resident sleeping bed location in the Hospice House for bonding of communication system devices, medical gas lines and other non-current carrying items located within 1500 mm of the bed. Locate the isolated ground buss in a readily accessible location within the room.

## **10.11 26 05 33 - Raceways**

### 10.11.1 Basic Requirements

- 10.11.1.1 For the purpose of this specification, the word “raceway” will have the same meaning as defined in the Canadian Electrical Code, Section 0.
- 10.11.1.2 Provide raceways for wiring and cabling to support, protect and organize wiring and cabling systems throughout the Facility.
- 10.11.1.3 Design and install raceways to provide ease of access and capacity for expansion and change that is consistent with the requirements of the equipment and systems that they serve.

### 10.11.2 Performance Criteria

- 10.11.2.1 Provide separate raceways for cables and conductors of different voltages or system types.
- 10.11.2.2 Cable trays will have space for installation of a minimum of 30% additional capacity in future cables.
- 10.11.2.3 Plan raceways to facilitate easy access to other systems and equipment including mechanical equipment, building systems access ways and architectural building components which may require periodic inspection or maintenance.
- 10.11.2.4 Design and install raceways without sharp edges or sharp bends so that cables can be pulled in or laid in and removed without damage to the cables. Observe manufacturer’s maximum bend radii.
- 10.11.2.5 Bond all metallic raceways continuously with a bonding conductor installed within the raceway.

## **10.12 26 20 00 - Transmission and Distribution**

### 10.12.1 Basic Requirements

- 10.12.1.1 Provide electrical power of the voltage, current and phase(s) required, from the main sources of supply, to each load requiring supply of power and to convenience and special purpose outlets designed to meet all requirements for operation of the Facility.



- 10.12.1.2 Design the transmission and distribution equipment and system to be robust, reliable, easily operated and maintained and with extra capacity to accommodate load growth and equipment additions.
- 10.12.1.3 Provide distribution equipment of “specification grade” and “industrial” quality, not of a “light duty”, “commercial” or “residential” quality.
- 10.12.1.4 Group major electrical equipment, including transformers, main distribution centres, transfer switches, motor control centres and power factor correction equipment, together in a configuration that allows for addition or expansion of each type of equipment and is a logical arrangement in terms of the interconnection, operation and maintenance of the equipment. The main breaker on the incoming feeder will be a full draw-out power air circuit breaker.
- 10.12.1.5 Locate major electrical equipment with the intention of minimizing run length of feeders and branch circuits, and so as to provide a clean, dry, safe, accessible installation protected from unauthorized access.
- 10.12.1.6 Locate electrical distribution, motor control equipment and panelboards in secure, lockable service rooms. Lockable, flush mounted 120/208 volt branch circuit panels will be permitted in corridors. Clearances for maintenance of equipment will comply with the Canadian Electrical Code including clearances for draw-out equipment.
- 10.12.1.7 Select, configure, locate and install all components of transmission and distribution systems so as to minimize the transmission of noise, vibration or unwanted heat into other parts of the Facility.
- 10.12.1.8 Design and install protection and coordination of protection equipment so that the initial electrical installation and future additions and modifications to the installation will be properly protected and fully coordinated, such that in the event of a fault or overload, protective devices will act to isolate only the faulty portion of the system and areas downstream, leaving all other portions of the system fully operational. Protection equipment will adequately protect against injury to persons and damage to property. The 600-volt main distribution and sub-distribution panelboards will consist of breakers, not fuses.
- 10.12.1.9 If a fire pump is required for the Facility, install a separate fire alarm breaker at the generator bus, with a separate feeder to the fire pump transfer switch, fire pump controller and fire pump run in mineral insulated cable.
- 10.12.1.10 Where required by system characteristics or operational requirements, provide special shielding, isolation, grounding, bonding, harmonic filtration or other treatment to prevent interference between systems or degradation of performance of an individual system.

- 10.12.1.11 Locate distribution centres with a minimum of 20% extra space in distribution centres.
- 10.12.1.12 For components of the transmission and distribution systems to be located in in any public, clinical, administrative or staff area, including light switches, receptacles, wire ways, equipment grounding points, and status displays:
- 10.12.1.12(1) provide components that will provide both long life expectancy without perceptible deterioration and good in appearance; and
- 10.12.1.12(2) select, design and install components so as to permit easy and complete cleaning.
- 10.12.1.13 Provide single phase 120VAC grounding receptacles, conforming to CEC and specifically to CSA Configuration 5-15R, at each location where electrical equipment requiring a supply of normal or emergency power will be plug connected.
- 10.12.1.14 Locations of receptacles will comply with all applicable codes and standards.
- 10.12.1.15 Wiring devices (switches and receptacles) throughout the Facility will be Decora style. All device wall plates will be nylon or polycarbonate. Grouped devices will have a single coverplate covering the whole group. Receptacles on normal power will be white; receptacles on emergency power circuits will be red. The wiring devices will be of the following grades:
- 10.12.1.15(1) Hospice House: Hospital Grade for the resident rooms, palliative care rooms and therapy room, and Specification Grade for all other rooms;
- 10.12.1.15(2) Standard Residential Homes: Specification Grade for the kitchen, and Residential Grade for all other rooms;
- 10.12.1.15(3) Adult Day Program, Community Centre and Neighbourhood Hubs: Specification Grade; and
- 10.12.1.15(4) Services Building: Specification Grade.
- 10.12.1.16 All receptacles will be permanently marked with clear laminated marker tape with black lettering identifying the branch circuit number from which the device is connected.
- 10.12.1.17 Branch circuits for the resident room bedrooms will be protected by arc-fault breakers.

**10.13 26 24 00 - Electrical Utilities**

## 10.13.1 Basic Requirements

- 10.13.1.1 Design and install the supply of electrical energy from the power utility to the Facility in accordance with the IEEE Standards listed in Appendix 3D [Reference Standards].
- 10.13.1.2 Design the arrangement of power utility service to the Facility in compliance with IEEE Standard 602-1996, Recommended Practice for Electrical Systems in Health Care Facilities.

## 10.13.2 Performance Criteria

- 10.13.2.1 Provide an underground service from the utility's pad mount transformer to the Facility's main distribution. Coordinate with Sask Power for an outdoor pad-mount transformer, located on the Site and away from public view. The incoming service voltage will be 347/600-volt 3 phase 4 wire.
- 10.13.2.2 The minimum ampacity of the service and service conductors will comply with the Canadian Electrical Code, Section 8 – Services and Feeders, Section 8-206 Hospitals.
- 10.13.2.3 The location of the Sask Power pad-mount transformer and the routing of the incoming services to the Facility will not interfere with any known future expansion of the Facility.

**10.14 26 27 00 - Metering**

## 10.14.1 Basic Requirements

- 10.14.1.1 Provide the utility meter socket and instrument transformer compartment for installation of the utility's meter and instrument transformer..
- 10.14.1.2 Supply digital pulse metering to provide detailed information about power quality and power consumption at key points at the main distribution and the emergency life safety and emergency non-life safety distributions. The metering will be networked to the BMS for use by maintenance and plant administration staff. .
- 10.14.1.3 Provide electrical consumption metering for collection and monitoring of electrical loads outlined in Appendix 2C [Energy].

## 10.14.2 Performance Criteria

- 10.14.2.1 The metering system will provide easily read locally displayed information for all distribution for each 600-volt distribution (normal power, emergency life safety, and emergency non-life safety).

- 10.14.2.2 Store historical data from the metering system network. Ensure the metering system is be capable of generating user configurable electronic and printed reports on demand.
- 10.14.2.3 The metering system will not be dependent on power from the metered circuit for its operation and will be supported by a backup power source or sources, which ensure operation when the metered circuit is de-energized.
- 10.14.2.4 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 Current (all phases and neutral), KW, KVA, Power Factor, KWH, VAR hours.
- 10.14.2.5 The meters will be power quality type able to monitor harmonics and surges / sags.

## **10.15 26 27 50 - Power Quality**

### 10.15.1 Basic Requirements

- 10.15.1.1 Provide an overall power quality which assures suitable conditions for operation of all electrical and electronic equipment throughout Facility.
- 10.15.1.2 Provide equipment and systems which ensure that the variety of electrical equipment and systems in use in the Facility will not be harmed or impaired either by external events or conditions, including lightning or disturbances to the Utility service, or by internal events or conditions generated within the Facility.
- 10.15.1.3 Power quality will meet or exceed the IEEE established standards for power quality. Provide Harmonic Mitigating Transformers where deemed necessary by Project Co and in compliance with the following:
  - 10.15.1.3(1) IEEE Standard 519 - Harmonics;
  - 10.15.1.3(2) IEEE Standard 1250 - Voltage Quality; and
  - 10.15.1.3(3) IEEE Standard 1346 - Recommended Practice for Evaluation Electric Power System Compatibility with Electronic Process Equipment.
- 10.15.1.4 Use methods and provide equipment consistent with IEEE Standard 1159 - Monitoring Electric Power Quality by installing a built-in power quality meter at the incoming service. All other system testing will be done by a technician using portable test equipment. Provide filters, TVSS, etc. as required. Provide power quality meters at all secondary distribution centres. Provide transient suppression to panels as required to ensure that power quality meets or exceeds published standards.

### 10.15.2 Performance Criteria

- 10.15.2.1 Provide equipment specifically designed to control and remove all adverse power quality conditions that could damage or impair function of any of the electrical or electronic equipment that will be in use in the Facility. Adverse power quality conditions to be addressed include voltage spikes, dips and droops, transients, harmonics, power factor and radio frequency interference.
- 10.15.2.2 Provide equipment and systems capable of demonstrating 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.

## 10.16 26 30 00 - Emergency Power

### 10.16.1 Basic Requirements

- 10.16.1.1 Provide a reliable source of power to all essential areas and systems within the Facility. The emergency power system will be available 100% of the time.
- 10.16.1.2 Fuel system will comply with CSA B139 and ULC CAN4-S601.
- 10.16.1.3 Comply with CAN/CSA-C282.09 – Emergency Electrical Power Supply for Buildings and CSA Z32.09.
- 10.16.1.4 Generators will comply with local noise bylaws and be EPA Certified for Stationary Emergency Application (EPA Tier 3 emissions level).

### 10.16.2 Performance Criteria

- 10.16.2.1 Supply one generator set to provide emergency power to life safety and non-life safety loads in the Facility. The system voltage is 347/600-volt 3 phase 4 wire.
- 10.16.2.2 Provide a diesel-fueled generator. Supply a generator set:
  - 10.16.2.2(1) with a double wall sub-base fuel tank with the capacity to operate the engine under full load for at least 24 hours; and
  - 10.16.2.2(2) that is capable of undergoing testing each week for at least ½ hour with actual Facility load.
- 10.16.2.3 Locate the generator:
  - 10.16.2.3(1) to permit convenient servicing and monitoring and to prevent unauthorized access; and

- 10.16.2.3(2) and provide vibration isolation and muffling so that sound and vibration outside of the rooms containing the generator are limited to low levels.
- 10.16.2.4 The Design will consider ease of maintenance and the ability to maintain continuous service to the Facility operations such that servicing or additions to the distribution equipment will not cause major service disruptions in a Building.
- 10.16.2.5 Provide separate automatic transfer switches for the emergency life safety and non-life safety essential loads throughout the Facility. All transfer switches will be closed transition with by-pass. Each transfer switch will allow in-phase monitoring allowing seamless transfer between the Utility and the plant. This is not a requirement between the normal and conditional power distributions.
- 10.16.2.6 Provide a tie-feed between the emergency life safety and non-life safety essential loads for redundancy. Size each life safety and non-life safety distribution to accommodate each other's loads in the event of maintenance or failure to either system's transfer switch.
- 10.16.2.7 Monitor and record the generator loads on the digital metering system and the BMS system. Monitor the generator and transfer switch alarms on the fire alarm and BMS systems.
- 10.16.2.8 The minimum engine generator set full-load rating will meet article 6.1.1.2 of CSA Z32-09 and will include a minimum 10% reserve capacity.
- 10.16.2.9 Supply the following areas or systems with emergency power, life safety:
- 10.16.2.9(1) fire alarm and emergency voice communication system;
  - 10.16.2.9(2) nurse call communication system;
  - 10.16.2.9(3) emergency lighting and exit lighting;
  - 10.16.2.9(4) sprinkler protection systems;
  - 10.16.2.9(5) vital loads connected to a UPS circuit including communication equipment;
  - 10.16.2.9(6) lighting in resident and public washrooms and spa rooms;
  - 10.16.2.9(7) lighting of all exits, principal routes providing access to exits in open floor areas and in service rooms, corridors used by the public, staff and residents, and all public corridors.
  - 10.16.2.9(8) integral patient lift on tubs; and
  - 10.16.2.9(9) generator room louver control.

- 10.16.2.10 Supply the following areas or systems with emergency power, non-life safety:
- 10.16.2.10(1) main and satellite communication rooms;
  - 10.16.2.10(2) security/access control systems
  - 10.16.2.10(3) BMS system control cabinets;
  - 10.16.2.10(4) any mechanical ventilation and heating systems and pumps essential to maintaining the operations in the Facility;
  - 10.16.2.10(5) in the Hospice House kitchens and Standard Residential Home kitchens, the microwave, refrigerator and one above counter duplex receptacle will be connected to the emergency power, non-life safety;
  - 10.16.2.10(6) refrigerators used for storing medication; and.
  - 10.16.2.10(7) at least one patient receptacle in each Residential Care Building resident room at the head of the bed, for use of medical electrical equipment.
- 10.16.2.11 Provide emergency power where required to meet program requirements or to protect equipment from damage.
- 10.16.2.12 Uninterruptible Power Supplies (UPS): The Facility will not require a Centralized Uninterruptible Power Supply (CUPS) system to serve critical loads. Provide equipment systems such as the fire alarm panel(s), nurse call system and door access control and building security system with integral battery power supplies to maintain those systems in the event of disruption of power.
- 10.16.2.13 Project Co will provide UPS systems with 15 minutes battery back-up capacity for equipment requiring UPS power for IT communication systems including the following:
- 10.16.2.13(1) computer network equipment (excludes computer terminal workstations);
  - 10.16.2.13(2) wireless infrastructure; and
  - 10.16.2.13(3) patient elopement systems if these systems are supplied without integral battery backup..

## **10.17 26 29 00 Mechanical Equipment Connections**

### 10.17.1 Basic Requirements

10.17.1.1 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.

### 10.17.2 Performance Criteria

10.17.2.1 Cables, connectors, conduit systems, fittings and hardware used to make connection to mechanical equipment will be of institutional or industrial quality. Project Co will select and install such equipment to provide high levels of reliability, durability and ease of maintenance of the equipment.

10.17.2.2 Provide connections to motors and/or motor driven equipment or equipment with noticeable levels of vibration of a type specifically designed to accommodate the vibration.

10.17.2.3 Design and install connections to mechanical equipment to easily permit removal and replacement of the equipment and provide for the eventuality that equipment may be replaced in the future with upgraded and dissimilar equipment types.

10.17.2.4 Size motor control centres, main feeders to motor control centres and mechanical distribution centres to accommodate the current mechanical equipment plus 50% of that amount in additional spare capacity.

10.17.2.5 Motor starters for 3-phase motors will be installed in:

10.17.2.5(1) motor control centres; and

10.17.2.5(2) combination starters utilizing splitter troughs.

10.17.2.6 Provide a means of disconnecting each motor branch circuit, motor starter or controller and motor.

## **10.18 26 29 10 Mechanical Control Systems Interface**

### 10.18.1 Basic Requirements

10.18.1.1 Provide a fully functional Building Management System whose primary function will be to control the mechanical systems within the Facility. The Building Management System will interface with building electrical and communication systems. Use this system to annunciate security alarms, generator and transfer switch alarms, and to control the Building and Site lighting (for energy management reasons) via its software program.



10.18.1.2 Use the system for energy management functions as well as energy related data acquisition and trending. Connect the digital meters monitoring the electrical power systems to this system.

10.18.2 Performance Criteria

10.18.2.1 Refer to Section 10.7 for Building Management System specifications.

**10.19 26 29 20 Specialty Systems**

10.19.1 Basic Requirements

10.19.1.1 Provide special electrical and communications systems for the Facility. Supply and install power supply, specially conditioned power and communication conduits and other electrical operational support equipment in order to provide for all the requirements of permanent installations of such special electrical and communications systems.

10.19.2 Performance Criteria

10.19.2.1 Select and install cables, connectors, conduit systems, fittings and hardware used to make connection to special equipment:

10.19.2.1(1) of institutional or industrial quality; and

10.19.2.1(2) that will provide for high levels of reliability, durability and ease of maintenance of the equipment.

10.19.2.2 Design and install connections to special equipment to easily permit removal and replacement of the equipment and provide for the eventuality that equipment may be replaced in the future with upgraded and dissimilar equipment types.

**10.20 26 50 00 - Lighting**

10.20.1 Basic Requirements

10.20.1.1 For all luminaries of greater than 60W, provide lamps with minimum efficacy of 50 lumens/watt.

10.20.1.2 Design lighting to optimize use of daylight by means of a combination of natural light, luminaires and controls.

10.20.1.3 Exterior and interior lighting will create a safe and secure environment for residents, visitors and staff.

10.20.1.4 The standard minimum lighting levels will be the minimum maintained average illuminance recommendations in ANSI/IESNA RP-28-07.

- 10.20.1.5 Lighting energy consumption will comply with ASHRAE Standard 90.1 and will exceed that standard by as much as possible with a reasonable standard being a 10% reduction range while still meeting program requirements.
  - 10.20.1.6 Select lighting source types that are LED or low mercury content light sources. Incandescent lamp sources are not acceptable.
  - 10.20.1.7 Exit light fixtures will be universal green 'Running Man Pictogram' in compliance with:
    - 10.20.1.7(1) NRCAN/CSA C860; and
    - 10.20.1.7(2) National Building Code.
  - 10.20.1.8 Battery operated emergency lighting units with integral lighting heads will be located in the main electrical room where transfer switches are located and in the standby generator room. Battery operated lighting units will have capacity to operate the integral lighting heads for a period of 60 minutes.
- 10.20.2 Performance Criteria
- 10.20.2.1 Selection of luminaires and light sources will meet the stated energy efficiency and quality and quantity requirements, but will also meet the objective of providing adequate lighting for residents, staff and visitors so that they can carry out their activities in comfort and safety. The lighting design will address age-related vision loss and diminished visual acuity (sharpness). Design and locate lighting in a manner that meets residents' needs as sensory orientation diminishes.
  - 10.20.2.2 Select type of lighting fixtures and their locations based on the activities/tasks of specific areas.
  - 10.20.2.3 Provide lighting levels throughout the Facility that are appropriate to the purpose and the use of the space and adequate to ensure the safety of residents while reflecting a residential environment. General lighting levels in the Facility will be a minimum of 250 lux. Refer to ANSI/IESNA RP28-07 for the recommended minimum maintained average illuminance for all rooms or areas.
  - 10.20.2.4 Refer to Section 5.4 for day lighting requirements.
  - 10.20.2.5 Lighting control will follow the requirements as listed in Attachment 1 [Room Data Sheets] to Appendix 3A [Functional Program].
  - 10.20.2.6 Construct luminaires in all areas to require minimal cleaning and permit practical and easy access and disassembly. Luminaires in the Neighbourhoods will suit a residential environment and will not be institutional grade.

- 10.20.2.7 Design lighting in areas where computer terminals and similar screens will be used to eliminate indirect glare and to meet or exceed the IES recommended cut off for VDT luminaires.
- 10.20.2.8 Exterior LED luminaires will be vandal resistant and dark sky compliant. Ensure the selection of exterior luminaires are glare-free and minimize the light trespass beyond the property line. The light level at the property line will not exceed 2.2 lux, and the light level 4.6 metres beyond the property line does not exceed 0.11 lux.
- 10.20.2.9 Install battery-operated unit emergency lighting to facilitate maintenance at the transfer switches and standby generator.
- 10.20.2.10 Provide lighting in main lobbies, waiting areas and main entrances that is comprised of high quality products and is aesthetically pleasing to the residences and staff.
- 10.20.2.11 Connect exit light fixtures to a dedicated emergency life safety circuit with wiring run in a separate raceway. Install breaker lock-on device at the exit light branch circuit breaker.
- 10.20.2.12 Connect battery operated emergency light fixtures to the room light circuit, non-switched.

## **10.21 26 50 10 - Lighting Control**

### 10.21.1 Basic Requirements

- 10.21.1.1 Design lighting control to:
  - 10.21.1.1(1) comprise a significant part both of the energy management of the Facility and of the flexibility required to adjust lighting to suit functions and activities;
  - 10.21.1.1(2) permit simple and integrated control of lighting;
  - 10.21.1.1(3) be easily operated and conveniently and appropriately located for each area and function; and
  - 10.21.1.1(4) allow for staff and residents to controls the lighting in their environment
- 10.21.1.2 Provide individual switches for lighting in the resident bedrooms to control the room lighting, independent of other lighting control systems in the Facility.
- 10.21.1.3 Ensure all lighting in communal and administration areas is capable of being operated from a central location.
- 10.21.1.4 Program the BMS for remote control of the exterior lighting.

10.21.1.5 Provide occupancy sensors to automatically turn off the room lighting after the room is vacated. Room lighting to be controlled by occupancy sensors is as indicated in Attachment 1 [Room Data Sheets] to Appendix 3A [Functional Program].

#### 10.21.2 Performance Criteria

10.21.2.1 Lighting controls located in areas accessible to the public will be protected from unauthorized operation.

10.21.2.2 All manually operated lighting controls will be of a type which can be completely cleaned and disinfected without requiring any disassembly. Manually operated controls will not deteriorate or be otherwise adversely affected by frequent cleaning and disinfection.

10.21.2.3 Provide separate switch controls for:

10.21.2.3(1) resident bedrooms;

10.21.2.3(2) resident washrooms; and

10.21.2.3(3) reading light at or above resident beds.

10.21.2.4 Provide illuminated switches for resident washroom lighting.

10.21.2.5 Wall mounted light switches will not exceed:

10.21.2.5(1) 1040 mm above the finished floor level in the resident areas;  
and

10.21.2.5(2) 1200 mm above finished floor level in all other areas.

10.21.2.6 Lighting in the open activity areas will be controlled by architectural lighting control systems based on multiple zones to create scene control that will suit various activities in the spaces. The lighting in these spaces will be dimmable and controlled by master scene controller. The architectural lighting control system will incorporate energy saving strategies including occupancy or vacancy sensing, daylight harvesting and personal dimming control.

10.21.2.7 Incorporate exterior lighting circuits into lighting zones and program control of exterior lighting circuits by the BMS. Include a common photo-sensor into the control of the lighting zones to turn the lighting on at dusk, off at dawn. Comply with the following requirement for lighting zones:

10.21.2.7(1) Exterior entrance/exit doors: controlled by the BMS via photocell control. Off at dawn, on at dusk, daily.

10.21.2.7(2) Walkway lighting: controlled by the BMS via photocell control. Off at dawn, on at dusk, daily.

10.21.2.7(3) Patio lighting: On at dusk. Programmed off by the BMS during the inactive hours of the night (after 2200 hours, adjustable through programming).

10.21.2.7(4) Parking area lighting: Site luminaires will include high/low stepped dimming. Controlled by the BMS via photocell control. Off at dawn, on at dusk, daily. Programming through the BMS will permit the lighting to be at the high level of illumination at dusk and pre-dawn, and at the low level of illumination during the inactive hours of the night (approximately 2200 hours to 0530 hours, adjustable through programming). A manual override for staff to bring the lighting back to full output may be provided but is not a requirement..

10.21.2.7(5) Illuminated signage: Controlled by the BMS via photocell control. Off at dawn, on at dusk, daily.

## **10.22 27 00 00 - Communications General**

### 10.22.1 Basic Requirements

10.22.1.1 Employ the latest technology and systems available at the start of Construction for transferring, securing, and storing information.

10.22.1.2 The data and voice cable installation will include all horizontal cabling, backbone cabling, connectors, patch panels, equipment racks, bix blocks, grounding and bonding of communications equipment.

10.22.1.3 The cabling system will use matched components from a single manufacturer certified to deliver system performance over the lifetime of the applications which the cabling system was originally designed to support.

10.22.1.4 Project Co will comply with the following qualification requirements:

10.22.1.4(1) The Person conducting the installation will:

10.22.1.4(1)(a) have full working knowledge of cabling low voltage applications, such as data/voice communications cabling systems;

10.22.1.4(1)(b) have at least five years of continuous recent experience on similar projects; and

10.22.1.4(1)(c) hold recent, up-to-date licenses, certifications and training certificates in Saskatchewan and for the equipment to be installed;

- 10.22.1.4(1)(d) provide references of the type of installation provided for this specification;
- 10.22.1.4(1)(e) have a knowledge of all applicable telecommunication standards, including CSA, TIA/EIA, IEEE and ANSI;
- 10.22.1.4(1)(f) have experience in the installation of pathways and support for horizontal and backbone cabling;
- 10.22.1.4(1)(g) be experienced in the installation and testing of telecommunications network cabling system, including the use of light meter and OTDR; and
- 10.22.1.4(1)(h) provide proof of being a manufacturer certified installer for all cable network components being installed such as but not limited to cables, connectors and end termination equipment. The use of non-manufacture certified installer will not be permitted.

10.22.1.5 Without limiting the commissioning obligations of Project Co set out in Schedule 2 [Design and Construction Protocols], Project Co will retain a 3<sup>rd</sup> party commissioning agent to provide a commissioning report to confirm:

- 10.22.1.5(1) the integration of the communications systems.
- 10.22.1.5(2) that systems such as nurse call, access control, resident elopement and fire alarm, will produce the specified signal on all required output devices;
- 10.22.1.5(3) that each output device can be activated by all specified input devices; and
- 10.22.1.5(4) that minimum of 5% of input and output devices of each type was tested.

## 10.22.2 Performance Criteria

10.22.2.1 Provide communications systems that are:

- 10.22.2.1(1) proven technology;
- 10.22.2.1(2) effectively used in other health facilities; and
- 10.22.2.1(3) easy to operate and maintain.

10.22.2.2 The communications cabling system and testing will comply with the following standards.

10.22.2.2(1) TIA/EIA/ANSI – 569B.1/2/3 latest revision

10.22.2.2(2) Category 6 system and testing as released by TIA/EIA/ANSI – latest revision

10.22.2.2(3) TIA/EIA T568-A UPT wiring/pinout

10.22.2.2(4) BICSI, TDMM Telecommunications Distribution Methods Manual (latest edition)

10.22.2.2(5) CAN/CSA-T529-M91

10.22.2.2(6) CAN/CSA-T530-M90

10.22.2.2(7) CAN/CSA-T527-94, EIA/TIA-607

10.22.2.2(8) CAN/CSA-T528-93, EIA/TIA-606

10.22.2.2(9) EIA/TIA-TSB 40-A

10.22.2.2(10) IA/TIA-TSB 67

10.22.2.2(11) EIA/TIA-569

10.22.2.2(12) EIA/TIA-606

10.22.2.3 Testing of fibre optic cable will be conducted in accordance with ANSI/TIA/EIA 526-14-A for multimode fibre. The light source will meet the launch requirements of ANSI-TIA/EIA-455-50B, Method A.

10.22.2.4 The installation will be completed by the cable Installer who is certified by the manufacturer for Category 6 and fibre optic cable installations. The installer will submit photocopies of accreditation certificates.

10.22.2.5 Select communications systems that are cost effective, provide efficiencies for staff and residents, perform the necessary tasks, adaptable to change, flexible in implementation and expandable to accommodate growth.

## **10.23 27 10 00 - Structured Cabling**

### 10.23.1 Basic Requirements

10.23.1.1 The cabling infrastructure will not differentiate on the type of end-use device that connects to it. The cabling infrastructure will be universal and allow all currently available forms of end-use devices access to the different system types.

- 10.23.1.2 The cabling infrastructure will be designed by a Registered Certified Data Designer (RCDD) or professional engineer and will be a to the latest TIA / EIA solution.
- 10.23.1.3 All cables will meet CSA Flame test 4 (FT4) rating, including the cables specified in Sections 10.23.1.4 (1), 10.23.1.5(1) and 10.23.1.6(1).
- 10.23.1.4 Copper Vertical Riser / Backbone Cabling:
- 10.23.1.4(1) All vertical riser cables for telephones will be 100 ohm UTP, solid copper, 24 AWG Category 3, CMP/FT6 for use indoors, minimum 25-pair. All vertical riser cabling for telephones will be GREY.
  - 10.23.1.4(2) Voice riser cables will terminate on BIX1A/110 or equivalent blocks at the main telephone termination board.
  - 10.23.1.4(3) All vertical riser data cables will meet minimum Category 6 requirements in the latest TIA./EIA-568C revisions.
- 10.23.1.5 Optical Fibre Cable (OFC):
- 10.23.1.5(1) Multimode Optical Fibre (MMF): Backbone/riser cables will be factory pre-terminated cable and have a fibre count of 2-fibre, laser optimized 50 um cor diameter/125um cladding diameter suitable for 10GBps. OM3 mulitmode-coated fibres housed in colour coded tight buffer tubes and have an orange sheath. All fibre cable will have cable jacket FT6 plenum CMP rating. OFC will conform to TIA/EIA-568-C.3.
  - 10.23.1.5(2) All fibre will be "Zero Water Peak" type.
- 10.23.1.6 Horizontal Communications Building Cable (CBC):
- 10.23.1.6(1) All CBC will be unshielded twisted pair, Category 6, 4-pair #23 AWG, CMP (FT6) rated and meet TIA/EIA/ANSI-568-C.2 latest revision.
  - 10.23.1.6(2) Each cable will be terminated with connectors on each end at the wall jacks and patch panels in the equipment racks.
  - 10.23.1.6(3) The permanent link test configuration includes a length of cable and one connector at each end, withthe overall length of the cable not to exceed 90 meters. The cabling channel test configuration includes a length of horizontal cable up to 90 meters, a work area cord and two patch cord cross connections, with the overall length not to exceed 100 meters.



- 10.23.1.7 Patch cords will be pre-terminated, factory tested and will be of the same manufacturer as the installed system, including being part of the certified system.
- 10.23.1.7(1) Patch cords for data and voice cables will meet the requirements of TIA/EIA 568, latest revision. Patch cords will be Category 6 criteria when tested with the components of the system. Patch cords will be provided for each cable termination at the equipment rack.
- 10.23.1.7(2) Fibre patch cords will be multimode tight buffered, multi-fibre building cable.
- 10.23.1.8 Locate communication rooms on the floor they will serve the floor and such that they will maximize the area they serve.
- 10.23.1.9 Communication equipment racks installed in the main IT communication room, satellite closets and utility rooms will be enclosed, lockable and ventilated equipment racks. Rack will be 4-post 483 mm racks, with doors at front and rear of the cabinets, and a minimum 2134 mm high x 863 mm deep x 762 mm wide. Racks will include two shelves or organizers for mounting network equipment supplied by the Authority. Racks will include at least one rack mounted power bar with shield cord, six 5-15R outlets, EMI/RFI filter protection. Cable managers will include vertical cable management troughs on each side of the rack and 2U horizontal cable management below each patch panel.
- 10.23.1.10 Capacity for equipment racks will not exceed 192 cable drops. All cables entering the equipment racks will be supported.
- 10.23.1.11 Minimum equipment rack clearances will be as follows: front – 914 mm, rear – 1067 mm, one side of rack – 762 mm.
- 10.23.1.12 Space will be allocated at the bottom of the equipment racks for rack mounted Uninterruptible Power Supply units, supplied by the Authority.
- 10.23.1.12(1) Patch panels, connectors and adaptors: Rack mounted fibre patch panels will be 1U in 483 mm with front and rear access design, equipped with hinged cover and built-in radius control.
- 10.23.1.12(2) Fibre patch panel will be sized to accommodate 12 strands of fibre. Additional units, if required, will be provided to allow for 50% spare ports for future growth.
- 10.23.1.12(3) Adaptor strips will be single density with 6 SC connectors compliant with 50/125uM for multimode connectors. Strips will be required to

accommodate 12 strands of fibre, and be field adjustable.

10.23.1.12(4) Data/voice rack mounted patch panels will be 2U in 483 mm racks, unloaded 48-ports suited for Category 6 installations. A minimum of 20% spare ports will be provided for each patch panel.

10.23.1.13 Connectors for Category 6 cables will be modular 8 PIN jacks, compliant to TIA/EIA T568-A UTP wiring/pinout.

10.23.1.14 Colour coding for Category 6 Cables and Connectors will be as follows:

10.23.1.14(1) Data/Voice including cabling for the Resident Entertainment System: blue or aqua cables / white jacks.

10.23.1.14(2) Wireless Access Points (WAP): green cables / green jacks.

10.23.1.14(3) Building Automation: yellow cables / yellow jacks.

10.23.1.14(4) Nurse Call: white cables.

10.23.1.14(5) Elopement Systems: white cables.

10.23.1.14(6) Security/Access Control: grey cables.

10.23.1.14(7) Fire Alarm: red cables.

10.23.1.15 The conduits, pathways, room layouts, and design will comply with the TIA / EIA-569 Commercial Building Standard for Telecommunications Pathway and Spaces, latest edition.

10.23.1.16 Perform the management and administration of the cabling plant in accordance with the TIA / EIA 606A standard – the Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.

10.23.1.17 The grounding of the conduit pathways and components will comply with the TIA / EIA 607A Standard – Commercial Building Grounding and Bonding Requirements for Telecommunication.

10.23.1.18 Provide a structured cabling component from a single manufacturer that is a recognized industry leader. To install the system, retain a data contractor who is certified by one of the industry leaders and comply with the manufacturer's best warranty.

## 10.23.2 Performance Criteria

10.23.2.1 Fibre optic cabling will interconnect communication equipment racks in the satellite closets or utility rooms to the main IT Communication Room's equipment racks. A redundant fibre interconnection of the communication equipment racks will be installed to provide the Authority with a primary

network and redundant (dark) network system. Separation will be provided where possible between the primary and redundant fibre cable runs.

- 10.23.2.2 Provide and install a complete Category 6 structured cabling solution throughout the Facility.
- 10.23.2.3 Utilize a star wired cabling approach to wire all outlet locations back to communication rooms and all communication rooms back to the nearest communications equipment rack.
- 10.23.2.4 In the wood frame construction where ceilings are inaccessible, cabling will run in non-metallic flexible raceways to provide some opportunity for re-pulling or future changes to cabling of the outlets. The flexible raceways will require the installation to permit future re-pulling, removal or additional cabling in the raceways.
- 10.23.2.5 Fibre cables run in non-accessible ceilings will be required to be run in conduit with pull boxes located in accessible ceilings; otherwise run in non-metallic flexible raceways.
- 10.23.2.6 Where ceilings are accessible, all communication cables will be run in conduit or basket tray. Fibre cable will be run in separate conduit, including separate conduit for redundant or 'dark' fibre cable runs.
- 10.23.2.7 Provide spare capacity to all communication rooms in compliance with TIA / EIA – 568B.1, B.2 and B.3 Commercial Building Cabling Standards and Optical Fibre Cabling Standards.
- 10.23.2.8 Terminate all cable drops at both ends. Provide the proper flame spread rating for the cabling system.
- 10.23.2.9 Provide patch cables for all end-use devices in sufficient quantity to make each device operational plus 20% spare. Patch cable will allow complete connection from end to end.
- 10.23.2.10 Label all cables, outlets and jacks/ports at patch panels in accordance with TIA/EIA-606. Labeling will be clearly marked with self-laminating labels at each end of the cable. Identification of cable drops will comply with the Authority's IT standards for identification.
- 10.23.2.11 Implement a cable management labeling software and electronic drawing system to track and manage the cable plant.
- 10.23.2.12 Provide multiple drops for specialized systems to ensure system operation.

## **10.24 27 13 00 - Network Equipment**

### 10.24.1 Basic Requirements

- 10.24.1.1 Provide a redundant and secure network design.

- 10.24.1.2 Provide open architecture network equipment.
- 10.24.1.3 Work with the Authority in creating an operational plan for the network complete with management strategy and resource requirements for maintenance.
- 10.24.1.4 Provide communication rooms throughout the Facility as required to service voice/video/data requirements of the Facility.

#### 10.24.2 Performance Criteria

- 10.24.2.1 Design and install logically and physically redundant wide area network connections to the Facility.
- 10.24.2.2 Provide a main information services communications room within the Facility to host servers supplied by the Authority and the main core internal backbone network equipment. The Authority will provide a list of equipment for the purposes of space, power and environmental control planning.

### **10.25 27 21 00 - Wireless Infrastructure**

#### 10.25.1 Basic Requirements

- 10.25.1.1 Provide a digital wireless network infrastructure for the Facility that will allow wireless end-use devices access to the Authority's network and all its associated applications.
- 10.25.1.2 The wireless network components supplied by the Authority will comply with IEEE 802.11a, b, e, g, i, k, n standards or the latest standards, whichever is more up to date. Ensure the bandwidth of the network will meet the requirements of the Facility at the time of installation.
- 10.25.1.3 Access points will be powered by PoE and be 802.3af compliant.
- 10.25.1.4 The wireless products will use advanced random data encryption protocol to secure the information.
- 10.25.1.5 The wireless transmitters will not adversely affect other biomedical equipment.

#### 10.25.2 Performance Criteria

- 10.25.2.1 Provide a complete wireless network throughout the Facility, with no dead spots, that supports any standard network applications or telephone applications.
- 10.25.2.2 It is anticipated that two separate antennae systems with access points will be required, one for wireless voice devices and one for the wireless data devices. Project Co will provide cost effective solutions which may utilize a common access point for both systems.

- 10.25.2.3 The structured cabling system will connect the wireless access points to the communication rooms.
- 10.25.2.4 All access points and wireless components will be seismically supported.
- 10.25.2.5 Demonstrate a minimum of 5.5 Mb/s throughout the Facility statistically accurate to within 2%, 95% of the time.
- 10.25.2.6 Project Co will provide a UPS power source(s) to support the wireless network system and connect to the emergency power non-life safety distribution system.

## **10.26 27 41 16 - Resident Entertainment System**

### 10.26.1 Basic Requirements

- 10.26.1.1 Provide the rough-in and cabling for a resident entertainment system in all resident rooms, lounge activity areas, the Adult Day Program and the Community Centre activity room and as identified in Appendix 3A Attachment 1 [Room Data Sheets]. The system will be provided by the Authority for interactive patient care.
- 10.26.1.2 Communication cabling for the resident entertainment system will be provided under Sections 27 00 00 Communication General and 27 10 00 Structured Cabling.
- 10.26.1.3 All TV monitors, tuner boxes, mounting hardware, beside controllers and speakers will be provided by the Authority. All network hardware, software and licenses will be provided by the Authority.
- 10.26.1.4 The nurse call system will not permit interface to allow the nurse call pillow speakers to control the TV monitors in the room (remote on/off control, volume control and channel up/down).

### 10.26.2 Performance Criteria

- 10.26.2.1 All TV outlets will be provided two Category 6 cables terminated at the nearest communications equipment rack. Installation and testing of cabling will be conducted in accordance with Section 27 00 00 Communications General and 27 10 00 Structured Cabling.

## **10.27 27 50 00 - Wireless Staff Communication Systems**

### 10.27.1 Basic Requirements

- 10.27.1.1 Provide the structure cable infrastructure for the wireless staff communication system that will function throughout the entire Facility, including within all Buildings, links and outdoor areas extending to the property line.
- 10.27.1.2 The wireless system will integrate with the following systems:

- 10.27.1.2(1) nurse call system;
  - 10.27.1.2(2) Wireless USB keyboard tablets;
  - 10.27.1.2(3) resident elopement system; and
  - 10.27.1.2(4) other network systems.
- 10.27.1.3 The head end CPU, application server, antennae base stations, line card, system software and wireless handheld devices will be supplied by the Authority.
- 10.27.1.4 Each wireless device will offer the full functionality of a standard hardwired telephone handset.
- 10.27.1.5 The wireless staff communication system will meet the IEEE 802.11a, b, g, and n standards and allow sufficient bandwidth to display clinical data.
- 10.27.1.6 The wireless staff communication system will provide standard telephone features as well as IP addressing and VoIP.
- 10.27.1.7 The system will employ wireless data security encryption techniques in compliance with 802.11i.
- 10.27.2 Performance Criteria
- 10.27.2.1 Install Category 6 structured cabling in compliance with Section 27 10 00 Structured Cabling.
  - 10.27.2.2 Locate antennae base stations throughout the Facility to provide full coverage with no dead spots. Increase the coverage of base stations to ensure full tracking of the resident elopement system and use of the wireless tablets.
  - 10.27.2.3 System server will include application software for full programming as well as gateway software to integrate with the nurse call system and other alarm systems to announce all necessary local alarms on the wireless handset.

## **10.28 27 51 23 - Intercommunication System**

### 10.28.1 Basic Requirements

- 10.28.1.1 Internal communication systems within the Facility is an important part of ensuring staff can deliver and receive timely information. A centralized PABX style intercom is not required because the wireless telephone system will be utilized as the intercommunication system at the Facility.
- 10.28.1.2 The nurse call system will also provide intercommunications between nurse call master consoles within the Facility, and between the nurse call master console station and the nurse stations within the immediate area of responsibility within the Building in which the nurse call system is installed.

10.28.1.3 Provide local intercom systems at locked entrance doors through which delivery personnel or the public will need access.

#### 10.28.2 Performance Criteria

10.28.2.1 Provide a nurse call staff station at the exterior public entrances and at the exterior patio entrance to the Standard Residential Homes and Hospice House for intercommunications to staff via the nurse call master console in the Building and the wireless staff handsets. Stations located outdoors will be protected by a weather protective clear polycarbonate hinged cover..

### 10.29 27 52 00 - Nurse Call

#### 10.29.1 Basic Requirements

10.29.1.1 Provide a completely independent audio visual nurse call communication system that uses the latest proven technology at the time of Construction.

10.29.1.2 The nurse call equipment and its installation will comply with ANSI/UL-1069 and all equipment will be CSA and ULC approved. This includes routers, hubs, switches and room control devices. The nurse call network will be FDA Registered Class II (or higher) medical device and the system's manufacturer will be an FDA Registered Operator. The nurse call system must have a current Health Canada Medical Device license.

10.29.1.3 The nurse call system will be the Rauland-Borg 'Responder 5' system or a system of equivalent or better quality and functionality that provides better performance and functionality to support an efficient staffing model. Video and audio monitoring systems that are unobtrusive and offer benefits to staff utilization may be proposed.

10.29.1.4 Install all equipment and components in strict compliance with the Manufacturer's recommendations.

10.29.1.5 Project Co will retain a preferred Local Proponent Controller (LPC) to provide the installation and service of the nurse call system throughout the Term. The LPC will:

10.29.1.5(1) be responsible for the satisfactory installation of a complete nurse call system;

10.29.1.5(2) provide, from the acceptable manufacturer's current product lines, equipment and components that comply with the requirements of this Schedule; and

10.29.1.5(3) be factory trained and certified by the system manufacturer to provide installation services and support for all system products being provided. Project Co will, at the request of the Authority, provide:

10.29.1.5(3)(a) manufacturer's documentation to support and verify factory certification; and

10.29.1.5(3)(b) a minimum of (5) five previous installation sites with names and contact information.

10.29.1.6 The nurse call system will consist of nurse call master consoles, staff terminal stations, enhanced single resident stations complete with cord sets, staff stations, duty stations, emergency stations with audio, dome controllers (indicator lights) and central equipment cabinets, with all switching devices, power supplies, amplifiers and all other accessories required for a complete and fully operational system.

10.29.1.7 The nurse call system will include provision for pocket page interfaces, computer interfaces, printer interfaces and be cable of bed side-rail interfaces and wireless telephone network interfaces.

10.29.1.8 The system will be capable of network operation to allow the tracking of calls via the system.

10.29.1.9 The call management software will record all calls from all departments, response time and allow trending and report generation.

10.29.1.10 Programming and staff communication device allocation will be accessible from the associated nursing station computer.

10.29.1.11 The nurse call system will integrate with marquees or LCD electronic message boards and wireless staff communication devices (PDA's or phones) for near instant alarm response. The wireless staff communication device will be user friendly (no more than 2 buttons to answer a nurse call), impact and water resistant and operate seamlessly with the nurse call system, allowing two-way voice communication into all resident rooms.

10.29.1.12 The nurse call system corridor lights will have a minimum of (4) four lamps. Lamps will be LED and fully programmable.

## 10.29.2 Performance Criteria

10.29.2.1 Supply and install the nurse call system in each resident bedroom, each resident washroom and where indicated in Attachment 1 [Room Data Sheets] to Appendix 3A [Functional program]. Resident washrooms will include emergency stations with audio. All nurse call systems will have two-way voice capabilities as well as tone and light communication.

10.29.2.2 The nurse call system will include the following components and meet the following requirements:

10.29.2.2(1) head end equipment for each group of Standard Residential Homes, Hospice House, and Adult Day Program to include a



Branch Regional Controller with Network Adapter Module, Network Concentrator and power supply with battery back-up;

- 10.29.2.2(2) nurse call master console located in each staff work area of the Neighbourhood Hub and in each Standard Residential Home and the Hospice House, which are required for communication with any Master Console or Staff Terminal Station, and assigned resident nurse call stations and staff stations via full duplex audio;
- 10.29.2.2(3) staff terminal station located in the Adult Day Program which will provide communications to the nurse call stations located within the Adult Day Program. The VoIP staff terminal station will include an LCD screen for touch-points for assigned functions. The station will also display a 24-hour clock display while not in use;
- 10.29.2.2(4) corridor lights (4-position): room indicator lights with a minimum of 4 LED colours (flashing and non-flashing) to indicate the priority of the call from the room's nurse call station. The indicator light will be located to provide staff the best possible view from where the nurse call station is located;
- 10.29.2.2(5) enhanced single bed station located at each resident bed with the capability of placing two additional calls. The station will allow both resident and staff to place a call and communicate with the assigned Master Console, assigned Staff Terminal Station or assigned wireless phone. The station will include a receptacle for connection of a call cord or pillow speaker. The additional call buttons will be 'Staff Assist' and 'Staff Emergency' call buttons. Include a clear station cover for each enhanced resident station to prevent accidental pressing of the additional call buttons.
- 10.29.2.2(6) locate staff stations in the utility support rooms in the residence areas, lounge and activity areas. The station will allow for placement of calls and communication to the staff in a similar manner as the single bed stations. Staff or residents will be able to communicate through the station's built in speaker;
- 10.29.2.2(7) provide a pull cord station with audio. This is an emergency pull cord station that will provide a priority from the nurse station and is typically located in all public and resident washrooms near the water closet. The audio permits staff to communicate directly with the resident that initiated the call. The call can only be silenced at the pull cord station;

- 10.29.2.2(8) provide a non-audio pull cord station. This is an emergency pull cord station without the built-in speaker/microphone. Locate this station near or in shower spaces that are out of reach from the audio pull cord station. The station will be water resistant and will work in conjunction with the audio pull cord station within the same room;
- 10.29.2.2(9) provide pillow speakers for each enhanced single bed station. The pillow speaker permits calls to be placed from the device and allow for communications direct from the bed or chair. The pillow speaker will include separate low-voltage on/off control for the reading light over the bed and general room lighting if desired. The pillow speaker will not provide any dimming control of the lighting. The pillow speaker also includes TV control, however is not compatible with the proposed Barco entertainment system.
- 10.29.2.2(10) provide spare and alternative call cords for residents with special needs to interchange with pillow speakers. The initiation of a call to be derived from a mechanical, pneumatic or electronic actuation. Provide 36 spare alternative call cords for each of the following: single button call cords, air bulbs and pressure pads.
- 10.29.2.2(11) locate feature bed control module in each resident room where the interconnection to the room lighting low-voltage relay are needed to operate the room lights.
- 10.29.2.3 All nurse call systems will be networked together to allow calls to be forwarded to other areas and for call management.
- 10.29.2.4 Nurse call systems in the Standard Residential Homes and Hospice House will be stand alone units.
- 10.29.2.5 All resident care areas will have nurse call devices installed. Appendix 3A [Functional Program] lists the mandatory nurse call devices. Other areas may be identified by the Authority.
- 10.29.2.6 All calls will be annunciated at nurse call master stations. Master stations will be capable of linking together to allow shift programming (day/night) annunciation of calls at different nursing stations.
- 10.29.2.7 Prior to programming the nurse call system, Project Co will meet with the Authority staff to obtain functional programming requirements. Without limiting the training obligations of Project Co set out in Schedule 2 [Design and Construction Protocols], Project Co will provide the following nurse call system training and assistance: sixteen (16) two-hour training sessions for

nursing staff, four (4) four-hour training sessions for maintenance staff, and fifty (50) hours of extra programming.

- 10.29.2.8 Provide tone stations in each department in sufficient quantities such that the calls can be heard from all locations within the department.
- 10.29.2.9 Locate nurse call field panels in communication rooms as near as possible to the department they serve.
- 10.29.2.10 Run Category 6 cabling for all nurse call system devices. Installation of cabling will be in accordance with the manufacturer's requirements and recommendations.
- 10.29.2.11 Fault monitoring will be a standard feature of the nurse call system. Faults such as communication failure, power failure, and CPU faults will be monitored.
- 10.29.2.12 System faults or failures will be repaired within twelve (12) hours of call origin.
- 10.29.2.13 For all electronic resident beds with built in resident operated functions, allow connection into the nurse system and provide the appropriate interface cable.
- 10.29.2.14 Supply all nurse call systems with power from the vital power distribution system and a minimum of 30 minutes of battery standby.

### **10.30 28 13 00 - Access Control**

#### 10.30.1 Basic Requirements

- 10.30.1.1 Provide a complete, programmable and independent Security Management System (SMS) which includes the electronic access control (EAC) and building security systems for the Facility that uses the latest proven technology at time of Construction. Include the installation of all control equipment, accessories, materials and software to operate the SMS.
- 10.30.1.2 The EAC will provide control of people through entrances and exits of a controlled area of the Facility. As an aspect of security, utilize hardware systems and specialized procedures to control and monitor movements into, out of, or within a controlled area. Design the EAC to provide access to various areas as a function of authorized level or time or a combination of both.
- 10.30.1.3 To address fire exit requirements and to allow residents that do not require the elopement system to prevent them from leaving the Building, provide mag locks and panic hardware with a 15 second delay (during which delay a notification is sent to the care giver).
- 10.30.1.4 Refer to Section 5.7.11 for additional door security information.

10.30.1.5 The SMS will comply with the following standards:

10.30.1.5(1) CAN/ULC-S301, Central and Monitoring Station Burglar Alarm Systems;

10.30.1.5(2) CAN/ULC-S302, Installation and Classifications for Burglar Systems for Financial and Commercial Premises, Safes and Vaults; and

10.30.1.5(3) UL 294, Standard for Safety for Access Control Systems Units.

10.30.1.6 The SMS will be the Lenel OnGuard® system.

10.30.1.7 The SMS will be UL 1076 listed and have FIPS 140-2 certification.

10.30.1.8 The SMS is to be supported by a Microsoft Windows operating system determined at time of installation that is acceptable to the Authority and compatible with the access control system to be installed..

10.30.1.9 The SMS will require only a single license key to be present on the database service for the SMS to operate.

10.30.1.10 The SMS will be of modular design to facilitate both expansion throughout the Facility and technical maintenance.

10.30.1.11 Integrate the SMS to the following systems:

10.30.1.11(1) building network system for the purposes of off-site monitoring and management of the EAC system, and VoIP interconnection if required;

10.30.1.11(2) electronic door hardware;

10.30.1.11(3) access control;

10.30.1.11(4) perimeter security system;

10.30.1.11(5) resident elopement systems; and

10.30.1.11(6) fire alarm system.

10.30.1.12 The SMS will support the following major functions:

10.30.1.12(1) access control;

10.30.1.12(2) alarm monitoring and control;

10.30.1.12(3) equipment control;

10.30.1.12(4) data import and export;

10.30.1.12(5) management reporting (extensive and user definable); and

10.30.1.12(6) archiving;

10.30.1.13 Determine security needs in accordance with the Facility Threat and Risk Assessment and in consultation with the Authority. Project Co will identify requirements relating to programming of photo ID cards, location of all security devices, monitoring requirements and alarm annunciation requirements.

10.30.1.14 Project Co will retain a preferred Local Proponent Controller (LPC) to provide the installation and service of the SMS through the Term. The LPC will:

10.30.1.14(1) be responsible for the satisfactory installation of a complete SMS.

10.30.1.14(2) provide, from the acceptable manufacturer's current product lines, equipment and components that comply with the requirements of this Schedule;

10.30.1.14(3) be factory trained and certified by the system manufacturer to provide installation services and support for all systems products being provided. Project Co will, at the request of the Authority, provide:

10.30.1.14(3)(a) manufacturer's documentation to support and verify factory certification; and

10.30.1.14(3)(b) a minimum of (5) five previous installation sites with names and contact information.

10.30.1.15 Project Co will train the Authority staff on the use and operation of the SMS, and location of all EAC and security devices.

## 10.30.2 Performance Criteria

10.30.2.1 Design, provide and install the security systems in consultation with the Authority to meet the objectives of the Authority's security programs.

10.30.2.2 Provide the Intelligent System Controller (ISC) or 'Global Controller' that will serve as the access control engine for the EAC. The ISC will operate, control and monitor up to 64 card readers. Provide multiple ISC's as required in the Facility to support all card readers. Within the capacity of the ISC, multiple combinations of input and output control modules, and card reader interface modules can be connected.

- 10.30.2.3 Project Co will ensure full coordination between the Electrical and Door Hardware Divisions, and other Divisions to ensure that all necessary components are installed to result in a fully operational EAC and door security system.
- 10.30.2.4 Provide an access control system that is PC based, contains an integral photo identification card system, has sufficient capacity to handle at minimum 2,000 regional employees down to the field panel level, can grant or restrict access to employees via a programmable classification system and runs over a standard TCP / IP Ethernet network.
- 10.30.2.5 The system will utilize a central file server with automatic switching to a separate backup file server in case of failure.
- 10.30.2.6 Alarms will be annunciated at the Facility management call centre / alarm management centre location at minimum.
- 10.30.2.7 Locate ISC's in secured service rooms in each Neighbourhood, the Hospice House and the Services Building.
- 10.30.2.8 Provide integral battery back-up in each ISC to maintain the system. Connect each ISC to a dedicated emergency non-life safety circuit.
- 10.30.2.9 Coordinate the location of access control doors and door alarms in consultation with the Authority. Locations will include:
- 10.30.2.9(1) all main entrances (Residential Care Buildings, Adult Day Program and Community Centre);
  - 10.30.2.9(2) exterior entrances to the Neighbourhood corridors,
  - 10.30.2.9(3) staff spaces accessible from the corridors (lounges, offices, washrooms), and
  - 10.30.2.9(4) all support service spaces accessible from the Neighbourhood corridors.
- 10.30.2.10 Install all cabling as supplied by the LPC for this system.
- 10.30.2.11 Provide a lock down system to give security staff the ability to lock the doors leading from Standard Residential Homes and the Hospice House to the rest of the Facility and exterior entrances.
- 10.30.2.12 Provide a wired and wireless panic duress system for staff in all internal areas and areas where there is a danger to staff from the residents or public. The system will be RF and infrared based and will annunciate the location of the alarm at the call centre.
- 10.30.2.13 Without limiting the training obligations of Project Co set out in Schedule 2 [Design and Construction Protocols], Project Co will institute a training program that initially trains all staff, trains new staff and refreshes staff

training annually on all aspects of the security systems. Coordinate these efforts with Authority staff.

### **10.31 28 16 00 - Intrusion Detection**

#### 10.31.1 Basic Requirements

- 10.31.1.1 Provide and install intrusion detection in all areas where protection of physical assets is critical.
- 10.31.1.2 The intrusion detection system will form an integral system of the overall Security Management System (SMS) in Section 28 13 00 Access Control System.
- 10.31.1.3 All devices and components will be products of the Lenel OnGuard® system.
- 10.31.1.4 The Intelligent System Control (ISM) will serve as the main control panel for the monitoring of the building security field devices.
- 10.31.1.5 A breach in a secured and monitored door or activation of a motion sensor in a secured area will immediately be transmitted to the Authority's central monitoring agency through the EAC system. The host computer(s) on the EAC system will indicate the alarm location. The same alarm conditions will be monitored off-site through the Authority's Central Monitoring agency.
- 10.31.1.6 The building security and auxiliary alarm points will be acknowledged by the Authority's security staff through acknowledge and clearing or resetting the alarm at the host computer station.
- 10.31.1.7 Unless otherwise directed by the Authority, all building security alarm points will not be supplemented by any local audible alarms or visual indicator lights.

#### 10.31.2 Performance Criteria

- 10.31.2.1 The intrusion detection system will utilize industry proven devices for intrusion detection. Building security field devices will include but not be limited to the following:
  - 10.31.2.1(1) magnetic door contacts;
  - 10.31.2.1(2) motion sensors;
  - 10.31.2.1(3) glass break detectors; and
  - 10.31.2.1(4) auxiliary alarm monitoring points.
- 10.31.2.2 Provide door contacts in areas identified by the Authority, including
  - 10.31.2.2(1) perimeter doors without card readers;

10.31.2.2(2) controlled doors equipped with card readers; and

10.31.2.2(3) Services Building exterior exit doors and overhead doors.

## **10.32 28 26 00 - Resident Elopement**

### 10.32.1 Basic Requirements

10.32.1.1 Install a resident elopement system, integrated with the magnetic locks and panic hardware, in all areas where a resident may be at risk of injury if they leave the area unescorted.

10.32.1.2 The system will consist of wireless transmitters for each required resident that will initiate an alarm at each entry / exit point within or from the Facility via programmable receivers. These receivers will allow staff the ability to override the alarm for authorized outings on a resident by resident basis. The elopment system will be interconnected to the building network and access control system. The following will occur when a resident with a wireless transmitter that approaches an exit point within the Facility:

10.32.1.2(1) the access control system will secure the door to prevent exit;

10.32.1.2(2) an attempt to open the door by the resident with a wireless transmitter will cause an audible alarm at the door to sound; and

10.32.1.2(3) passage into an elevator will not be permitted.

10.32.1.3 In the event a resident with wireless transmitter leaves a Standard Residential Home or the Hospice House without staff authorization, the following will occur:

10.32.1.3(1) the nearest perimeter door, or door in the corridor linking the Residential Care Building to the Neighbourhood, will automatically close and lock;

10.32.1.3(2) entry into an elevator without authorization will cause the elevator to remain at the floor level in which the resident entered. Elevator cab doors will remain open. The elevator will return to normal operation once the resident leaves the elevator cab;

10.32.1.3(3) staff will be notified immediately of the breach on their wireless telephone which will indicate the room location where the resident is located and the name of the resident.

10.32.1.4 Clearing alarms at the doors will be possible through the door access control system's card reader at the door location.



- 10.32.1.5 Full tracking throughout the Facility will be required via the wireless access points to permit annunciation on the staff's wireless phones.
- 10.32.1.6 Authorized exit from a Residential Care Building or the Facility will be permitted by a staff member having rights to the access control system, to allow passage and entry through the card reader at the door monitored by the elopement system.
- 10.32.1.7 The resident elopement system will be the Roam Alert Resident Wandering system or equal a system of equivalent quality and functionality.

#### 10.32.2 Performance Criteria

- 10.32.2.1 Provide a resident elopement system in all Resident Care Buildings and other areas identified in consultation with the Authority.
- 10.32.2.2 The resident tags will be fully supervised, waterproof, and transmit a unique digitally encoded ID number. The tag will incorporate a tamper detection mechanism that will be enabled as soon as the tag is attached to the resident.
- 10.32.2.3 The resident elopement system will interface with magnetic locking system, access card readers and elevator interlock control to restrict unauthorized exiting.
- 10.32.2.4 The elopement system will have self-supervisory signals for low-battery, interference or other off-line conditions exist.
- 10.32.2.5 Interconnection of the fire alarm system and the access control system: in the event of a general evacuation alarm that disrupts power to the electromagnetic lock, the elopement system at the exit door will be prevented from locking the door.
- 10.32.2.6 Connect the elopement system to the emergency life safety circuit in the Standard Residential Homes and Hospice House.

### 10.33 28 31 00 - Fire Alarm

#### 10.33.1 Basic Requirements

- 10.33.1.1 Design and install the fire alarm system to meet the latest applicable versions of the following standards:

10.33.1.1(1) National Building Code 2010;

10.33.1.1(2) CAN / ULC S524-06, Installation of Fire Alarm Systems;

10.33.1.1(3) CAN / ULC S525, Audible Signal Devices;

10.33.1.1(4) CAN / ULC S526, Visual Signal Devices;

- 10.33.1.1(5) CAN / ULC S528, Manual Stations for Fire Alarm Systems including Accessories;
  - 10.33.1.1(6) Can / ULC S529, Smoke Detectors;
  - 10.33.1.1(7) Can / ULC S536-04, Inspection and Testing of Fire Alarm Systems; and
  - 10.33.1.1(8) Can / ULC S537-04, Verification of Fire Alarm Systems.
- 10.33.1.2 The system will utilize the latest proven technology available at the time of installation.
- 10.33.1.3 Provide a two-stage system operation. If an alarm is caused by activation of the pulling of a manual pull station, indication of flow on a sprinkler flow switch, operation of a fire detector (smoke, duct detector, thermal, flame detector) or operation of a kitchen exhaust hood fire suppression system, the following will occur:
- 10.33.1.3(1) A pre-signal audible alarm will sound through the Facility and all strobe lights will flash.
  - 10.33.1.3(2) An automatic voice page will sound on all fire alarm emergency evacuation speakers throughout the Facility to alert staff of a 'CODE RED' condition within the Facility. The automatic voice page will include generic location of the alarm (Neighbourhood, Resident Care Building, Hospice House, Adult Day Program, Services Building, Community Centre).
  - 10.33.1.3(3) The network annunciators will indicate by priority of alarm the location, type and time of the alarm.
  - 10.33.1.3(4) The pre-signal alarm will continue until the alarm is acknowledged and the system is silenced at any of the network annunciator control panels.
  - 10.33.1.3(5) Provide shut-down of ventilation systems as required and closing of doors held open in the immediate area of the alarm (by Neighbourhood).
  - 10.33.1.3(6) A signal will be sent via telephone signal to the municipal fire department. A separate signal will be sent to each Neighbourhood, the Adult Day Program, Community Centre and Services Building. The intent will be to allow the fire department advance notice as to which area of the Facility to respond and stage.
  - 10.33.1.3(7) The pre-signal alarm will continue until a general alarm key switch in any manual station is activated or a 0 – 5

minute time delay is activated to sound the general evacuation signal throughout the Facility.

10.33.1.4 A signal will be sent to the BMS system as an advisory alarm to alert the Authority's operating staff of the following conditions:

10.33.1.4(1) activation of the fire alarm system; and

10.33.1.4(2) trouble advisory alarm.

10.33.1.5 Magnetic locks will remain secure in the immediate area where the alarm is initiated and being automatically released on general alarm. Areas outside the Neighborhood from which the initial alarm originates will remain secure during the pre-signal alarm.

10.33.1.6 To address fire exit requirements, coordinate the interface of the resident elopement system, magnetic locks and panic hardware, providing a 15 second delay, with a notification sent to the care giver during the delay period.

10.33.1.7 Install lock boxes at each entrance in the Facility where a remote network annunciator panel is located.

#### 10.33.2 Performance Criteria

10.33.2.1 Provide a fully addressable, two stage computer-based fire alarm system throughout the Facility.

10.33.2.2 The fire alarm system may be used for day-to-day paging if required by the Authority.

10.33.2.3 The fire command centre will include a fire alarm control panel, a fire alarm graphic annunciator panel, a fire alarm colour graphics computer, a building management system computer for fan control and an elevator status/control panel. The fire alarm system will consist of the following:

10.33.2.3(1) a main fire alarm control and digital voice command (DVC) panel located in the Services Building's main telephone room that will control and monitor the fire alarm system throughout the Facility;

10.33.2.3(2) digital audio amplifier cabinets located in the Services Building and each Neighbourhood to operate the fire alarm speakers in each area;

10.33.2.3(3) remote LCD and digital voice command panel located at the main public entrances to the Community Centre and Services Building, and at each entrance of the Neighbourhood selected as the entry point for the fire department;

- 10.33.2.3(4) remote 'Power Booster' panels with integral auxiliary charger/power supply for strobe circuits and door holders; and
- 10.33.2.3(5) room smoke LED annunciator panels located in each Resident Care Building, equipped with integral alarm and silence button (and remote chime if required). The purpose for this annunciator to allow staff in the staff to quickly locate, by room number on the annunciator, which detector initiated an alarm in a particular Resident Care Building.
- 10.33.2.4 Interconnect the DVC panel and audio amplifier cabinets by fibre, run in conduit. Interconnect the remote network annunciator panels and smoke alarm annunciator panels to the main fire alarm panel by copper wiring as recommended by the manufacturer.
- 10.33.2.5 Install manual pull stations at all exit door locations, fire doors where required, and at all door locations equipped with magnetic door locks. Equip all pull stations in the Resident Care Buildings with clear LEXAN covers intended to deter unwanted activation of the pull station and provide protection from physical abuse to the pull station. Equip the covers with 9-volt DC battery operated warning horn to sound when the cover is raised.
- 10.33.2.6 All detectors will be addressable and programmable by the fire alarm control panel. Smoke detectors will be multi-sensor technology detectors, installed in all sleeping rooms and corridors serving as a means of egress from sleeping areas. Install smoke duct detectors where required.
- 10.33.2.7 Install fixed, high temperature conventional detectors in the attic spaces where protected by dry sprinkler systems. Install fire alarm monitor modules in the heated spaces of Buildings.
- 10.33.2.8 Provide the standby generator room with fixed, high temperature thermal detectors and a flame detector.
- 10.33.2.9 Audible annunciation will be a zoned overhead fire alarm speaker system that may also form part of the building public address system. Audible alert levels will be 10dBA above ambient with minimum of 75dBA and be audible in every room of the Facility.
- 10.33.2.10 Emergency paging will be accessible via fire phone at each Building exit/entrance and at the main fire alarm control panel.
- 10.33.2.11 Without limiting the training obligations of Project Co set out in Schedule 2 [Design and Construction Protocols], Project Co will train Authority staff on the operation of the system and incorporate a fire plan in the training to alert staff to policy and procedures in case of fire alarm and safe gathering points in case of evacuation.

10.33.2.12 The system will include pre-programmed voice messaging to automatically audibly announce the location of the alarm.

10.33.2.13 Install carbon monoxide alarms monitored by the fire alarm system as per the National Building Code. Design the BMS to provide readings of carbon monoxide levels and record peak levels once every 24 hours for each carbon monoxide detector.

## **PART 11. SITE AND INFRASTRUCTURE SUBGROUP SPECIFICATIONS**

### **11.1 31 11 00 - Earthwork Clearing and Grubbing**

#### 11.1.1 Performance Criteria

11.1.1.1 Prevent damage to trees, benchmarks, existing curbs and subsurface Utilities to remain.

### **11.2 31 14 00 - Soil Stripping and Stockpiling**

#### 11.2.1 Basic Requirements

11.2.1.1 Topsoil means the existing "A" horizon containing accumulated organic matter that is distinguishable by a darker colouration. Determination of suitability of soil for stockpiling will be made by the Authority when excavation begins.

11.2.1.2 Strip topsoil to its full depth, taking care not to mix topsoil with subsoil.

11.2.1.3 Remove cleared and grubbed materials off-Site to disposal area in accordance with the Phasing Plan.

#### 11.2.2 Performance Criteria

11.2.2.1 Retain an independent testing lab to sample and analyze stockpiled native topsoil to determine fertility and need for amendments.

11.2.2.2 Project Co will not move or work topsoil while it is in a wet or frozen condition or in any manner in which the soil structure is adversely affected.

### **11.3 32 11 00 - Aggregate Base Courses**

#### 11.3.1 Basic Requirements

11.3.1.1 Utilize granular sub-base and base course for stability of surface treatment through freeze thaw cycles and for its ability to store moisture.

11.3.1.2 Place granular sub-base and base only on an underlying subgrade that has been properly compacted and approved by the project engineer.

- 11.3.1.3 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.
- 11.3.1.4 Design the depth of aggregate base courses to exceed limits defined by regional average freeze thaw cycles averaged over a twenty year period.

#### 11.3.2 Performance Criteria

- 11.3.2.1 For each type of surface treatment where a sub-base and base is required, complete a structure design that demonstrates that the intended loads will be supported for the typical life cycle of the surface treatment. The structure design will provide detail on the depth and gradation of the sub-base and base courses to be used.
- 11.3.2.2 Unless otherwise specified in the structure design, the granular sub-base course will be well graded and have a maximum size of 50 mm and not more than 10 percent passing the 0.08 mm sieve by weight.
- 11.3.2.3 Unless otherwise specified in the structure design, the granular base course will be well graded and have a maximum size of 25mm and not more than 10 percent passing the 0.080 mm sieve by weight.
- 11.3.2.4 Place the granular material in uniform layers not exceeding a 200 mm compacted depth.
- 11.3.2.5 Compact the material near the optimum moisture content to a minimum 98% Standard Proctor Density.

### 11.4 32 12 16 – Asphalt Paving

- 11.4.1.1 Use hot mix asphalt paving in all roadway areas where vehicle traffic and snow clearing equipment will travel.
- 11.4.1.2 Place hot mix asphalt only on an underlying base course that has been compacted and approved by the project engineer.
- 11.4.1.3 Design asphalt mix for the intended load conditions and climatic conditions found on the Site.

#### 11.4.2 Performance Criteria

- 11.4.2.1 For each type of surface treatment where hot mix asphalt is required, complete a pavement structure design in accordance with the Asphalt Institute Method of Pavement Design and based on the Site Reports.
- 11.4.2.2 The pavement design will demonstrate that the intended loads will be supported for the typical life cycle of the surface treatment. The pavement design will provide detail on the depth of the asphalt structure and required asphalt properties.

- 11.4.2.3 Complete an asphalt mix design prior to any asphalt paving in accordance with the Marshall method of mix design as outlined in the latest edition of the Asphalt Institute Manual Series No. 2. Asphalt properties used for paving will be in accordance with the mix design or mix design purposes.
- 11.4.2.4 Asphalt paving will comply with specifications of the pavement structure design and asphalt mix design.
- 11.4.2.5 Asphalt densities will be specified as 97% of the standard laboratory Marshall and in no case will asphalt densities less than 95% be accepted.

## **11.5 32 13 13 - Concrete Curbs, Sidewalks and Driveways**

### 11.5.1 Basic Requirements

- 11.5.1.1 Use concrete paving in areas that require firm, long lasting hard surfaces for activities such as, loading docks, building entrances and walks.
- 11.5.1.2 Provide concrete curbs along the perimeter of all asphalt surfaces, unless otherwise approved by the Authority.
- 11.5.1.3 Products, concrete materials, execution and methods of concrete construction will comply with CSA CAN-A23.1.
- 11.5.1.4 Concrete mixes will be designed by a qualified engineer.
- 11.5.1.5 Place concrete only on an underlying base course that has been compacted and approved by the project engineer.
- 11.5.1.6 Perform concrete testing in accordance with the current CSA and ASTM specifications.

### 11.5.2 Performance Criteria

- 11.5.2.1 Place concrete curbs on a granular base with a minimum of 150mm of the curb buried below the abutting asphalt, concrete and/or a suitable backfill on each side of the curb.
- 11.5.2.2 Where vehicular traffic will be crossing curbs, reinforce the curb and sidewalk with rebar.
- 11.5.2.3 Portland cement will meet the requirements of CSA Standard Portland A5-M cement and will be Type 10 normal, or Type 50 sulfate resistant.
- 11.5.2.4 Maintain the air content of the concrete between the limits of 5-8% unless otherwise specified in the mix design and approved by the Authority.
- 11.5.2.5 The maximum allowable slump will be 70 mm +/- 10 mm for all hand poured concrete and 40 mm +/- 10 mm for all machine poured concrete.

- 11.5.2.6 Construct curb and sidewalk contraction joints at 1.5 m intervals and not less than 50 mm in depth. Contraction joint widths will not be greater than 5 mm. Deviations in walk surface caused by jointing tool must not be more than 3 mm.
- 11.5.2.7 Sidewalk cross-fall slopes will not exceed a 3% slope.
- 11.5.2.8 Walks will be a minimum of 1.5 m wide, unless adjacent to 90 degree parking where it will be a minimum of 1.8 m.
- 11.5.2.9 Sloped transitions will be transitioned over a minimum distance of 1.5 m.
- 11.5.2.10 Where sidewalks are poured separate from curbs, the curb must be notched to support the sidewalk, and rebar dowelling must be used to reinforce the connection between the sidewalk and curb or other structure.
- 11.5.2.11 Consolidate and smooth sidewalk surfaces using a wood float. Use light-steel trowelling followed by a uniform brush finish. Provide a sample to the Authority for approval. Edge sidewalks at joints to prevent chipping of the concrete. The minimum 28 day strength for concrete curbs, gutters, sidewalks and driveways will be 25 MPa.

## **11.6 32 31 19 - Fences and Gates**

### 11.6.1 Basic Criteria

- 11.6.1.1 Provide fences and gates for yards and other areas as noted.
- 11.6.1.2 Provide fences with decorative metal“picket”-style, except in loading or utility areas where screening is required.
- 11.6.1.3 Install fences per manufacturer’s directions and to minimize movement from freeze-thaw cycles.

### 11.6.2 Performance Criteria

- 11.6.2.1 Provide decorative aluminum or steel fence with powder coat finish. Pickets will not extend over top rail.
- 11.6.2.2 Supply gates with locking hardware that will release with fire alarm and sized to allow access for maintenance equipment.
- 11.6.2.3 Fence and gates components will meet the following minimum criteria:
  - 11.6.2.3(1) ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
  - 11.6.2.3(2) ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.



- 11.6.2.3(3) ASTM D523 - Test Method for Specular Gloss.
- 11.6.2.3(4) ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- 11.6.2.3(5) ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- 11.6.2.3(6) ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- 11.6.2.3(7) ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- 11.6.2.3(8) ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- 11.6.2.3(9) ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- 11.6.2.3(10) ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

## **11.7 32 84 10 – Landscape Irrigation**

### 11.7.1 Basic Requirements

- 11.7.1.1 Provide a permanent automated irrigation system for watering of turf in Standard Residential Home yards, Hospice House yard, Adult Day Program yard, and Community Centre central courtyard. All other turf and planting areas will be watered manually (see Section 11.7.1.3).
- 11.7.1.2 Design the automated irrigation system to minimize water waste including head spacing and spray pattern, watering times and length, head type, low-flow components and re-use of rainwater.
- 11.7.1.3 Buildings will be provided with sufficient numbers of exterior hose bibs to allow for manual watering of all turf and planting areas (except those described in Section 11.7.1.1) using a maximum 30 meter hose. Location and number of hose bibs will ensure that watering hoses do not impede resident, visitor or staff safe access to Buildings, parking lots and other exterior spaces.
- 11.7.1.4 Planting and turf in areas without a permanent automated irrigation system will be drought tolerant.

## 11.7.2 Performance Criteria – Automated irrigation system

- 11.7.2.1 Provide commercial grade irrigation equipment.
- 11.7.2.2 PVC distribution pipe will not be accepted. Use HPDE or LDPE pipe.
- 11.7.2.3 Provide PVC sleeves where distribution pipe and control wires pass under sidewalks, driveways and other hard surfaces.
- 11.7.2.4 Design system to irrigate turf and shrubs on different zones. Zone division will consider microclimate.

## 11.8 32 91 21 – Topsoil and Finish Grading

### 11.8.1 Basic Requirements

- 11.8.1.1 Apply topsoil and planting mix to areas of turf and shrub and tree planting.
- 11.8.1.2 Test soil to determine texture, nutrient composition, pH, organic carbon and salinity.
- 11.8.1.3 Project Co will provide final grading to site in areas of turf and planting

### 11.8.2 Performance Criteria

- 11.8.2.1 Topsoil will be black topsoil, a fertile, friable natural loam, neither heavy clay nor very light sand, consisting of not less than 4% organic matter for clay loams and not less than 2% for sandy loams, with an acidity value ranging from pH 6.0 to 8.0.
- 11.8.2.2 Planting mix will be 60% topsoil, 20% peat moss or well-rotted manure, 20% sharp-grained sand.
- 11.8.2.3 Complete testing on topsoil and planting mix to determine particle size, total organic carbon, salinity and NPKS levels. Testing facility will provide fertilizer recommendations.
- 11.8.2.4 Finish grading will spread topsoil and planting mix evenly where required. Eliminate rough and low areas to ensure positive drainage.

## 11.9 32 92 19 - Seeding

### 11.9.1 Basic Requirements

- 11.9.1.1 Seeding mix, seed and fertilizer application may be used in areas of turf.
- 11.9.1.2 Seeded areas will be established and maintained per the landscape maintenance requirements as well as what is noted below,
- 11.9.1.3 Erosion control measures may be used where slopes require stabilization.

- 11.9.1.4 Seed mixes used in areas without permanent irrigation will be drought tolerant.

#### 11.9.2 Performance Criteria

- 11.9.2.1 Provide seeds that are certified Canada No. 1 Grade to Government of Canada Seeds Regulations and have a minimum germination of 75% and minimum purity of 97%.
- 11.9.2.2 Provide fertilizer that is a complete commercial synthetic slow release fertilizer with maximum 35% water soluble nitrogen and is uniform in composition and free-flowing.
- 11.9.2.3 Keep seeded areas moist during germination period. Provide seeding that, after two mowings, is free of eroded, bare or dead spots and reasonably free of weeds.
- 11.9.2.4 Provide erosion control blanket of agricultural straw or straw / coconut fibre mix stitched between two woven biodegradable nets.
- 11.9.2.5 Provide straw or wood cellulose hydro-mulch with a tackifier of plant derived hydrocolloid polysaccharide (guar), organic psyllium fiber or water dilatable liquid dispersion containing thermoplastic resin. Mix and application rate will be per manufacturer's instruction.
- 11.9.2.6 Use erosion control measures where required and installed per manufacturer's instruction.

### 11.10 32 92 23 - Sodding

#### 11.10.1 Basic requirements

- 11.10.1.1 Kentucky Bluegrass sod may be used in turf areas with permanent irrigation.
- 11.10.1.2 Fescue-based low-watering sod may be used in turf areas without permanent irrigation.

#### 11.10.2 Performance criteria

- 11.10.2.1 Grade No. 1 cultured turf in accordance with the current edition of the "Metric Guide Specification for Nursery Stock" of the Canadian Nursery Landscape Association (CNLA), composed of:
  - 11.10.2.1(1) Kentucky Bluegrass sod: a minimum of 60% Kentucky Bluegrass / *Poa pratensis*.
  - 11.10.2.1(2) Fescue sod – mix of fine fescue and perennial rye grasses with spreading habit.
- 11.10.2.2 Provide sod that, after two mowings, is free of eroded, bare or dead spots and reasonably free of weeds.

**11.11 32 93 00 - Trees, Shrubs and Ground Cover Planting**

## 11.11.1 Basic requirements

## 11.11.1.1 Design planting to:

11.11.1.1(1) support the landscape design by reinforcing spatial relationships and way-finding; and

11.11.1.1(2) respond to program requirements for therapeutic outdoor spaces.

## 11.11.1.2 Select and place plantings:

11.11.1.2(1) to address micro-climates surrounding the Facility;

11.11.1.2(2) mitigate heating and cooling loads; and

11.11.1.2(3) provide a comfortable exterior environment for residents, staff and visitors.

11.11.1.2(4) Plantings that are not watered by a permanent automated irrigation system will be drought tolerant.

## 11.11.1.3 Design of planting will anticipate the following:

11.11.1.3(1) mature height and width of the plant material to maintain sight lines and screening; and

11.11.1.3(2) mature plant size does not interfere with walks, door movement, eaves, downspouts or any other architectural or site feature.

11.11.1.4 Plant quantities or planting bed quantities will, at a minimum, meet the requirements set out in the table below:

Row	Component	Landscape Element	Minimum Quantity
(i)	Standard Residential Home and Hospice House	Planting Beds	Provide 25 m <sup>2</sup> of planting beds per yard as defined in Section 4.1.8. Provide plant material in sufficient quantity such that within three years of installation 75% of each planting bed is covered.
(ii)	Parking Lots	Deciduous Shade Trees	1 tree for every 2 parking stalls
(iii)	Parking Lots	Shrub Planting	Provide a minimum of 2 rows of shrubs along: <ul style="list-style-type: none"> <li>• parking areas in order to screen parking from adjacent residential</li> </ul>

Row	Component	Landscape Element	Minimum Quantity
			<p>areas in the Facility; and</p> <ul style="list-style-type: none"> <li>the City's municipal reserve at the north edge of the Site.</li> </ul>
(iv)	Site Perimeter	Deciduous Shade Trees	1 tree per 10 linear meters of property line where landscaping abuts property line
(v)	Building Faces (Connecting Corridors / Neighbourhood Hubs / Hospital Link)	Foundation Planting	Provide foundation planting in continuous beds along 75% of the available building face that will extend from the building face to a minimum average distance of 0.8 m. Provide plant material in sufficient quantity such that within three years of installation 75% of each planting bed is covered.
(vi)	Community Centre and Services Building	Foundation Planting	Provide foundation planting in continuous beds along 75% of the available building face, that will extend from the building face to a minimum average distance of 1.8 m. Provide plant material in sufficient quantity such that within three years of installation 75% of each planting bed is covered.
(vii)	Standard Residential Home and Hospice House	Foundation Planting	Provide foundation planting in continuous beds along 75% of the available building face, in addition to planting beds defined for yards, that will extend from the building face to a minimum average distance of 1.2 m. Provide plant material in sufficient quantity such that within three years of installation 75% of each planting bed is covered.

#### 11.11.2 Performance criteria

11.11.2.1 Locate the nursery source in a hardiness zone 3a or hardier.

11.11.2.2 Imported plant material must be accompanied with necessary permits and import licenses. Transportation of elm trees must comply with Provincial DED regulations.

11.11.2.3 Source any roses from areas free of the pathogen *Phytophthora ramorum*.

11.11.2.4 Quality and source will comply with latest edition of the "Canadian Standards for Nursery Stock", by the Canadian Nursery Landscape Association (CNLA), referring to size and development of plant material and root ball.

11.11.2.5 Minimum plant sizes are as follows:

11.11.2.5(1) Deciduous trees – 40 mm caliper for site trees; 60 mm caliper for boulevard trees.

- 11.11.2.5(2) Coniferous trees – 1800 mm height.
- 11.11.2.5(3) Deciduous shrubs – #2 pot size.
- 11.11.2.5(4) Coniferous shrubs - #2 pot size.

## **11.12 32 93 15 – Mulches**

### 11.12.1 Basic requirements

- 11.12.1.1 Provide mulch to planting beds and tree wells to increase moisture retention.

### 11.12.2 Performance criteria

- 11.12.2.1 Provide wood mulch that is untreated, shredded wood fibre from mills in Northern Saskatchewan.
- 11.12.2.2 Rock mulch will be clean washed rock, installed over professional grade landscape fabric.
- 11.12.2.3 Mulch will be tapered to base of tree, shrub or perennial.

## **11.13 33 05 13 - Manholes and Catch Basins**

### 11.13.1 Basic requirements

- 11.13.1.1 Provide monolithic concrete manholes with transition to lid frame, covers, anchorage, and accessories.
- 11.13.1.2 Provide modular precast concrete manhole sections with tongue and groove joints with masonry transition to lid frame, covers, anchorage, and accessories.

### 11.13.2 Performance criteria

- 11.13.2.1 Locate manholes at the end of each line, at all changes in pipe size, grade or alignment, at the intersection of mains and at all changes in direction, except in the cases of curved sewers.
- 11.13.2.2 All manholes will be 1,200 mm inside diameter for all pipe 900 mm or less. For piping exceeding 900 mm diameter, manhole diameter will be pipe diameter plus 600mm, or a use a Tee-Riser.
- 11.13.2.3 All manhole joints will be watertight.
- 11.13.2.4 Catch basin barrels will be 900mm I.D. conforming to CSA-A257 2 and have a pre-cast base and pre-cast slab top. Joints will be confined O-ring to CSA-A 257.3 using rubber gasket.
- 11.13.2.5 The minimum size of catch basin leads will be 250 mm diameter with a minimum grade of 1%.

- 11.13.2.6 Catch basin manholes will be used in place of a catch basin when the lead exceeds 30 m in length or one catch basin discharges into another.

#### **11.14 33 10 00 - Site Water Utility Distribution Piping**

##### 11.14.1 Basic requirements

- 11.14.1.1 Design the water system to conform to "A Guide to Waterworks Design", latest edition, as published by the Saskatchewan Ministry of Environment.
- 11.14.1.2 The water distribution system consists of pipe and fittings for Site water lines including domestic water lines and fire water lines.
- 11.14.1.3 Size the distribution system to meet fire flow requirements and maximum daily demand.

##### 11.14.2 Performance criteria

- 11.14.2.1 Provide fire hydrants with western Canadian threads with Storz connections and of the same type and make as presently used by the City.
- 11.14.2.2 Use PVC, Class 150 (DR18) pipe or an approved equal for all water mains below ground.
- 11.14.2.3 Provide two separate connections to the City water system for backup water supply.
- 11.14.2.4 Upon completion of the site water distribution, test and flush the system in accordance with the requirements of the Saskatchewan Ministry of Environment.
- 11.14.2.5 Ensure the water distribution system is deep enough to protect it from external load damage and to prevent freezing.

#### **11.15 33 30 00 - Site Sanitary Sewerage Piping**

##### 11.15.1 Basic requirements

- 11.15.1.1 Design the sanitary sewerage system to conform to The Guidelines for Sewage Works Design published by the Saskatchewan Ministry of Environment.
- 11.15.1.2 The sanitary sewerage system will consist of the supply and installation of drainage piping, fittings, accessories, and bedding.
- 11.15.1.3 The Sanitary sewerage system includes connection of the Facility sanitary drainage systems to municipal sewers and testing.
- 11.15.1.4 Ensure pipe joints are watertight with infiltration within specified limits of manufacturer.

- 11.15.1.5 The maximum peak dry weather sanitary sewer flows permitted to be discharged from the site into the sanitary sewer main in Woodrow Lloyd Place is 5.16 L/s
- 11.15.1.6 Sanitary sewer can be connected to the Saskatchewan Drive sanitary sewer. Discharge flows are to be approved by the City.
- 11.15.1.7 Sanitary sewer mains will not be connected directly to the sewer main in Douglas Drive.

#### 11.15.2 Performance criteria

- 11.15.2.1 Design minimum pipe slopes to maintain 0.60 m/s minimum flow velocity. The maximum flow velocity should be 3.1 m/s. Where velocities exceed this value, give special engineering consideration to invert scouring and pipe anchoring.
- 11.15.2.2 Use PVC pipe and fittings type SDR 35 with locked in gasket and integral bell system for sanitary sewage systems.
- 11.15.2.3 Where concrete pipe is to be used, use Type 50 sulfate resisting Portland cement.
- 11.15.2.4 The sanitary sewage piping will have manholes, or approved clean out access at all changes in pipe size or alignment and not exceeding a spacing of 120 m.
- 11.15.2.5 Ensure sanitary sewage piping is deep enough to protect it from external load damage and to prevent freezing. Provide insulation for sewers that cannot be placed at sufficient depth to prevent freezing.

### 11.16 33 40 00 - Storm Sewer Water Drains

#### 11.16.1 Basic requirements

- 11.16.1.1 Design the storm sewer water drain system to conform to The Standards and Guidelines for Municipal Wastewater and Storm Drainage Facility, latest edition, as published by the Saskatchewan Ministry of Environment.
- 11.16.1.2 Provide a storm system consisting of a minor and major system of sufficient capacity to carry storm runoff from the surface of the Site.
- 11.16.1.3 The storm sewer water drain system consists of all piping, fittings catch basins, plant area drains, paved area drainage, site surface drainage accessories and bedding, including:
  - 11.16.1.3(1) the major system comprised of the roads, parking lots, detention facilities, parkland and any other land; and
  - 11.16.1.3(2) the minor system comprised of piping, manholes, catch basins and outfall structures.



- 11.16.1.4 The system includes connection of the on-Site system to the municipal off-site infrastructure and to the stormwater drainage channel on the north side of the Site.
- 11.16.1.5 Stormwater flow rates released from the Site into the City stormwater mains will not exceed the following flows:
  - 11.16.1.5(1) Woodrow Lloyd Place stormwater: peak release rate of 85 L/s;
  - 11.16.1.5(2) MR2 stormwater channel : peak release rate of 307 L/s.; and
  - 11.16.1.5(3) Saskatchewan Drive stormwater: flow to be approved by the City;
- 11.16.1.6 Stormwater mains will not be connected directly to the stormwater mains in Douglas Drive.
- 11.16.1.7 Design the release of stormwater drainage into the MR2 stormwater channel in accordance with the requirements of the City.

#### 11.16.2 Performance Criteria

- 11.16.2.1 Design the minor system to convey runoff from snowmelt and rainfall events to the municipal off-site stormwater system without sustaining any surface ponding or excessive surface flows for events up to and including a 1-in-5-year return period.
- 11.16.2.2 Design the major system to:
  - 11.16.2.2(1) to convey runoff from events up to and including a 1-in-100 year return period;
  - 11.16.2.2(2) to utilize the storm detention channel on the north side of the site, or an alternate means of storage; and
  - 11.16.2.2(3) to ensure that no flooding will cause significant property damage.

### 11.17 33 46 13 - Foundation Drainage

#### 11.17.1 Basic requirements

- 11.17.1.1 Provide a building perimeter, retaining wall and under slab on fill weep drainage system.
- 11.17.1.2 Provide filter aggregate, fabric and bedding.
- 11.17.1.3 Pipe materials will be:

11.17.1.3(1) polyvinyl chloride pipe that conforms to ASTM D2729, with required fittings; or

11.17.1.3(2) concrete pipe that conform to ASTM C412, with required fittings.

11.17.1.4 Accessories will be:

11.17.1.4(1) pipe coupling: solid;

11.17.1.4(2) joint cover: No. 15 or 30 asphalt saturated roofing felt or polyethylene; and

11.17.1.4(3) filter fabric: water pervious type, black polyolefin or polyester.

11.17.2 Performance criteria

11.17.2.1 Design foundation drainage to carry all sub-surface ground water away from footings and foundation walls and into storm drainage system.

## **11.18 33 51 00 - Natural Gas Site Piping**

11.18.1 Basic requirements:

11.18.1.1 Provide pipe and fittings for Site natural and propane gas distribution.

11.18.1.2 Provide propane storage tanks.

11.18.2 Quality Requirements

11.18.2.1 Natural gas piping will conform to the following:

11.18.2.1(1) ANSI B31.2 Fuel Gas Piping;

11.18.2.1(2) NFPA 54 National Fuel Gas Code; and

11.18.2.1(3) NFPA 58 Liquefied Petroleum Gas Code.

11.18.3 Performance Criteria

11.18.3.1 Perform natural gas piping work in accordance with the requirements of the gas transmission utility.

11.18.3.2 Welding materials and procedures will conform to ASME Boiler and Pressure Vessel Code.

11.18.3.3 Ensure persons performing welding are certified in accordance with ASME SEC IX.

11.18.3.4 Conform to CSA B149.1-10, NFPA 54, NFPA 58, ANSI B31.2, ANSI B31.8.



**APPENDIX 3A:           FUNCTIONAL PROGRAM**

[See attached document]

**APPENDIX 3B: LEAN 3P WORKSHOP - KITCHEN AND BATH DESIGNS**

[See attached document]

## APPENDIX 3C: SOUND TRANSMISSION RATINGS

### 1. Definitions

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

“**STC**” means: Sound Transmission Class. STC is a single number that is an indication of a partition’s ability to block sound. The higher the STC, 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 a STC 60 wall;

“**NC**” means: Noise Criteria. NC is a single number rating that is sensitive to the relative loudness within a given space; and

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

### 2. Noise Transmission Ratings

Project Co will:

- (a) provide wall and floor assemblies with STC ratings in accordance with Table 1 below;
- (b) where possible, provide buffer zones (e.g. corridors) between noise sensitive areas (e.g. video-conferencing, meeting rooms and offices) and noisy areas (e.g. service areas and lounges);
- (c) where possible, avoid vertical adjacencies between noisy and noise sensitive areas;
- (d) in order to achieve the required level of speech privacy (speech privacy for confidentiality is critical), extend the STC rated assembly full-height from floor to the underside of structure above for all walls and partitions required to have an STC rating of 50 or higher per Table 1 below. 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 will be achieved with the proposed design; and
- (e) if doors or interior windows are located in a wall required to have an STC rating of 50 per Table 1 below, then:
  - (1) such doors will be STC 45 and have an area of no more than 20% of the entire partition;
  - (2) such windows will be STC 45 and have an area of no more than 20% of the entire partition; and
  - (3) such windows and doors located together will be STC 45 and have a combined area of no more than 20% of the entire partition.

**Table 1 – STC Ratings of Demising Walls**

Adjacency combination		STC – Walls	STC – Floors
Resident Room	Resident Room	45	50
Resident Room	Corridor	45	50
Meeting Room	Corridor	50	50
Resident Room	Public Space (i.e. Lobby, Dining Room, Activity Room)	45	50
Resident Room	Service areas (i.e. Elevator and elevator machine room, mechanical room)	55	-
Toilet Room	Public space	45	-
Staff Room	Public space	45	50

Meeting Room	Public space	50	50
Meeting Room	Meeting Room	50	50

Table 1 – Notes:

- (a) “Public Space” includes lobbies, dining rooms, activity rooms and similar spaces.
- (b) “Service areas” include kitchens, elevators, elevator machine rooms, laundries, garages, maintenance rooms, mechanical and boiler rooms and similar spaces.

### 3. Noise Criteria Within Various Spaces

Project Co will:

- (a) in undertaking the design of the Facility, evaluate the expected noise from all mechanical systems in the Facility (using one rating system: either NC or dBA); and
- (b) design and construct the Facility so that noise from the mechanical systems does not exceed the noise level specified in Table 2 below within the room or space identified.

**Table 2 – Noise Criteria – Rating Within Various Spaces**

<b>Room Type</b>	<b>NC</b>	<b>dBA</b>
Resident room/Counselling room	30-35	35-40
Multiple occupant resident care areas	35-45	40-50
Corridors and public spaces	35-45	40-50
Offices	30-40	35-45
Conference/meeting rooms	25-35	30-40
Video conferencing rooms	25 (max)	30 (max)
Large gathering rooms	25-30	30-35

## **APPENDIX 3D: REFERENCE STANDARDS**

### **ANSI / ASHRAE**

52.2-2012	Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size
55-2010	Thermal Environmental Conditions for Human Occupancy
62.1-2013	Ventilation for Acceptable Air Quality
90.1-2007	Energy Efficient Design for New Buildings
111-2008	Measurement, Testing, Adjusting & Balancing of Building HVAC Systems
129-1997 (RA 2002)	Measuring Air Change Effectiveness
135-2012	Data Communication Protocol for Building Automation & Control Networks; and

### **ASHRAE:**

Handbooks:	2011 HVAC Applications, 2012 HVAC Systems and Equipment, 2013 Fundamentals, 2010 Refrigeration; 2012 Smoke Control Engineering;
Guideline 0-2005	The Commissioning Process.
Guideline 1.1-2007	HVAC & R Technical Requirements for the Commissioning process; and
Guideline 12-2000	Minimizing the Risk of Legionellosis Associated with Building Water Systems

### **ANSI / ASME:**

B31.1-2012	Power Piping Code, for steam systems;
B31.2-1968	Fuel Gas Piping
B31.8-2012	Gas Transmission and Distribution Piping System
BPVC-IX-2013	Welding Qualifications;

### **ANSI / AWS**

D1.3/D1.3M:2008	Structural Welding Code - Sheet Steel.
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**ANSI / BHMA**

A156.1-2013	Butts & Hinges
A156.2-2011	Bored and Preassembled Locks and Latches
A156.3-2008	Exit Devices
A156.4-2013	Door Controls-Closers
A156.5-2010	Auxiliary Locks and Associated Products
A156.6-2010	Architectural Door Trim
A156.8-2010	Door Controls-Overhead Stops and Holders
A156.9-2010	Cabinet Hardware
A156.13-2012	Mortise Locks & Latches, Series 1000
A156.15-2011	Release Devices-Closer Holder, Electromagnetic and Electromechanical.
A156.16-2008	Auxiliary Hardware
A156.19-2013	Power Assist and Low Energy Power Operated Doors.
A156.21-2009	American National Standard for Thresholds
A156.22-2012	Door Gasketing and Edge Seal Systems
A156.25-2013	Electrified Locking Devices
A156.31-2007	American National Standard for Electric Strikes and Frame Mounted Actuators

**TIA / EIA**

526-7	Measurement Of Optical Power Loss Of Installed Single-Mode Fiber Cable Plant
526-14	Optical Power Loss Measurements Of Installed Multimode Fiber Cable Plant
568.1/2/3	Commercial Building Standards for Telecommunications Pathways and Spaces
T568-A	UTP wiring/pinout
568-B.1	(CSA-T568.1-05 (R2010) Commercial Building Telecommunications Cabling Standard – Parts 1
568-B.2	(CSA-T568.2-05 (R2010) Commercial Building Telecommunications Cabling Standard – Parts 2
568-B3	(CSA-T568.3-05 (R2010)) Optical Fibre Cabling Components Standard;
568-C.0	Generic Telecommunications Cabling for Customer Premises

**TIA / EIA (cont):**

568-C	Series Commercial Building Telecommunications Cabling Standard
569	Commercial Building Standard for Telecommunications Pathway and Spaces
569-B	(CSA-T530-99) Commercial Building Standard for Telecommunications Pathways and Spaces;
606	The Administration Standard for the Telecommunications Infrastructure of Commercial Building
606A	(CAN/CSA-T528-96 (R1997)) Design Guidelines for Administration of Telecommunications Infrastructure of Commercial Buildings;
607	Commercial Building Ground (Earthing) and Bonding Requirements for Telecommunications
607A	(CSA-527-94 (R1999)) Grounding and Bonding for Telecommunications in Commercial Buildings.
758	Customer Owned Outside Plant Infrastructure Standard;
TIA/EIA/ANSI	Category 6 system and testing – latest revision

**ANSI / IESNA**

RP28-07	Lighting and the Visual Environment for Senior Living
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**ANSI / TIA**

TSB-162	Telecommunications Cabling Guidelines for Wireless Access Points;
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**ANSI / UL**

UL 1069	Hospital Signaling and Nurse Call Equipment
ANSI / ESNA	American National Standard Practice for Lighting
ASPE	Plumbing Engineering Design Handbook, Volumes 1-4

**ASTM:**

A53/A53M-12	Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless
A653/A653M-11	Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
B88-09	Standard Specification for Seamless Copper Water Tube
B117	Practice for Operating Salt-Spray (Fog) Apparatus.
C412-11	Standard Specification for Concrete Drain Tile

C472-99(2009) Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete

C475/C475M-12 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board

**ASTM (cont):**

C645-13 Standard Specification for Nonstructural Steel Framing Members

C1047-10A Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base

C1177/1177M-13 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing

C1186-28(2012) Standard Specification for Flat Fiber-Cement Sheets

C1311-10 Standard Specification for Solvent Release Sealants

C1396/C1396M-13 Standard Specification for Gypsum Board

D523 Test Method for Specular Gloss.

D714 Test Method for Evaluating Degree of Blistering in Paint.

D822 Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.

D1654 Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.

D2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

D2729-11 Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings

D2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

D3018/D3018M-11 Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules

D3359 Test Method for Measuring Adhesion by Tape Test.

D4226-11 Standard Test Methods for Impact Resistance of Rigid Poly (Vinyl Chloride) (PVC) Building Products

D4726-09 Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors

D6162.00a(2008) Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements

D6164/6164M-11 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements

**ASTM (cont):**

D6222/6222M-11 Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements

D6223/6223M-02(2009) Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements

D6878/D6878M-11a Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

E84-13a Standard Test Method for Surface Burning Characteristics of Building Materials

E283-04(2012) Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

E330-02(2010) Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

E331-00(2009) Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

E1745-11 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

F2034-03e1 Standard Specification for Sheet Linoleum Floor Covering

F2408 Ornamental Fences Employing Galvanized Steel Tubular Pickets.

G21-09 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

**CAN / ULC**

S101-07 Standard Methods of Fire Endurance Tests of Building Construction and Materials

S102-10 Surface Burning Characteristics of Building Materials and Assemblies

S104-10 Standard Method for Fire Tests of Door Assemblies

S107-10 Methods of Fire Tests of Roof Coverings

S109-03 Flame Tests of Flame Resistant Fabrics and Films

S115-11 Standard Method of Fire Tests of Firestop Systems

UL 294	Standard for Safety for Access Control System Units
S524-06-AM1	Standard for the Installation of Fire Alarm Systems
S525-07	Audible Signal Devices for Fire Alarm Systems

**CAN / ULC (cont):**

S526-07	Visual Signal Devices for Fire Alarm Systems
S528-05	Manual Pull Stations for Fire Alarm Systems
S529-09	Smoke Detectors for Fire Alarm Systems
S536-04	Inspection and Testing of Fire Alarm Systems
S537-04	Verification of Fire Alarm Systems;
S601-07	Standard for Shop Fabricated Steel Aboveground Horizontal Tanks for Flammable and Combustible Liquids
S701-11	Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
S702-09-AM1	Standard for Thermal Insulation Mineral Fibre for Buildings
S704-11	Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced
S716-1-11	Standard for Exterior Insulation and Finish Systems (EIFS) - Materials and Systems
S716.2-12	Standard for Exterior Insulation and Finish Systems (EIFS) - Installation
S716.3-12	Standard for Exterior Insulation and Finish Systems (EIFS) - Design Application.
S770-09	Standard Test Method for Determination of Long-term Thermal Resistance of Closed-cell Thermal Insulating Foams

**CAN / CGSB**

12.1-M90	Tempered or Laminated Safety Glass
12.3-M91	Flat, Clear Float Glass.
12.8-97	Insulating Glass Units.
12.9-M91	Spandrel. Glass
12.11-M90	Wired Safety Glass.
37-GP-9Ma	Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing
37-GP-56M	Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing

51.33-M89	Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.
51.34-M86	Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
75.1-M88	Tile, Ceramic
93.5-92	Installation of Metal Residential Siding, Soffits and Fascia

#### **CEC**

C22.1-12 & C22.2-12	Canadian Electrical Code as adopted in Saskatchewan;
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#### **CISC**

Code of Standard Practice for Structural Steel, Seventh Edition, adopted June 6, 2008

#### **CAN / CSA**

A23.1-09/A23.2-09	Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete, Includes Update No. 1 (2011);
A23.3-04(R2010)	Design of Concrete Structures; Includes Update thru to No. 3 (2009)
A23.4-09	Precast Concrete - Materials and Construction;
A82.1-M87 (R2003)	Burned Clay Brick (Solid Masonry Units Made from Clay or Shale).
A123.1-05/A123.5-05(R2010)	Asphalt Shingles Made From Organic Felt and Surfaced With Mineral Granules / Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules
A123.2(R2008)	Asphalt-Coated Roofing Sheets
A123.5(R2010)	Asphalt Saturated Organic Roofing Felt
A165 Series-04 (R2009)	CSA Standards on Concrete Masonry Units
A179-04(R2009)	Mortar and Grout for Unit Masonry
A257 SERIES-09	Standards for Concrete Pipe and Manhole Sections
A370-04 (R2009)	Connectors for Masonry;
A371-04(R2009)	Masonry Construction for Buildings
A440-11	NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights
A440.4-07(R2012)	Window, Door, and Skylight Installation
A660-10	Certification of Manufacturers of Steel Building Systems
A3000-08	Cementitious Materials Compendium
B44-2010	Safety Code for Elevators and Escalators

B51-09	Boiler, Pressure vessel and Pressure Piping Code;
B52HB-05	Mechanical Refrigeration Code;
B111-1974(R2003)	Wire Nails, Spikes and Staples
B139-09	Installation code for oil-burning equipment

**CAN / CSA (cont):**

B149.1-10	Natural Gas and Propane Installation Code;
B651-12	Accessible Design for the Built Environment;
C22.2 No. 214	Communications Cables (Bi-national Standard, with UL 444)
C22.2 No. 182.4	Plugs, Receptacles, and Connectors for Communication Systems
C282-09	Emergency Electrical Power Supply for Buildings;
E283-04 (BS ISO 18292:2011)	Energy Performance of Fenestration Systems for Residential Buildings
G30.18-09	Carbon Steel Bars for Concrete Reinforcement
G30.5-M1983 (R1998)	Welded steel Wire Fabric for Concrete Construction
G40.2-04/G40.21-04	General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel
G164-M92(R2003)	Hot Dip Galvanizing of Irregularly Shaped Articles
O86-09	Engineering Design in Wood, Includes Update thru to No. 4 (2012)
O132.2-Series 90(R1998)	Wood Flush Doors
S16-09	Limit States Design of Steel Structures, Includes Updates thru to No 3 (2013)
S136-12	North American Specification for the Design of Cold Formed Steel Structural Members
S301	Central and Monitoring Station Burglar Alarm Systems
S302	Installation and Classification for Burglar Alarm Systems for Financial and Commercial Premises, Safes and Vaults
S304.1-04 (R2010)	Design of Masonry Structures
S478-95 (R2007)	Guideline on Durability of Buildings
T529	Telecommunications Cabling Systems in Commercial Buildings (adopted ANSI/EIA TIA 568A with modifications)
S832-06 (R2011)	Seismic Risk Reduction of Operational and Functional Components (OFCS of buildings).
W47.1-09	Certification of Companies for Fusion Welding of Steel Structures, Includes Update No 5 (2012)

W59-03 (R2008)	Welded Steel Construction (Metal Arc Welding)
W186-M1990 (R2012)	Welding of Reinforcing Bars in Reinforced Concrete Construction;
Z32.09	Electrical Safety and Essential Electrical System in Health Care Facilities; Includes Update No. 2 (2010)
Z305.1-92	Design the medical gas systems

**CAN / CSA (cont):**

Z317.1-09	Special requirements for plumbing installations in Health Care facilities
Z317.2-10	Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities;
Z317.5-98 (R2013)	Illumination Systems in Health Care Facilities;
Z317.10-09	Handling of waste materials in Health Care Facilities and Veterinary Health Care Facilities
Z317.11-02 (R2012)	Area requirements for Health Care Facilities
Z317.13-12	Infection Control During Construction, Renovation, and Maintenance of Health Care Facilities
Z318.0-05	Commissioning of Health Care Facilities;
Z318.1-95 (R2001)	Commissioning of HVAC Systems in Health Care Facilities;
Z318.5-95 (R2001)	Commissioning of Electrical Equipment and Systems in Health Care Facilities;
Z7396.1-12	Medical Gas Pipeline Systems – Part 1: Pipelines for Medical Gases and Vacuum;
Z7396.2-02 (R2007)	Medical Gas Pipeline Systems – Part 2: Anaesthetic Gas Scavenging;
Z614-07 (2012)	Children’s play spaces and equipment

**CSSBI**

30M-06	Standard for Steel Building Systems
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**NFPA (Fire)**

10-2013	Portable Fire Extinguishers
13-2013	Standard for the Installation of Sprinkler Systems
14	Standard for the Installation of Standpipe and Hose System, 2013 Edition
54 / ANSI Z223.1	National Fuel Gas Code, 2012 Edition
58	Liquefied Petroleum Gas Code, 2014 Edition



56	Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems, 2014 Edition;
80	Standard for Fire Doors and Other Opening Protectives, 2013 Edition
90A	Installation of Air Conditioning and Ventilation Systems; 2012 Edition
92A	Standard for Smoke-Control Systems, 2012 Edition
96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. 2014 Edition
101	Life Safety Code, 2012 Edition
252	Fire Tests of Door Assemblies, 2012 Edition
701	Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, 2010 Edition

#### **NLGA**

Standard Grading Rules for Canadian Lumber, current edition

#### **IEEE**

519-1992	Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
602-2007	Recommended Practice for Electric Systems in Health Care Facilities
802.1BA-2011	Standard for Local and Metropolitan area networks -, Audio/Video Bridging (ABV) Systems;
802.3-2012	Standard for Ethernet;
802.11-2012	Standard for Information Technology – Telecommunications and Information Exchange Between Systems;
1159-2009	Monitoring Electric Power Quality
1250-2011	Guide for Identifying and Improving Voltage Quality in Power Systems

#### **RSIC**

Manual of Standard Practice (2004)

#### **OTHERS:**

TTMAC	Terrazzo Tile and Marble Association of Canada (TTMAC) Specification Guide 09 30 00 Tile Installation Manual (latest edition)
AWMAC	Architectural Woodwork Standards Edition 1 (2009) - Adopted and Published Jointly by Architectural Woodwork Institute (AWI),

Architectural Woodwork Manufacturer's Association of Canada (AWMAC) and the Woodwork Institute.

CSDMA

Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2000, by the Canadian Steel Door Manufacturer's Association (CSDMA)

Saskatchewan Plumbing and Drainage Regulations.