

# **Design Guidelines for Continuing Care Facilities in Alberta**

**August 2018**

## ACKNOWLEDGEMENT

The development of this document was truly a collaborative effort. ***Steering Committee members***, who directed the process and provided valuable and thoughtful input into the document, included individuals from the following organizations:

- Alberta Infrastructure
- Alberta Health Services
- Alberta Health
- Alberta Seniors and Housing
- Alberta Continuing Care Association
- Alberta Senior Citizen's Housing Association
- Private consultants

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## SECTION A: HOW TO USE THE GUIDELINES

### I. PURPOSE AND GUIDING PRINCIPLES

The **Design Guidelines for Continuing Care Facilities in Alberta (Design Guidelines for CCF)** are intended to promote innovative design for Supportive Living and Facility Living environments in Alberta. This document describes “best and contemporary practices” for continuing care facilities. It is intended to promote positive health outcomes/quality of life and optimal service delivery, through appropriate and positive living environments.

The overall goal of the Design Guidelines for CCF is to integrate design concepts to facilitate the provision of quality health care services within comfortable, aesthetically pleasing and home-like environments. These guidelines are intended to support and encourage the configuring of environments that respond positively and appropriately to the diverse physical, psychological, social, cultural, and spiritual needs of individuals who live within Supportive Living and Facility Living environments.

The planning process for a continuing care facility should be collaborative, involving several constituents, including designated health professionals/specialists (i.e., an interdisciplinary team), representatives of the sponsoring agencies, representatives of various levels of government and planning consultants. As part of the planning process, the development of a functional program should be considered. It is regarded as a best practice and serves three primary purposes:

- it translates residents’ need for care, support and everyday living experiences, combined with efficient and effective operations, into a comprehensive understanding of program and facility directions;
- it provides the direction to the architectural team for the preparation of preliminary building design; and,
- it is an effective tool for decision making and communication with others, including approval and funding sources, through all subsequent stages of planning.

These Design Guidelines for CCF have been developed as a reference guide for both new construction and renovation/ rejuvenation projects. It is understood that use of the guidelines in renovation/rejuvenation projects may require additional flexibility in implementing the guidelines, due to potential limitations that may be imposed by existing building systems and conditions. They are not exhaustive and do not address all facility and design elements essential for a successful facility. Accordingly, the guidelines must be read in concert with all applicable building codes/requirements and other relevant information/research regarding optimal continuing care facilities.

### **Principles to Guide Planning**

The underlying principles upon which these guidelines were developed include:

- Care facilities are residents' homes. The design should encompass similar residential features, in both scale and proportion, as those common to family homes;
- Innovation and creativity guide the planning and design of facilities;
- The design and planning is resident focused;
- Facilities balance needs for space and equipment, required by most residents with those that are unique to individual residents, thus necessitating customized adaptations to the environment;
- Facilities promote wellness and independence for the residents, their family/friends and the staff who work there. The design supports easy and independent use of the space, often facilitated by the presence of needed equipment;
- These guidelines and the best practices upon which they are based, will continue to change over time; flexibility in the design of space is essential to allow operators to respond to new trends, best practices and resident needs;
- While guidelines are helpful in creating desirable facilities, they should not replace real life experience. Creating mock-ups for key rooms can be effective in determining what works best for the residents who live within the facility and their families, as well as the staff who work there; and,
- It is recognized that continuing care environments accommodate seniors and persons younger than 65 years who may have specialized needs. These guidelines are intended to be supportive of all resident needs and may need to be augmented and refined to respond to specialized needs of specific populations. These guidelines incorporate the principles of universal design in support of the resident populations that will be served in these facilities.

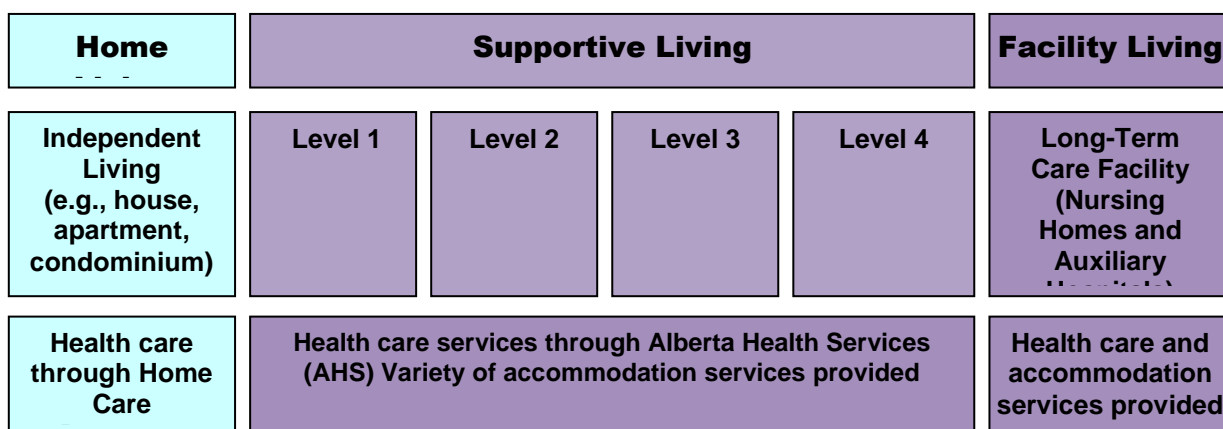
The Design Guidelines for CCF are to augment the specific requirements of each project, as outlined in the project specific request for proposals. The project specific request for proposals is developed based on community needs and in consultation with government and Alberta Health Services.

## **II. CONTEXT**

The Supportive Living Guide (August, 2013) outlines three living streams – Home Living, Supportive Living, and Facility Living (Long Term Care Facility) (See *Figure 1*). The Coordinated Access to Publically Funded Continuing Care Health Services: Directional and Operational Policy (Coordinated Access Policy, 2010) of Alberta Health Services further defines the populations best served by the health services packages within Supportive Living and Facility Living environments.

Notwithstanding, several of the guidelines may be useful for planning other facility types that respond to the needs of other populations who also require congregate living and care environments.

Figure 1: Three Streams of Continuing Care



- Alberta Health is responsible for publicly funded continuing care health services and has developed the Continuing Care Health Service Standards.
- Alberta Health is responsible for overseeing the government's role in the provision of accommodation services as described in the following documents:
  - *Supportive Living Guide (August, 2013)*
  - *Supportive Living Accommodation Licensing Act (2010) and*
  - *Updated Long Term Care Accommodation Standards (2013)*

Throughout Alberta, it is important to create home-like congregate living environments that respond to the varied and distinct needs of residents for optimal everyday living experiences including care, socialization, participation in meaningful activities, and personal, spiritual and therapeutic support. In planning for both the site and the building, it is equally important to ensure sufficient flexibility to accommodate potential changes in the needs, resident populations and the types of care provided. This must be considered in concert with the needs of the local community and the care delivery model(s) proposed for the facility.

While Supportive Living environments can stand alone on a site, the literature also supports “campuses of care” where individuals can “age in place” as their needs for care and support change, overtime. An “aging in place” philosophy, when supported by an appropriate physical environment, has been associated with improved resident independence, well being, and quality of life. Further, campuses of care have the potential to promote continuity of care, flexibility in responding to changing resident needs and economies of scale. A campus of care that also incorporates other community based programs on site (e.g., respite spaces, day programs, hospice, sub-acute, transition care) may enhance the use of the physical space and the site. Of note, to support an aging in place philosophy within a single building (i.e., providing Supportive

Living and Facility Living), the entire building, including the supporting living areas shall need to be constructed to meet the most current B3 Alberta Building Code occupancy classification.

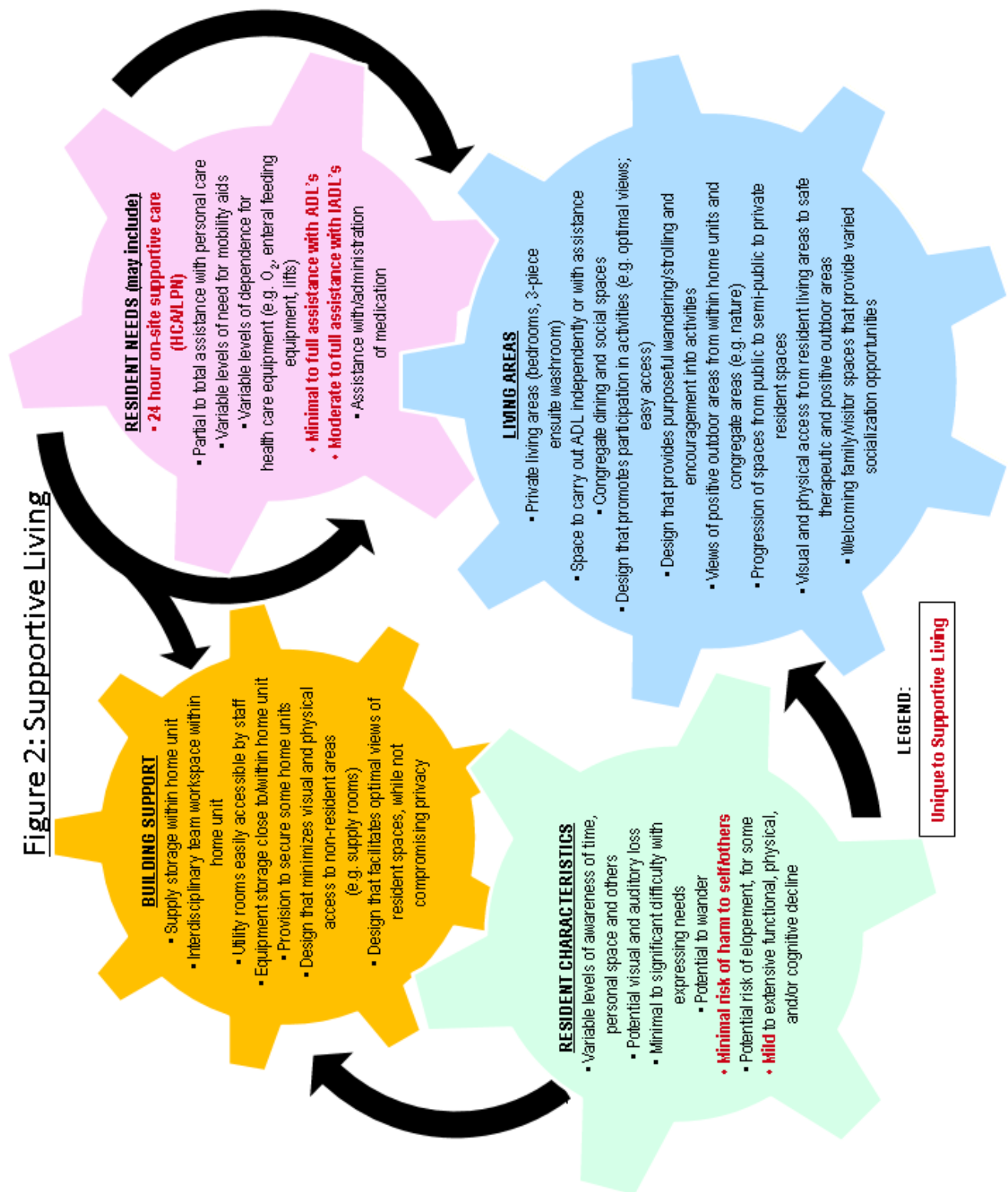
### **Supportive Living**

Supportive Living is both a philosophy and approach for providing services within a housing environment. It provides a residential setting where people can maintain control over their lives while also receiving the support they need, all within a safe environment<sup>1</sup>. Residents and their family members are equal partners in decision making and health care delivery. Supportive Living provides accommodation/housing in association with hospitality services, personal support services and health services support. Hospitality services may include meals, housekeeping and laundry services and life enrichment activities. Supportive Living environments are characterized by private resident living areas as well common areas for dining and social functions. Staffing is available on site for supervision, socialization, personal care and/or, health care. Alberta Health Services provides scheduled health professional visits, case management functions and consultative allied health services to residents within their living environments; this may not apply to all Supportive Living facilities operating in the province.

Figure 2 depicts the relationship between common resident characteristics/needs and the physical features of a Supportive Living environment.

<sup>1</sup> Supportive Living Framework 2007.

Figure 2: Supportive Living





### **Facility Living**

Facility Living (Long Term Care Facility) describes an approach to care and a living environment that supports the provision of care, therapy and treatment, in concert with everyday activities, to individuals who are unable to live at home or within a Supportive Living environment.

Individuals typically have medical and care needs that require the involvement of various medical, nursing and allied health personnel, in their daily living routines. Facility Living environments are characterized by private resident living areas<sup>2</sup> that allow high levels of care and support to be provided. Common areas for dining, socialization as well as therapy and treatment are also included within these facilities. Facility Living environments also require specialized spaces and facility infrastructure to support the delivery of high levels of care.

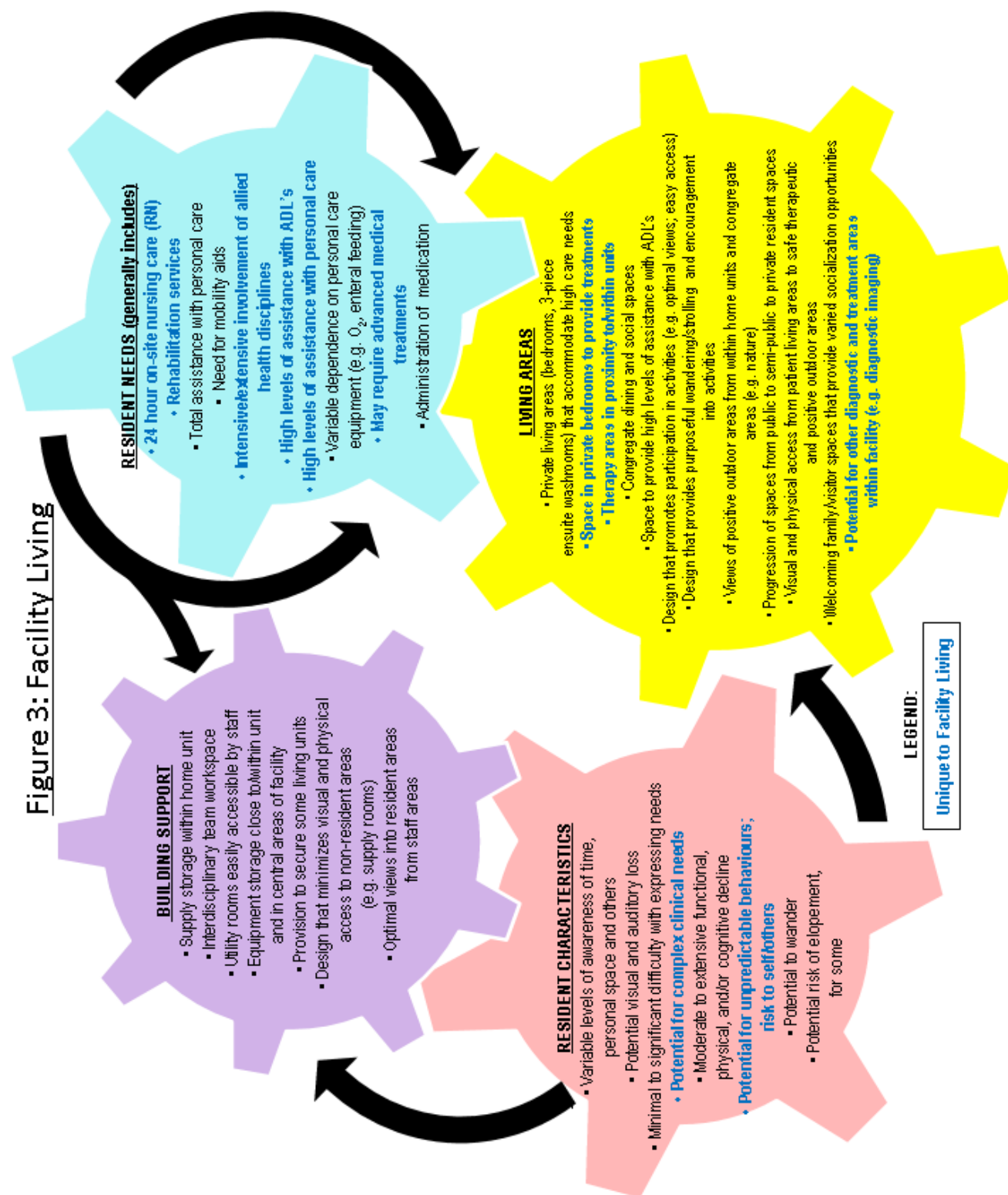
Figure 3 depicts the relationship between common resident characteristics/needs and the physical features of a Facility Living environment.

Individuals living with “special needs” and requiring an adapted living environment may also live in Supportive Living and Facility Living environments. However, the distinct spaces required to meet the special needs of these residents are not outlined in this document.

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<sup>2</sup> Within some Facility Living environments, two bed resident bedrooms continue to exist.

**Figure 3: Facility Living**



## PRINCIPLES AND VALUES

The major principles and values that guide Supportive Living and Facility Living environments, consolidated from several provincial publications, are described below in Figure 4.

Figure 4: Principles and Values of Supportive Living and Facility Living Environments	
Principle/Value	Features
<b>Aging in Place</b>	<ul style="list-style-type: none"> <li>Bring services and care to the client and adjust as care needs change rather than the client having to move to another setting until such time as more appropriate setting is required</li> </ul>
<b>Person Centred Care</b>	<ul style="list-style-type: none"> <li>Care plans, coordination and delivery of health services will be centred on residents' unique needs and preferences</li> <li>Residents and health service providers will be considered intra-dependent in developing care plans (<i>Source: Alberta Health Continuing Care Health Service Standards, July 2008</i>)</li> <li>Residents will participate in care decisions which will be respected</li> </ul>
<b>Person and Family Involvement</b>	<ul style="list-style-type: none"> <li>Residents and families will be essential members of the integrated health care team</li> <li>Each member of the team (including residents) understands roles/responsibilities, what is expected and support others in making informed decisions about care (<i>Source: AH Continuing Care Health Service Standards, July 2008</i>)</li> </ul>
<b>Wellness</b>	<ul style="list-style-type: none"> <li>Residents will be provided with health services to address assessed <sup>a</sup>, unmet health needs and promote their wellbeing (<i>Source: Alberta Health Continuing Care Health Service Standards, July 2008</i>)</li> </ul>
<b>Capacity Enhancing</b>	<ul style="list-style-type: none"> <li>Resident's and family's ability, desire and willingness to make/provide care choices will be supported</li> <li>Gaps in desired care will be augmented</li> <li>Families and residents will be assisted in developing necessary skills, knowledge or adapting processes, to carry out functions independently</li> </ul>
<b>Supporting Resilience <sup>b</sup></b>	<ul style="list-style-type: none"> <li>Resident and family resilience will be supported</li> </ul>
<b>Respecting Autonomy and Independence <sup>c</sup></b>	<ul style="list-style-type: none"> <li>Residents personal autonomy, to make decisions that affect their life and living conditions will be respected</li> </ul>
<b>Case Management and Integrated and Collaborative Care Teams</b>	<ul style="list-style-type: none"> <li>Residents will have access to integrated and collaborative care teams. A collaborative person centred strategy for the provision of quality health and supportive services, using a case management approach, will be used</li> </ul>

**Figure 4: Principles and Values of Supportive Living and Facility Living Environments**

Principle/Value	Features
<b>Residential/Home-Like Environment</b>	<ul style="list-style-type: none"> <li>Living environments should be               <ul style="list-style-type: none"> <li>residential in nature and provide amenities reflective of a family home</li> <li>organized to allow for a smaller number of residents to be accommodated in home areas that include private bedroom with ensuite washrooms, congregate dining and living spaces</li> <li>designed to encourage resident participation in activities</li> <li>organized to provide a variety of spaces for resident privacy, small intimate gatherings with family/friends and large group activities</li> <li>designed to promote resident interest in accessing and exploring their living environment through visual cues, interesting circulation routes that promote purposeful wandering, short distances between rooms and simple wayfinding cues.</li> </ul> </li> </ul>
<b>Affordable</b>	<ul style="list-style-type: none"> <li>All residents will have access to required health services, regardless of their ability to pay.</li> </ul>
<b>Safety and Security</b>	<ul style="list-style-type: none"> <li>Resident and family safety and security will be promoted</li> </ul>
<b>Accessibility</b>	<ul style="list-style-type: none"> <li>High levels of multi-sensory accessibility will be reflected throughout the environment</li> </ul>
<b>Cost Effective</b>	<ul style="list-style-type: none"> <li>Supportive Living and Facility Living environments will be cost effective ways of delivering health services without a loss of quality or an increase in resident risk</li> </ul>
<b>Footnotes</b>	
a	Assessed care requirements that cannot be met by the client or their caregiver(s) taking into consideration their willingness, availability and ability (Source: AHW/AHS)
b	Change or misfortune without being overwhelmed or acting in dysfunctional or harmful ways (Resiliency Centre, 2010).
c	Individuals have the right to make informed decisions regarding their own situations including participating in activities that may place them at risk. (Alberta Health Continuing Care Health Service Standards, July 2008). Recognizing the right to live at risk, negotiated risk is the process of informing, discussion, and coming to consensus, balancing personal risk to the resident and respect for resident choice (Assisted Living Federation of America, 2009).
d	Standardized assessments will provide guidance to the health-care professional who assesses and advises seniors and their families/caregivers about health services within living options. Throughout the assessment and recommendation process, the role of the resident and their family as well as physicians and other care providers will remain integral. In addition to the assessment tools, decisions on access will take into account family/caregiver and other support for the senior being assessed (Source: AHS, <i>Progressing the Continuing Care Strategy, "The Right Care in the Right Place", 2010</i> )

### III. DESIGN OBJECTIVES AND GUIDELINES

Each section of the Design Guidelines for CCF is based on the following format:

- **Design Objective:** describes the purpose and design expectations for the area under review, including how the space can be used to achieve optimal resident outcomes.
- **Design Guidelines:** provide suggestions and helpful guidance regarding features/concepts to include during the design process.

### IV. COMPLIANCE AND APPLICATION

#### **Mandatory requirements**

The only mandatory requirement of this document is that the building will be designed and built to a **Group B Division 3 (B3) occupancy classification** as defined in the Alberta Building Code, along with the Infection Prevention & Control requirements in **Appendix 3**.

Exception: Complex Care Facilities must be designed and built to a Group B Division 2 (B2) occupancy classification.

Other mandatory requirements may be stated within specific RFPs where these guidelines may be referenced, for example there may be a minimum resident room size, or a minimum overall area per resident requirement.

The Design Guidelines for CCF are intended to provide guidance and are not mandatory, with the exception of the items noted above. They will be reviewed and updated periodically to reflect changing delivery practices, technologies, evaluation findings and expectations. The term “must” is used when the clause has a direct relationship to resident safety.

The Design Guidelines for CCF are also intended to be read in conjunction with applicable codes and regulations including, but not limited to, the Alberta Building Code and Supporting Living Accommodation Licensing Act (SLALA). All capital projects must comply with all current applicable codes and regulations. Applicable codes and regulations represent the minimum acceptable standard. Further, buildings must comply with the accessibility requirements of the Alberta Building Code for the whole building. Where “barrier-free” is referenced throughout the document, the “Barrier-Free Design Guide” from the Alberta Safety Codes Council should be used.

## V. ORIENTATION TO THE DOCUMENT

The Design Guidelines for CCF are organized as follows:

- **Sections B – Resident Personal Space; C – Dining Area and Servery Space; D – Resident Living Rooms and Activity Space; and E – Resident Common and Public Space** include guidelines that help to shape the resident living experience, including the involvement of family, friends and visitors. Illustrative diagrams are also included for key rooms. They provide useful examples of how room requirements may be achieved; they are **not** intended to imply design. Rather, they encourage innovation and creativity in design and present a visual check-list of key performance requirements to be considered.
- **Section F – Facility and Staff Support Space** include guidelines that support staff and others in providing high quality resident care within the bounds of efficiency and effectiveness.
- **Section G – Common Facility Wide Guidelines** includes guidelines that apply to most areas of the facility.

The document does not provide guidelines for spaces associated with facility wide dietary, environmental and plant maintenance services.

- **Appendices** include:
  - 1: *Special Resident Guidelines* – Guidelines related to the needs of distinct resident populations; (e.g., residents with dementia or obesity).
  - 2: *References* – Other provincial/regional documents that contributed to the information in the Design Guidelines for CCF.
  - 3: *Infection Prevention and Control* – Guidelines that apply to all areas of the facility.

## SECTION B: RESIDENT PERSONAL SPACE

### I. RESIDENT HOUSES

#### Design Objective

Resident houses reflect largely self-contained, home-style settings, where personal care and many daily living activities are offered to/undertaken by residents living within the house. The objective is to provide a living environment sized to accommodate a set number of residents, which has a familiar, home-like and residential feel with welcoming spaces and easy and interesting wayfinding. Houses offer opportunities for privacy, socialization and participation in everyday activities, either independently or with assistance. The size of the house (i.e., number of residents) affects operational efficiency. Residential, non-institutional and home-like interior design features (e.g., wall colours, floor coverings, millwork, etc.) assist in achieving this objective. Innovation in linking individual houses to optimize service operations and staff utilizations is desired and should be considered in space planning.

#### Design Guidelines

##### Features of the House

1. Houses are the clearly defined living areas of the residents. They should possess features commonly found in a family house and include spaces for everyday living such as bedrooms, washrooms, bathing areas, dining rooms, living/activity rooms, support areas and storage spaces.
2. Typically individual houses have up to a maximum of 18 residents. The optimal number of residents per house should be determined during the functional program process, and balance needs for:
  - a. a residential home-like setting which is best achieved with a smaller number of residents per house. Smaller houses help to:
    - avoid an institutional feel;
    - allow for the collocation of smaller groups of residents who may have similar care needs;
    - promote resident familiarity with their surroundings;
    - limit large gatherings; and,
    - reduce the potential for high levels of noise and other stimuli common to high occupancy areas;
  - b. a design that responds to the needs of specific resident populations (e.g., those with dementia) which may necessitate a smaller number of residents per house, to facilitate resident participation and familiarity with everyday activities and resident safety;
  - c. operational efficiency, ensuring that staffing levels are both optimal and affordable. Houses that have a very small number of residents (with no ability to share staffing with an adjacent house), or a very large number of residents may be inefficient and costly to operate;

- d. different sized houses. The number of residents in each house does not have to be the same throughout the facility; and
  - e. Depending upon the functional design of the residence, the houses should be linked so that more than one group of residents can be monitored or serve as a group when staffing numbers are smaller (e.g. night time).
3. A house includes resident bedrooms with three-piece ensuite washrooms for the designated number of residents who live within the house. It may also include a lounge, a multi-use activity room, a dining room and support service areas, all dedicated to support the functions of the specific house.
4. Each house should be self contained and distinct from, yet joined to other houses and communal and shared spaces, within the facility (see Neighbourhoods). From the entry into the house, it should allow for a progression from communal/semi private spaces (e.g., activity/dining areas) to private spaces (e.g., resident bedrooms).
5. Houses should be designed with simple circulation patterns that promote wayfinding, purposeful wandering and exploring. Clear visible destinations along circulation routes help to facilitate resident orientation and participation in activities. Circulation routes, within each house and the overall facility, should:
  - be interesting and encourage residents to stroll within safe and familiar surroundings;
  - provide opportunities for resting and observing along the way;
  - permit easy maneuverability by persons using walkers, wheelchairs and possibly scooters of all sizes;
  - provide optimal and frequent sight lines for residents to view the outdoors to promote spatial orientation within the facility, as well as with the physical surroundings outside of the facility;
  - provide optimal sight lines to enable staff to observe and respond, if supervision is required to meet resident needs;
  - be short in length and minimize distances between resident bedrooms and other resident areas of the house/facility to facilitate resident mobility and independent travel, whenever possible;
  - allow for easy travel between houses while not providing a sole thoroughfare from one house to another or through a house to other areas of the facility;
  - provide easy access to outdoor areas such as gardens, patios, terraces and solariums. Outdoor areas should provide a mix of spaces that offer protection from the elements and shading from the sun. To encourage resident access and facilitate staff supervision, they should also be located to allow for optimal visibility from within the house. All outdoor areas must also ensure resident safety (e.g., suitable walking surfaces, no obstacles, strategically placed bushes or fences) and prevent elopement or unrestricted entry; and,
  - minimize obstacles (e.g., ensure continuous floor levels and handrails along walls) and in particular, at doorways.



6. Houses that respond to a specific resident population, such as persons living with dementia, may need to be securable to provide a higher level of safety and security and be located on the ground floor.
7. Should the use of power scooters be anticipated within the area, the space implications should be considered (e.g., turning radius, manoeuvrability, circulation and storage spaces, etc.).

### **Neighbourhoods**

8. Two or more houses can be physically linked to form a “neighbourhood”; this can facilitate staffing and spatial efficiency. Neighbourhoods create a “working unit” that allow for the sharing of staff and/or space between houses. Rooms that may be shared include central/assisted bathing rooms, larger activity rooms, support spaces including serveries and staff work areas. Also, rooms within each house, such as dining rooms, may be collocated as part of the neighbourhood to create larger shared spaces.

### **Doors/Entrances**

9. Houses/neighbourhoods should have easily recognizable entrances.

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Cueing**

10. Visual and/or textural “cueing” should be included on signs to assist residents in identifying different rooms and finding their way within the facility (e.g., a knife and fork sign indicating a dining room or a picture of a tub indicating a bathing room, or different colours or themes at the entrance to different houses).

## II. RESIDENT BEDROOMS

### Design Objective

The resident bedroom is the resident's private space where most personal activities take place - sleeping, grooming and dressing. Most residents require assistance in performing personal care activities which are carried out in a manner respectful of a resident's privacy. While the boundary of resident privacy often requires a caregiver, privacy from others is essential.

The bedroom also meets each resident's need for comfort, safety, independence and dignity. Each bedroom has good sightlines to all areas within the room to promote resident orientation and comprehension of surroundings. Bedrooms are organized and sized to facilitate quality resident care which may include the provision of direct care by one or more caregivers/staff, simultaneously. Caregivers/staff require unobstructed access to the bed to deliver care to a resident, while in bed.

The bedroom is also the resident's "own" space; an area where they can do as they please, which may include visiting with family and friends, completing activities independently (e.g., working on the computer) or with others, relaxing privately, enjoying outdoor views, listening to music and/or watching television. Accordingly, the bedroom is familiar to the resident, which may be facilitated by having some of their own personal furniture (e.g., dresser, desk, easy chair or small entertainment unit) in their room.

Each bedroom has an enclosed ensuite three-piece washroom providing direct access from the bedroom to the washroom. Each bedroom also has a separate entrance into the room from the corridor.

### Design Guidelines

#### Features of the Bedroom

1. Each bedroom should accommodate one resident. A portion of the bedrooms (the percentage should be determined during the functional program process) may be connected (or the ability to be connected) for those wishing to share space (e.g., couples). The rooms should be connected by a lockable door or moveable solid divider.
2. All bedrooms should include:
  - a bed area that allows for access on three sides and an unobstructed turning radius of a wheelchair on at least two sides of the bed with one access at the foot of the bed;
  - space for immediate access from the bed to a walker or wheelchair;
  - a separate visiting/seating area, located to provide easy auditory and visual access from the bed area; and
  - a place to charge an electric wheelchair/scooter. (CSA Z8000 8.8.2.6.5).
3. Room configuration, where possible, should provide for at least two options for bed location. All bed location options should provide:

- views of the outdoors from both sitting and lying in bed positions (*See #11*);
  - optimal view of the washroom, from the bed area and throughout the room;
  - minimal distance from the bed to the washroom;
  - no visibility of the bed from the corridor; and,
  - access to a resident/staff communication and response system.
4. Bariatric room requirements for residents with obesity need to be considered separately. However, rooms designed for residents with obesity could be used by people that do not have obesity as well. *See Appendix 1 – Special Resident Guidelines.*
5. Each bedroom should include space for items such as a dresser, desk, easy chair, shelving, bookcases and tack boards to allow residents to display and store personal items. Residents should be given every reasonable opportunity to personalize their bedrooms.

### **Kitchenettes**

6. Kitchenettes may be provided in resident rooms. The kitchenette should provide a sink and room for a barrier free microwave and mini-fridge. (The need for kitchenettes should be confirmed during the functional program process).

### **Storage**

7. Each bedroom should have enclosed storage space for resident's personal clothing and linens/towels. Most residents will need to store several pieces of clothing including indoor and outdoor wear, typically requiring a minimum of 1 square meter (10.76 square feet) of floor space. The clothes closet should be of sufficient height and depth to store and hang clothes and designed for easy access, by residents, in a wheelchair. If a free-standing closet is used, rather than a built-in closet, it must be securely fastened to the wall to ensure resident and staff safety.

A component of the storage provided to be lockable.

### **Doors/Entrances**

8. Bedroom doors, should be lockable, must be readily releasable, and simple for both residents and staff to use/open.
9. Doorways shall meet barrier free standards.

### **Lighting/Windows**

10. Each bedroom should have overhead lighting and task lighting that has wheelchair and bed accessible light switches.
11. Each bedroom requires a minimum of one operable window located at a suitable height to provide a direct view of the outside environment (not just the sky) from both a sitting and lying in bed position. The lowest edge of window glass should be a maximum of 610 mm (24 inches) from floor level. Also, the window should be of sufficient size to ensure good levels of natural lighting within the bedroom.

12. The window cannot open more than 152 mm (6 inches) to avoid elopement.

### **Water Controls**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Temperature Control/Humidification**

13. Each bedroom should have individual controls for air temperature within a range. Individual room air conditioning is not usually required but may be desirable, depending on local climate and orientation of the resident rooms (e.g., high cooling requirements on south facing rooms). For populations sensitive to ambient temperatures, a mechanical system to cool air temperatures may be required. Ventilation air supply should be humidified for resident bedrooms.

### **Lifting Devices**

14. All bedrooms should be designed and constructed to accommodate access for mobile lifting devices or ceiling lifting devices. Where ceiling lifts are contemplated, there are several design factors to consider:

- The structure above the ceiling must have the capacity to support the total weight of the lift plus the capacity weight of the lift.
- The ceiling track location must avoid conflict with mechanical and electrical fixtures and services.
- The washroom ceiling, typically dropped for mechanical ducts and pipes, may need to be raised to align with the resident room ceiling unless a suspended track is used; this may detract from the residential feel of the room.
- The ceiling adjustment presents challenges for mechanical distribution and ultimately has cost implications beyond simply extending the track.
- Note that bariatric lifts can also be used for residents with lower BMIs but the reverse is not true.

### **Response Systems**

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Power Outlets**

15. Readiness for telephone, cable TV and independent internet service should be provided in each resident bedroom. Each bedroom should provide adequate numbers of power outlets, at varying heights, for other electrical equipment. Power outlets must comply with legislative/building code requirements.

**Cueing**

16. Each bedroom should have “cueing” features, (e.g., a familiar objects/pictures), outside the bedroom, within the corridor, to assist residents in finding their way and identifying their bedroom.

### III. RESIDENT WASHROOMS

#### Design Objective

Each washroom promotes resident privacy, dignity and independence. Washrooms provide space for wheelchair accessibility, resident lift maneuverability and up to two caregivers/staff to assist the resident with showering and use of the toilet. The washroom is an environment that is safe from slips and falls. To ensure resident privacy, there are no views into the washroom, from the corridor, when the bedroom door is open. The entrance into the washroom is from within the bedroom. The washroom is visible from several areas within the bedroom, and in particular, from the bed and sitting/visiting area.

#### Design Guidelines

##### Features of the Washroom

1. Each bedroom should have an ensuite three-piece washroom that is accessed from within the bedroom. The washroom should include a wheelchair accessible shower, toilet and sink.
2. There should be barrier free access within the washroom to allow for wheelchair or walker accessibility and for a caregiver/staff to assist a resident.
3. There should be no direct view of the shower or the toilet from outside the bedroom.
4. The washroom walls should be reinforced to allow for multiple locations of the grab bars. The location of the grab bars may need to be customized to individual resident needs.

##### Storage

5. The washroom should have a cabinet for storage of the resident's personal toiletry items.

##### Toilets

6. Height of toilet needs to comply with barrier free requirements.

##### Showers

7. The ensuite shower should be barrier free. The slope of the floor should support appropriate drainage without negative impact on resident mobility.
8. The shower enclosure should be equipped with a securely mounted shower bar for an adjustable-height hand-held shower head. The bar may be used as a grab bar so it should be able to support the weight of a resident. The hose length should be at least 1500 mm (5 feet).
9. Shower controls should be located so that they can be accessed by care givers that may be assisting the resident with showering.

10. The shower area should be distinct from the other fixtures in the bathroom to avoid over spray and significant clean-up.

### **Doors/Entrances**

11. When open, a washroom door should not block the entrance into the bedroom from the corridor and not swing into another door in the bedroom, such as the bedroom door itself or the clothes closet door. For resident safety, the resident washroom door may swing out into the bedroom or slide on the bedroom side of the partition to prevent accidental blockage of the door by the resident. If the washroom door swings into the washroom it should be a double acting door with break-away capability. The minimum door width shall be 915mm (36 inches).
12. If the washroom door is to be a sliding door, factors to consider are:
  - the weight of the door (to make sure that it is easy to move); and,
  - the location of the hardware (to avoid injuring caregivers' backs and getting hands caught when the door slides)

### **Lighting**

13. A night light should be provided on the bedroom wall, by the washroom entrance. A 3-way switch could be provided for the night light – one at the resident bed and one at the entrance to the room for staff use.

### **Water Controls**

*See Section G – Common Facility Wide Guidelines*  
*See Appendix 3 – Infection Prevention and Control*

### **Response Systems**

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

14. Locks on washroom doors are optional. If a lock is installed on a washroom door, the lock must be easily operable and readily releasable by residents and staff.
15. Each washroom should have a mirror, preferably located over the sink, and visible by residents of all heights and those in wheelchairs. When determining the need and location of mirrors in washrooms, consideration should be given to the needs of specific resident populations. *See Appendix 1 – Special Resident Guidelines.*
16. A ceiling mounted heat lamp, provided in each resident washroom, may be helpful to maintain resident warmth, while in the washroom. Connecting heat lamps to timer switches or motion detectors should be considered.

*See Section G – Common Facility Wide Guidelines*  
*See Appendix 3 – Infection Prevention and Control*

### **Cueing**

17. The use of colours to assist residents to identify and locate the washroom as well as fixtures within the washroom should be considered. For example, research suggests that a contrasting washroom door and door frame colour (from the bedroom wall) assists with identification as does a contrasting shower floor colour (from the shower walls and fixtures) and a contrasting toilet colour (from the washroom floor and walls).



## IV. RESIDENT ASSISTED BATHING ROOMS

### Design Objective

Assisted bathing rooms are safe, private, relaxing, comfortable and not austere. They enable caregivers/staff to easily and safely assist residents to bathe or shower in a manner that protects dignity and promotes resident independence, to the extent possible. The room possesses a home-like, warm décor.

### Design Guidelines

#### Features of the Bathing Room

1. Each resident requires access to an assisted bathing room that is located preferably in close proximity to, and on the same level as, their house. (The number of bathing rooms required within a facility will be determined as part of the functional program process).
2. The assisted bathing room should be screened from a main circulation route.
3. Each assisted bathing room should accommodate:
  - a bathing tub with unrestricted access on three sides. One raised tub or side entrance tub should be provided. If a side-entrance bathtub is installed, it should be a “quick-filling” model to ensure resident comfort. The tub should be of a non-jetted design (i.e., no air or water jets);
  - a wheelchair accessible shower area;
  - a wheelchair accessible toilet, with its own enclosure;
  - a stand-alone hand wash sink;
  - a change/dressing area where residents can be undressed and redressed/groomed, following their bath or shower;
  - hair wash sink (possibly);
  - storage space for supplies;
  - shower chairs and other devices to assist caregivers maneuver residents on and off toilets and into and out of showers and bathtubs; and,
4. Where a facility has only one assisted bathing room, it should be designed to bariatric standards. Where a facility is supporting several residents with obesity, there may be a need for more than one bathing room designed to bariatric standards. This should be determined during the functional program process. Note that bariatric lifts can also be used with residents with lower BMIs but the reverse is not true.

#### Storage

5. Assisted bathing rooms should have an area for in-room storage (e.g., a one-day supply of clean towels, washcloths, etc.), including space for a towel warmer and a separate soiled laundry hamper. There should be adequate space to ensure separation between the storage/holding and flow of clean supplies and soiled items into and out of the room. Bulk storage for towels and linens is also required but should be in a separate location (i.e., not in

the bathing room).

6. Assisted bathing rooms should have secure lockable areas to store cleaning supplies for the cleaning and sanitizing of bathtubs, showers, toilets and hair wash and hand wash basins.
7. Placement of towel warming and shelving cabinets should be a sufficient distance from the tub, shower and sink to prevent contamination for water spray or splash. Shelving cabinets should be enclosed.

### **Doors/Entrances**

8. Each assisted bathing room should have a minimum of 1200 mm (48 inches) clear opening.

### **Lighting/Windows**

9. Whenever possible, natural lighting should be provided in the assisted bathing room to provide for a more pleasant and comfortable experience. Residents' privacy can be assured through the use of frosted windows.

### **Water Controls**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Temperature Control**

10. Assisted bathing rooms should have heating and be individually controlled to maintain the room temperature at a comfortable level for residents while bathing.

### **Lifting Devices**

11. Assisted bathing rooms may be equipped with a ceiling lift to facilitate the transfer of residents. (See #14 Resident Bedrooms)

### **Response Systems**

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

12. Privacy curtains, if used, should be single-use or washable and changed/washed at regular intervals or when visibly soiled. They should not touch the floor.
13. Effort should be made to make bathing a relaxing experience through the use of room finishes (e.g., murals).
14. A ceiling mounted heat lamp, provided in the room, may be helpful to maintain resident warmth while in the room. Connecting heat lamps to timer switches or motion detectors should be considered.

*See Section G – Common Facility Wide Guidelines*

## **V. CORRIDORS**

### **Design Objective**

Corridors are the essential link between houses and spaces within them as well as between houses and other spaces within the facility.

Corridors extend the residential feel of the houses into the more public spaces of the facility. Long and narrow corridors or overly wide and austere corridors, associated with an institutional feel, are not desirable.

Well designed corridors draw residents into positive activity, encourage resident mobility, facilitate resident orientation with their internal and external surroundings and support resident comfort, safety and satisfaction.

Corridors are often one of the first spaces potential residents, families and visitors will observe when entering a seniors care facility. Accordingly, corridors should feel like home.

Well designed corridors are also instrumental in supporting operational efficiency. Corridors allow for efficient and discrete delivery and removal of supplies/linens to/from resident houses and for efficient staff coverage. They are not used for storage of supplies and equipment; alcoves off corridors or storage rooms should be used. As much as possible, corridor routes for supply delivery/removal are distinct from routes residents, families and visitors will use.

### **Design Guidelines**

#### **Features of the Corridor**

1. Corridors in resident houses and the overall facility should allow sufficient space for
  - contiguous handrails along the corridors
  - unrestricted wheelchair and bed access
  - two wheelchairs to pass simultaneously within the corridor (i.e. minimum 1,800 mm)
2. Corridors within and between the resident houses, should provide internal walking routes that create interesting destinations by linking different areas of the house. Corridors that create a route or loop are preferred over those that come to an abrupt end. Where a contiguous route is not possible, creating a sizeable turnaround space, possibly with a sitting/resting area, should be considered. The approach is to provide points of interest along the route and a sense of meaningful journey and arrival.
3. The length of corridors particularly in the houses should be minimized to reduce travel distance for residents and create routes that are easy for residents to manage, within their abilities. Seating and rest areas should be provided along the corridors to encourage

residents to travel, with the assurance they can rest, when needed.

4. Corridors should provide unrestricted space to encourage easy and safe travel by residents, many of whom may require the assistance of a walker or wheelchair, and in some facilities, possibly scooters.

### **Storage**

5. The design and articulation of corridors should provide for adequate unobtrusive space, perhaps in alcoves, for the temporary presence of clean and soiled items and cleaning equipment and carts. Permanent storage of supply carts and equipment should be in a designated space, which may include decentralized storage alcoves off the corridors, and not in the corridor proper.

### **Lighting**

*See Section G – Common Facility Wide Guidelines*

### **Handrails**

6. Handrails must be located on both sides of the corridor. The handrail design and the diameter of the cross-section should be 30 mm to 45 mm (1.2 to 1.8 inches) to ensure that most hands are able to have a secure grasp of the railing. The position of the handrail should restrict the possibility of hands and arms slipping between the handrail and the wall. The walls on which the handrails are mounted should have adequate support to safely secure the handrail. The bracket supporting the handrail should not interfere with the fingers or the hand grip of the residents using the handrail.
7. Handrails with tactile indication (e.g., small bumps) of end of the rail and/or under rail lighting should be considered as safety measures to assist persons with low vision and reduce the incidence of falls.

### **Cueing**

8. The use of colours to improve wayfinding and reduce access to non resident areas should be considered.

## SECTION C: DINING AREA AND SERVERY SPACE

### I. RESIDENT DINING ROOM

#### Design Objective

A positive dining experience, including eating tasty food within familiar surroundings, is often cited by residents as one of the most important factors contributing to their overall satisfaction with their living environment. High resident satisfaction is essential for a successful seniors care facility. A dining room should be provided in each house unit.

As in many family homes, the dining room is the central gathering space in the house where residents congregate to enjoy meal time activities which may include participating in meal preparation, eating good meals, engaging in conversation or just simply enjoying the company of others, all within homelike surroundings. The dining room is sized to accommodate the number of residents (possibly with wheelchairs or walkers) who live in the house, and visiting family and friends.

Many residents enjoy eating their meals with others; however, some residents may prefer to eat alone, perhaps with the assistance of a caregiver/staff. As a result, the dining room allows for the creation of some separate areas for those who prefer privacy.

The dining room incorporates design features reflective of a home style dining room to promote resident familiarity with their surroundings and reinforce everyday eating patterns. It reflects an open and inviting concept, providing a positive dining atmosphere, while minimizing extraneous distraction. It is easily accessible from the bedrooms.

The dining room, in addition to the living and activity rooms in the house, may also be used for social activities and events during non mealtimes.

The design of dining room(s) and servery(ies) are dependent, to some extent, on the food service delivery model, as well as organizational practices for operational efficiency.

#### Design Guidelines

##### Features of the Dining Room

1. The optimal size of the dining room (i.e., number of persons to accommodated) should be determined during the functional program process and influenced by several factors including:
  - the number of residents who live in the house and preferences/operational practices for all residents to dine together, during standard meal times, or dine during staggered meal times;

- the need for smaller dining rooms or subdivided areas for residents who require a lower stimulus environment to eat and/or for residents who may prefer additional privacy (e.g., those who require caregiver/staff assistance);
  - the need for spaces within the facility to accommodate large group functions. This may necessitate the collocation of two or more dining rooms, with the flexibility to open up the rooms into one large room. Where dining rooms may be subdivided or opened up, the architectural, electrical and equipment features to permit this should be considered;
  - the need to include bariatric friendly seats for families/friends/caretakers who may wish to dine with their relative/friend; and,
  - the food service delivery model including the capacity of the serveries and requirements for operational efficiency.
2. The minimum space for the dining room(s), excluding the servery, should be calculated to accommodate the use of wheelchairs of all sizes or mobility aids and for there to be sufficient space for the mobility aids to be located at the table side.
  3. Each dining room should have convenient access to a wheelchair accessible two-piece washroom (toilet and sink), separate from the ensuite washrooms located with the bedrooms. There should be no views into the washroom from the seating area of the dining room or the servery. While it may be shared with the washroom supporting the living room and/or activity space, the number of washrooms will need to be determined during the programming stage.
  4. A private dining room, separate from the resident dining rooms, should be included within a central, easily accessible area of the facility. It should encourage use by residents and their family and friends who may wish to prepare favourite foods on site and dine together in a more intimate and private setting, often in celebration of an event. The private dining room may include:
    - a home-style kitchen including a sink, stove, refrigerator, commercial grade dishwasher (i.e., able to rinse at 180°F), counter top, etc. The need for wheelchair accessible appliances/counters should be considered: and,
    - a comfortable seating area resembling a home style dining room. The number of seats/people to be accommodated in the private dining room should be determined during the functional program process.
  5. Should the use of power scooters or bariatric wheelchairs be anticipated within the area, the space implications should be considered (e.g., turning radius, manoeuvrability, circulation spaces, etc.).

### **Storage**

6. The dining room should have sufficient size to include space for the safe storage of resident mobility aids, including walkers and wheelchairs, located in view of the resident seating area throughout the dining room. Some residents who require a wheelchair may prefer to transfer to a regular dining chair to eat their meal.

### **Lighting/Windows**

7. Each dining room should provide a direct view of outdoor space. If this is not possible, the dining room should have direct views into other naturally lit spaces to allow for high levels of natural light into the dining room.

*See Section G – Common Facility Wide Guidelines*

### **Water Controls**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Temperature Control**

8. The air handling system should have mechanical cooling to control air temperatures in each dining room.

### **Response Systems**

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

9. The type of dining room chairs used should assist residents to raise themselves from a sitting to a standing position, often through arms on chairs, provide a firm yet comfortable seating surface and include a chair back that provides lumbar support. There may also be a need for some chairs that do not have arms to facilitate residents transferring from a wheelchair to a dining chair and/or accommodate larger residents (e.g., residents with obesity).

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

## II. KITCHEN/SERVERY

### Design Objective

The kitchen is residential in feel and resembles the preparation/cooking area of a kitchen within a family home. It supports the final preparation and plating of food, all in proximity to the dining room(s) which allows residents to:

- see and smell their food prior to eating it, which has been shown to increase appetites; and,
- choose their food items and portions at the point of meal service, thereby increasing their choice and independence.

### Design Guidelines

#### Features of the Servery

1. The kitchen/servery should support:
  - participation in meal preparation by residents, to the extent their abilities allow, requiring wheelchair accessible counter and equipment space (e.g., microwave at counter height);
  - viewing of meal preparation by residents seated in the dining room;
  - good visibility by staff to supervise the dining area; and,
  - safe use of the area/equipment by residents. This may require safety features accessible to staff only that limit the independent use (i.e., without staff assistance) of equipment (e.g., stove) by residents.
2. The functional space for kitchens/serveries and related storage, including secured storage, is dependent on the operator's food service model and the number of serveries required to support the dining rooms in each house as well as other congregate dining spaces within the facility.
3. The kitchen/servery may include space for:
  - wheelchair accessible counter space for food preparation;
  - a holding area for the food delivered from the main facility kitchen which may include a built-in steam table or portable bulk food cart and other food service equipment;
  - a double bowl sink for food preparation and a separate stand-alone handwash sink;
  - lockable storage of kitchen supplies (e.g., knives);
  - a microwave oven;
  - a refrigerator with capacity for refreshments and a freezer compartment;
  - a stove that has a lockout switch to control the operation of the cook top and oven range;
  - a dishwasher, typically of commercial grade; and,
  - lockable storage for cleaning supplies.
4. The kitchen/servery will comply with all requirements regarding safe food handling practices outlined in Alberta Public Health Act Food Regulations.
5. Depending on the facility, the portion of kitchen/servery that accommodates the food holding area, storage of supplies and possibly other spaces may be used exclusively by staff and



not be accessible by residents. A method of securing the area, as needed, should be considered.

### **Water Controls**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Temperature Control**

6. The air handling system should have mechanical cooling to control air temperatures in each kitchen/serverly.

### **Fixtures/Finishes/Materials**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

## SECTION D: RESIDENT LIVING ROOMS AND ACTIVITY SPACE(S)

### I. RESIDENT LIVING ROOMS AND ACTIVITY SPACE(S)

#### Design Objective

Resident living rooms are welcoming, comfortable and relaxing spaces. Along with the dining room, they are the main area for social interaction within the house. They provide residents with optimal flexibility to pursue their interests and preferences; whether that is to socialize and interact with others, spend time alone while observing and listening to others, or engage in small or large group passive (e.g., playing cards) or active activities (e.g., bowling with the Wii or Xbox 360).

Activity areas also accommodate a variety of resident focused social activities which contribute to an optimal resident quality of life. Activities may include participating in hobbies and crafts, exercise and relaxation sessions, group recreational activities and seasonal/special events, among others.

Most facilities also require space(s) to accommodate large resident groups and/or staff events, from time to time (e.g., Christmas concert). Large group space(s) is typically accessed by residents, staff and visitors to the facility. As a result, the space(s) is located for easy access from the resident houses as well as from the main entrance; access to the room(s) does not require travel into or via the resident houses.

#### Design Guidelines

##### Features of the Living Rooms, Activity Areas and Large Group Space(s)

1. There should be a living room in each house.
2. Activity areas may be included in each house and possibly combined with the living room, or located to serve several houses within the facility.
3. There should be sufficient spaces within each house and the overall facility to allow for optimal flexibility to provide a wide range of resident activities. The size of the living rooms in each house and the number and size of activity rooms in each house and/or the overall facility should be determined during the functional program process, and will be influenced by:
  - the number of residents in each house and their needs for physical, functional and social support. For example, a house that accommodates residents with significant cognitive impairment may require smaller rooms to reduce the potential for high levels of stimuli within the rooms; whereas, a house that accommodates many residents who require the use of wheelchairs may require larger rooms to support accessibility and maneuverability;

- residents' preference to access social gathering spaces. Some residents may prefer to use their private bedroom for informal visiting or activities;
  - the need for small versus large group spaces in each house as well as the overall facility; and,
  - the degree to which the living and activity rooms also support other functions, such as dining.
4. Living rooms and activity spaces should have convenient access to a wheelchair accessible two-piece washroom (toilet and sink) that is separate from the ensuite washrooms located with the bedrooms. There should be no direct views into the washroom from the lounge or activity room. While it may be shared with the washroom supporting the dining room, the number of washrooms should be determined at the functional programming stage.
  5. Living rooms should be designed for clustered, rather than linear, seating to facilitate resident interaction and socialization.
  6. There may be a large group space within the facility for major events/celebrations, accommodating many people. The size of the space will be determined during the functional program process and will be dependent on the anticipated use of the room and the number of people to be accommodated. Where the space supports a multi-use building or campus of care, there may be a need to accommodate a larger number of people than would be typical of a single facility.
  7. At a minimum, a two-piece wheelchair accessible washroom should be located in proximity to the large group space.
  8. Should the use of power scooters or bariatric wheelchairs be anticipated within the area, the space implications should be considered (e.g., turning radius, maneuverability, circulation spaces, etc.).

### **Storage**

9. There should be storage space for recreational supplies located within, or in close proximity to, the living rooms and activity spaces.
10. Large group spaces, typically located in central areas of the facility, should include storage space for moveable furniture and equipment (e.g., folding tables and chairs, projectors, etc.) and a lockable housekeeping closet, both located within, or in close proximity to, the room.
11. Living rooms and activity areas within the houses, may also include spaces for the display and storage of familiar objects (e.g., books, cards, table games, etc.) that residents may wish to use independently, or with others.

### **Doors/Entrances**

12. Activity areas and other spaces that accommodate large numbers of people should have two entrances/exits to allow for easy and quick entry into, and egress from, the room.

*See Section G – Common Facility Wide Guidelines*

### **Lighting/Windows**

13. Each living room should have a direct views of outside areas. Where this is not possible, high levels of diffused natural light into the room, from an adjacent room/space should be provided.

*See Section G – Common Facility Wide Guidelines*

### **Water Controls**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Temperature Controls**

14. The air handling system should have mechanical cooling to control air temperature in living rooms and activity spaces.

### **Response Systems**

15. Where the lounge and activity space are integrated, one device may be used.

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

16. Where resident-accessible electrical appliances are provided, a method of deactivating the appliances must be in place to ensure resident and staff safety.

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

## SECTION E: RESIDENT COMMON AND PUBLIC SPACE

### I. MAIN ENTRANCE AND RECEPTION AREA

#### Design Objective

The main entrance and reception area provides the entry and introduction into the facility. It creates the first and often lasting impression of the culture within the facility and the care that is provided to those living within it. It is a recognizable and welcoming space that invites visitors into the facility. It provides orientation to the major zones or areas within the facility and facilitates easy and straightforward access to desired destinations.

It is also an area where residents gather to comfortably observe the comings and goings of the facility as well as to wait and greet visiting family and friends.

#### Design Guidelines

##### Features of the Main Entrance

1. The main entrance should be designed with a recognizable reception point for visitor greeting and for staff to monitor all persons entering and exiting the facility.
2. There should be a passenger drop-off area, in close proximity to the building entry, which offers no incline and protection from the elements. The covered entry should be large enough to accommodate an ambulance or Handi-Bus with a loading and unloading zone.
3. Comfortable indoor and possibly outdoor seating areas should be provided. They will be used by residents to sit and observe the activity inside and outside of the facility, often while waiting to greet visiting family and friends. They will also be used by visitors to wait and/or interact with residents.
4. Amenity spaces (e.g., gift shop, hair salon, large group assembly space, etc.) may be clustered in areas directly accessible to the main entrance to allow for:
  - easy and straight forward access by those entering the facility;
  - reduced traffic into resident spaces;
  - improved operational efficiency; and,
  - improved flexibility in the use of space.
5. A wheelchair accessible two-piece washroom should be located in close proximity to the main entrance.
6. Should the use of power scooters or bariatric wheelchairs be anticipated within the area, the space implications should be considered (e.g., turning radius, manoeuvrability, circulation spaces, etc.).

### **Storage**

7. A closet area should be provided at the main entrance for temporary storage of visitor boots, mobility aids, etc.

### **Doors/Entrances**

8. The main entrance should include a vestibule. It should be designed to prevent drafts into the seating/reception area; this may be achieved by staggering the entrances/doors and/or ensuring the doors do not open at the same time. A door opening/push plate device should be considered for easy access to the building.
9. Glass entry doors should be easily recognizable as doors and marked (e.g., with stripes or patterns) to assist with identification, particularly for those with visual deficits.
10. The main entrance should be clearly marked with illuminated signage that provides the name and address of the facility.
11. Automatic, barrier free door openers should be utilized for the main entrance.

*See Section G – Common Facility Wide Guidelines*

### **Access and Security System**

12. Controls should be provided at the main entrance so that building access and egress can be monitored and managed, as necessary.

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

13. Rough surfaces, such as brick pavers, on any walking areas should be avoided as they may cause tripping and impede wheelchair use. Control joints on concrete sidewalks and patios should be saw cut and not trowelled, to eliminate a potential tripping hazard.
14. Floor grates at the entrance should not present a mobility hazard.

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

## II. ELEVATORS

### Design Objective

Elevators located in multi-storey facilities must be designed so that they are safe and easy for residents to use. They should be located in areas that are accessible to residents, staff and the public.

### Design Guidelines

#### Features of the Elevators

1. The number, size and capacity of the elevators in multi-storey building must comply with the Alberta Building Code. There should be two elevators, at a minimum. One elevator should be accessible by a stretcher.
2. Elevators should have handrails in the cab, large format, touch illuminated buttons at an accessible height, non-slip floorings, and high levels of illumination.
3. Elevators should be equipped with adjustable door closing speed to ensure sufficient time for entry/exiting
4. Consideration should be given to avoiding “through-lifts”, that is, elevators with door openings at the front and back, which can be confusing to some residents.

#### Lighting/Windows

*See Section G – Common Facility Wide Guidelines*

#### Response Systems

5. The emergency phone or button must be clearly marked.

*See Section G – Common Facility Wide Guidelines*

#### Fixtures/Finishes/Materials

6. Elevators should have an audio system to identify floors if greater than four floors.

*See Section G – Common Facility Wide Guidelines*

#### Cueing

7. Signage should make for easy wayfinding upon exiting the elevator.
8. Elevators that serve areas where resident access is restricted should integrate a numeric code pad or card access.

### III. FITNESS/ WELLNESS AREA

#### Design Objective

Space may be available to support the delivery of resident fitness programs that optimize residents' physical, functional and social abilities and contribute to resident quality of life. The amount and type of wellness space(s) required within a facility should be determined during the functional program process.

#### Design Guidelines

##### Features of the Fitness Area

1. A fitness area may accommodate space for:
  - exercise equipment (e.g., parallel bars, treadmill, upper and lower body cycles, weights, etc.);
  - table top activities;
  - supplies and equipment storage (e.g., seating equipment, adaptive devices and components, etc.);
  - wheelchair accessible two-piece washroom for resident use.
2. Consideration may be given to installing a ceiling lift in the fitness area to assist with resident transfer. Note that bariatric lifts can be used for residents with a lower BMIs but the reverse is not true. (*See #14 – Resident Bedrooms*)
3. A multi-use room may be required to conduct a variety of the therapeutic/treatment functions that require special equipment and/or space that should not, or cannot, be provided in resident bedrooms (e.g. podiatry, dentistry, ophthalmology, etc.) The Room should be designed and furnished to allow for various functions to be conducted.

While the need for this type of room should be determined during the functional programming process, the operational principle that supports bringing services to residents versus bringing residents to services should be considered. The room should be located in an area that is easily accessible from the houses and facilitates multipurpose use (e.g. may be contiguous with the wellness area.)

#### Response Systems

*See Section G – Common Facility Wide Guidelines*  
*See Appendix 3 – Infection Prevention and Control*

#### Fixtures/Finishes/Materials

*See Section G – Common Facility Wide Guidelines*  
*See Appendix 3 – Infection Prevention and Control*



## IV. BEAUTY SHOP/BARBER SHOP

### Design Objective

A beauty shop/barber shop, that may be located within the facility, allows residents to participate in a familiar activity that is enjoyable and supports one's sense of well-being.

### Design Guidelines

#### Features of the Beauty Shop

1. There should be sufficient space to include hairdressing chairs, hair wash sink and trap, work and storage counters, secured storage space for chemicals, a hair drying area and a handwash sink.
2. A shampoo chair should be provided that allows residents to have their hair washed either leaning forward over the sink, or leaning back. The hair wash sink should be accessible by persons in wheelchairs.
3. The drying chair (chair equipped with a hooded dryer) should allow for comfortable seating and transfer of a resident from a wheelchair to the chair.
4. A ventilation system should be included in the room to remove odors related to hair styling chemicals.

#### Response Systems

See Section G – Common Facility Wide Guidelines  
See Appendix 3 – Infection Prevention and Control

#### Fixtures/Finishes/Materials

See Section G – Common Facility Wide Guidelines  
See Appendix 3 – Infection Prevention and Control

## V. PLACE FOR WORSHIP

### Design Objective

A place of worship that may be provided within the facility assists residents to observe their spiritual beliefs, religious observances, practices and affiliations. It often creates a memorable link to life-long experiences and can be a source of great personal comfort.

### Design Guidelines

#### Features of the Place of Worship

1. The place of worship may be separate or part of multi-purpose space and should be wheelchair accessible.
2. The space should respond to the multi-denominational needs of the resident population.

## **VI. LAUNDRY AREA FOR RESIDENT AND FAMILY USE**

### **Design Objective**

Residents and/or their families may choose to launder some portion of the residents' personal laundry. A laundry room located close to the resident house(s) may support:

- resident independence and orientation to familiar every day activities;
- positive family/friend involvement in the care of their relative/friend;
- reduced risk of losing personal resident items; and,
- improved staff efficiency due to reduced time spent tracking down lost items.

### **Design Guidelines**

#### **Features of the Laundry Area**

1. A space for washing and drying resident's personal laundry should be provided on each floor.
2. The laundry room should have a washer and dryer, laundry sink, hands free stand-alone handwash sink and areas for folding and hanging clothes.
3. The laundry room should be located to facilitate resident access and participation in laundering activities.

*See Appendix 3 – Infection Prevention and Control*

#### **Fixtures/Finishes/Materials**

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

## **VII. GIFT SHOP AND SNACK BAR**

### **Design Objective**

A gift shop/snack bar may be provided to allow residents to shop for personal items and/or have a snack with family and friends. It helps to 'normalize' the experience of facility living and improve the quality of life for residents.

## Design Guidelines

### Features of the Gift Shop and Snack Bar

1. Space for a gift shop and snack area may be provided.
2. Provision should be made for display of merchandise and storage of merchandise in the gift shop. The display space should allow for at least a 1.5 meters (5 feet) turning radius for a wheelchair.
3. To encourage use, the gift shop and snack bar should be located in a high traffic and easily accessible area of the facility.
4. If vending machines are planned for the area, there should be adequate exhaust or cooling to offset the heat generated by the machines.

## VIII. PUBLIC WASHROOMS

### Design Objective

All public washrooms for use by residents and visitors should be wheelchair accessible. Washrooms should be easily accessible from rooms, commonly used by residents, to avoid unnecessary travel by residents back to bedrooms/ensuite washrooms.

### Design Guidelines

#### Features of the Public Washrooms

1. Each public washroom should have at least one wheelchair-accessible toilet and one wheelchair-accessible handwashing sink and mirror.
2. Counter space should be available to allow for temporary storage of personal items (e.g., purse), to avoid placing them on the floor.
3. There should be clear and easily understood signage identifying all public washrooms. Washroom doors should be clearly gender-identified and easy to open.

#### Doors/Entrances

4. Each public washroom stall should have a lock that is readily releasable and easily openable to ensure that a person is not accidentally locked into the washroom.

#### Lighting/Windows

*See Section G – Common Facility Wide Guidelines*

#### Water Controls

5. Handwash sinks in public washrooms should be hands free.

*See Section G – Common Facility Wide Guidelines*  
*See Appendix 3 – Infection Prevention and Control*

## **Response Systems**

*See Section G – Common Facility Wide Guidelines*

## **Fixtures/Finishes/Materials**

*See Section G – Common Facility Wide Guidelines*

# **IX. OUTDOOR SPACE**

## **Design Objective**

Contact with the outside environment – both physical and visual – is an essential feature of everyday resident life. Outdoor spaces support:

- passive and active activities;
- opportunities for socialization and privacy;
- independent, safe walking;
- special events; and,
- opportunities to observe seasonal changes and images associated with the outdoors (e.g., birds, flowers, water features, etc.).

Outdoor spaces provide an easily accessible, safe environment for residents to enjoy the outdoors. Outdoor spaces used by residents also provide safe and interesting walkways, seating areas and activity spaces (e.g., raised planting beds).

## **Design Guidelines**

### **Features of the Outdoor Space**

1. Space requirements for controlled garden environments differ widely depending on building configurations, site restrictions and anticipated activities of residents.
2. Outdoor areas should:
  - be accessible from each house and provide a minimum of 2 m<sup>2</sup> per resident.
  - provide a partially covered area to protect residents from outside elements;
  - have interesting areas and circulation paths;
  - be directly accessible from the building;
  - be safe from physical and perceptual obstacles to movement and ambulation;
  - be safe for residents to use independently in all seasons weather permitting;
  - allow for easy supervision by staff that is not intrusive for the resident;
  - have security features that blend into the environment;

- be accessible by all residents including those who ambulate independently, use a walker, wheelchair or possibly a scooter, and those with visual impairments; and,
  - have exterior lighting and an exterior doorbell/access control.
3. Outdoor areas should be directly accessible from each house and should be observable from a staffed area.
  4. There should be some outdoor space accessible at grade level. In a multi-storey facility, outdoor space should also be available on floors above ground level, through the use of a balcony or a roof terrace. The design and the height of the guardrails must take into consideration the safety of the residents including the possibility of self-harm.
  5. There should be at least one outdoor area that is directly accessible from a dining room and activity area.
  6. At least one outdoor area should be tastefully enclosed and secured to prevent wandering and egress of residents and intrusion by outsiders. Fences should comply with the homelike feel of the environment, as well as prevent the possibility of them being climbed.
  7. The landscaping and design of outdoor space should consider the safety needs of residents.
  8. Each outdoor area should provide a mix of environments including:
    - areas shaded from the sun;
    - sunny areas; and,
    - areas protected from the wind and other weather elements.
  9. All walking surfaces/circulation routes should avoid steep inclines (i.e. no steeper than 1:20), steps, tripping hazards and indentations (e.g., ditches) beside paths.
  10. Should residents use powered scooters, consideration should be given to an area for parking and recharging of the scooters.
  11. In facilities where smoking is permitted outdoors for residents only, the designated area must be at least 10 metres (33 feet) away from the building to ensure that second-hand smoke does not filter into the facility.

### **Lighting/Windows**

12. Each living room should have a direct view of outside areas. Where this is not possible, high levels of diffused natural light into the room, from an adjacent room/space should be provided.

*See Section G – Common Facility Wide Guidelines*

## **Response Systems**

*See Section G – Common Facility Wide Guidelines*

### **Fixtures/Finishes/Materials**

When decorating and landscaping outdoor space, consideration should be given to such residential features as fencing, outdoor furniture, raised planting beds and parking for scooters.

Rough surfaces, such as brick pavers, on any walking areas should be avoided as they may cause tripping and impede wheelchair use. Control joints on concrete sidewalks and patios should be sawcut and not trowelled, to eliminate a potential tripping hazard.

## SECTION F: FACILITY AND STAFF SUPPORT SPACE

### I. WORK SPACE FOR THE INTERDISCIPLINARY TEAM

#### Design Objective

The provision of quality resident care is supported by a well-coordinated, interdisciplinary care team model that allows staff to meet resident care needs in an efficient and effective manner. Staff work spaces support the home-like ambience of the facility; they are located in areas that assist staff to carry out their responsibilities. Staff work spaces that should not be accessed by residents or families, will be out of view of resident spaces. Staff work spaces that residents and families will wish to access are easily accessible and recognizable, all without compromising confidentiality and privacy.

Good sight lines between staff work spaces and resident spaces afford the opportunity for staff to observe, at a glance, the resident and more public areas of the house/facility.

#### Design Guidelines

##### Interdisciplinary Team Space

1. Each neighbourhood (or at a minimum, each level) within a facility should have designated work space that assists staff to carry out resident care responsibilities and duties. Depending on the facility, spaces may vary from a lockable desk/room to an interdisciplinary team work area. Spaces should also allow staff to monitor the overall activity within the house/area to alert them to potential problems that may arise within the space, in order to diffuse/avoid them.
2. The interdisciplinary team work space may vary to accommodate space for:
  - reception/clerical functions;
  - secure storage for paper based resident health care records, if any (includes resident care plans and medical histories);
  - interdisciplinary team activities (e.g., communication, shift reporting, completion of documentation);
  - connectivity for computer, telephone and facsimile technology; and,
  - monitoring systems such as Resident/Staff Communication and Response System, fire alarm panels, etc.
3. Meeting room space(s), should be provided within, or in close proximity to the houses to facilitate communication (i.e., between staff as well as between staff and residents/families), in a manner that recognizes and respects residents' privacy.

*See Appendix 3 – Infection Prevention and Control*

### **Medication Room/Area**

4. Medication preparation space must be in an area free from distractions. A lockable medication space/cupboard may be made available within each neighbourhood. Medications may also be stored in lockable cupboards/drawers in residents' rooms.

### **Staff Multi Purpose Room**

5. Dedicated space should be provided in each facility for staff training and education depending on the functional programming of the facility. A classroom/conference room should allow for:
  - multiple seating arrangements (e.g., linear classroom seating, break out groups etc.);
  - Internet access capable.
6. Adequate storage for teaching materials, AV equipment, etc. should be available, within or close to, the staff training and education room.

## **II. ADMINISTRATIVE SPACE**

### **Design Objective**

The administration area is primarily comprised of office and meeting spaces for administrative personnel. Requirements will vary depending on the size and complexity of the facility and at the discretion of the operator. The specific need for administrative space should be determined at the functional programming stage.

## **III. STORAGE SPACE FOR CARE SUPPLIES AND EQUIPMENT**

### **Design Objective**

Designated central space is available for the storage of supplies and equipment for the care and treatment of residents. (Also, some supplies may be stored in cupboards in the residents, bedrooms). Central space for the storage of care supplies and equipment is readily accessible to caregivers/staff, yet does not intrude on the resident's personal space. Ideally, spaces are out of view of resident spaces and/or include design features/finishes that make them invisible to residents.

### **Design Guidelines**

#### **Clean Linen Storage/Clean Utility**

1. Each house or neighbourhood should contain a lockable clean utility room for the storage of, medical-surgical supplies/products and small medical equipment. It may be combined with the clean linen storage room.
2. The room should be easily accessible, yet out of view of the resident bedrooms.

*See Section G – Common Facility Wide Guidelines*



*See Appendix 3 – Infection Prevention and Control*

### **Soiled Utility**

3. Each house or neighbourhood should contain a lockable soiled utility room for storage of soiled supplies, equipment or waste. The room should be easily accessible, yet out of view of the resident bedrooms.
4. The soiled utility room may accommodate:
  - a utility sink for surface cleaning of contaminated equipment and disposal of fluids;
  - a work counter;
  - storage racks or cupboards;
  - a lockable storage cupboard for cleaning products;
  - automated disposal station (e.g., enclosed bedpan washer/disinfector or equivalent product);
  - space for soiled linen hampers, garbage containers, etc.;
  - a floor drain;
  - an exhaust fan; and,
  - a hand washing sink.
5. Consideration should be given to exceeding the minimum exhaust and air exchange requirements in the soiled utility room to support an odor-free environment.

*See Section G – Common Facility Wide Guidelines*

*See Appendix 3 – Infection Prevention and Control*

### **Equipment Storage**

6. Each house or neighbourhood should contain conveniently located storage space for frequently used, large resident care equipment (e.g., lifts, stretchers, etc.).
7. There should be storage space for emergency equipment, such as suction machines and defibrillators, located in an area easily accessible from the house(s).
8. If oxygen therapy is offered (as part of the facility's scope of program delivery), dedicated space for storage of oxygen must be provided in a location that is convenient and accessible to the house(s). An oxygen storage room must meet the requirements of the Alberta Building Code, Alberta Fire Code and NFPA requirements.
9. The facility should provide a central storage area for large equipment and furniture that is not used on a daily basis (e.g., spare beds).

*See Appendix 3 – Infection Prevention and Control*

### **Housekeeping Closets**

10. In each neighbourhood, the lockable housekeeping closet should be located close to the dining/servary areas.

### **Facility Laundry**

11. Each facility will manage its resident laundry through either on site, or a contracted out laundry service in accordance with appropriate standards. If laundry is an off site service, a separate soiled holding area is to be provided.

*See Section G – Common Facility Wide Guidelines*

## **IV. FACILITY STAFF AND VOLUNTEER SPACE**

### **Design Objective**

The facility includes dedicated spaces for use by staff and volunteers; they are not used by residents. These spaces allow staff and volunteers to take a break from job responsibilities, store personal belongings and change into/out of work clothing.

### **Design Guidelines**

#### **Features of the Facility Staff and Volunteer Space**

1. A secure lockable storage area(s) should be provided for staff and volunteers to store personal belongings.
2. In larger facilities, a staff lounge, separate from resident spaces, may be provided for staff “break” periods. The lounge may contain areas that facilitate interaction among staff and provide a healthy release/break from job responsibilities. The lounge may include:
  - a seating area;
  - a kitchenette with a sink, a microwave, a refrigerator and counter top space;
  - a display/storage area for educational resources; and,
  - an ensuite two-piece washroom.
3. In larger facilities, a volunteer lounge, separate from the staff lounge, may be provided for volunteer-specific activities and information.
4. In larger facilities, designated locker rooms for female and male staff and volunteers may be provided. They may include:
  - full or partial lockers for staff to store clothing;
  - seating/changing area;
  - shower room(s); and,
  - washroom(s).
5. An exercise or fitness centre for staff and volunteers may also be considered within the functional program process.

## SECTION G: COMMON FACILITY WIDE GUIDELINES

The following section includes guidelines that apply to most/all areas of the facility.

### Doors/Entrances/Walls

1. The minimum door width for the entrance, into all resident-accessible spaces in the facility, should allow for full wheelchair access as well as a two person assist of a resident (side by side assist) and meet the minimum requirements of the Alberta Building Code of 36 inches. Where larger access is required (e.g., to accommodate residents with obesity ), a minimum of 1.12 m (44 inches) should be planned; the need for the larger door width should be determined during the functional program process.
2. Kick plates on the “push” side of all doors should be provided to prevent damage to the doors.
3. Doors and associated hardware in all resident areas, (e.g., bedrooms, washrooms, lounges, resident storage cupboards, bath/shower rooms, etc.), should meet the requirements of the Alberta Building Code and be barrier free.
4. Residential style corner guards should be provided, as required, on corners of walls to prevent damage.
5. If transfer poles are to be used, the floor to ceiling height cannot exceed 10 feet and the ceiling and floor should be designed to safely secure the pole.
6. Handrails that meet the requirements of the Alberta Building Code should be provided on both sides of corridors that are used by residents.

### Lighting/Windows

7. Lighting should augment changes in visual acuity, common to seniors. There should be even lighting levels to avoid hot or bright spots, particularly on the floor, as well as options for:
  - higher levels of lighting, possibly through task lighting, in areas where residents will engage in activity (e.g., reading, eating, crafts and other activities);
  - decorative lighting, (e.g., hanging fixtures, etc.) for a more home-like environment;
  - higher levels of lighting in areas where cleaning and disinfection are required (kitchen, dining room, serveries, tub rooms, utility rooms and cart wash areas;
  - low level lighting for use during evenings and nights particularly in resident areas; and,
  - features that reduce glare or reflections on the floor.
8. Windows that open and will be accessed by residents must be safe (i.e., prevent egress) and easily operable by both frail and cognitively impaired residents. They should include window restrictors that limit opening to no greater than 152 mm (6 inches) and screens, on the openable portion of the window.

*See Appendix 3 – Infection Prevention and Control*

### **Water Controls/Temperature**

9. Hand hygiene requirements for staff/caregivers use are addressed in *Appendix 3 – Infection Prevention and Control*.
10. Controls must be in place to ensure that the water temperatures meet requirements of CSA Z317.1- “Special Requirements for Plumbing Installations in Health Care Facilities” Table 1 and Section 6.3.4.5.
11. Bathing and shower valves must meet requirements of CSA Z317.1 “Special Requirements for Plumbing Installations in Health Care Facilities”. Level handles in resident washrooms must clearly distinguish between hot and cold water.
12. All common spaces used by residents (e.g., dining room, activity room, etc.) should have controls for air temperature, within a range. Individual room air conditioning is not universally required but may be desirable, depending on local climate. For populations sensitive to ambient temperatures, a mechanical system to cool air temperatures may be required.

*See Appendix 3 – Infection Prevention and Control*

### **Communication and Response System**

13. Infrastructure that supports a resident/staff communication and response system should be provided to allow staff and residents to summon assistance, if required. The system should be operational in all resident areas (i.e., all rooms that residents may access) and facilitate prompt response to a resident or staff request. The system should not be intrusive.
14. The resident/staff communication and response system:
  - should be an electronically-designed system, equipped with activation devices that are easily accessible, simple and easy to use by all residents and staff; and,
  - must be capable of remaining “ON” at all times and be connected to the back-up generator;
  - have the ability to operate in a silent manner that is not audible to the residents; and,
  - should be able to be integrated with wireless two-way communication between staff.
15. When any activation device for the resident/staff communication and response system is activated, it must:
  - clearly indicate where a signal is coming (when activated), allowing prompt response; and,
  - have a cleanable pull cord with appropriate features for resident safety.
16. The level of sound of the system should be adjustable and controlled so that it is not excessive and disruptive and is equally distributed in the areas it covers.

17. A system that requires a voice response when activated is not recommended for residents who have cognitive and sensory impairments.
18. The system should accommodate other safety devices such as bed alarms and wander guards, as required.

### **Fixtures/Finishes**

19. All surfaces, including provided furniture should be easily cleaned.
20. Fixtures and finishes in resident areas should be residential in style and support a home-like environment.
21. When selecting floor finishes, consideration should be given to their effect on wheelchair and walker maneuverability, ongoing cleaning and maintenance, low glare, sound dampening, impact absorbing, odour control and durability.
22. In wet areas, floors should have a non-skid, slip resistant surface and be integrally sealed so that water cannot penetrate under any section of the flooring. Floor/wall junctions should also be coved and sealed. When tiles are used, epoxy grout should be applied. Floors should be seamless or with seams that are heat-sealed or chemically bonded.
23. Sharp contrast colours, patterns or textures should be avoided between flooring types.
24. Flooring border accent should not run across doorways or entranceways.
25. Where carpet is selected, considerations should be given to the pile type, length, density and height for roll resistance to walkers and wheelchairs. The carpeting should have solid PVC backing. Carpets should not be used in rooms where floors are likely to become wet or soiled.
26. Where different floor/surface materials are used, transitions (within the facility and between indoor and outdoor areas) should be smooth, with no noticeable bump or difference in elevations between floor surfaces.
27. Finishes and systems that minimize noise and sound intrusion into resident areas should be used. For example, public address systems in resident areas should be avoided.
28. Walls and wall corners that will be subject to continual striking by wheelchairs and portable equipment should have features that protect the wall surface (e.g., corner guards and bumper rails) and extend to wheelchair height.
29. Sharp edges on counters, cabinets and corners should be avoided.

*See Appendix 3 – Infection Prevention and Control*

### **Fire Safety**

30. Fire alarm systems must include audio and visual signaling devices.

### **Emergency Power**

31. Emergency power is required to allow for safe evacuation of all residents in a continuing care facility in case of emergency in conformance to all applicable codes and guidelines. In addition, the design team may consider an emergency generator for other circumstances, such as remote locations.

### **Heating, Ventilation and Air Conditioning (HVAC) Systems**

32. The HVAC systems should contribute to a healthy indoor environment by suitable control of temperature, relative humidity, ventilation rate, air movement, noise level and indoor air quality.
33. The HVAC design should meet applicable Class B facility requirement of CSA Z317.2 “Special Requirements for Heating, Ventilation and Air Conditioning (HVAC) Systems in Health Care Facilities”, and applicable continuing care facilities design requirements of the Blue Book.

### **Plumbing Systems**

34. Design of plumbing systems will comply with the National Plumbing Code and should meet applicable Class B facility requirements of CSA Z317.1 “Special requirements for Plumbing Installations in Health Care Facilities”.

## Appendix 1: Special Resident Guidelines

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## Appendix 1: Special Resident Guidelines

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This section addresses the unique and special requirements for:

- 1.1 Residents with obesity
- 1.2 Residents with Dementia and Related Needs

### 1.1 Residents with Obesity

#### ***Definition***

Average resident with obesity: 150 kg (330 pounds)

Design target: 363 kg (800 pounds)

Design drop weight (impact factor 1.4): 508 kg (1,120 pounds)

#### ***Philosophy***

Bedrooms for residents with obesity should be larger than regular bedrooms, but not so large as to give the perception of being overly modified. The decision to collocate bedrooms for residents with obesity in one house, or locate them in several houses, will be determined during functional programming

The following guidelines are in addition to the features for resident safety, comfort, independence and infection prevention and control, described in the body of this document.

#### **Bedrooms**

1. Bedrooms for resident with obesity should have 1 + ½ wide style doors, with the extra leaf operable and manageable by the resident. Total opening width should be 1500 mm (60 inches) with at least one leaf with a minimum of 1200 mm (48 inches) clear opening.
2. A minimum 1900 mm (75 inches) turning radius should be provided.
3. The ceiling in a bariatric suite should be high enough and structurally capable of supporting a ceiling lift and floor to ceiling transfer poles if required by the resident.
4. Floor mounted rails, placed strategically from bed to toilet, should be considered as they facilitate increased independence with toileting.
5. The amount and design of space should consider the need for oversized furniture and the storage of oversized equipment.
6. A mechanical system to cool air temperatures in the room should be considered.



**Washroom/Shower**

1. Toilets should be floor mounted. Wall mounted toilets should not be used.
2. Toilet seats should be extra wide with a 453 kg ( 1000 lbs.) rating.
3. If not using a bariatric toilet, a bariatric commode over a toilet with a 360 kg (800 lbs.) weight capacity and an adjustable seat height is an alternative option. A floor-mounted toilet with an unattached flush tank is more flexible to use with various bariatric commodes.
4. A floor mounted wheelchair accessible sink or surface mounted wheelchair accessible sink with extra support rated for 363 kg ( 800lbs.) should be provided.
5. A turning radius of 1900 mm (75 inches) is required for individuals with obesity using a wheelchair.
6. Walls should have extra reinforcing to allow for mounting grab bars in multiple locations around the toilet and shower area.
7. Toilet tissue dispenser should be mounted sufficiently to allow ease of access and not interfere with grab bar use.
8. Wheelchair accessible open showers should be considered. Avoid enclosing walls and use shower curtains to allow for ease of access and assistance by caregivers if needed.
9. In order to accommodate an individual with obesity and a caregiver, the shower dimensions should be increased. Shower controls should be mounted on the side wall of the shower.
10. The resident assisted bathing room should have a tub that is capable of accommodating a resident with obesity and allow easy access for staff to provide bathing assistance.

**Doorways/Corridors/Elevators**

1. Doorways in the facility should allow for a barrier-free path of travel for a resident with obesity and/or for oversized equipment. Doorways should have a minimum clearance (free space) of 1100 mm (44 inches). A larger door width can be accomplished by use of unequal-leaf swing doors. Other ways to maximize door clearance include the use of folding doors and off-set hinges.
2. Corridors and hallways should be wider to accommodate larger girth and equipment.

3. Elevator door clearances should be as large as possible (minimum of 1100 mm). The interior dimensions should allow for a larger turning radius of wheelchairs and the transportation of a stretcher with two caregivers (i.e., emergency services).

### **Entrance and Ramps**

1. Ramps should have a minimum unobstructed width of 1100 mm (44 inches) to allow for larger wheelchair widths and sufficient clearance space for individuals to propel their wheelchairs.
2. A maximum gradient of 1 to 20 should be provided due to the increased weight of the individuals with obesity and the impact on self propulsion and caregiver effort when pushing the wheelchair.
3. A minimum 1524 mm x 1524 mm (60 inches x 60 inches) level area should be provided where a ramp makes a 90° or 180° turn and at intermediate levels as required in longer ramps.
4. Curb cut outs and openings should be at least 1100 mm (44 inches) wide to accommodate larger wheelchair widths.
5. If the door swings open towards the wheelchair user, increasing the clear space on the latch side of door to a minimum 760 mm (30 inches) should be considered, to allow for an increased turning radius of a wheelchair.
6. Load values for handrails should be increased to withstand the increased weight of individuals with obesity. Handrails should withstand a minimum of 363 kg ( 800 lbs.) applied at any point and in any direction and a minimum uniform load of 363 kg ( 800 lbs.) applied in any direction to handrails located outside of houses.

### **Furniture**

1. Bariatric furniture rated to 453 kg (1000 lbs.) should be available for use by residents with obesity in common areas throughout the facility (i.e., dining room, lounge areas, etc.).
2. Bariatric furniture should be selected to mix well with the look and design of standard furniture and should offer choice between chairs with armrests, chairs without armrests and loveseats.

## 1.2 Residents with Dementia and Related Needs

### ***Philosophy/Definition***

Designing buildings that support people with cognitive impairment empowers them to live through the progression of the stages of dementia with an enhanced level of comfort and dignity. Comfortable, unobtrusive, client-centered and home-like design have all been shown to contribute improved quality of life for persons with dementia and other forms of cognitive impairment.

While the design objective and the design guidelines outlined below may be beneficial for all residents within a seniors care facility, they have particular importance for residents with dementia and other forms of cognitive impairment.

### **Design Objective**

The environment facilitates resident independence, autonomy, choice, orientation, socialization and participation in familiar and enjoyable everyday activities. It also supports staff to interact with residents in a natural, home-like, calming environment. The more residential the character of the building, the more control residents experience over their environment. The more control the resident feels they have, the higher the likelihood that they will assert their fullest range of function and ability.

The overall character of the space is as residential and home-like as possible. Living in a home-like environment increases the probability that the resident will become familiar with their surroundings and interact with others in a meaningful way to maintain their independence and abilities.

The overall scale of the space should not be overwhelming; rather, functional and flexible in its use and in scale and proportion to rooms found in a large family home. A mixture of a larger, congregate activity space and smaller, type spaces accommodate small group interactions and sensory reduction. Emphasis is placed on creating a 'family-like' environment typically including small group interactions.

The design also reduces resident confusion and orients them to the time of day through optimal natural light and to their surroundings through a simple and understandable design and the presence of familiar rooms/activities.

## Design Guidelines

### 1 Sensory Changes

Sensory changes are common in the elderly and in particular, persons with dementia. The senses help to interpret ones environment and as such must give clear messages. The following summarizes some common sensory changes in the elderly and implications for facilities.

#### **a. Vision**

- i Steps should be taken to ensure that lighting is not overly bright (creating glare) or overly dim (creating shadows). Aging eyes need more light and have a reduced capacity to discern between varying levels of light intensity. Natural or flicker-free light should be utilized wherever possible. Sconces which produce various lighting patterns are not desirable in areas used by residents with dementia.
- ii. Changes in flooring elevation, or perceived changes in flooring elevation caused by color extremes or patterns can result in falls. Boldly patterned flooring or bright/shiny flooring should be avoided. Residents with dementia will often avoid walking in rooms with visually confusing flooring quickly leading to a reduction in mobility.
- iii. The reduced ability to perceive slight differences in lighting, shade, and hue experienced by residents with dementia require an increased emphasis on contrasting colors to assist residents in discerning walls from floors, door handles from doors, toilets from bathroom walls and floors, etc. Contrasting colors utilized in toilet seats, door handles, handrails, and other architectural features often assist residents to accurately identify those elements.
- iv. In buildings where resident elopement is problematic, non-contrasting architectural elements assist in reducing the likelihood of elopement. Exits can be disguised with design features that make the fixture/exit invisible to the resident.
- v All furnishings, wall colors, flooring, and window coverings should be chosen from colors in warm, mid-range colors. Beiges, peaches, and pale pinks and blues are perceived as white and indistinguishable, while harsher dark colors such as chocolate browns, navies, and blacks are all seen as black. Warm mid-range colors are comforting and discernible; some report red and yellow as “best perceived” colours.
- vi Mirrors, shiny appliances, and excessive use of glass should be avoided. Shimmery surfaces produce glare which impedes visibility. For some with dementia, mirrors may cause confusion. Accordingly, they should have the capacity to be covered or removed.

**b. Auditory**

- i. Furnishings should be chosen to assist in the reduction of excessive noise – fabrics, window coverings, and floor finishes should be selected from those that absorb noise rather than amplify it. Hearing in the elderly tends to diminish and ordinary sounds may cause confusion when too many sounds are presented together. Efforts should be made to dampen extraneous noise to assist residents in processing auditory information.
- ii. The use of overhead paging systems should be avoided.
- iii. Music and television should be used selectively in common areas.
- iv. Equipment and carts should utilize rubber tires.

**c. Tactile**

- i. The sense of touch also diminishes with age. This requires more contrast in textures that are meant to orient the resident to their surroundings.

**2 Orientation and Familiarity**

Resident bedroom design should respect the individuality of each resident. Residents and families should be encouraged to personalize the resident's room, as much as possible. Familiar surroundings assist in orientating residents to their living environment. For example, personal items such as a favourite ornament or personal photos may be displayed in a small curio window outside each resident's bedroom to assist in orienting the resident to their own space.

Enlarged photos of residents at meaningful times in their lives (weddings, graduations, births, working) may also be a source of personal comfort to the residents.

Built in shelving units, hutches, or desks should be considered for displaying interesting collections of objects within residents' reach. Rummaging through collections of fragrant, textured, or visually attractive objects provides opportunity for reminiscence and meaningful conversation.

**3 Safety**

The design should create support spaces that are invisible to residents to ensure residents do not access them and put themselves at risk. For example, doors into support rooms should have the same colour as the surrounding walls. The design should also allow for optimal visibility by staff into several congregate resident spaces, to ensure optimal safety, yet without compromising privacy.

Residents with dementia should be housed on the ground level to better enable emergency evacuation and emergency access.

#### 4 Outdoor Spaces

Residents should be allowed unrestricted access to the outdoors independently, and in most seasons/weather types. There should be shaded areas protected from the elements and open, yet secured areas. Enclosed gardens can provide stimulation as well as an additional distraction when behaviors escalate. The space should be inviting and representative of a residential garden, but not overly large like a public park.

A variety of flower beds and gardens, both ground level and elevated should be considered. Natural plants allow both sensory stimulation as well as endless opportunity for meaningful engagement in activities enjoyed by most residents. Lists of toxic and non-toxic plants should be consulted when designing an outdoor space.

Outdoor spaces should provide opportunities for residents to engage in/observe familiar everyday activities. For example, the area may include:

- a clothesline to hang laundry;
- comfortable seating (i.e., does not absorb heat);
- a bird bath to observe birds;
- an area to pile firewood/logs, etc.;
- shaded area; or
- circuitous pathways.

Fences should be attractive and natural. Trees, shrubs, and climbing or flowering vines will disguise fences reducing the enticement to explore elsewhere. Chain-link or plexi-glass fences are an invitation for elopement as occurrences in the distance can attract the resident's attention.

Several seating options should be available, scattered along a continuous walking path, to encourage purposeful wandering. Walking surface should be smooth to avoid tripping or stumbling hazards.

Areas of indirect sunlight should be readily available. The use of gazebos, trellises, canopies, or umbrellas will allow residents to enjoy the outdoors without the glare of direct sunlight. A "back porch" environment is the goal.

Gates should be avoided and if required they should blend into the overall fence to be invisible to residents.

Interesting objects/features should be created within the centre of the space to draw attention away from the periphery.

## 5 Signage

Meaningful methods of way finding (rather than the written word) through illustrations or objects should be considered. For example, large comfy quilts on sofas to encourage gathering in a congregate activity area, a photo of a toilet on a shared bathroom, or large plants near the doors to the garden may be more helpful in orientating the residents.

### Resources

The Eden Alternative - <http://www.edenalt.org/>

Gentlecare - <http://www.gentlecare.com/>

Supportive Pathways - [http://www.carewest.ca/index.php?page=supportive\\_pathways](http://www.carewest.ca/index.php?page=supportive_pathways)

PIECES - [http://www.thebethanygroup.ca/health\\_services/rosehaven\\_provincial\\_program/pieces/](http://www.thebethanygroup.ca/health_services/rosehaven_provincial_program/pieces/)

Rosehaven Tips Library - [http://www.thebethanygroup.ca/health\\_services/rosehaven\\_provincial\\_program/tips\\_library/](http://www.thebethanygroup.ca/health_services/rosehaven_provincial_program/tips_library/)

## Appendix 2: References



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**Appendix 2: References**

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The following documents were referenced in the development of these guidelines;

- Barrier Free Design Guide, Alberta Safety Codes Council, Summer 2017.
- Long Term Care Design Standards, Capital Health Region, June 2008.
- Design Guidelines: Complex Residential Care Developments, Vancouver Coastal Health, June 2007.
- Nursing Home Design Guide, U.S. Department of Veteran's Affairs, 2006.
- Design Standards and Guidelines for New Construction of Care Centres, Calgary Health Region, June 2005.
- Guidelines for Rejuvenation of Long Term Care Facilities, Calgary Health Region, October 2003.
- Ontario Long-Term Care Facility Design Manual, Ministry of Health and Long Term Care, May 1999.
- Long Term Care Bed Capacity: Invitation for Expression of Interest, Calgary Health Region, December 1998.
- Facility Design Issues For Continuing Care Centres, Alberta Health, 1994.
- Z8000-11 Canadian Health Care Facilities, Canadian Standards Association, 2011

## Appendix 3: Infection Prevention and Control General Design Guidelines

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### Participants:

Pam Armstrong – IPC, Calgary Zone

Yvette Gable – IPC, Edmonton Zone

Karen Hope – IPC, Calgary Zone

Bev Knudtson – Capital Management, Calgary Zone

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## Appendix 3: Infection Prevention and Control General Design Guidelines

### Introduction

This guideline is an abridged version of the Alberta Health Services *Infection Prevention and Control Health Care Facility Design Guidelines and Preventative Measures for Construction, Renovation and Maintenance May 2013*. It includes items pertaining specifically to Continuing Care Facilities.

This guideline was developed to establish safe environments for residents and staff by reducing the risk of transmission of infections in Continuing Care Facilities (CCF) in Alberta. It is to be used to determine Infection Prevention and Control (IPC) requirements when planning and designing new health care facilities, performing construction and renovations, or functionally changing existing spaces. Included in this guideline is the Infection Control Risk Assessment (ICRA) and a Preventive Measures toolkit that provides standardized tools for establishing levels of risk and the preventive measures required to mitigate these risks during construction, renovation and maintenance activities. See *Section VIII*

The application of this guideline shall take into consideration the level of care and risk to resident populations.

In addition to IPC considerations other pertinent guidelines, standards and codes shall be included in design, construction and renovation projects. If there is a discrepancy between this document and the CSA Standards, applicable federal, provincial and municipal building codes and regulatory requirements will apply. [CSA:5.1.1.5]<sup>1</sup>

### Reference Citations

Clauses are directly referenced to a specific standard, guideline or other reference. Each reference is cited in brackets at the end of the clause. When further clarification is required refer to the specific standard identified.

Using the example [CSA: 4.5.1.2]<sup>1</sup>:

- The first letters, CSA, are the reference source.
- Numbers following the reference source, : 4.5.1.2, indicate the exact clause found in the reference document and.
- Number(s) in superscript after the last bracket , ]<sup>1</sup> match the numbers found in the Reference List at the end of this guideline and correspond to a specific reference document (e.g. Canadian Standards Association, CSA Z8000-11).

### Language

In this document “shall” is used to express a requirement; “should” is used to express a recommendation or that which is advised but not required; “may” is used to express an option or that which is permissible within the limits of the guidelines. [CSA: 1.3]<sup>1</sup> When further explanation is required for terms such as, but not limited to, “sufficient”, “accessible”, “appropriate” or “adequate” etc. consult the specific standard referenced.

## Exceptions

Where an exception to a guideline is perceived to be required (e.g. constraints of an existing footprint or based on engineering or architectural reports) the process shall be dependent on the order of magnitude.

**Minor deviations** from the guidelines can be managed through informal consultation with Infection Prevention and Control.

**Major deviations** from the guidelines *require* consultation between relevant stakeholders and Infection Prevention and Control to seek an acceptable compromise. Where compromise cannot be achieved, a risk assessment *shall* be used to form a final decision.

For further clarification to the exception guidelines see Section 7, AHS *Infection Prevention and Control Health Care Facility Design Guidelines and Preventative Measures for Construction, Renovation, and Maintenance Activities*. May 2013<sup>25</sup>

## Design Guidelines

### I. HAND HYGIENE

Proper hand hygiene is the single most important practice to prevent the transmission of microorganisms in seniors care facilities. To ensure compliance with hand hygiene protocols, there shall be sufficient hand hygiene stations that are conveniently located, functioning and accessible as close as possible to the point of care for all health care personnel and others. Point of Care refers to the place where a resident receives care from a health care worker (HCW). It is the place where three elements occur together: the resident, the health care worker and care or treatment involving contact with the resident or his/her surroundings.<sup>27</sup> Point of Care products should be accessible without having to leave the room where care or resident contact is taking place, so they can be used at the required moment.

### General Considerations for Hand Hygiene Stations

1. AHS Hand Hygiene Policy states that hand hygiene shall be performed either through the use of alcohol based hand rubs (ABHR) or with soap and water at a hand washing sink. Provision shall be made to allow the use of both.<sup>2</sup>
2. Towel dispenser design shall be such that towels are dispensed one at a time. They shall either be hands-free or designed so that only the towel is touched during removal of the towel for use. [CSA: Table 11.1,19 (c)]<sup>1</sup>
3. Hot air dryers shall not be used in clinical areas as warm air currents dry hands slowly and can be used by only one individual at a time. [CSA: Table 11.1,19 (d)]<sup>1</sup>
  - In non-clinical (public) areas paper towel dispensers shall continue to be needed until such time as all sinks are equipped with automatic faucets, and all bathrooms are a walk in style (no door).

4. Receptacles for soiled paper towel disposal should be of a type that prevents hands coming in contact with the receptacle, its contents or surrounding soiled surfaces and shall be provided at each hand hygiene sink. [CSA: Table 11.1, 19 (h)]<sup>1</sup>
5. Hand soap shall be dispensed from a non-refillable soap dispenser (i.e. not refilled from a bulk container). [CSA: Table 11.1, 19 (g) (ii)]<sup>1</sup>
6. ABHR shall be dispensed in a non-refillable dispenser (i.e. not refilled from a bulk container).
7. Sinks used for hand hygiene shall not be used for equipment cleaning or the disposal of waste fluids (e.g. blood and body fluids, IV fluids). [CSA: 7.5.11.1.3]<sup>1</sup>
8. The sink basin and faucet fixtures shall be able to withstand frequent cleaning with CCF approved low level disinfectants.
9. Sinks used by residents and where water temperature control is required, (e.g. resident room washrooms) shall have manual cold and hot water taps. [FGI: 2.5-2.3.2.3, 4]<sup>3</sup>, [CSA: 8.3.2]<sup>5</sup>
  - Wrist blade controls are preferable on sinks used by residents. Blade handles used for this purpose should be at least 10.2 centimeters (four inches) in length.
  - The fixtures should be easy to clean, low maintenance, and constructed of materials that withstand cleaning with CCF approved low level disinfectants.
10. Hand washing sinks should be free standing and not inserted into or immediately adjacent to a counter.
11. Countertops (Applicable to all sinks)
  - In areas where countertops are necessary, an integral or seamless (one piece) unit of sink, backsplash and counter should be used. This will minimize the use of seams and/or caulking.
  - Countertops should be smooth, non-porous, seamless and impervious to moisture particularly around the sink.
  - If sink basins are set into plastic laminate countertops the substrate (beneath the laminate) shall be marine-grade plywood (or equivalent) with an impervious seal. [FGI: A2.4-2.2.8.4, (2c)]<sup>3</sup>
  - If a cupboard or closure of the plumbing lines is required under a sink, it shall not be used for storage of clean/sterile supplies or equipment.

### **Selection Criteria for Hand Washing Sinks** <sup>(29)</sup>

*Note: A dedicated hand washing station includes a sink for the purposes of hand hygiene only. Includes a hand hygiene sink, soap dispenser, paper towel dispenser and waste receptacle.*

#### **Specifications for staff hand washing sinks include the following:**

12. The sink shall have a deep basin of at least 19 centimetres (7.5 inches) in depth to prevent splashing of surrounding areas.

13. The area of the sink basin shall not be less than 929 square centimeters (144 square inches).
14. The sink basin shall be made of solid, non-porous materials, (e.g. porcelain, enamel, vitreous china, or a minimum thickness of 18/8 gauge, grade 304 stainless steel).
15. Granite or marble shall not be used.
16. When water falls from the faucet it shall hit the sink basin surface; it shall not flow directly into drain.
17. The sink basin shall be designed to prevent pooling of water.
18. Seamless, integral backsplashes are recommended to reduce microbial growth and facilitate cleaning.
19. The sink drain shall not be able to take a plug.
20. All sink drains shall have accessible clean-outs and be designed so that sewage will not be spilled when maintenance is performed.
21. The hand washing sink basin shall not be equipped with a drain overflow, unless it is determined, after evaluation of the infection-versus-flood risk that overflows are necessary: [CSA: 8.1.9, 8.1.10]<sup>5</sup>
  - For dedicated staff hand washing sinks, located where there is minimal risk of a flood (e.g. medication room, utility rooms, kitchen, serveries, staff washrooms); sinks shall not have an overflow.
  - For dedicated staff hand washing sinks in resident rooms (not the washroom) where there is a potential risk of a flood; an overflow with documented cleaning program allowed.
  - For shared hand washing sinks, located where there is potential risk of a flood (e.g. dining room, public washrooms); an overflow with documented cleaning program allowed.
  - For sinks in residents wash rooms that are also used occasionally for staff hand washing; an overflow with documented cleaning program allowed.
22. The trap location shall be offset from the drain to minimize splash back from under sink plumbing where biofilm development is most likely to occur.
23. The trap shall be 40 mm diameter. [CSA: Table 11.1, 19 (c) (viii)]<sup>1</sup>  
*Note: Trap size relates to drainage time and water flow time.*

### **Selection Criteria for Faucet Fixtures** <sup>(29)</sup>

*Proper fixtures for dedicated staff hand washing sinks, when combined with an acceptable basin design, minimize contamination of surrounding area through splash and aerosolization. Adequate clearance for hand washing mitigates the risk of contaminating the hands through inadvertent touching of sink and fixtures.*

#### **Criteria for selection of faucets include the following:**

24. The faucet shall have a gooseneck spout with a minimum height of 25 centimetres (10 inches).

25. The faucet radius shall be sufficient to avoid inadvertent touching of the sink basin during hand washing and ensure water does not fall directly into drain.
26. A minimum gooseneck radius of 10 centimetres (4 inches) is recommended.
27. Once the faucet has been attached to the sink basin, there shall be a minimum of 25 centimetres (10 inches) clearance from discharge point of faucet to the bottom of the basin.
28. Faucets shall be stationary and not swivel.
29. Laminar flow regulation is recommended.
  - Aerators shall not be used due to build-up of residue and biofilm.
  - Plumbing lines connecting the valve and water outlet should be as short as possible.
30. Hands free controllers should be used and the following specifications apply:
  - Electronic sensor regulated faucets (electronic eye) are preferred.
  - If electronic sensor is used the faucet shall be capable of operation during power failures.
  - Foot pedal operated sinks are acceptable.

#### **Location of hand hygiene stations (hand washing sinks and alcohol-based hand rub dispensers)**

31. Alcohol Based Hand Rub (ABHR) products and/or hand washing sinks for hand hygiene shall be available as close as possible to the point of care.
32. The number and placement of both ABHR dispensers and hand washing sinks for hand hygiene shall be determined by a work flow pattern and risk assessment.

*Note: A risk assessment shall be done to guide placement of ABHR where access to ABHR constitutes a resident and/or visitor safety risk (e.g. residents who do not have the mental capacity to realize the negative effects of product ingestion or misuse of any kind).*
33. Hand washing sinks should be installed at least 1 metre (3 feet) from sources of extrinsic contamination such as clinical rim flushing sinks or hoppers.
34. Due to the risk of splash, sinks should be located at least 1 metre (3 feet ) from residents, clean supplies and adjacent counters or be equipped with a splash guard to avoid contamination from splashing.
35. Sink placement shall provide convenient access to a wall-mounted non-refillable soap dispenser (i.e. not refilled from a bulk container); a refillable no-touch paper towel dispenser (i.e. only the towel is touched during removal for use) and a receptacle for soiled paper towel disposal.
36. ABHR shall be placed in accordance with provincial and local restrictions/guidelines. [Government of Alberta Fire Code]<sup>14, 26</sup>
37. ABHR should not be placed at or adjacent to hand hygiene sinks.



38. ABHR dispensers shall not protrude in a way that could cause injuries.

39. ABHR dispensers shall not leak on surfaces that could cause falls or other injuries.

**40. Hand washing sinks for staff shall be located:** [CSA: 7.5.11.2.1]<sup>1</sup>

- Inside each resident bedroom, adjacent to the entrance. *Note: Dedicated hand washing sinks for staff use in each resident's room is considered best practice; however, in the absence of this dedicated staff hand washing sink, the sink in the resident's washroom may be used.*[FGI: 3.1 – 2.2.2.5]<sup>3</sup>
- Inside each tub room. [CSA: Table 11.1,47]<sup>1</sup>
- In fitness/wellness rooms (including rooms where treatment is provided or procedures or physical exams are performed).
- In each room where medication is prepared.
- In any room in which food or resident care items (e.g., tray) are prepared. This includes but is not limited to clean utility rooms used for resident tray preparation, nourishment centres, rooms where tube feeding is prepared, etc.)
- In each soiled utility or holding room (in addition to sinks or hoppers that are used for contaminated materials).
- In housekeeping closets.
- In each room where un-bagged soiled linen is handled (e.g. central laundry room and resident laundry room).
- In areas where hands are likely to become contaminated, such as material goods receiving areas, chemical storage, waste disposal and housekeeping supply area.
- In hair salons

*Note: In situations where a hand washing sink cannot be placed according to the above criteria, Infection Prevention and Control shall be consulted for exceptions.*

**41. Alcohol-based hand rub (ABHR) hygiene stations shall be provided in each of the following locations:** [CSA:7.5.11.3.1]<sup>1</sup>

- At all entrances and exits to the facility and each resident house. *ABHR hand hygiene stations shall be placed at the entrance(s) to the facility and each resident house, in a prominent location within the traffic flow, so that visitors and staff stop, take notice, and use them. If wall-mounted hand hygiene stations are used they shall be placed at the entrance to health facilities alongside the traffic flow.*
- outside the entrance to resident bedrooms (for hand hygiene upon entering and leaving the resident's environment).

- Inside the resident bedroom (for hand hygiene before and after providing direct care) in all situations except where resident safety could be put at risk.
  - ABHR must be accessible without having to leave the room where care or resident contact is taking place.
  - ABHR must be accessible in hallways unless contraindicated by the risk assessment; this facilitates situations in which care is given in hallways and allows visitors to easily access ABHR.
  - A risk assessment should be done to guide placement of ABHR for residents who do not have the mental capacity to realize the negative effects of ingestion or misuse of any kind.
- Immediately adjacent to the entrances of common areas (e.g. dining room, lounge).
- Public and staff eating areas.
- Portable medication carts.
- Common use areas.
- Fitness/wellness areas/rooms.

*Note: Wall-mounted ABHR should be placed in accordance with the facility work pattern and risk assessment. In situations where ABHR cannot be placed according to the above criteria, Infection Prevention and Control should be consulted for exceptions.*

## II. IPC GENERAL PRACTICE GUIDELINES FOR CCF DESIGN

1. Alberta Continuing Care Facilities (CCF) shall be planned and designed to be safe for all building occupants. The planning and design process shall include participation with Infection Prevention and Control. [CSA: 4.5.1.2]<sup>1</sup>
2. The IPC Risk Assessment and Preventative Measures Analysis shall be conducted as part of the planning process for any new construction, addition or renovation. [CSA: 4.5.1.3]<sup>1</sup> (See Section VIII).
3. An infection control risk assessment with consideration of the facility's resident population and programs shall be included during the planning phase of a project. Based on the risk assessment, the CCF shall be designed to include infection prevention and control measures that minimize the potential for acquisition and transmission of infections. [CSA:7.5.1.2]<sup>1</sup>
4. The following IPC measures shall be incorporated into the planning, design and construction: [CSA: 4.5.1.4, 7.7.1.3]<sup>1</sup>
  - Sufficient space for resident care that prevents the spread of illnesses and provides for the implementation of routine practices.

- Construction materials that are free of contaminants and excessive moisture and able to withstand regular use and cleaning (See Section III).
  - Areas for localized waste management [CSA:7.5.6,7.5.7]<sup>1</sup>.
  - Dedicated areas for storage of supplies and equipment.
  - Adequate and accessible hand hygiene stations designed for health care workers (HCW) and resident hand hygiene. (See Section I)
  - Mechanical requirements for proper ventilation.
  - Equipment and requirements for proper reprocessing (cleaning and disinfection) of medical devices and equipment.
  - Segregation of soiled and clean items.
  - Planning to facilitate CCF responses to catastrophic events (e.g. pandemic disease).
5. Resident hair care and grooming facilities shall be separate from the resident rooms and shall contain a hand washing station and a resident toilet located in close proximity. [FGI: 3.1-2.3.5.1]<sup>3 (10, 11)</sup>
6. Decorative fountains and open fish tanks should not be allowed in clinical areas. [APIC Text 105-4]<sup>6</sup> [CDC: Recommendations Water I E]<sup>7</sup> *Note: If decorative fountains are placed in public areas of the health care facility, ensure that appropriate standards are followed for disinfection and maintenance.*

### III. STRUCTURE

#### Surfaces (general, walls, floors, ceilings, storage shelves, furniture and fixtures)

1. Surfaces shall have the following characteristics: [CSA: 7.2.2.1]<sup>1</sup>
  - Easy to maintain, repair and clean.
  - Resistant to microbial spread and growth.
  - Non-porous and smooth.
  - Durable.
  - Seamless.
  - Constructed in such a way that they do not soak up or harbor moisture.
  - Water impermeable in areas where water or dampness can occur.
2. Materials and finishes shall be moisture impervious and compatible with HCF approved low level disinfectants used for environmental cleaning. [CSA: 7.2.1.2]<sup>1</sup>

3. Avoid the use of materials that are susceptible to moisture damage, hard to clean or that provide areas where bacteria and mould may grow. Examples of materials to avoid include, but are not restricted to: Refer to [CSA:5.1.2]<sup>15</sup>
  - Carpets, if used, should be minimal. Carpets should not be used in resident suites, in rooms with plumbing fixtures, treatment rooms, clean storage rooms, dining areas, etc. If carpeting is used, it shall be cleanable with hospital-grade cleaners and disinfectants. (In areas where carpet may be considered, investigate the use of innovative materials that do not support microbial contamination). [CSA: 12.2.5.2.2]<sup>1</sup>
  - Wallpaper (paper and vinyl).[APIC: 106-9]<sup>6</sup>
  - Textured surfaces and ledges.[APIC :106-9]<sup>6</sup>
  - Floor and wall ceramic tile with porous grouting.  
*If tiles are used, epoxy grout that will not support microbial growth shall be applied.*
4. Emergency staff call cords shall be non-porous, non-moisture absorbing, and easy to clean with CCF approved low level disinfectants.

## Window Coverings and Privacy Curtains

5. Window treatments shall be selected for ease of cleaning or laundering. [CSA: 7.2.2.1]<sup>1</sup>
6. The use of fabric privacy curtains shall be permitted if they are washable. [FGI: 2.1-2.4.2.4, (2b)]<sup>2</sup>

## Walls

7. Wall finishes shall be washable and able to withstand routine cleaning with CCF approved low level disinfectants. [CSA: 12.2.5.3.1]<sup>1</sup>
8. Walls in the vicinity of plumbing fixtures (e.g. behind sinks or showers) shall be smooth and water resistant. [CSA: 12.2.5.3.1]<sup>1</sup>
9. The bottom edge of drywall shall be set a minimum of 1.2 cm above the finished floor level and the gap sealed. [CSA: 12.2.5.3.2]<sup>1</sup>
10. Wall finishes in storage areas shall be free of fissures and open joints or crevices that may retain or permit passage of dirt particles. [CSA: 12.2.5.3.3]<sup>1</sup>
11. Protective coving shall be used from the floor and up the wall in all areas where there will be frequent or constant moisture (e.g. workrooms where soiled materials are sorted or processed, shower facilities, and change areas). [CSA: 12.2.5.3.7]<sup>1</sup>

12. Modular walls shall meet the applicable requirements in Section III – Surfaces. In addition, modular walls:
- Shall not be used where protective coving is required.

## Floors

13. Floor and wall openings for pipes, ducts and conduits shall be tightly sealed/sleeved to minimize entry of rodents and insects and to ensure that water cannot pass through the floor penetrations to the floor below. Joints of structural elements shall be similarly sealed. [CSA: 12.5.2.11]<sup>1</sup> [FGI: 2.1-7.2.3.4]<sup>2</sup>
14. Floors in areas subject to frequent wet cleaning methods shall be monolithic and coved, resistant to water penetrations, and resistant to damage by CCF approved low level disinfectants (e.g. kitchen, soiled utility rooms, shower rooms, washrooms, tub rooms). [CSA: 12.2.5.2.4]<sup>1</sup>
15. Floors subject to traffic while wet (e.g. shower and bath areas, kitchens, and similar work areas) shall have a cleanable non-slip surface. [CSA: 12.2.5.2.5]<sup>1</sup>
16. When coving is used ensure the sheet goods base is continuous with the floor.
17. When using PVC wall covering, weld sheet vinyl flooring integral base to PVC wall covering material.

## Ceilings

18. Ceilings in resident houses should withstand cleaning using CCF approved low level disinfectants. [FGI: 2.1-7.2.3.3]<sup>2</sup>
19. Solid ceilings shall be installed in 3 piece washrooms, shower rooms, tub rooms, clean and sterile storage areas. [CSA: 12.2.5.4.2, 12.2.5.4.3]<sup>1</sup>
20. All conduits, piping, duct work and open construction systems shall be covered by a finished ceiling in locations where dust fallout would present a potential problem. All overhead piping and ductwork in the dining and food handling areas shall be concealed behind a solid finished ceiling. [CSA: 12.2.5.4.7)<sup>1</sup>

## Toilets

21. All toilets shall follow CSA:Z317.1-09 ,8.2.2<sup>5</sup> :

- Be wall-mounted.
  - Toilets for bariatric rooms shall be floor-mounted and support 453 kg. [CSA: 7.8.8.2.5]<sup>1</sup>
- Be made of vitreous china, stainless steel, or a material whose durability and imperviousness are equivalent to vitreous china.
- Be designed to have a maximum flush volume of 6 L.
- Have an open front seat with integral check hinges and without a seat cover.
- Have a quiet action flush.
- Have a siphon-jet elongated bowl.
- Have wall-mounted supports and grab bars.

22. Toilets with tanks shall not be used due to the risk of condensation. [CSA: Table 11.1, 25 (h), 49 (d)]<sup>1</sup>

23. Toilets should have flush pressure controlled to minimize risk of aerosolization. [Barker and Jones, 2005]<sup>12</sup>

24. Automatic flushing shall not be installed in resident houses. [CSA: 8.2.7]<sup>5</sup>

25. If automatic flushing is provided in non-resident areas (e.g. public areas) the activation mechanism shall provide consistent and reliable service and shall be capable of functioning during loss of normal power. [CSA: 8.2.8]<sup>5</sup>

26. There shall be a hand washing station within the same room.

## Showers and Tub Rooms

27. Showers shall be built to ensure that:

- The shower floor is integrally sealed with the shower base so that water cannot penetrate under any section of flooring.
- Water cannot flow out of the shower area and onto the floor or into the hallway.
- Wall bases shall be integral with the floor, tightly sealed against the wall and constructed without voids. [CSA: Table 11.1, 47 (j)]<sup>1</sup>
- Sufficient exhaust to limit water condensate.

28. Tub rooms shall meet the following: [CSA: Table 11.1, 47]<sup>1</sup>

- There shall be a hand washing sink within the room.
- Each room shall have storage space for supplies to clean the tub after each resident use (e.g. personal protective equipment (PPE) and cleaning supplies).
- There shall be a separate toilet within the room or accessible without entry into the corridor. [FGI: 3.1-4.2.3.4]<sup>3</sup>
- Tubs with recirculation jets shall not be used.
- Tub/shower rooms shall not be used for any other purpose (e.g. equipment storage).
- Wall bases shall be integral with the floor, sealed against the wall and constructed without voids.

- Flooring material shall be slip resistant and shall not support growth of mildew or mould.

**Soiled Utility Room** [CSA: Table 11.1, 40]<sup>1</sup>

29. Soiled utility rooms are required on all resident houses and should be located and arranged to provide easy access for staff.
30. This should be a separate room with no direct connection to the clean utility room.
31. Each soiled utility room shall have:
- One sink for cleaning of contaminated equipment and disposal of fluids.
  - A separate dedicated hand washing sink.
32. Soiled utility rooms shall only be used for temporary storage of supplies and equipment that will be removed for cleaning, reprocessing or destruction.
33. Soiled utility rooms shall be designed and equipped to minimize/contain the aerosolization of waste.
34. Flooring shall be of seamless, impermeable and non-slip material.
35. Splash protection shall be provided on walls near water supply, sinks, or human waste management systems.
36. Counter tops shall be of non-porous material, free from seams and tolerant of routine daily cleaning with CCF approved low level disinfectants.
37. The room shall have a door which should remain closed with access restricted for clinical and support staff. [CSA: Table 11,40,(I)]<sup>1</sup>
38. The room shall have the capacity to:
- Segregate waste into health care facility approved containers.
  - Hold soiled linen and items for return to designated laundry or equipment cleaning areas.
  - Contain a human waste management system (HWMS).
  - Contain supplies associated with waste management systems.
  - Provide for cleaning soiled resident equipment if a designated cleaning room is not available. (e.g. IV poles, lifts, commode chairs).

*Note: Clean equipment shall not be stored in the soiled utility room.*

39. Spray wands shall not be installed for rinsing of items. Equipment used for removal of gross soiling shall minimize aerosolization of particulates.

40. Space shall be provided for separate mobile carts/ containers for soiled linen, general waste, medical/hazardous waste, confidential waste, and recycling, etc.
41. The room shall provide storage for carts that will be used to move the soiled material from the room.

### Disposal of Human Body Waste

42. Human waste disposal equipment shall be provided in accordance with the functional program needs (e.g., macerator, washer disinfecter). The number and location of these systems shall be determined based on the need to maintain proximity to the point of care and the risks and acuity of the resident population. [CSA: 7.5.7.2]<sup>1</sup>
- If clinical flushing rim sinks (hoppers) are used, they shall be designed to contain any splash and the controls shall be located so as not to expose staff to contamination. [CSA: 8.3.4]<sup>5</sup>
43. There should be a minimum of one closed waste management system (e.g. enclosed bedpan washer/disinfecter, macerator) per neighbourhood (unit), conveniently located close to resident rooms where staff can decant or discard human waste, solid and liquid, and other potentially contaminated fluids. [CSA: 7.5.7.2]<sup>1</sup>.
- The type of unit purchased should be made only after discussion with the end users followed by consultation and discussion with other stakeholders such as Facilities and IPC.
  - The system must not expose the user to contamination.
  - The system should have hands free operation, have mechanisms to prevent backflow, and achieve a minimum of low level disinfection for reusable equipment.

*Note: Depending on the system, human waste discard can either be accomplished through the use of disposable containers that are discarded with the waste (macerator) or reusable containers that are emptied and reprocessed (e.g. using a washer-disinfecter). [CSA: 7.5.7.3]<sup>1</sup>. Adequate storage for cardboard supplied should be taken into consideration with design requirements.*

44. Human waste management systems shall be designed to prevent aerosolization during the decanting or discarding of waste. [CSA: 7.5.7.3]<sup>1</sup>
45. Spray wands shall not be installed or used for rinsing waste receptacles. [CSA: 7.5.7.3]<sup>1</sup>
46. Resident washroom fixtures shall not be used to dispose of human waste or body fluids or to clean waste receptacles. [CSA: Table 11.1, 25, (y)]<sup>1</sup> [CSA: 7.5.11.1.2]<sup>1</sup>

### Clean Utility Room [CSA: Table 11.1, 8]<sup>1</sup>

47. Clean utility rooms are required on all resident houses and shall be located and arranged to provide easy access for staff.
48. Clean utility rooms shall be physically distinct from soiled utility rooms.



49. Clean utility rooms require a hand washing station if the room is used for preparation of resident items (e.g. preparation of IV equipment) [FGI: 2.3-4.2.5.1]<sup>3</sup>
50. The room shall have a door that is closed with access limited to clinical and support staff.
51. Decontamination or cleaning of supplies shall not be permitted in the clean utility room.
52. Shelving units or cart surfaces shall have cleanable, smooth, and non-porous surfaces tolerant of CCF approved low level disinfectants.
53. Storage of equipment and supplies shall not be exposed to direct airflow from the HVAC system in accordance with CSA: Z314.15<sup>30</sup>
54. Storage should be away from the windows.
55. Flooring shall be of seamless impermeable non-slip material.
56. Shelving for clean and sterile supplies shall be at least:
- 23 cm off the floor.
  - 45 cm from the ceiling.
  - 5 cm from outside walls.
57. The bottom shelf of any storage should be solid surface to prevent contamination from the floor.
58. The room shall have designated locations for the types of items being stored, including clean and sterile supplies, clean linen and crash carts.

## Facility Linen Management

### Laundry Facilities

59. Each facility shall have provisions for separate storing and processing of clean and soiled linen.
60. Areas shall be designed to maintain separation between soiled and clean items. Walls shall separate functional work areas to control traffic flow and contain contaminants generated during the process. [FGI: 2.1-5.2.2.1]<sup>2</sup>
61. The floor, walls, ceiling and work surfaces should be constructed of non-porous materials that will withstand frequent cleaning and wet conditions.
62. Hand washing stations shall be provided in each room where clean or soiled linen is processed and handled. [FGI: 2.3-4.2.7.3]<sup>3</sup>
63. For laundry area HVAC systems refer to CSA: Table 1<sup>4</sup>, Technical Design Requirements: Table 5.2.2.c<sup>19</sup>.

64. If linen is processed within a CCF, the following elements shall be provided:

- Layout of equipment shall be arranged to permit an orderly workflow from dirty to clean and minimize cross traffic that might mix clean and soiled operations. [FGI: 3.1-4.6.2.1]<sup>3</sup>
- A receiving, holding, and sorting room shall be provided for control and distribution of soiled linen. Discharge from laundry chutes shall be received in a separate room adjacent to it. [FGI: 3.1-4.6.2.2(1)]<sup>3</sup>
- Washers/extractors shall be located between the soiled linen receiving and clean processing areas. [FGI: 3.1-4.6.2.2(2)]<sup>3</sup>
- The laundry processing room shall have space for commercial or industrial type equipment that can process at least a seven day supply within the regular scheduled work week. [FGI: 2.1-5.2.2.2 (2)]<sup>2</sup>
- A clean linen inspection, mending and assembly area shall be provided. A space for tables, shelving, and storage shall be provided. [FGI: 3.1-4.6.2.2(5)]<sup>3</sup>

65. If linen is processed off-site or in a separate building on-site, the following shall be provided:

- A service entrance, protected from inclement weather, for loading and unloading of linen. [FGI: 3.1-4.6.4.1]<sup>3</sup>
- A control station for pick up and receiving. [FGI: 3.1-4.6.4.2]<sup>3</sup>

### Resident Personal Laundry Rooms

66. In resident personal laundry rooms clearly defined separate areas should be provided for handling clean and soiled laundry.

67. Layout of equipment shall be arranged to permit an orderly workflow and minimize cross traffic that might mix clean and soiled operations. [FGI: 3.1-4.6.2.1]<sup>3</sup>

### Clean Linen Storage Area

68. Clean linen storage areas are required in all resident houses.

69. Clean linen may be stored in a clean utility room or closed closet specifically for clean linen storage. If clean linen is not stored in a clean utility room/closet then storage of a covered linen cart in an alcove shall be permitted. [FGI: 2.3-4.2.7.4(2)]<sup>3</sup> [CSA: Table 11.1, (8 b)]<sup>1</sup>

70. A central clean linen storage and issuing room(s) shall be provided in addition to the linen storage required in individual resident areas. [FGI: 3.1-4.6.3.1]<sup>3</sup>

### Linen Carts

71. Cart storage area(s) shall be provided for separate parking of clean or soiled linen carts out of traffic. [FGI: 3.1-4.6.3.3(1)]<sup>3</sup>

72. Provisions shall be made for cleaning of linen carts on premises (or exchange of carts off premises) [FGI: 3.1-4.6.3.3(2)]<sup>3</sup>

## Laundry chutes

73. Laundry chutes should not be used. [CSA:10.5.1.2.]<sup>18</sup>

74. If laundry chutes are installed, they *must* be properly designed, maintained and used in a manner that minimizes dispersion of aerosols from contaminated laundry [PHAC<sup>27</sup>, PIDAC<sup>28</sup>]:

- Laundry bags are securely bagged and tightly closed before placing the filled bag into the chute.
- Loose items are not placed in the chute.
- Laundry chutes are maintained under negative pressure.
- Laundry chutes discharge into a separate soiled linen collection area adjacent to the soiled linen receiving room. [FGI: 3.1-4.6.2.2]<sup>3</sup>
- Laundry chutes are cleaned on a regular basis.

## Housekeeping Service Room [CSA: Table 11.1, 22]<sup>1</sup>

Note: The sizes and requirements for this room are based on the assumption that major equipment is stored in the service area.

75. A housekeeping service room shall be centrally located between resident houses and shall be able to accommodate large power equipment and have greater inventory for distribution to the smaller housekeeping closets.

76. The room shall accommodate the following functions: enough space for cleaning products (and dispensers, if used), an eyewash station with tempered water supply, and a floor drain to collect run-off.

77. The room shall have a door that is kept closed and secured with access restricted to clinical and support staff.

## Housekeeping Closet [FGI: 2.3-4.9.3.2]<sup>3</sup>, [CSA: Table 11.1, 21]<sup>1</sup>

Note: The sizes and requirements for this room are based on the assumption that major equipment is stored elsewhere.

78. A housekeeping closet shall be provided in all major care areas.

79. Every housekeeping closet shall have a 60 cm x 60 cm floor-based sink. This sink shall be protected by an easily cleanable wall surface up to 1.2 m from the finished floor.

80. The housekeeping closet shall be large enough to store at least one housekeeping cart.

81. Wall protection shall be provided to prevent damage by the carts to a height of 1.2 metres.

82. Housekeeping closet shall include:

- Floor sink for dumping of dirty water from pails, etc.
- Fresh water source (hot and cold) for filling pails, etc.
- Hand washing sink.
- Fixed shelving for storage of small quantities of cleaning products.

83. The housekeeping closets shall have a door that is kept closed and is secured with access restricted to clinical and support staff.

## Waste Management

84. Waste management practices shall include segregation of waste into an appropriate dedicated holding area in the unit of care or work environment and shall be in compliance with CSA Z317.10<sup>31</sup> [CSA: 7.5.6]<sup>1</sup>

## Equipment Storage

85. Adequate equipment storage shall be provided in every resident house. [CSA:7.7.1.6]<sup>1</sup>

86. Dirty supplies/equipment shall be stored separately from where clean/sterile supplies are stored.

87. Circulation areas (e.g. corridors or hallways) shall not be used for storage. [CSA: 7.7.1.6]<sup>1</sup>

*Note: Improperly stored items (e.g. in corridors or treatment spaces) can present multiple risks to safety and security fire safety, infection prevention and control, theft, and hazards due to sharps or electrical shock.*

88. Sealed lighting units with cleanable lens covers are required in all clinical/resident and equipment/supply storage areas. U-channel lighting and open scone lighting shall not be used.

## Cart/Equipment Cleaning

89. Adequate space for cleaning and disinfection of reusable equipment, carts, wheelchairs and mechanical lifts shall be provided. It should provide adequate separation of the decontamination areas from the clean areas.

## Main Kitchen Space and Servery

90. At a minimum, the design of the main kitchen space and the servery shall meet all specifications in the Alberta Public Health Food Regulations, Alberta Building Code and all sanitation codes and standards (e.g. water, lighting, ventilation, sewage disposal, food storage, refrigeration, and work flow).

## Hydration Stations

91. Drinking fountains or 'bottled-water' type water coolers are not allowed in resident houses.
92. Plumbed-in water dispensers that use disposable cups may be installed.

*Note: Manufacturer's directions for routine and preventive maintenance shall be followed.*

93. A hand hygiene station with supporting signage shall be provided.

## Corridors

94. Hallways shall not be used to store equipment or clean supply carts. Equipment and clean supply carts shall be stored in a designated space or alcove and covered so clean supplies do not become contaminated. [CSA: 7.7.1.6]<sup>1</sup>
95. Coat hooks may be mounted in hallways outside resident rooms to allow garments to be hung up prior to donning PPE. *(Coat hooks are supplied in non-protruding safety release models and may be useful for families and visiting health professionals to hang their coats if they need to wear PPE when visiting residents on additional precautions).*

*Note: A resident risk assessment should be done prior to installing coat hooks.*

## Lighting

96. The lighting requirements shall meet standards outlined in the Technical Design Requirements<sup>19</sup>.
97. Sealed lighting units with cleanable lens covers should be installed in all treatment/examination rooms, storage rooms, washrooms, laundry, housekeeping closets, kitchens, serveries. U-channel lighting and open scone lighting should not be used.

## IV.WATER SUPPLY

### Plumbing

1. All plumbing shall meet standards outlined in the most current Technical Design Requirements<sup>19</sup>, local regulations and CSA Z317.1 *Special requirements for plumbing in health care facilities*<sup>5</sup>.
2. All tap water shall meet local potable water standards.

*Note: Bacterial and fungal contamination risks are associated with potable (drinking) water and have potential for direct or indirect transmission from faucets and sinks, or through inhalation of aerosols, such as those generated from construction activities or from showerheads. The overall risk of healthcare associated transmission of these pathogens from water is considered relatively low. [APIC: 105-1]<sup>6</sup>*

3. Water systems shall be designed to prevent stagnant sections. [CSA: 6.7.2(f)]<sup>21</sup>
  - Dead leg sections of plumbing pipe shall be avoided. [FGI: 2.1-8.4.2.5(3)]<sup>2</sup>, [CSA;6.7.2(f)]<sup>21</sup>
4. Recirculation lines should return water from a point as close as possible but not further than 150 cm from each distal point. [ Roles, A., Kadziolka, M.]<sup>22</sup>

*Note: The reduced length of recirculation lines in combination with other measures will mitigate the risk of Legionella contamination. The design goal is to keep hot water flowing in the entire hot water distribution system all of the time. The 150 cm recirculation line length and the elimination of dead legs have been shown to be an effective intervention in preventing Legionella. This recommendation should be considered for new CCF designs.*

5. Hot water distribution systems shall be designed to ensure that distribution temperatures are maintained in accordance with CSA Z317.1-09, CSA:6.3.4.10 and 6.3.4.12<sup>5</sup>.
6. Drainage shall comply with local codes and environmental and health regulations. [Technical Design Requirements: 5.3]<sup>19</sup>

## V. AIR HANDLING

1. Air handling shall meet standards outlined in the most current Technical Design Requirements<sup>19</sup> and Canadian Standards Association CSA Z317.2-10 *Special requirements for heating, ventilation and air conditioning (HVAC) systems in health care facilities*<sup>4</sup>. It is prudent to allow for expansion in order to effectively deal with emerging infectious diseases. For different air handling requirements refer to CSA: Z317.2-10, Table 1<sup>4</sup>.

## VI.MEDICAL GASES

1. The medical gas pipelines system supplying medical gases or medical vacuum that is used for resident care shall not be used for any other purposes. [CSA: 4.3]<sup>23</sup>
2. Medical gas pipelines supplying medical gases used for powering devices unrelated to human respiration shall not be used for resident care. [CSA: 4.4]<sup>23</sup>
3. Instrument grade compressed air or compressed dry nitrogen should be used to operate air powered equipment according to the manufacturer's written instructions. [CSA: 4.4]<sup>23</sup>

## VII.REPROCESSING SPACE FOR CRITICAL AND SEMICRITICAL MEDICAL DEVICES

1. Any space used for reprocessing (cleaning and high level disinfection or sterilization) of reusable critical or semi-critical medical equipment/devices (e.g., reusable foot care equipment) shall meet the requirements for a reprocessing space outlined in the Alberta Health, *Standards for Cleaning, Disinfection and Sterilization of Reusable Medical Devices for all Health Care Facilities and Settings*<sup>20</sup> and in the Canadian Standards Association, CSA Z314.8-08, *Decontamination of*

*reusable medical devices*<sup>16</sup> and Canadian Standards Association CSA Z314.3 *Effective sterilization in health care facilities by the steam process*<sup>33</sup>.

## VIII.IC Risk Assessment (ICRA) and Preventive Measures Toolkit for Construction, Maintenance and Renovation

Serious health risks for patients, staff and visitors are created during construction, renovation and maintenance activities. At the initial stages of design and planning the completion of an Infection Control Risk Assessment (ICRA) by the construction planning team (including Infection Prevention and Control (IPC), Facilities Maintenance and Engineering, Administration, Project Management, Environmental Services, health care workers (HCWs), Designers and Constructors) is an essential component of all construction, renovation and maintenance projects in a healthcare facility.

The ICRA has been developed by Alberta Health Services with involvement by IPC and Capital Management to provide a standard tool for establishing preventive measures required to minimize the risk of infection for patients, staff and visitors during construction renovation and maintenance activities.

The term “construction activity” is defined as major and minor facility activities that disturb or modify facility structures and systems [CSA:3.1]<sup>15</sup>. This includes all renovation, maintenance, and repurposing and remediation activities.

**Note:** Modification of a facility or area with the intent to change the original functional purpose is considered new construction, and shall necessitate the need to meet current and applicable standards. [CSA, p.11]<sup>1</sup>

### Risk Factors related to construction, renovation and maintenance

Construction, renovation, and maintenance projects in health care facilities pose a potential threat of infection to current and future occupants, particularly those with reduced immunity. Reduced immunity can result from many different illnesses or conditions, for example,

- a) bone marrow or solid organ transplantation;
- b) receipt of chemotherapy for cancer or other conditions;
- c) use of antibiotics to treat fevers or previous infections;
- d) HIV and AIDS;
- e) immune system defects present at birth;
- f) dialysis or kidney failure;
- g) diabetes;
- h) chronic lung disease;
- i) assisted breathing (i.e., being on a ventilator);
- j) heart disease;
- k) cancer;
- l) surgery and other invasive medical procedures; and
- m) extremes of age (e.g., newborns or elderly individuals). [CSA:4.2.1]<sup>15</sup>

### Sources of Infection (Refer to [CSA : 4.3.1]<sup>15</sup>)

Some of the environmental sources of infection in health care facilities include soil, water, and dust contaminated with fungal spores, bacteria, or other micro-organisms.

The biological agents that can cause construction –related infections or allergic reactions include, but are not limited to;

- a) fungi (e.g. forms of the *Aspergillus* species such as *A. fumigatus*, *A. flavus*, *A. niger*, and *A. terreus*; *Candida albicans*, *Candida tropicalis*, and *Candida parapsilosis*; *Fusarium*, *Zygomycetes*; *Rhizopus indicus*; *Mucoraceae rhizopus*; and *Scedosporium prolificans*); and



- b) bacteria (e.g., *Nocardia asteroides*, mycobacteria, and forms of the *Legionella* species such as *L. Pneumophila* and *L. bozemanii*).

Contamination can be caused by many factors during construction, including

- a) inadequate preparation and quality control;
- b) inadequate or uncontrolled ventilation;
- c) improper or inadequate containment of construction activities;
- d) improper or inadequate storage of construction materials;
- e) disturbance of existing contaminated materials (e.g., disturbance of soil during excavation, removal of ceiling tiles, demolition of partitions);
- f) penetration of construction materials by water, and resultant stagnation;
- g) repairs, modifications or accidental incursions into water supplies;
- h) contaminated materials brought to the construction site;
- i) standing water on the construction site;
- j) entry of vermin (e.g., rodents, insects, birds); and
- k) inadequate cleanup and sanitation procedures. [CSA:4.3.2]<sup>15</sup>

Examples of health care facility construction, renovation, and maintenance activities with events that have caused contamination producing infections and pseudo-infections include the following:

- 1) soil excavation
  - a) near health care facilities; and
  - b) from construction contaminating the water supply;
- 2) heating, ventilation, and air conditioning system (HVAC):
  - a) air intakes or exhaust grilles in patient care rooms that are not covered during construction or demolition work;
  - b) changing of air filters in patient care areas or in systems supplying air to patient care areas;
  - c) demolition of ducts;
  - d) improper ventilation of exhaust systems;
  - e) failure to maintain air filters; and
  - f) inappropriate use of permanent ducts to move HEPA filtered air during construction.
- 3) windows:
  - a) construction or demolition near open or improperly sealed windows;
  - b) improperly maintained or protected window and door opening that allow migration or vermin;
  - c) window air conditioners facing road construction activity; and
  - d) disturbance of dust while working on window blinds;
- 4) failure of moisture barriers:
  - a) leaking temporary or incomplete roofs;
  - b) leaking temporary walls or incomplete wall systems; and
  - c) failure at exterior joints; and
- 5) other activities and occurrences:
  - a) carpeting that becomes contaminated during construction;
  - b) construction dust that contaminates patient care supplies;
  - c) construction dust that enters an elevator shaft;

- d) construction near high-risk patients;
- e) disturbance or removal of ceiling tiles;
- f) disturbance of contaminated wall coverings;
- g) dust barriers not erected before construction;
- h) dust from ceiling tiles contaminating microbiological plates, resulting in false diagnoses;
- i) nearby construction work contaminates isolation rooms;
- j) food or drink left in wall cavities or ceiling spaces;
- k) removal of fibrous thermal insulating material (glass fibre); and
- l) water supply depressurizes when a valve is opened, causing descaling and release of biofilm organisms such as *Legionella* and *Mycobacteria* sp. [CSA:4.3.3]<sup>15</sup>

### Guidelines for ICRA and Preventive Measures

1. Construction activities shall include IPC personnel in the project planning stages prior to blue print creation, contracting and commencement of activities. [CSA: 6.1.5,6.2.1.1, 6.2.2,6.3.2.2]<sup>15</sup>, [APIC: 106-1]<sup>6</sup>, [CSA: 4.5.1.2]<sup>1</sup>, [FGI: 1.2-1.2]<sup>2</sup>
2. FM&E shall perform an ICRA and the Preventive Measures Analysis (PMA) for maintenance activities. This shall be documented in the maintenance management system or on the ICRA form. [CSA:6.1.3]<sup>15</sup>
3. For new construction and contracted renovations the ICRA and PMA shall be completed by designated members of the construction planning team that shall include IPC, Project Management, FM&E site administration and others as required. [CSA:6.1.3, 6.1.4,6.1.5]<sup>15</sup>
4. Any situation that poses a risk to patients and staff shall be reported immediately. [CSA: 5.3.11]<sup>1</sup>, [CSA:6.1.11]<sup>15</sup>
5. IPC shall be notified for all work affecting population Risk Group 4 [CSA 6.3.1.1]<sup>15</sup>.
6. IPC shall be notified of an ICRA requiring IC Preventive Measures Level 3 and 4 (CSA: 6.5.4)<sup>15</sup>
7. An ICRA shall be documented, and reviewed by the members of the construction planning team. A copy of the ICRA shall be kept by the facility. [APIC: 106-3]<sup>6</sup>, [CSA:6.1.3, 6.1.4,6.1.5, 6.1.6]<sup>15</sup>, [FGI: 1.2-3.1.7.1, 1.2-3.2.1.1, 1.2-3.2.1]<sup>2</sup>.
8. ICRA and PMA shall be included in tendering documents. [APIC: 106-1, 106-2, 106-3]<sup>6</sup>, [CSA: 4.5.1.3, 4.5.5, 5.3.1.1]<sup>1</sup>, [CSA: 6.1.6]<sup>15</sup>, [FGI: 1.2-3.1.7.2, 1.2-3.2.1.2]<sup>2</sup>
9. A documented plan for meeting the required PMA shall be completed and reviewed by the construction planning team including the contractors.[CSA:6.1.5]<sup>15</sup>, [FGI:1.2-3.1.4, 1.2-3.2.2]<sup>2</sup>
10. PMA identified shall be implemented, monitored and updated as required. [APIC: 106-4]<sup>6</sup>, [CSA: 6.1.7]<sup>15</sup>. If the scope of the construction activity changes, a new ICRA shall be required [FGI: 1.2-3.1.7.2, 1.2-3.2.3.4]<sup>2</sup>, [CSA: 6.1.7]<sup>15</sup>
11. Monitoring of construction activity is a shared responsibility between the construction planning team members (e.g. IPC, FM&E, Project Management, and staff). A documented monitoring plan shall be developed, reviewed and implemented. [CSA: 6.18]<sup>15</sup>, [FGI: 1.2-3.2.3.4]<sup>2</sup>
12. Written protocol for a stop work order shall be identified prior to beginning work. A stop work plan will include lines of authority, communication, investigation and remediation prior to restarting activity. [CSA: 5.3.11]<sup>1</sup>, [CSA:6.3.2.3, 6.1.12]<sup>15</sup> [APIC:106-4]<sup>6</sup>, [FGI: 1.2-3..2.3.4]<sup>2</sup>

13. The facility shall have an IPC education plan for staff and external contractors regarding construction related potential risks and preventive measures. [CSA:6.3.1.5]<sup>15</sup>, [FGI: 1.2-3..2.3.3]<sup>2</sup>, [APIC: 106-4]<sup>6</sup>

## Infection Control Risk Assessment (ICRA) Tool Kit

### **Contents of ICRA Tool Kit:**

- Form1: Infection Control Risk Assessment (ICRA)
- Form 2: Construction Activity Type (detailed)
- Form 3: Population Risk Group (detailed)
- Form 4: Infection Prevention & Control Construction Site Monitoring Tool
- Form 5: Infection Control Post Construction Checklist
- Form 6: Infection Control Preventive Measures Level 1
- Form 7: Infection Control Preventive Measures Level 2
- Form 8: Infection Control Preventive Measures Level 3
- Form 9: Infection Control Preventive Measures Level 4

### **Instructions:**

1. Complete the ICRA Form 1 using the following instructions:
  - a. Collect and record project information from Construction Planning Team.
  - b. Identify and record construction activity type. (Refer to Form 2, Construction Activity Type)
  - c. Identify and record the population risk group. (Refer to Form 3, Population Risk Group)
  - d. Using the Risk Analysis and Preventive Measures Class Matrix identify the IC Preventive Measures required and record on Form 1.
  - e. Include any additional ICP recommendations or comments.
  - f. Obtain all necessary signatures from the Construction Planning Team,
  - g. Circulate copies of Form 1 to the Construction Planning Team.
2. There are four IC Preventive Measure Levels: 1, 2, 3, 4. (Refer to Form, 6, 7, 8, 9 respectively).
  - a. Each IC Preventive Measures (PM) form is a standalone document which contains the preceding PM Level information.
  - b. Form 6: Infection Control Preventive Measures Level 1 may be filled out by FM&E or Infection Control Professional or their Designate to identify the required preventive measures for the activity described in "Form 1" Infection Control Risk Assessment and Preventive Measures Analysis". Identify the appropriate measures by marking X in the check boxes.
  - c. Form 7, 8, 9: Infection Control Preventive Measures Level 2,3,4 is filled out by the construction planning team or designated person(s) to identify the required preventive

measures for the activity described in Form 1” Infection Control Risk Assessment and Preventive Measures Analysis”. Identify the appropriate measures by marking X the check boxes.

3. Form 4 Construction Site Monitoring Tool may be used for compliance and quality monitoring. This form is used by the Infection Control Professional, their Designate or member of the construction planning team to monitor preventive measures required during construction / renovation activities.
4. Form 5 Post Construction Checklist should be completed prior to area occupancy. This form is used by Infection Control Professional or their Designate to ensure the post construction area is ready for patient/ staff occupancy.

## Form 1: Infection Control Risk Assessment (ICRA) Form

This form shall be completed by FM&E and /or designated members of the construction planning team that may include IPC, Project Management, FM&E and site administration for all maintenance, design planning, construction, renovation or remediation activities. Refer to Section 6.1, Guidelines for ICRA and Preventative Measures.

<b>Project Number</b>		<b>Project Name and Description:</b>	
<b>Project start date:</b>		<b>Estimated Duration:</b>	
<b>Construction Activity Types (these categories are not limited to the examples provided; refer to Form 2 for details) [CSA: Table 3]</b>			
<b>Type A:</b>	<b>Inspection and non-invasive activities such as:</b> a single controlled opening in a wall or removal of one ceiling tile or wall panel for inspection for painting (no sanding), wall covering, electrical trim work, activities that do not generate dust or require cutting of walls, or access to ceilings other than above, minor plumbing limited to 1 <u>patient</u> care room/area that does not disrupt water for more than 15 minutes.		
<b>Type B:</b>	<b>Small scale, short duration, creates minimal dust activities such as:</b> access to and use of chase spaces, cutting a small opening in contained space where dust can be controlled, cutting of walls/ceilings for cabling, wiring, minor electrical, ventilation or plumbing. Minor sanding & repair of small area of a wall, plumbing work in 1 or more <u>patient</u> care rooms that does not disrupt water for more than 30 minutes.		
<b>Type C:</b>	<b>Moderate to high levels of dust, moderate service disruption, requires demolition or removal of fixed components (e.g. sink) or assembly (e.g. cupboard). May include:</b> major sanding, removal of flooring, ceiling tiles, casework, new wall construction, minor duct or electrical work in ceilings, major cabling, plumbing that disrupts water supply in 1 or more <u>patient</u> care rooms 30 minutes to 1 hour.. Activities cannot be completed in a single work shift.		
<b>Type D:</b>	<b>High levels of dust, significant service disruption, heavy demolition &amp; construction, includes: soil excavation, new construction,</b> complete removal of cabling, demolition of wall(s), plumbing that disrupts water in 2 or more <u>patient</u> care rooms for more than 1 hour, requires consecutive shifts to complete		
<b>Population Risk Group</b> (these groups are not limited to the examples provided descriptions; refer to Form C for details)			
<b>Group 1</b>	<b>Group 2</b>	<b>Group 3</b>	<b>Group 4</b>
<ul style="list-style-type: none"> <li>Office areas</li> <li>Unoccupied wards</li> <li>Public areas</li> <li>Laundry, soiled linen, sorting, and storage areas</li> <li>Physical plant workshops</li> <li>Housekeeping rooms and closets</li> </ul>	<ul style="list-style-type: none"> <li><u>Patient</u> care areas not listed in Group 3 &amp; 4</li> <li>Outpatient clinics (except oncology &amp; surgery)</li> <li>Admission, discharge, waiting areas</li> <li>Autopsy, morgue</li> <li>Occupational and physical therapy areas remote from <u>patient</u> care areas</li> </ul>	<ul style="list-style-type: none"> <li>Geriatrics and long-term care</li> <li>Resident Areas in Continuing Care</li> <li>E.R (except trauma rooms)</li> <li>nuclear medicine, MRI</li> <li>Labour, delivery and nursery</li> <li>Hydrotherapy</li> <li>Echocardiography</li> <li>Laboratories</li> <li>Pediatric units</li> <li>General med/surg units</li> <li>Respiratory therapy</li> <li>Food preparation, serving, dining</li> <li>Clean linen handling and storage</li> </ul>	<ul style="list-style-type: none"> <li>Operating Rooms and pre/post care units</li> <li>Anaesthesia storage</li> <li>Trauma, burn care and isolation</li> <li>Oncology and Transplant</li> <li>Immunodeficiency</li> <li>ICU, CCU, NICU, PICU</li> <li>Bronchoscopy/Endoscopy</li> <li>MDRD and sterile storage</li> <li>Dialysis</li> <li>Cardiac cath, angiography</li> <li>Cardiology</li> <li>Pharmacy admixture</li> <li>Central supply</li> <li>Dental procedure room</li> <li>Diagnostic Imaging</li> <li>Tissue culture labs</li> </ul>

<b>Risk Analysis &amp; Preventive Measures Class Matrix: *IPC must be notified when Risk Level indicates Class 3 &amp;4</b>					
<b>Population Risk Group (circle)</b>	<b>Construction Activity Type (Circle)</b>				<b>Preventive Measures Determined</b>
	Type A	Type B	Type C	Type D	<div style="border: 1px solid black; width: 150px; height: 100px; margin: 10px auto;"></div>
Group 1	1	2	2	3/4*	
Group 2	1	2	3	4*	
Group 3	1	3*	3/4*	4*	
Group 4	1-3*	3/4*	3/4*	4*	
<b>Additional Recommendations</b>					
<b>Names &amp; Signatures of Responsible Construction Planning Team (Print Name)</b>					<b>Date</b>
<b>Project Manager:</b>					
<b>Facilities Maintenance &amp; Engineering:</b>					
<b>Contractor:</b>					
<b>ICP:</b>					
<b>Clinical Representative:</b>					
<b>Administration:</b>					
<b>Other:</b>					

## Form 2: Construction Activity Type

Construction activity type	Description [Refer to CSA Z317.13-12 Table 3] <sup>15</sup>
Type A	<p>Inspection and non-invasive activities. These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a. activities involving a single opening in wall or ceiling for minor work or visual inspection with removal of no more than one ceiling tile or opening of a wall or ceiling panel.</li> <li>b. painting (but not sanding) and wall covering;</li> <li>c. electrical trim work;</li> <li>d. minor plumbing work that disrupts the water supply to a localized <u>patient</u> care area (i.e., one room) for less than 15 min; and</li> <li>e. other maintenance activities that do not generate dust or require cutting of walls or access to ceilings other than item a above..</li> </ul>
Type B	<p>Small-scale, short-duration (e.g. less than 2 hours) activities that create minimal dust. These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a. activities that require access to and use of chase spaces;</li> <li>b. where dust migration can be controlled, cutting of walls or ceilings for installing or repairing minor electrical work, ventilation components, telephone wires, or computer cables;</li> <li>c. sanding or repair of a small area of a wall; and</li> <li>d. plumbing work that disrupts the water supply of one or more than one <u>patient</u> care area for less than 30 min.</li> </ul>
Type C	<p>Activities that generate a moderate to high level of dust; cause a moderate service disruption, require demolition; require removal of a fixed building component (i.e., sink) or assembly (e.g., countertop, cupboard); or cannot be completed in a single work shift. These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a. activities that require sanding of a wall in preparation for painting or wall covering;</li> <li>b. removal of floor coverings, ceiling tiles, and casework;</li> <li>c. new wall construction;</li> <li>d. minor ductwork;</li> <li>e. electrical work above ceilings;</li> <li>f. major cabling activities; and</li> <li>g. plumbing work that disrupts the water supply of one or more than one <u>patient</u> care area (i.e., two or more rooms) for more than 30 min but less than 1 h.</li> </ul>
Type D	<p>Activities that generate high levels of dust, activities that necessitate significant service disruption, and demolition and construction activities requiring consecutive work shifts to complete. These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a. soil excavation;</li> <li>b. activities that involve heavy demolition or removal of a complete cabling system;</li> <li>c. new construction that requires consecutive work shifts to complete; and</li> <li>d. plumbing work that disrupts the water supply of more than one <u>patient</u> care area (i.e., two or more rooms) for more than one hour.</li> </ul>

## Form 3: Population Risk Group

Refer to CSA Z317.13-12<sup>15</sup>

<b>Group 1 Lowest Risk</b>	<ul style="list-style-type: none"> <li>Office areas</li> <li>Unoccupied wards</li> <li>Public areas</li> <li>Laundry and Soiled Linen cleaning areas</li> <li>Physical plant workshops</li> <li>House keeping areas</li> </ul>
<b>Group 2 Medium Risk</b>	<ul style="list-style-type: none"> <li><u>Patient</u> care areas (unless listed in Group 3 or 4)</li> <li>Outpatient clinics (except for oncology and surgery)</li> <li>Admission and discharge units</li> <li>Autopsy and Morgue</li> <li>Occupational therapy areas remote from <u>patient</u> care areas</li> <li>Ambulatory Care (Non- Invasive) i.e. Cardiac</li> <li>Rehabilitation</li> <li>Office Area Adjacent to <u>Patient</u> Care Areas</li> <li>Waiting rooms</li> <li>Physical therapy areas remote from <u>patient</u> care areas</li> </ul>
<b>Group 3 Medium to High Risk</b>	<ul style="list-style-type: none"> <li>Geriatric units</li> <li>Long-term care units</li> <li>Resident Areas in Continuing Care</li> <li>Emergency (except Trauma room)</li> <li>Diagnostic imaging</li> <li>Radiology/MRI</li> <li>Labour and delivery (without OR capacity)</li> <li>Nurseries for healthy newborns</li> <li>Day surgery</li> <li>Nuclear medicine</li> <li>Hydrotherapy</li> <li>Food preparation, serving, and dining areas</li> <li>General Med/Surgical wards other than those listed in Group 4</li> <li>Pediatric units</li> <li>Echocardiography</li> <li>Laboratories</li> <li>Surgical outpatient clinics</li> <li>Clean linen handling and storage areas</li> <li>Respiratory therapy</li> </ul>
<b>Group 4 Highest Risk</b>	<ul style="list-style-type: none"> <li>All ICUs, PICUs, NICU, etc.</li> <li>All Operating rooms (ORs) (including prep, induction, post-aesthesia care unit (PACU), and scrub areas)</li> <li>Obstetrical operating rooms</li> <li>Anaesthesia storage areas and workrooms</li> <li>Burn Care units, Trauma care rooms</li> <li>Animal Rooms</li> <li>Oncology inpatient units and outpatient clinics</li> <li>Transplant units and outpatient clinics</li> <li>Inpatient and outpatient clinics for AIDS patients or other immunodeficiency diseases</li> <li>Interventional Radiology</li> <li>Dialysis units</li> <li>Diagnostic Imaging areas</li> <li>Protective isolation rooms</li> <li>All cardiac catheterization &amp; angiography areas</li> <li>Cardiovascular/cardiology patients areas</li> <li>All Endoscopy areas</li> <li>Bronchoscopy</li> <li>Cystoscopy</li> <li>Dental procedure rooms</li> <li>Pacemaker insertion rooms</li> <li>Pharmacy admixture rooms</li> <li>Tissue culture laboratories</li> <li>Clean and sterile storage</li> <li>Medical device reprocessing areas (wherever located)</li> <li>Central Sterile supply areas</li> <li>Interventional radiology</li> </ul>



## Form 4: Infection Prevention & Control Construction Site Monitoring Template

This form may be used by the Infection Control Professional or their Designate to monitor preventive measures required during construction / renovation activities. It may be adjusted depending on the Preventative Measure Level in place.

Project \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Item	Yes	No	N/A*	Comments
<b>Barriers</b>				
ICRA is posted for the area				
Construction signs posted for the area				
Doors properly closed and sealed				
Floor area clean, no dust tracked				
Walk off mats moist/sticky				
Tape adhering to surface				
Hoarding Intact				
<b>Air Handling</b>				
All windows closed behind barrier				
Negative air monitored at entrance (7.5 Pascal)				
Construction Air Handling Unit running				
Current maintenance label visible				
Air exhausted to appropriate area/outside				
<b>Project Area</b>				
HEPA-filtered Vacuum on job site				
Debris removed in covered container daily				
Designated construction route/map posted				
Trash in appropriate container				
Routine cleaning done on job site				
Air vents sealed/duct work capped				
<b>Traffic Control</b>				
Restricted to construction workers and necessary staff only				
All doors and exits free of debris				
<b>Dress Code</b>				
Is appropriate for the area (OR, MDRD, L&D, etc.)				
Required to enter				
Required to leave				
Protective clothing required in work space				
Workers clothing clean on exiting work space				

\*N/A: Means not applicable or not observed

Reported Deficiencies to \_\_\_\_\_ Date \_\_\_\_\_

Signature: \_\_\_\_\_

### Form 5: Infection Control Post Construction Checklist

This form is used by Infection Control Professional or their Designate to ensure the post construction area is ready for patient/ staff occupancy.

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_

Project Location: \_\_\_\_\_ Preventive Measure Required: \_\_\_\_\_

Item/Action	All work is completed: Yes No N/A			List deficiencies or comments if present:	Date Completed
<b>Post Construction Cleaning</b>					
Before hoarding removal, job site is clear of dust, construction debris/equipment. Area had been cleaned—including HEPA vacuuming and wipe down of surfaces including hoarding to remove dust.					
Facility based cleaning (e.g. environmental services) performed prior to hording removal (if required).					
After removal of hoarding, contractor completes final construction cleaning followed by facility based preoccupancy terminal cleaning.					
Where required, HVAC ductwork cleaning has been performed					
Other:					
<b>Finishes</b>					
Area is dust free (all horizontal surfaces, headwalls, ledges, inside of cabinets, drawers, tops of clocks etc.).					
Hand hygiene dispensers filled and functioning and properly located.					
Hand drying paper towels available and properly located.					
Provisions for sharps and proper personal protective equipment supplies					
Integrity of walls/ceiling tiles are maintained e.g. not stained or damaged.					
Surfaces in <u>patient</u> care/procedure/service areas are appropriate (e.g. smooth, nonporous, water resistant)					

Area surfaces are free of fissures or open joints and crevices that retain or permit collection of debris or facilitate bacterial and fungal growth.					
Other:					
<b>Infrastructure</b>					
If plumbing has been affected/shutdown plumbing has been flushed. Verified by _____ (name and position, required if applicable)					
Plumbing if affected has been checked for leaks. Verified by _____ (name and position, required if applicable)					
Correct hand washing sinks and faucets present, properly located and functioning					
Faucet aerators are NOT present in <u>patient</u> care areas.					
Ceiling tiles are in place, well approximated and not stained.					
HVAC systems are clean, function restored, balanced and verified. Verified by _____ (name and position required if applicable)					
Correct room pressurization (negative or positive) Verified by: _____ (name and position required if applicable)					
All mechanical spaces, including ceiling space should be cleaned of dust and debris.					
Other:					

## Form 6: Infection Control Preventive Measures Level 1

This form is filled out by FM&E or Infection Control Professional or their Designate to identify the required preventive measures for the activity described in the corresponding Form 1 "Infection Control Risk Assessment and Preventive Measures Analysis". All CSA standards identified below refer to CSA Z317.13-12 Infection control during construction, renovation and maintenance of health care facilities. This is not an exhaustive list of preventative measures for complete details refer to CSA Z317.13-12.

Identify the appropriate measures by marking X in the check boxes ☐.

<b>Project Name :</b>		<b>Location:</b>
<b>Form completed by:</b>	<b>Signature:</b>	<b>Date :</b>

### Preventive Measures Level 1

#### Facilities Maintenance & Engineering/Contractors/Project Management

##### ***Before Construction***

- ☐ The Project Manager/Facility Maintenance & Engineering designate (PM/FME) shall identify essential services (e.g., water supply, electricity, and ventilation systems) that could be disrupted and appropriate measures to address the disruption. [CSA: 7.1.2.1]<sup>15</sup>

##### ***During Construction***

- ☐ Ensure construction materials are protected from exposure to dust and moisture during delivery, unloading, storage and construction processes. Refer to [CSA:5.3]<sup>15</sup>
- ☐ Paper and paper-faced materials (e.g., gypsum wall board, panels, ceiling tiles, wall coverings) damaged by moisture are not used for interior surfaces. [CSA: 5.1.3]<sup>15</sup>
- ☐ Construction materials that have been contaminated or damaged by moisture are decontaminated or replaced. Refer to [CSA: 5.3.2.3]<sup>15</sup>

##### **Dust Control** [CSA:7.2.1.1]<sup>15</sup>

- ☐ Immediately after Type A activity (e.g., visual inspection) has been completed, close access panels and replace displaced tiles; and
- ☐ Clean the work area with a HEPA filter-equipped vacuum cleaner with dust capture attachment as needed

##### **Plumbing** [CSA:7.2.1.2]<sup>15</sup>

- ☐ Ensure gasket material is smooth and does not promote build up of biofilm or scale. Replace if worn or rough;
- ☐ Ensure faucet aerators are not installed or used and sink controls are adjusted to prevent splash-back;
- ☐ Maintain a dry work environment; and
- ☐ Schedule water interruptions during periods of low user activity (e.g., evenings), receive approval for disruption before starting.

##### ***After Construction***

- ☐ The construction planning team shall review the preventative measures that were undertaken and assess their effectiveness. [CSA:7.3.1]<sup>15</sup>

##### **Additional Comments:**

### Preventive Measures Level 1

#### Environmental Services/Infection Control/Healthcare Staff

##### **Before Construction**

- ☐ The health care staff, in conjunction with infection prevention and control personnel, shall collaborate to minimize occupant exposure by identifying high-risk patients that might need to be temporarily moved away from the construction area. [CSA:7.1.2.2]<sup>15</sup>

##### **During Construction** [CSA:7.2.1.4]<sup>15</sup>

- ☐ Report discoloured water and water leaks to the maintenance and infection prevention and control departments; and
- ☐ Ensure that patient care equipment and supplies are protected from dust exposure.

##### **After Construction** [CSA:7.3.1]<sup>15</sup>

- ☐ The construction planning team shall review the preventative measures that were undertaken and assess their effectiveness.

#### **Additional Comments:**

## Form 7: Infection Control Preventive Measures Level 2

This form is filled out by the construction planning team or designated person(s) to identify the required preventive measures for the activity described in Form 1" Infection Control Risk Assessment and Preventive Measures Analysis". All CSA standards identified below refer to CSA Z317.13-12 Infection control during construction, renovation and maintenance of health care facilities. This is not an exhaustive list of preventative measures for complete details refer to CSA Z317.13-12.

Identify the appropriate measures by marking X in the check boxes ☐.

<b>Project Name :</b>		<b>Location:</b>	
<b>Form completed by:</b>	<b>Signature:</b>	<b>Date :</b>	
<b>Approved by:</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Comments:</b>			
<b>Preventive Measures Level 2</b>			
<b>Facilities Maintenance &amp; Engineering/Contractors/Project Management</b>			
<b><i>Before Construction</i></b>			
<input type="checkbox"/> The Project Manager shall identify essential services (e.g., water supply, electricity, and ventilation systems) that could be disrupted and appropriate measures to address the disruption. [CSA:7.1.2.1] <sup>15</sup>			
Refer to [CSA:7.1.3.1] <sup>15</sup>			
<input type="checkbox"/> Determine a safe route for the transportation of clean or sterile supplies and equipment away from the construction area.			
<input type="checkbox"/> Establish traffic patterns for construction workers that avoid <u>patient</u> care areas.			
<input type="checkbox"/> Minimize exhaust output from the elevator cab in the construction area to ensure that it is not re-circulated into the health care facility			
<input type="checkbox"/> Designate an elevator that shall be used solely by construction workers.			
<input type="checkbox"/> Drawings shall be obtained that show the layout of the ventilation systems that supply air to, or exhaust air from, the work area. The project plan shall state whether it is necessary to close outlets, modify performance, shut down systems. [CSA:7.1.3.4] <sup>15</sup>			
<input type="checkbox"/> Establish water temperature standards for the health care facility (Refer to CSA-Z317.1-09).			
<input type="checkbox"/> Determine whether domestic cold, hot, and recirculation water lines will be affected by the construction.			
This assessment shall include: Refer to [CSA:7.1.3.2] <sup>15</sup>			
I. Identifying plumbing lines that will need to be <div style="margin-left: 20px;"> <input type="checkbox"/> Shut off or interrupted using existing valves; or             </div>			
<div style="margin-left: 20px;"> <input type="checkbox"/> Isolated by additional valves             </div>			
II. Determining the method to be used to sanitize the water lines before occupancy			
III. Drafting the procedure to be used to sanitize the water system, including identifying the required			

equipment

- IV. Determining the flow path to be used to hyper chlorinate and flush water lines affected by the construction

### ***During Construction***

- ☐ Ensure construction materials are protected from exposure to dust and moisture during delivery, unloading, storage and construction processes. Refer to [CSA:5.3]<sup>15</sup>
- ☐ Paper and paper-faced materials (e.g., gypsum wall board, panels, ceiling tiles, wall coverings) damaged by moisture are not used for interior surfaces [CSA: 5.1.3]<sup>15</sup>
- ☐ Construction materials that have been contaminated or damaged by moisture are decontaminated or replaced Refer to [CSA: 5.3.2.3]<sup>15</sup>

### **Dust Control**

- ☐ Immediately after Type A activity (e.g. visual inspection) has been completed, close access panels and replace displaced tiles [CSA:7.2.1.1]<sup>15</sup>

Refer to [CSA:7.2.2.2]<sup>15</sup>

- ☐ Clean the work area with a HEPA filter-equipped vacuum cleaner with dust capture attachment
- ☐ Use drop sheets to control dust
- ☐ Control dust by water-misting work surfaces while cutting (use electrical safety measures)

Note: Caution should be exercised when such techniques are used on cellulose or fibre-based materials that are intended to stay in place following construction work.

- ☐ Seal windows and unused doors
- ☐ Seal plumbing penetrations, electrical outlets, and any other sources of potential air leaks in the construction area
- ☐ Seal air supply and return ducts in the construction area
- ☐ Place a walk-off mat outside the entrance to the construction area to trap dust from the equipment and shoes of personnel leaving the area, and vacuum the mat daily with a HEPA filter-equipped vacuum cleaner, as well as when the mat is visibly soiled. Walk-off mats shall be of sufficient size to ensure that constructors have to place both feet on the mat at least once on exiting the construction area. [CSA: Figure A.5, A.6]<sup>15</sup>

### **Ventilation**

- ☐ If possible, the ventilation system should be disabled until the project has been completed. An engineering analysis shall be performed to ensure that the fan systems continue to perform their intended function and that the operation of the HVAC system is not compromised. [CSA:7.2.2.3]<sup>15</sup>

### **Plumbing**

Refer to [CSA:7.2.1.2, 7.2.2.4]<sup>15</sup>

- ☐ Ensure gasket material is smooth and does not promote build up of biofilm or scale. Replace if worn or rough;
- ☐ Ensure that faucet aerators are not installed or used and sink controls are adjusted to prevent splash-back;
- ☐ Maintain a dry work environment; and
- ☐ Schedule water interruptions during periods of low user activity (e.g., evenings); receive approval for disruption before starting
- ☐ Avoid using collection tanks and long pipes (which allow water to stagnate).
- ☐ Maintain a dry work environment and report any water leaks through walls or substructures.
- ☐ Hyper chlorinate (to a minimum of 50 parts per million) or superheat (to a minimum of 70 °C) stagnant

domestic water (especially if *Legionella* is already present in the domestic water supply).

- ☐ The water lines in the construction area and adjacent patient care areas shall be flushed before reuse.
- ☐ Be aware of the impact of techniques to remove bacterial growth and choose the approach that minimizes the risks associated with such work.

**Site maintenance** Refer to [CSA:7.2.2.5]<sup>15</sup>

- ☐ Place debris in covered containers or cover it with a moistened sheet before transporting it for disposal. (7.2.2.5b)
- ☐ Clean the construction area with a HEPA filter-equipped vacuum cleaner, a wet mop, or both, as necessary.
- ☐ Place supplies and equipment in covered containers during transportation through the health care facility to prevent contamination in other areas.
- ☐ Wipe wheels of mobile equipment, transport carts, and bins before entering occupancies areas
- ☐ Remove the debris in the evening when patients are in their rooms and visitors have left. If this is not possible, debris should be removed at the end of the workday. Exposure of the occupants of the health care facility to debris shall be minimized.
- ☐ Inform facility environmental services if clean up outside of construction area is needed.

**After Construction**

- ☐ The construction planning team shall review the preventative measures that were undertaken and assess their effectiveness. [CSA:7.3.2.1]<sup>15</sup>

**Additional Comments:**

**Preventive Measures Level 2**

**Environmental Services/Infection Control/Healthcare Staff**

**Before Construction**

- ☐ The health care staff, in conjunction with infection prevention and control personnel, shall collaborate to minimize occupant exposure by identifying high-risk residents who might need to be temporarily moved away from the construction area. [CSA:7.1.2.2]<sup>15</sup>
- ☐ Infection prevention control staff shall ensure a surveillance system is in place to monitor residents for *Legionella* in the event of soil excavation or disruption and repressurization of the water supply.

**During Construction** Refer to [CSA:7.1.2.4]<sup>15</sup>

- ☐ Report discoloured water and water leaks to the maintenance and infection prevention and control departments; and
- ☐ Ensure that resident care equipment and supplies are protected from dust exposure

**After Construction**



### Preventive Measures Level 2

#### Environmental Services/Infection Control/Healthcare Staff

- ☐ The construction planning team shall review the preventative measures that were undertaken and assess their effectiveness. [CSA:7.3.2.1]<sup>15</sup>
- ☐ The construction planning team shall conduct a final inspection to ensure that the ventilation system is functioning properly in the construction area and adjacent areas. [CSA:7.3.2.1]<sup>15</sup>
- ☐ Infection prevention and control personnel shall ensure that the construction area has been terminally cleaned before building occupants are readmitted to the completed construction area. [CSA:7.3.2.3]<sup>15</sup>
- ☐ Environmental Services and health care staff shall ensure that the construction area has been cleaned with a HEPA filtered-equipped vacuum cleaner, a wet mop, or both, as necessary, and that horizontal work surfaces have been wiped with a disinfectant. [CSA:7.3.2.2]<sup>15</sup>
- ☐ Environmental Services and health care staff shall report discoloured water and water leaks to the maintenance and infection prevention and control departments

#### Additional Comments:

### Form 8: Infection Control Preventive Measures Level 3

This form is filled out by the construction planning team or designated person(s) to identify the required preventive measures for the activity described in Form 1 "Infection Control Risk Assessment and Preventive Measures Analysis". All CSA standards identified below refer to CSA Z317.13-12 Infection control during construction, renovation and maintenance of health care facilities. This is not an exhaustive list of preventative measures for complete details refer to CSA Z317.13-12.

Identify the appropriate measures by marking X in the check boxes ☐.

<b>Project Name :</b>		<b>Location:</b>	
<b>Form completed by:</b>	<b>Signature:</b>	<b>Date :</b>	
<b>Approved by:</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Comments:</b>			

#### Preventive Measures Level 3

##### Facilities Maintenance & Engineering/Contractors/Project Management

##### **Before Construction**

- ☐ The Project Manager shall identify essential services (e.g., water supply, electricity, and ventilation systems) that could be disrupted and appropriate measures to address the disruption. [CSA:7.1.2.1]<sup>15</sup>
- Refer to [CSA:7.1.3.2]<sup>15</sup>
- ☐ Determine a safe route for the transportation of clean or sterile supplies and equipment away from the construction area.
- ☐ Drawings shall be obtained that show the layout of the ventilation systems that supply air to, or exhaust air from, the work area. The project plan shall state whether it is necessary to close outlets, modify performance, shut down systems. [CSA:7.1.3.4]<sup>15</sup> Establish traffic patterns for construction workers that avoid resident houses.
- ☐ Designate an elevator that shall be used solely by construction workers.
- ☐ Minimize exhaust output from the elevator cab in the construction area to ensure that it is not re-circulated into the health care facility
- ☐ Establish water temperature standards for the health care facility .(Refer to CAN/CSA-Z317.1-09)
- ☐ Determine whether domestic cold, hot, and recirculation water lines will be affected by the construction.

### Preventive Measures Level 3

#### Facilities Maintenance & Engineering/Contractors/Project Management

This assessment shall include:

1. Identifying plumbing lines that will need to be

- ☐ Shut off or interrupted using existing valves; or
- ☐ Isolated by additional valves

2. Determining the method to be used to sanitize the water lines before occupancy

3. Drafting the procedure to be used to sanitize the water system, including identifying the required equipment

4. Determining the flow path to be used to hyper chlorinate and flush water lines affected by the construction

- ☐ Plumbing and HVAC systems shall be supplied, installed, and commissioned in accordance with CAN/CSA-Z317.1<sup>5</sup>, CAN/CSA-Z317.2<sup>4</sup>, and CAN/CSA-Z8001-13<sup>32</sup>.

1. HVAC – Production and Site Delivery [CSA: 5.3.3.2]<sup>15</sup>, [CSA 6.9.7.1]<sup>4</sup>, [SMACNA Advanced Level]<sup>31</sup>

- ☐ All self-adhesive labels for part identification are applied to external surfaces only.
- ☐ Openings in mechanical equipment and ductwork are sealed before shipping.
- ☐ All ductwork is sealed either by blanking or capping duct ends, bagging small fittings, surface wrapping or shrink wrapping.
- ☐ Measures are taken to ensure that seals are not damaged during shipping or handling.

2. HVAC – Site Storage [SMACNA Advanced Level]<sup>31</sup>

- ☐ On arrival at site, during storage and installation - all sealed ends are visually examined and if damaged resealed with an appropriate material.
- ☐ A clean and dry environment where the ductwork is protected from dust is provided for the storage of ductwork prior to installation.

3. HVAC – During installation – [SMACNA Advanced Level]<sup>31</sup> [CSA:5.3.3.3, 5.3.3.4, 5.3.3.5]<sup>15</sup>

- ☐ The working area must be clean, dry and the ductwork protected from dust.
- ☐ Ductwork remains sealed until installation and any exposed opening of installed ductwork remains sealed until completion of connections or construction. Protective coverings shall only be removed immediately before installation and inspected to determine if additional wipe down is necessary.
- ☐ Exposed openings of installed ductwork remains sealed until construction has reached the final connection/completion stage and filtered air flow will be provided without interruption.
- ☐ Return air ducts remain sealed until the permanent air handling equipment is running without interruption; the duct work systems has been cleaned; and the building has undergone final cleaning by the constructor

4. HVAC – Commissioning [CSA: 5.3.3.6]<sup>15</sup> [CSA:6.9.7.3]<sup>4</sup>

- ☐ HVAC systems are clean, function restored, balanced and verified. (Verification of HVAC system cleanliness shall be in accordance with NADCA ACR 2006).

#### ***During Construction***

- ☐ Ensure construction materials are protected from exposure to dust and moisture during delivery, unloading,

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storage and construction processes. Refer to [CSA:5.3]<sup>15</sup>

- ☐ Paper and paper-faced materials (e.g., gypsum wall board, panels, ceiling tiles, wall coverings) damaged by moisture are not used for interior surfaces [CSA: 5.1.3]<sup>15</sup>
- ☐ Construction materials that have been contaminated or damaged by moisture are decontaminated or replaced Refer to [CSA: 5.3.2.3]<sup>15</sup>

**Dust Control**

Refer to [CSA:7.2.1.1]<sup>15</sup>

- ☐ Immediately after Type A activity (e.g., visual inspection) has been completed, close access panels and replace displaced tiles
- ☐ Clean the work area with a HEPA filter-equipped vacuum cleaner with dust capture attachment or wet mop as needed.

Refer to [CSA:7.2.2.2]<sup>15</sup>

- ☐ Using drop sheets;
- ☐ Control dust by water-misting work surfaces while cutting (use electrical safety measures);

**Note: Caution should be exercised when such techniques are used on cellulose or fibre-based materials that are intended to stay in place following construction work.**

- ☐ Seal windows and unused doors;
- ☐ Seal plumbing penetrations, electrical outlets, and any other sources of potential air leaks in the construction area;
- ☐ Seal air supply and return ducts in the construction area
- ☐ Place walk-off mats outside and inside the entrance to the construction area to trap dust from the equipment and shoes of personnel leaving the area. Vacuum the mat daily with a HEPA filter-equipped vacuum cleaner, as well as when the mat is visibly soiled. Walk-off mats shall be of sufficient size to ensure that constructors have to place both feet on the mat at least once on exiting the construction area. Refer to [CSA :Figure A5 and A6]<sup>15</sup>.

Refer to [CSA:7.2.3.2]<sup>15</sup>

- ☐ Erect an impermeable dust barrier, from the floor to the underside of the deck (including the areas above false ceilings) consisting of two layers of 0.15 mm (6 mil) fire-retardant polyethylene (or an equivalent barrier and gypsum wallboard protection approved by the construction planning team. Polyethylene membrane shall be present to maintain required pressurization. The dust barrier shall remain in place until the project is complete and the area has been cleaned thoroughly and inspected. After construction has been completed, the dust barrier shall be removed to prevent the spread of dust and other debris particles adhering to the barrier.
- ☐ Use impermeable temporary containment units (vessels) constructed to contain dust and other contaminants. Such vessels shall have a monolithic (one-piece) exterior shell constructed of a minimum of 0.20 mm (8 mil) fibre-reinforced, fire-retardant polyethylene. The construction of the vessel shall allow for containment of contaminants within the vessel and have ports through which HEPA-filtered vacuum cleaners or portable construction air handling units (CAHUs) can be easily attached to draw the unit under negative pressure.

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- ☐ HEPA vacuum mechanical and electrical systems and spaces above drop or false ceilings, if necessary.
- ☐ Remove protective clothing (e.g. hardhat, coveralls, etc.) before entering resident houses.

#### **Ventilation**

- ☐ Disable the ventilation system and seal duct openings in the construction area until the project is completed. An engineering analysis shall be performed to ensure that the fan systems continue to perform their intended function and that the operation of the HVAC system is not compromised. Refer to [CSA:7.2.3.3]<sup>15</sup>
- ☐ Maintain negative pressure within the construction area by using portable HEPA-filtered-equipped CAHUs units that include pressure gauges and an alarm. Filters shall be monitored and replaced if clogged or functioning below the manufacturer's specifications.
- ☐ Ensure that the air is exhausted directly outside and away from intake vents and filtered through a HEPA filter.  
In conditions that prohibit exhausting the exhaust outside, air may be re-circulated in accordance CSAZ317.13-12; Clauses 6.6 and 7.2.3.6.
- ☐ Ensure that the ventilation system is functioning properly and is cleaned if contaminated by soil or dust after the construction project is complete and before restarting.
- ☐ A system of negative pressure of 7.5 Pa (0.03 in. wc) shall be created using CAHUs exhausted to the outside of a construction zone and monitored using a differential pressure gauge connected to a local alarm. The gauge shall be no closer than 5 m. of the entrance to the construction site and be located on the adjacent or exterior side of the dust barrier. The local alarm shall be an audible or visible type that can be heard or seen in the alarm's vicinity. Monitoring shall be continuous. Monitoring equipment shall be maintained and zeroed and calibrated as per manufacturer's instructions.[CSA: 7.2.3.3.2]<sup>15</sup>
- ☐ The pressure differential gauge should be connected to a permanently mounted data recorder. [CSA: 7.2.3.3.3]<sup>15</sup>
- ☐ The constructor shall record in a daily log the pressure difference from the gauge. If readings are less than 7.5 Pa (0.03 in. wc) negative pressure in construction zone for more than 4 h, or less than 2.5 Pa for more than 90s, immediate corrective measures shall be taken to restore and maintain pressure differential. [CSA:7.2.3.3.3]<sup>15</sup>

#### **Portable construction air handling units (CAHUs)** Refer to [CSA:6.6.3, 6.6.4,6.6.5, 7.2.3.4]<sup>15</sup>

- ☐ CAHUs shall be certified, operated, and maintained in accordance with Clause 6.6.4<sup>15</sup>
- ☐ CAHUs shall be visually inspected by the constructor at least daily and their condition shall be documented
- ☐ Air exhausted from construction areas shall be HEPA filtered. HEPA filters used shall have a collection efficiency of 99.97% at 3µm.
- ☐ HEPA filters and pre-filters for construction air handling units shall be visually inspected by the constructor at least daily and their condition shall be documented.
- ☐ Filters shall be replaced when loaded, when change indicators light comes on or in accordance with the manufacturer's instructions. [CSA;6.6.4.3]<sup>15</sup>
- ☐ At the beginning of any Preventative Measure 3 or 4 construction activity, CAHUs shall be leak tested and

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performance verified. They shall be recertified at least every 12 months and the recertification shall be documented.[CSA: 6.6.4.2]<sup>15</sup>

- ☐ Construction, maintenance, and repair area exhaust air shall not be discharged to areas occupied by Population Risk Group 3 or 4.
- ☐ Measures related to re-circulated air shall require approval from the construction planning team.
- ☐ The relative space pressures between areas occupied by Population Risk Group 3 or 4 shall be continuously monitored and alarmed.[CSA:6.6.2.3]<sup>15</sup>
- ☐ Where the failure of either the portable negative air unit or the exhaust fan would compromise the relative pressurization of a Population Risk Group 4 area, the systems shall be interlocked.

#### **CAHU Impact on the facility HVAC system** [Refer to CSA:7.2.3.5]<sup>15</sup>

- ☐ The main facility system shall be verified for operation in accordance with design during construction work.
- ☐ The health care facility and constructor shall verify the pressure relationships for critical areas near the construction area (e.g., Population Risk Group 4 areas).

#### **Construction air handling** [Refer to CSA: 7.2.3.6]<sup>15</sup>

- ☐ Permanent air handling systems should not be used for exhausting air from construction or renovation work areas. Temporary ductwork may be installed for such purposes. However, it shall not connect to the facility's HVAC system.
- ☐ In cases where air cannot be exhausted directly outside (not tying into another system), exhaust air may be temporarily piped to the building exhaust system if an engineering analysis has been performed by qualified personnel to ensure that exhaust air will not be re-entrained into the occupied building and the construction planning team approves piping to the exhaust system.
- ☐ In cases where air cannot be exhausted directly outside or piped through the building exhaust system, it may be re-circulated into areas of the building occupied by Risk Group 1 or 2, if construction planning team approval is granted.
- ☐ Construction exhaust air shall not be re-circulated into building areas occupied by Risk Group 3 or 4. Refer to Use of permanent exhaust below.

#### **Plumbing**

Refer to[CSA:7.2.1.2]<sup>15</sup>

- ☐ Ensure gasket material is smooth and does not promote build up of biofilm or scale. Replace if worn or rough;
- ☐ Ensure materials that support the growth of *Legionella* are not being used.
- ☐ Ensure that faucet aerators are not installed or used and sink controls are adjusted to prevent splash-back;
- ☐ Schedule water interruptions during periods of low user activity (e.g., evenings); receive approval for disruption before starting
- ☐ Maintain a dry work environment and report any water leaks through walls or substructures.

Refer to[CSA:7.2.2.4]<sup>15</sup>

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- ☐ Avoid using collection tanks and long pipes (which allow water to stagnate).
- ☐ Hyper chlorinate (to a minimum of 50 parts per million) or superheat (to a minimum of 70<sup>0</sup> C) stagnant domestic water (especially if *Legionella* is already present in the domestic water supply).
- ☐ The water lines in the construction area and adjacent resident houses shall be flushed before reuse.
- ☐ Be aware of the impact of techniques to remove bacterial growth and choose the approach that minimizes the risks associated with such work.

#### **Site maintenance**

Refer to [CSA:7.2.2.5]<sup>15</sup>

- ☐ Place debris in covered containers or cover it with a moistened sheet before transporting it for disposal.
- ☐ Clean the construction area with a HEPA filter-equipped vacuum cleaner, a wet mop, or both, as necessary
- ☐ Place supplies and equipment in covered containers during transportation through the health care facility to prevent contamination in other areas
- ☐ Wipe wheels of mobile equipment, transport carts, and bins before entering occupancies areas
- ☐ Remove the debris in the evening when residents are in their rooms and visitors have left. If this is not possible, debris should be removed at the end of the workday. Exposure of the occupants of the health care facility to debris shall be minimized.
- ☐ Inform facility environmental services if clean up outside of construction area is needed.
- ☐ Engineering or operations and maintenance staff in the construction area shall clean outside the work area with a HEPA filter-equipped vacuum cleaner every day or more frequently if necessary. [CSA:7.2.3.7.1]<sup>15</sup>

#### **Use of permanent exhaust** Refer to [CSA:7.2.2.6]<sup>15</sup>

- ☐ The permanent air handling system shall be used for exhausting air from the construction zone via a portable negative air unit only under the following conditions:
  - ☐ The air handling system is an exhaust system that leads directly to the outdoors.
  - ☐ An engineering analysis is performed to ensure that the exhaust system continues to perform its intended function and that the operation of the HVAC system is not compromised.
  - ☐ The operation of the exhaust fan shall be monitored and alarmed to building operations staff and alarmed in the construction zone.
- ☐ If the conditions outlined in the above three (3) items cannot be satisfied, then the steps outlined in Construction air handling CSA: 7.2.3.6<sup>15</sup> shall be followed.

#### **After Construction**

- ☐ The construction planning team shall review the preventative measures that were undertaken and assess their effectiveness. [CSA:7.3.2.1]<sup>15</sup>
- ☐ After construction has been completed, the dust barrier shall be removed in such a manner to prevent the spread of dust and other debris particles adhering to the barrier.

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- ☐ The construction planning team shall conduct a final inspection to ensure that the ventilation system is functioning properly in the construction area and adjacent areas. [CSA:7.3.2.1]<sup>15</sup>

Refer to [CSA:7.3.2.3]<sup>15</sup>

- ☐ The construction planning team shall ensure that the construction area has been cleaned with a HEPA filtered-equipped vacuum cleaner, a wet mop, or both, as necessary, and that horizontal work surfaces have been wiped with a disinfectant before building occupants are readmitted to area.
- ☐ After construction has been completed, the dust barrier shall be removed in such a manner to prevent the spread of dust and other debris particles adhering to the barrier.

**Additional Comments:**



### Preventive Measures Level 3

#### Environmental Services/Infection Control/Healthcare Staff

##### **Before Construction**

- ☐ The health care staff, in conjunction with infection prevention and control personnel, shall collaborate to minimize occupant exposure by identifying high-risk residents who might need to be temporarily moved away from the construction area. [CSA:7.1.2.2]<sup>15</sup>
- ☐ Infection prevention control staff shall ensure a surveillance system is in place to monitor residents for *Legionella* in the event of soil excavation or disruption and repressurization of the water supply.

##### **During Construction**

##### **Environmental Services (ES) Staff** Refer to [CSA:7.2.3.7.2]<sup>15</sup>

Environmental services staff shall;

- ☐ Increase the frequency of cleaning in areas adjacent to the construction area while the project is underway.
- ☐ Wet mop and vacuum the area with a HEPA filter-equipped vacuum cleaner as necessary and when the work is complete;
- ☐ Wipe exposed surfaces with a hospital-grade disinfectant;
- ☐ Report discoloured water and water leaks to maintenance and infection prevention and control personnel.
- ☐ Ensure that resident care equipment and supplies are protected from dust exposure

##### **Infection Prevention and Control Personnel** Refer to [CSA:7.2.3.8]<sup>15</sup>

IPC shall be responsible for:

- ☐ Collaboration with the environmental services staff to ensure that the construction area is thoroughly cleaned when work is complete;
- ☐ Inspecting and auditing the program for assuring the integrity of the dust barriers;
- ☐ In collaboration with the facility project manager, designating a traffic pattern for constructors that avoids resident houses and a traffic pattern for clean or sterile supplies and equipment that avoids the construction area.

##### **Healthcare staff** Refer to [CSA:7.2.3.9]<sup>15</sup>

Health care staff shall:

- ☐ Ensure that resident care equipment and supplies are protected from dust exposure
- ☐ Ensure that residents do not go near the construction area
- ☐ Ensure that staff do not visit the construction area
- ☐ Immediately report discoloured water and water leaks to maintenance and IPC
- ☐ Ensure that resident care equipment and supplies are protected from dust exposure

### Preventive Measures Level 3

#### Environmental Services/Infection Control/Healthcare Staff

##### ***After Construction***

Refer to [CSA: 7.3.2.3]<sup>15</sup>

- ☐ Environmental Services and health care staff shall ensure that the construction area has been cleaned with a HEPA filtered-equipped vacuum cleaner, a wet mop, or both, as necessary, and that horizontal work surfaces have been cleaned and disinfected per Environmental Services protocols.
- ☐ Environmental Services and health care staff shall report discoloured water and water leaks to the maintenance and infection prevention and control departments
- ☐ Before the completed construction area is occupied, any portions of the infection control plan still in effect shall be reviewed by the construction planning team. If necessary, such portions shall be incorporated into the health care facility's ongoing operating policies and procedures.
- ☐ IPC shall ensure that the construction area has been terminally cleaned before building occupants are allowed to occupy the new space. The terminal clean shall be performed by the health care facilities environmental services department or designated alternative cleaning contractor using a terminal cleaning procedure approved by the IPC department or the construction planning team. [CSA:7.3.2.3]<sup>15</sup>

##### ***Additional Comments:***

### Form 9: Infection Control Preventive Measures Level 4

This form is filled out by the construction planning team or designated person(s) to identify the required preventive measures for the activity described in Form 1" Infection Control Risk Assessment and Preventive Measures Analysis". All CSA standards identified below refer to CSA Z317.13-07 Infection control during construction, renovation and maintenance of health care facilities. This is not an exhaustive list of preventative measures for complete details refer to CSA Z317.13-12.\*-

Identify the appropriate measures by marking X in the check boxes ☐.

<b>Project Name :</b>		<b>Location:</b>	
<b>Form completed by:</b>	<b>Signature:</b>	<b>Date :</b>	
<b>Approved by:</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Copy Received by Signature and Title</b>		<b>Date:</b>	
<b>Comments:</b>			

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<p><b>Before Construction</b></p> <p><input type="checkbox"/> The Project Manager shall identify essential services (e.g., water supply, electricity, and ventilation systems) that could be disrupted and appropriate measures to address the disruption. [CSA:7.1.2.1]<sup>15</sup></p> <p>Refer to [CSA:7.1.3.2]<sup>15</sup></p> <p><input type="checkbox"/> Determine a safe route for the transportation of clean or sterile supplies and equipment away from the construction area.</p> <p><input type="checkbox"/> Establish traffic patterns for construction workers that avoid resident houses.</p> <p><input type="checkbox"/> Drawings shall be obtained that show the layout of the ventilation systems that supply air to, or exhaust air from, the work area. The project plan shall state whether it is necessary to close outlets, modify performance, shut down systems. [CSA:7.1.3.4]<sup>15</sup></p> <p><input type="checkbox"/> Designate an elevator that shall be used solely by construction workers.</p> <p><input type="checkbox"/> Minimize exhaust output from the elevator cab in the construction area to ensure that it is not re-circulated into the health care facility</p> <p><input type="checkbox"/> Establish water temperature standards for the health care facility .(Refer to CAN/CSA-Z317.1-09)</p> <p><input type="checkbox"/> Determine whether domestic cold, hot, and recirculation water lines will be affected by the construction.</p>	

## Preventive Measures Level 4

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This assessment shall include:

1. Identifying plumbing lines that will need to be
  - ☐ Shut off or interrupted using existing valves; or
  - ☐ Isolated by additional valves.
2. Determining the method to be used to sanitize the water lines before occupancy.
3. Drafting the procedure to be used to sanitize the water system, including identifying the required equipment.
4. Determining the flow path to be used to hyper chlorinate and flush water lines affected by the construction.
- ☐ The construction planning team shall meet to determine appropriate infection prevention measures in accordance with ICRA. [CSA:7.1.4.2]<sup>15</sup>
- ☐ Plumbing and HVAC systems shall be supplied, installed, and commissioned in accordance with CAN/CSA-Z317.1<sup>5</sup>, CAN/CSA-Z317.2<sup>4</sup>, and CAN/CSA-Z8001-13<sup>32</sup>.
5. HVAC – Production and Site Delivery [CSA: 5.3.3.2]<sup>15</sup>, [CSA 6.9.7.1]<sup>4</sup>, [SMACNA (Advanced Level)]<sup>31</sup>
  - ☐ All self-adhesive labels for part identification are applied to external surfaces only.
  - ☐ Openings in mechanical equipment and ductwork are sealed before shipping.
  - ☐ All ductwork is sealed either by blanking or capping duct ends, bagging small fittings, surface wrapping or shrink wrapping.
  - ☐ Measures are taken to ensure that seals are not damaged during shipping or handling.
6. HVAC – Site Storage [SMACNA Advanced Level]<sup>31</sup>
  - ☐ On arrival at site, during storage and installation - all sealed ends are visually examined and if damaged resealed with an appropriate material.
  - ☐ A clean and dry environment where the ductwork is protected from dust is provided for the storage of ductwork prior to installation.
7. HVAC – During installation – [SMACNA Advanced Level]<sup>31</sup> [CSA:5.3.3.3, 5.3.3.4, 5.3.3.5]<sup>15</sup>
  - ☐ The working area must be clean, dry and the ductwork protected from dust.
  - ☐ Ductwork remains sealed until installation and any exposed opening of installed ductwork remains sealed until completion of connections or construction. Protective coverings shall only be removed immediately before installation and inspected to determine if additional wipe down is necessary.
  - ☐ Exposed openings of installed ductwork remains sealed until construction has reached the final connection/completion stage and filtered air flow will be provided without interruption.
  - ☐ Return air ducts remain sealed until the permanent air handling equipment is running without interruption; the duct work systems has been cleaned; and the building has undergone final cleaning by the constructor
8. HVAC – Commissioning [CSA: 5.3.3.6]<sup>15</sup> [CSA:6.9.7.3]<sup>4</sup>
  - ☐ HVAC systems are clean, function restored, balanced and verified. (Verification of HVAC system cleanliness shall be in accordance with NADCA ACR 2006).

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#### ***During Construction***

- ☐ Ensure construction materials are protected from exposure to dust and moisture during delivery, unloading, storage and construction processes. Refer to [CSA:5.3]<sup>15</sup>
- ☐ Paper and paper-faced materials (e.g., gypsum wall board, panels, ceiling tiles, wall coverings) damaged by moisture are not used for interior surfaces [CSA: 5.1.3]<sup>15</sup>
- ☐ Construction materials that have been contaminated or damaged by moisture are decontaminated or replaced Refer to [CSA: 5.3.2.3]<sup>15</sup>

#### **Dust Control**

Refer to [CSA:7.2.1.1]<sup>15</sup>

- ☐ Immediately after Type A activity (e.g., visual inspection) has been completed, close access panels and replace displaced tiles.
- ☐ Clean the work area with a HEPA filter-equipped vacuum cleaner, with dust capture attachment or a wet mop, as needed.

Refer to [CSA:7.2.2.2]<sup>15</sup>

- ☐ Using drop sheets;
- ☐ Control dust by water-misting work surfaces while cutting (use electrical safety measures).

*Note: Caution should be exercised when such techniques are used on cellulose or fibre-based materials that are intended to stay in place following construction work.*

- ☐ Seal windows and unused doors.
- ☐ Seal plumbing penetrations, electrical outlets, and any other sources of potential air leaks in the construction area
- ☐ Seal air supply and return ducts in the construction area
- ☐ Place walk-off mats outside and inside the entrance to the construction area to trap dust from the equipment and shoes of personnel leaving the area. Vacuum the mat daily with a HEPA filter-equipped vacuum cleaner, as well as when the mat is visibly soiled. Walk-off mats shall be of sufficient size to ensure that constructors have to place both feet on the mat at least once on exiting the construction area. [CSA: Figure A5 and A6]<sup>15</sup>

Refer to [CSA:7.2.3.2]<sup>15</sup>

- ☐ Erect an impermeable dust barrier, from the floor to the underside of the deck (including the areas above false ceilings) consisting of two layers of 0.15 mm (6 mil) fire-retardant polyethylene (or an equivalent barrier) and gypsum wallboard protection approved by the construction planning team. Polyethylene membrane shall be present to maintain required pressurization. The dust barrier shall remain in place until the project is complete and the area has been cleaned thoroughly and inspected. After construction has been completed, the dust barrier shall be removed to prevent the spread of dust and other debris particles adhering to the barrier.
- ☐ Use impermeable temporary containment units (vessels) constructed to contain dust and other contaminants. Such vessels shall have a monolithic (one-piece) exterior shell constructed of a minimum of 0.20 mm (8 mil) fibre-reinforced, fire-retardant polyethylene. The construction of the vessel shall allow for containment of

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contaminants within the vessel and have ports through which HEPA-filtered vacuum cleaners or portable construction air handling units (CAHUs) can be easily attached to draw the unit under negative pressure.

- ☐ HEPA vacuum mechanical and electrical systems and spaces above drop or false ceilings, if necessary.
- ☐ Remove protective clothing (e.g. hardhat, coveralls, etc.) before entering resident houses.

#### **Ventilation**

- ☐ Disable the ventilation system and seal duct openings in the construction area until the project is completed. An engineering analysis shall be performed to ensure that the fan systems continue to perform their intended function and that the operation of the HVAC system is not compromised. Refer to [CSA:7.2.3.3]<sup>15</sup>
- ☐ Maintain negative pressure within the construction area by using portable HEPA filter-equipped CAHUs that include pressure gauges and an alarm. Filters shall be monitored and replaced if clogged or functioning below the manufacturer's specifications.
- ☐ Ensure that the air is exhausted directly outside and away from intake vents and filtered through a HEPA filter. In conditions that prohibit exhausting the exhaust outside, air may be re-circulated in accordance with CSA:6.6, 7.2.3.6<sup>15</sup>.
- ☐ Ensure that the ventilation system is functioning properly and is cleaned if contaminated by soil or dust after the construction project is complete and before restarting.
- ☐ The negative pressure of 7.5 Pa (0.03 in. wc) that is created using CAHUs exhausted to the outside of a construction zone shall be monitored by the constructor using a differential pressure gauge. The differential pressure shall be continually recorded, and the gauge shall be connected to a local auditory and visual alarm that is also connected to the building automation system for monitoring purposes. The gauge shall be no closer than 5 m. of the entrance to the construction site and be located on the adjacent or exterior side of the dust barrier. If this alarm cannot be connected to the building automation system, the decision whether to use an alternative system for alarm monitoring or logging shall be made by the construction planning team.[CSA: 7.2.4.4]<sup>15</sup>
- ☐ The HCF shall immediately notify the constructor when a construction pressure differential alarm is received through the building automation system alarm. [CSA: 7.2.4.4]<sup>15</sup>
- ☐ The constructor shall record in a daily log the pressure difference. If readings are less than 7.5 Pa (0.03 in wc) negative pressure in construction zone for more than 4 h, or less than 2.5 Pa for more than 90s, immediate corrective measures shall be taken to restore and maintain pressure differential. [CSA: 7.2.4.5]<sup>15</sup>

#### **Portable construction air handling units (CAHUs)** Refer to [CSA:6.6.3,6.6.4,6.6.7,7.2.3.4]<sup>15</sup>

- ☐ CAHUs shall be certified, operated, and maintained in accordance with Clause 6.6.4
- ☐ CAHUs shall be visually inspected by the constructor at least daily and their condition shall be documented
- ☐ Air exhausted from construction areas shall be HEPA filtered. HEPA filters used shall have a collection efficiency of 99.97% at 3µm.
- ☐ HEPA filters and pre-filters for construction air handling units shall be visually inspected by the constructor at least daily and their condition shall be documented.
- ☐ Filters shall be replaced when loaded, when change indicators lights comes on, or in accordance with

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manufacturer's instructions. [CSA: 6.6.4.3]<sup>15</sup>

- ☐ At the beginning of any Preventative Measure Level 3 or 4 construction activities, CAHUs shall be certified. They shall be recertified at least every 12 months and the recertification shall be documented.
- ☐ The construction committee planning team shall assign a team member to regularly visit the construction area to confirm the preventive measures are being followed and document findings. (Refer to Form 4) [CSA: 7.2.4.6]<sup>15</sup>
- ☐ Construction, maintenance, and repair area exhaust air shall not be discharged to areas occupied by Population Risk Group 3 or 4.
- ☐ Measures related to re-circulated air shall require approval from the construction planning team.
- ☐ The relative space pressures between areas occupied by Population Risk Group 3 or 4 shall be continuously monitored and alarmed.[CSA:6.6.2.3]<sup>15</sup>
- ☐ Where the failure of either the portable negative air unit or the exhaust fan would compromise the relative pressurization of a Population Risk Group 4 area, the systems shall be interlocked.

#### **CAHU Impact on the facility HVAC system** Refer to [CSA :7.2.3.5]<sup>15</sup>

- ☐ The main facility system shall be verified for operation in accordance with design during construction work.
- ☐ The health care facility and constructor shall verify the pressure relationships for critical areas near the construction area (e.g., Population Risk Group 4 areas).

#### **Construction air handling** Refer to [CSA :7.2.3.6]<sup>15</sup>

- ☐ Permanent air handling systems should not be used for exhausting air from construction or renovation work areas. Temporary ductwork may be installed for such purposes. However, it shall not connect to the facility's HVAC system.
- ☐ In cases where air cannot be exhausted directly outside (not tying into another system), exhaust air may be temporarily piped to the building exhaust system if an engineering analysis has been performed by qualified personnel to ensure that exhaust air will not be re-entrained into the occupied building and the construction planning team approves piping to the exhaust system.
- ☐ In cases where air cannot be exhausted directly outside or piped through the building exhaust system, it may be re-circulated into areas of the building occupied by Risk Group 1 or 2, if construction planning team approval is granted.
- ☐ Construction exhaust air shall not be re-circulated into building areas occupied by Risk Group 3 or 4. Refer to Use of permanent exhaust below.

#### **Plumbing**

Refer to [CSA:7.2.1.2]<sup>15</sup>

- ☐ Ensure gasket material is smooth and does not promote build up of biofilm or scale. Replace if worn or rough;
- ☐ Ensure materials that support the growth of *Legionella* are not being used.
- ☐ Ensure that faucet aerators are not installed or used and sink controls are adjusted to prevent splash-back;

## Preventive Measures Level 4

### Facilities Maintenance and Engineering/Contractors/Project Management

☐ Schedule water interruptions during periods of low user activity (e.g., evenings); receive approval for disruption before starting

☐ Maintain a dry work environment and report any water leaks through walls or substructures

Refer to [CSA :7.2.2.4]<sup>15</sup>

☐ Avoid using collection tanks and long pipes (which allow water to stagnate)

☐ Hyper chlorinate (to a minimum of 50 parts per million) or superheat (to a minimum of 70 °C) stagnant domestic water (especially if *Legionella* is already present in the domestic water supply).

☐ The water lines in the construction area and adjacent resident houses shall be flushed before reuse

☐ Be aware of the impact of techniques to remove bacterial growth and choose the approach that minimizes the risks associated with such work.

#### **Site maintenance**

Refer to [CSA :7.2.2.5]<sup>15</sup>

☐ Place debris in covered containers or cover it with a moistened sheet before transporting it for disposal.

☐ Clean the construction area with a HEPA filter-equipped vacuum cleaner, a wet mop, or both, as necessary.

☐ Place supplies and equipment in covered containers during transportation through the health care facility to prevent contamination in other areas.

☐ Wipe wheels of mobile equipment, transport carts, and bins before entering occupancies areas

☐ Remove the debris in the evening when residents are in their rooms and visitors have left. If this is not possible, debris should be removed at the end of the workday. Exposure of the occupants of the health care facility to debris shall be minimized.

☐ Inform facility environmental services if clean up outside of construction area is needed.

☐ Engineering or operations and maintenance staff in the construction area shall clean outside the work area with a HEPA filter-equipped vacuum cleaner every day or more frequently if necessary. [CSA :7.2.3.7.1]<sup>15</sup>

#### **Use of permanent exhaust** Refer to [CSA:7.2.2.6]<sup>15</sup>

☐ The permanent air handling system shall be used for exhausting air from the construction zone via a portable negative air unit only under the following conditions:

☐ The air handling system is an exhaust system that leads directly to the outdoors.

☐ An engineering analysis is performed to ensure that the exhaust system continues to perform its intended function and that the operation of the HVAC system is not compromised.

☐ The operation of the exhaust fan shall be monitored and alarmed to building operations staff and alarmed in the construction zone.

☐ If the conditions outlined in the above three (3) items cannot be satisfied, then the steps outlined in Construction air handling CSA: 7.2.3.6<sup>15</sup> shall be followed



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### Facilities Maintenance and Engineering/Contractors/Project Management

Refer to [CSA: 7.2.4.2,7.2.4.3]<sup>15</sup>

In addition to the above specifications, engineering or operations and maintenance staff or constructors shall:

- ☐ Ensure that all access be from outside the occupied areas of the health care facility, or construct anterooms at access points to the construction area if access is from within the health care facility.
- ☐ Place a walk-off mat outside and inside the anteroom to trap dust from equipment, debris, and the shoes of personnel leaving the construction area. Walk-off mats shall be of sufficient size to ensure that constructors have to place both feet on the mat at least once on exiting the construction area.
- ☐ Ensure that the constructors leave the construction area through the anteroom so that they can be vacuumed with a HEPA filter-equipped vacuum cleaner before leaving; or
- ☐ Wear protective clothing that is to be removed each time they leave the construction area and before going into resident houses.
- ☐ Repair holes in walls immediately when found.
- ☐ Ensure that ventilation systems are working properly in adjacent areas.
- ☐ Carefully remove barrier walls and use short term protection to minimize environmental contamination during removal.
- ☐ During construction, events that can present infection risks occur; intervention procedures shall be implemented immediately to resolve the problems. [CSA: 7.2.4.8]<sup>15</sup>

#### ***After Construction***

- ☐ Before resident or staff occupancy of the construction project work area is permitted, a project infection control work plan completion audit shall be completed. If the commissioning process identifies any uncompleted work from the infection control plan, this shall be listed as a project deficiency. [CSA: 7.2.4.10]<sup>15</sup>
- ☐ After construction has been completed, the dust barrier shall be removed in such a manner to prevent the spread of dust and other debris particles adhering to the barrier.
- ☐ The construction planning team shall review the preventative measures that were undertaken and assess their effectiveness. [CSA: 7.3.1]<sup>15</sup>
- ☐ The engineering or operations and maintenance staff or constructors shall ensure that the construction area is free of equipment and debris.
- ☐ The construction planning team shall conduct a final inspection to ensure that the ventilation system is functioning properly in the construction area and adjacent areas. [CSA: 7.3.2.1]<sup>15</sup>
- ☐ Before the completed construction area is occupied, any portions of the infection control plan still in effect shall be reviewed by the construction planning team. If necessary, such portions shall be incorporated into the health care facility's ongoing operating policies and procedures. [CSA: 7.3.3]<sup>15</sup>
- ☐ A project infection control work plan completion audit shall be completed before occupancy. If the commissioning process identifies uncompleted work this shall be listed as a project deficiency. A revised work

### Preventive Measures Level 4

#### Facilities Maintenance and Engineering/Contractors/Project Management

plan with the steps needed to attain completion shall be reviewed and approved by the MDT.

#### Additional Comments:

### Preventive Measures Level 4

#### Environmental Services/Infection Control/Healthcare Staff

##### **Before Construction**

- ☐ The health care staff, in conjunction with infection prevention and control personnel, shall collaborate to minimize occupant exposure by identifying high-risk residents who might need to be temporarily moved away from the construction area. [CSA: 7.1.2.2]<sup>15</sup>
- ☐ Infection prevention control staff shall ensure a surveillance system is in place to monitor residents for *Legionella* in the event of soil excavation or disruption and repressurization of the water supply.

##### **During Construction**

**Environmental Services** Refer to [CSA:7.2.3.7.2]<sup>15</sup>

Environmental services staff shall:

- ☐ Increase the frequency of cleaning in areas adjacent to the construction area while the project is underway.
- ☐ Wet mop and vacuum the area with a HEPA filter-equipped vacuum cleaner as necessary and when the work is complete;
- ☐ Wipe exposed surfaces with a hospital-grade disinfectant;
- ☐ Report discoloured water and water leaks to maintenance and infection prevention and control personnel.
- ☐ Ensure that resident care equipment and supplies are protected from dust exposure.

##### **Infection Prevention and Control Personnel**

- ☐ Infection prevention and control personnel shall be responsible for collaboration with the environmental services staff to ensure that the construction area is thoroughly cleaned when work is complete.

### Preventive Measures Level 4

#### Environmental Services/Infection Control/Healthcare Staff

- ☐ Infection prevention and control personnel shall be responsible for inspecting the integrity of the dust barriers.
- ☐ Infection prevention and control personnel shall, in collaboration with the facility project manager, be responsible for designating a traffic pattern for constructors that avoids resident houses and a traffic pattern for clean or sterile supplies and equipment that avoids the construction area.
- ☐ Infection prevention and control personnel or member of the construction planning team shall regularly visit the construction area to ensure that preventative measures are followed. The frequency of their visits shall be determined by the construction planning team. [CSA: 7.2.4.6]<sup>15</sup>
- ☐ Infection prevention and control measures shall be constantly monitored and shall be reviewed at every construction and project management meeting. [CSA: 7.2.4.7]<sup>15</sup>

#### Health Care Staff (Refer to [CSA: 7.2.3.9])<sup>15</sup>

Health care staff shall ensure:

- ☐ Resident care equipment and supplies are protected from dust exposure;
- ☐ Residents do not go near the construction area;
- ☐ Staff and visitors do not visit the construction area; and
- ☐ Report discoloured water and water leaks to maintenance and infection prevention and control personnel.
- ☐ Ensure that resident care equipment and supplies are protected from dust exposure.

#### After Construction

Refer to [CSA: 7.3.2.3]<sup>15</sup>

- ☐ Environmental Services and health care staff shall ensure that the construction area has been cleaned with a HEPA filtered-equipped vacuum cleaner, a wet mop, or both, as necessary, and that horizontal work surfaces have been cleaned and disinfected per Environmental Services protocols.
- ☐ Environmental Services and health care staff shall report discoloured water and water leaks to the maintenance and infection prevention and control departments
- ☐ Before the completed construction area is occupied, any portions of the infection control plan still in effect shall be reviewed by the construction planning team. If necessary, such portions shall be incorporated into the health care facility's ongoing operating policies and procedures.
- ☐ IPC shall ensure that the construction area has been terminally cleaned before building occupants are allowed to occupy the new space. The terminal clean shall be performed by the health care facilities environmental services department or designated alternative cleaning contractor using a terminal cleaning procedure approved by the IPC department or the construction planning team. [CSA: 7.3.2.3]<sup>15</sup>

<b>Preventive Measures Level 4</b>
<b>Environmental Services/Infection Control/Healthcare Staff</b>
<b>Additional Comments:</b>

## Glossary

**Adjacent areas:** all of the areas surrounding an area where construction, renovation, or maintenance work is occurring, including, where applicable, all or part of the floors above and below.

**Anteroom:** a small room that is immediately adjacent to or within a construction area and is intended to be used by constructors for purposes such as storage or removal of protective clothing, cleaning of debris-removal containers, and/or removal of contaminants from footwear.

**AIR anteroom:** a small room or space at the entrance to an AIR that is separated by doors from both the outside and the main space in the AIR.

**Note:** *The AIR anteroom provides an airlock between the adjacent space and the patient and allows for storage of supplies e.g. PPE.*

**Airborne isolation room (AIR):** a room that is designed, constructed, and ventilated to limit the spread of airborne micro-organisms from an infected occupant to the surrounding areas of the HCF.

**Notes:**

(1) *These rooms are designed for use when caring for patients requiring airborne precautions; for example, patients with known or suspected tuberculosis, varicella zoster, or measles.*

(2) *AIRs are designed to maintain negative pressurization relative to adjacent areas.*

**Ambulatory care:** a mode of delivering health care services on a same-day basis, not requiring overnight hospitalization.

**Area Classification-** a designation applied to an area in a health care facility to distinguish between varying levels of risk.

Type I — a patient care area where the invasiveness of procedures, the level of risk of morbidity and mortality to the patient, and the level of risk of adverse outcomes to the care providers dictate that more stringent HVAC and environmental parameters be met.

Type II — a patient care area or an area that is intended for the provision of services that provide direct support to patient care services (e.g., labs, central supply).

Type III — all other support services not designated as Type I or II.

**Automatic Flushing:** flushing electronically by using a sensor that provides a touch-free system.

**Biomedical waste:** waste generated within a health care that requires special handling and disposal because it presents a particular risk of disease transmission.

**Central tub/shower room:** a room not associated with a single inpatient bedroom, containing a tub or shower for the bathing of patients.

**Clinical area:** is composed of the areas within facility where residents reside, receive treatment or care or have access to for their daily activities. This includes side rooms, utility rooms, and recreation rooms or annexed offices which lead directly into the resident's

environment or bedside areas. A clinical area may be described as the environment which is most susceptible to the transmission of communicable infections

**Commissioning (commissioning process)** - a systematic verification, documentation, and training process applied to all activities during the design, construction, static verification, start-up, and functional performance testing of equipment and systems in a facility to ensure that the facility operates in conformity with the owner's project requirements and the basis of design in accordance with the contract documents.

**Construction:** major and minor facility activities that disturb or modify facility structures and systems, the term includes not only construction but also renovation, maintenance, and repair work.

**New construction:** construction to produce all or part of an HCF that did not exist prior to the project.

**Renovation:** construction to modify or upgrade an existing HCF to be used for similar purposes.

**Construction air handling unit (CAHU)** — a machine used to move HEPA-filtered air into or out of a construction site.

**Construction clean** -cleaning performed at the end of a workday by construction workers that removes gross soil and dirt, construction materials, and workplace hazards.

**Note:** Cleaning to the “construction clean” level may include sweeping and vacuuming, but usually does not address horizontal surfaces or areas adjacent to the job site.

**Constructor:** a person who undertakes a construction or renovation project for an owner. A constructor can be a contractor, subcontractor, construction manager, construction worker, or tradesperson. The term also includes an owner who personally undertakes all or part of a construction or renovation project.

**Critical Medical Equipment/Device** – medical equipment/devices that enter sterile tissues, including the vascular system (e.g., surgical instruments, biopsy forceps, foot care equipment, dental hand pieces, etc.). Critical medical equipment/devices present a high risk of infection if the equipment/device is contaminated with any microorganisms, including bacterial spores. Reprocessing critical equipment/devices involves meticulous cleaning followed by sterilization.

**Environmental services:** HCF services (e.g., general housekeeping, waste management, pest control, and hazardous material cleanup).

**Functional area:** an area within the HCF that is described by its function within the facility or by the activities that take place there as part of the operation of the facility (e.g., inpatient bedrooms, critical care units, ambulatory care areas).

**Functional program:** a planning document that defines the desired outcome for a building project, informing both operating and capital cost estimates and providing the functional and spatial specifications that provide the primary guide for the subsequent architectural design of a building.

**Hands-free operation:** includes elbow, knee, foot, or electronic operation.

**Hand washing station:** an area dedicated for the purposes of hand hygiene only. Includes a hand hygiene sink, soap dispenser, paper towel dispenser and waste receptacle.

**Health care facility (HCF):** a set of physical infrastructure elements supporting the delivery of health-related services.[refer to CSA: Definitions]<sup>1</sup>

(1) For examples of different HCFs by class, (see Annex B).

(2) Within any given building, there may be more than one class of HCF (see Annex B).

Class A-1 HCF — an HCF in which patients are

- (a) accommodated on the basis of medical need;
- (b) provided with continuing medical care; and
- (c) provided with supporting diagnostic and therapeutic services that can extend beyond 12 h.

Note: Class A-1 HCFs typically provide trauma and emergency services, have surgical operating rooms, and are referred to as “active treatment” or “acute care” institutions.

Class A-1 HCFs fall into one of the following categories:

**Category 1** — HCFs designated by the authority having jurisdiction as a mission critical facility including those HCFs designated as essential in infectious diseases outbreak management.

**Category 2** — HCFs that meet two of the following conditions:

- (a) the HCF is an academic centre providing tertiary or quaternary services such as transplantation, oncology, or trauma services;
- (b) the HCF provides regional programs such as oncological, trauma, cardiac, dialysis, pediatric, maternal, or newborn services;
- (c) the expected travel time to a Class A-2 facility exceeds 1.0 h under normal driving conditions; or
- (d) the HCF is the sole provider of acute care health services to populations in excess of 500 000 people.

**Category 3** — HCFs that meet one of the requirements listed in Category 2 and

- (a) provide programs or services that are not generally provided by other nearby HCFs; and
- (b) include at least one of the following:
  - (i) rehabilitation hospital;
  - (ii) chronic patient care for hospitals with at least 200 licensed beds;
  - (iii) mental health facilities;
  - (iv) special rehabilitation services for persons with a disability;
  - (v) transplantation centres; or
  - (vi) continuing care centres for management of chronic diseases.

**Class A-2 HCF — an HCF**

- (a) in which patients are
  - (i) accommodated on the basis of medical need;
  - (ii) provided with continuing medical care; and
  - (iii) provided with supporting diagnostic and therapeutic services that can extend beyond 12 h; and
- (b) that does not meet the Category 1, 2, or 3 requirements for a Class A-1 facility.

**Notes:**

- (1) Class A-2 HCFs include facilities for patients rendered incapable of self-preservation as a result of their medical condition.
- (2) Class A-2 HCFs typically provide trauma and emergency services, have surgical operating rooms, and are generally referred to as “active treatment” or “acute care” institutions.

**Class B HCF — an HCF in which patients, as a result of physical or mental disabilities, are unable to function independently and are accommodated on the basis of medical need for constant care by health care professionals or the need for intensive therapies that require supervision by health care professionals, but where interventional and other invasive procedures are not performed.**

**Notes:**

- (1) Class B HCFs include facilities for patients rendered incapable of self-preservation as a result of their medical condition.
- (2) Class B HCFs include extended care, intermediate care, multi-level care, hospice, mental health, and rehabilitation facilities.

**Class C HCF — an HCF in which ambulatory patients**

- (a) are accommodated on the basis of medical need;
- (b) are provided with non-invasive medical services for diagnosis, treatment, or therapy; and
- (c) stay for no more than 12 h (except for residential facilities in which occasional care is provided).

**Notes:**

- (1) Class C HCFs include facilities for patients who remain capable of self-preservation.
- (2) Class C HCFs include outpatient clinics, dentists' offices, doctors' clinics, group homes, and privately run residences.

**HEPA (high-efficiency particulate air) filter** - an air filter with an efficiency of 99.97% in the removal of airborne particles 0.3 µm or larger in diameter.

**Hopper:** A clinical rim flushing sink or a large floor-standing or wall-hung sink equipped with a flush valve and handle, for use in disposing of body fluids and other substances that cannot be safely disposed of in a conventional sink or toilet.



**House:** resident houses are the clearly defined living areas of the residents that include spaces for everyday living such as bedrooms, washrooms, bathing areas, dining rooms, living/activity rooms, wellness areas, support areas and storage spaces.

**Infection control risk assessment (ICRA):** a process used to identify design elements that increase the risk of microbial transmission in the environment.

**Note:** *An ICRA considers the facility's patient population and clinical programs, and the potential effects of disruptions to essential services (e.g., water, ventilation, electricity) that could affect patient placement or necessitate relocation of patients.*

**Inpatient:** an HCF patient who occupies a bed for at least one night in the course of treatment, examination, or observation.

**Inpatient area:** an area in the HCF specifically intended for the accommodation of inpatients.

**Note:** *Examples of inpatient areas: critical care, maternal and newborn, medical-surgical inpatient, mental health services, pediatric and adolescent inpatient; and rehabilitation care.*

**Maintenance** - a type of construction activity conducted to preserve the condition and functionality of a physical element of a health care facility. See Construction

Notes:

1) Maintenance can be performed by an equipment supplier, contractor, or facility-based operation and maintenance staff.

2) The term "maintenance" also covers repairs.

**Monolithic ceiling:** a ceiling constructed with a surface free of fissures, cracks, and crevices.

Notes:

(1) Seals or gaskets are used to maintain ceiling integrity at penetrations such as lights, diffusers, and access panels.

(2) Ceilings using "lay-in" panels are not monolithic.

**Multidisciplinary team (MDT) – (AHS Construction Planning Team)** a group comprising representatives from various disciplines in the health care facility that works with the project management team and others to ensure that the appropriate infection prevention and control measures are followed during construction activities.

**Net area:** the horizontal area of space assignable to a specific function.

Notes:

(1) The net area of rooms is measured to the inside face of wall surfaces.

(2) Spaces such as corridors, un-programmed or unassigned storage, mechanical and electrical service space, and other areas that are determined as a result of design are not considered assignable net areas.

(3) *Also referred to as "net square metres".*

**New construction** - a project intended to produce a complete health care facility, or a new section of an existing facility, that did not exist prior to the project.

**Non-clinical area** - areas within the facility where residents do not reside, do not receive treatment or care or participate in their daily activities. A non-clinical area may be described as the environment which is least susceptible to the transmission of communicable infections (e.g., public areas, front entrance lobby, private administration offices, gift shop). See Clinical area

**Plumbing dead leg** - a pipe or other plumbing component or system that has contained, contains, or likely will contain stagnant water.

**Preventive measure** - a system involving precautionary actions, equipment, and barriers at each phase of a project to decrease the spread of contaminants during construction, renovation, or maintenance of a health care facility.

**Preventive measures analysis** - the process of evaluating construction-related risks to patients and staff and determining the preventive measures that will be necessary to mitigate those risks.

**Patient:** a person who is waiting for or undergoing medical investigation, care, or treatment.  
Note: This Standard uses “patient” as a global term applying to all HCFs. Some HCFs prefer to use alternative terms such as client, patient, or occupant.

**Patient care area:** an area used primarily for the provision of diagnosis, therapy, or treatment.

**Personal protective equipment (PPE):** items that when worn correctly form a barrier or shield against hazardous materials.

**Point of Care:** the place where three elements occur together: the patient, the health care worker and care or treatment involving contact with the patient or his/her surroundings.

**Procedure:** a course of action, treatment, or care process.

Note: Procedures are often characterized as diagnostic, therapeutic, or surgical, and can be further categorized in terms of the type of electrical contact between the patient and the medical electrical equipment when such equipment is used.

**Renovation:** see **Construction**.

**Routine infection prevention and control practices:** the approach to infection prevention and control in which all human blood and body fluids are treated as if known to be infectious.

**Semicritical Medical Equipment/Device** – medical equipment/devices that come in contact with non-intact skin or mucous membranes but ordinarily does not penetrate them (e.g. respiratory therapy equipment, transrectal probes, specula). Reprocessing semicritical equipment/devices involves meticulous cleaning followed by, at a minimum, high-level disinfection.

**Single occupancy:** means that patients have a spatial separation and a physical barrier between them sufficient to provide privacy, protection from the spread of infection, and adequate area to support the clinical functions.

**Sink:** a bowl and faucet permanently installed and connected to a water supply and drainpipe.

**Terminal Cleaning** - the thorough cleaning of a clinical space following construction and before the space is used for patient care, medical equipment, or the storage of clean or sterile supplies, in order to remove contaminating micro-organisms that could be acquired by subsequent occupants or staff.

**Toilet room:** contains a toilet and hand washing sink.

**User:** person occupying or performing an activity in a building, area, or room intended for that purpose (e.g., diagnosis, treatment, waiting, dining, etc.).

**Walk-off mat** - a specially designed mat that is placed outside a construction area or in an anteroom and is intended for removal of contaminants from the footwear of workers.

Note: Walk-off mats include, for example,

- a) mats for removal of sand and winter road salt;
- b) mats with a sticky surface;
- c) sections of carpet made with synthetic fibers; or
- d) antibacterial mats that include a frame allowing for placement of antibacterial solutions.

**Washroom suite:** contains a toilet, hand washing sink and shower.

**Waterless hand hygiene station:** a location that is equipped with a waterless (e.g., alcohol-based) hand sanitizer dispenser.

## Abbreviations

AAMI - Association for the Advancement of Medical Instrumentation

ABHR- Alcohol based hand rub

AIR - airborne isolation room

ANSI - American National Standards Institute

ASHE - American Society for Healthcare Engineering

ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers

CAHU- a machine used to move HEPA-filtered air into or out of a construction site

CDC - U.S. Centers for Disease Control and Prevention

CSA - Canadian Standards Association

ES - Environmental Services

ETO - ethylene oxide

FGI - Facility Guidelines Institute

FME - Facility Maintenance and Engineering

HCF - health care facility

HCW - health care worker

HEPA - high-efficiency particulate air

HVAC - heating, ventilation, and air conditioning

ICP - Infection Control Professional

IPC - Infection Prevention and Control

ICRA - infection control risk assessment

MERV- minimum efficiency reporting value

MDR - medical device reprocessing

MDRD - medical device reprocessing department

PE - protective environment

PPE - personal protective equipment

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