

APPENDIX 1E  
ERGONOMIC DESIGN STANDARDS



## ERGONOMIC DESIGN STANDARDS

### Ergonomic Design Specifications

The KGH IHSC shall be designed in accordance with all appropriate ergonomic design principles, and best design practices.

In addition to minimum criteria set out in the 2006 Edition of the British Columbia Building Code, the Facilities shall also be designed in strict accordance with the Occupational Health and Safety Regulations, and the Ergonomics (MSI) Requirements of WorkSafe B.C.

The Authority have created an Ergonomic Design Guide which follows below:

#### **i) Ergonomics in Healthcare Design Philosophy**

Ergonomics is the science of designing the job to fit the worker, rather than physically forcing the worker's body to fit the job. Ergonomics promotes a holistic approach in which considerations of physical, cognitive, social, organizational, environmental and other relevant factors are taken into account in the design of jobs and workplaces. Physical ergonomics is concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical activity and risk factors for musculoskeletal injury. The physical environment should be designed to accommodate adequate reaches, strength, and endurance necessary to perform all physical tasks; adequate clearance for movement, to ingress/egress work area, and perform all required tasks; adequate internal and external visibility to perform all required operations by a majority of the user population. Cognitive ergonomics examines the mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system. Each of these factors affects the design of Interior Health healthcare facilities. By designing Interior Health facilities to fit the physical environment to the staff, there can be decreases in staff injury and illness, increases productivity, decreases in medication errors, improvements in workplace culture, and most importantly, decreases in stress within the workplace. Please refer to Appendix 1 for the International Ergonomics Association definition of Ergonomics.

#### **ii) Ergonomic Regulations for Design**

Regulations through Worksafe BC:

- a. Occupational Health and Safety Regulation  
(<http://www2.worksafebc.com/Publications/OHSRegulation/Home.asp>)
- b. Ergonomic (MSI) Requirements  
(<http://www2.worksafebc.com/Topics/Ergonomics/RegulationAndGuidelines.asp>)



iii) Office Environments

All office environments shall be sized and designed according to the Interior Health document, Interior Health Workstation and Office Guidelines. The furniture and office equipment within these offices and workstations should comply with the Interior Health Authority’s workstation and chair regional standards.

iv) Mandatory Millwork Dimensions

The design of the millwork shall meet the minimum requirements on the following page.

Space	Distance (mm)
Seated work height	737
Standing work height for light work tasks	914
Standing work height for precision work tasks	965
Height between standing work surface and bottom shelf of upper cabinet	450
Height between seat work surface and bottom shelf of upper cabinet	450-510
Clear leg space (width) underneath a work surface	914
Clear depth under work station	500
Maximum height of shelf from floor	1500
Minimum work surface depth	610
Minimum work surface depth for reception/unit clerk where monitor will be placed	760
Minimum writing surface width	610
Height of transaction shelf above seated work surface	360
Height of transaction shelf (absolute)	1060-1100
Desk drawer units	Drawer units shall be mobile
Reception desk design	Ability to have an L-shaped work surface where practicable
Height of outlets (electrical and data)	Above work surface where feasible
Minimum knee clearance (depth)	534

- For reach distances, a 50% North American Female anthropometric data is used
- For knee clearance, a 50% North American Male anthropometric data is used



v) **Mandatory Working Distances**

The design of workspaces shall meet the physical requirements for the users to complete various tasks. The working distances listed below shall be accommodated.

<b>Task</b>	<b>Space (mm)</b>
Transfer area for transfer of patient on to stretcher/bed	1500
Minimum working space on either side of stretcher/bed	750
Minimum space between end of stretcher and next surface	900
Minimum space on either side of all toilets used by patients in clinical or inpatient units	800
Minimum space in front of toilet	1500
Minimum space from millwork face to next surface to allow proper chair/person movement	1520
Maximum horizontal reach distance	680
Maximum vertical reach distance	1947

- For reach distances, a 50% North American Female anthropometric data is used
- For knee clearance, a 50% North American Male anthropometric data is used



Area	Recommended Type of Door	Rationale
Building Main Entrance	Sliding automatic 4' double doors with an adequately sized vestibule entrance. There shall not be any circular or rotating entrance doors.	This will provide barrier free access for all individuals entering the facility
Exterior Ambulance Entrance	Minimum 5' Automatic sliding doors	Designed according to 2006 AIA Guidelines for Design and Construction of Healthcare Facilities (pp71).
Department entrances (walk in patients)	Minimum 3'6" door, optimal for 4' door	Provides barrier free access
Department entrances (non-ambulatory patients)	Minimum 3' double doors, optimal 4' automatic double doors.	Allows for easy egress for those patients in wheelchairs and on stretcher
Patient washrooms	4' door with dual swing	Barrier free access and allows staff to get into washroom to assist fallen patient
Treatment rooms (non psychiatric)	4' door	Provide barrier free access for those in wheelchairs and on stretchers
Patient room	4' door or 3'1' split	Provides barrier free access
OR's – patient entrance	Two doors, large leaf must be 1219mm and small leaf must be 548mm. See Section G, item 41 in volumes 2 and 3.	Provides barrier free access

\*All doors to swing into the room unless noted



## **ACCESSIBLE DESIGN STANDARDS**

### **Building Accessibility**

Public orientation to and from all parts of the facility shall be achieved by emphasis on “first time” entrances where personal guidance and building graphics/signage can introduce the interior circulation system to the user.

Service vehicle loading/unloading area(s) shall be distinct from other entrances.

The facility (interior and exterior) must be accessible by those of different functional capacities including, children, the elderly, handicapped, and the disabled as defined in the British Columbia Building Code and Universal Design.

Ramps will be avoided if at all possible. If a ramp must be included it will not be permitted with greater than a 1/20 incline ratio and will have a midway step rest, if appropriate, and the appropriate handrails provided.

### **Provisions for People with Disabilities**

Occupied areas of the facility shall be accessible by persons with disabilities, functional impairment, and handicapped.

A minimum of 800mm clear is required on either side of patient washroom toilets and either side of treatment areas. This does not pertain to public accessible washrooms.

Selected patient washrooms shall be wheelchair accessible with full 360° wheelchair turning capability. All patient accessible corridors shall have a handrail.

Provide curb cuts at exterior sidewalks to assist persons with disabilities in accordance with the B.C. Building Code, and to the design requirements of the local authorities having jurisdiction.

Staff locker rooms shall have at least one locker space and one washroom, which is wheelchair accessible.

Counters, desks and work areas shall include wheelchair access for both patients and the public.

All light switches shall be wheelchair accessible.

Project Co shall apply “Universal Design” philosophies in the design and planning of the facilities, to ensure all occupied environments are usable by all people without the need for specialized design or adaptation.



### **General Circulation**

Material circulation routes shall be kept separate where possible from patient/staff/public circulation routes. Door widths shall be dependent on the people/equipment loads anticipated.

Stairways shall be used to augment personnel movement between floors.

Passenger elevators shall be clearly identifiable from the building main entrance.

Location of elevators shall be clearly marked, as appropriate, from the building entrances for the intended user (public/staff/service). Service elevators shall not be obvious or accessible to the public.

## **BARIATRIC DESIGN STANDARDS**

### **Bariatrics and the Implication on Design**

A minimum of 4% of spaces in KGH IHSCI shall be designed to meet bariatric requirements.

## **INTERIOR HEALTH OFFICE AND WORKSTATION GUIDE**

This document outlines the guidelines for office and workstation allocation for Interior Health office and clinical employees for Interior Health owned and leased facilities. These workstation guidelines are based on functional requirements to complete the various job requirements and office and workstation size information from other government agencies.

There are two overall categories of workspaces that govern the design of the office/clinical layout.

### **Open Area Workstations**

Criteria of allocation of open area workstation include:

- Workspace is used intermittently or temporarily and the majority of the individual's time is spent in alternative workspaces or clinical spaces
- Alternative space is provided to support the work environment (clinical rooms, meeting spaces, private work spaces)
- Management staff without confidentiality requirements
- Administrative and computer intensive work

### **Enclosed Offices**

Enclosed offices are allocated to those staff members whose task requirements cannot effectively or efficiently be achieved with an open area workstation.



Criteria of allocation of a closed office include:

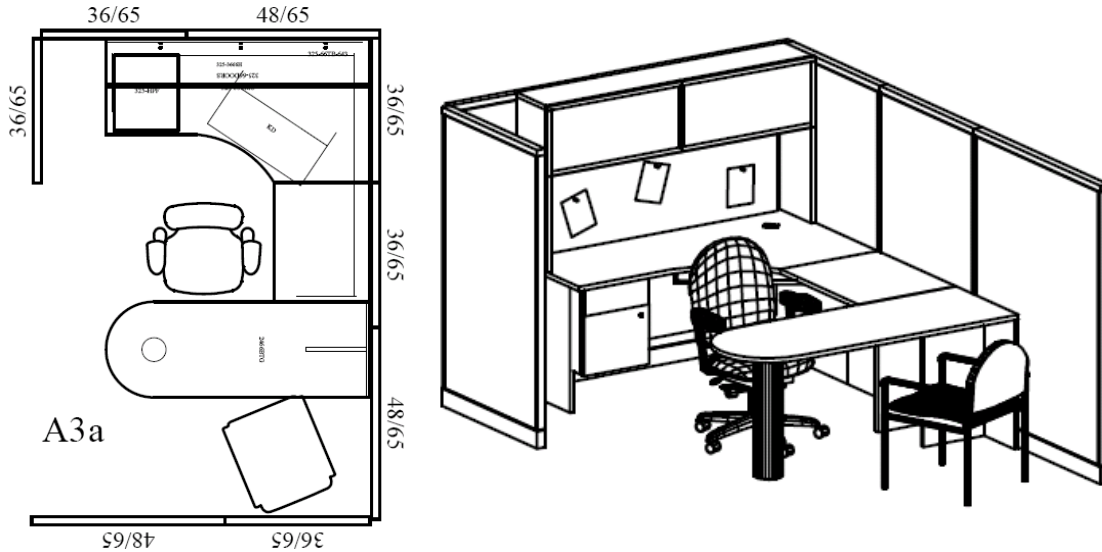
- Face to face interaction between staff members and clients/and or family members (at least 70% of staff member's day) requires separate or enclosed private spaces
- Individuals frequently supervise people
- A high level of confidentiality is required

It should be noted that these recommended workstation sizes be used as a guide and not a standard. When offices and staff are moving into existing buildings and spaces, these recommended workstation sizes might not be feasible due to the existing building design, furniture or layout conditions. As well, as positions and the service delivery changes, these proposed workstations sizes would need to change accordingly.

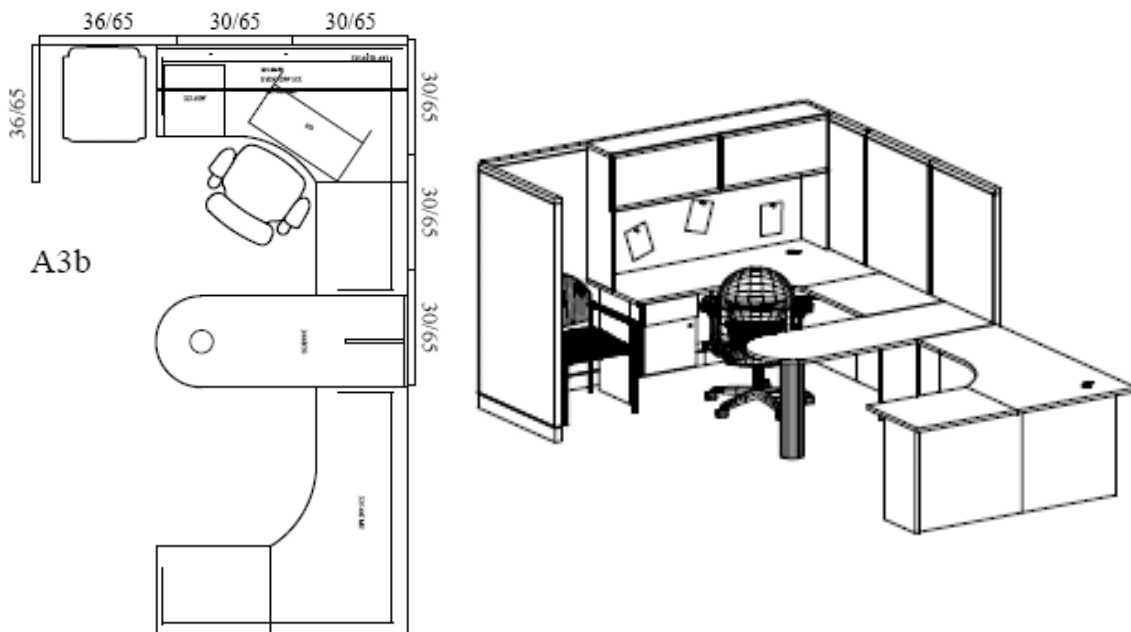




A3a Open Workstation (6.7m<sup>2</sup> (72 ft<sup>2</sup>)) including an L shaped workstation with bullet top (colour: grey), open or closed hutch, two drawer pedestal, fabric tack board, task light, fabric panels, and visitor chair. Workstation will include Interior Health Regional Standard office chair and keyboard tray.

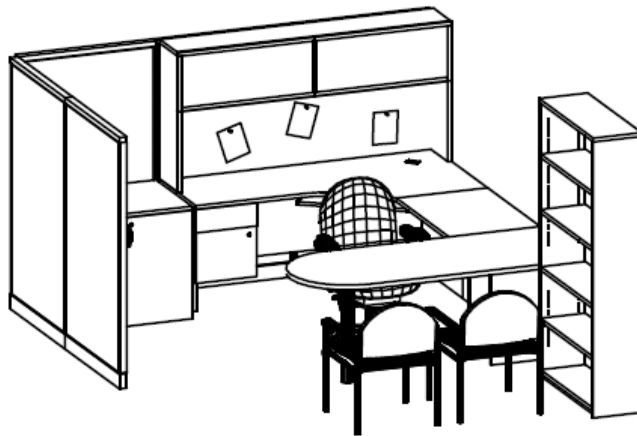
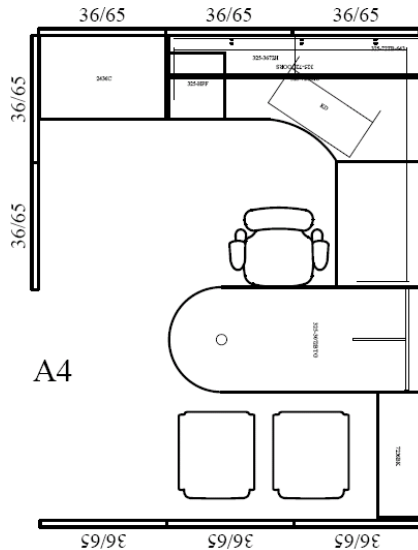


A3b Open Workstation (5.74m<sup>2</sup> (62 ft<sup>2</sup>)) including an L shaped workstation, shared bullet top (colour: grey), open or closed hutch, two drawer pedestal, fabric tack board, task light, fabric panels, and visitor chair. Workstation will include Interior Health Regional Standard office chair and keyboard tray. Please note in the drawings, only one workstation is shown, the other is a mirror image.

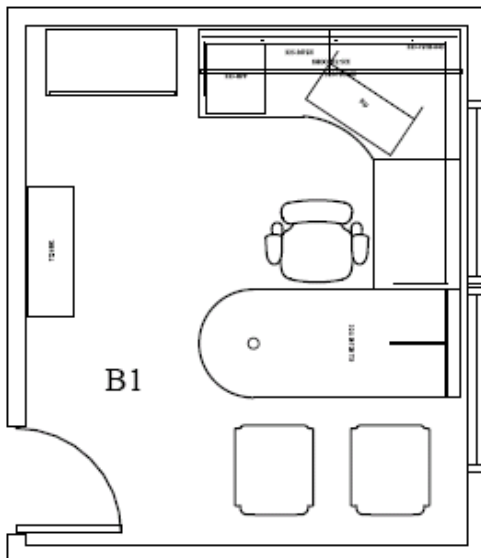




A4 Open Workstation (9.6m<sup>2</sup> (103ft<sup>2</sup>)) including an L shaped workstation with a bullet top (colour: grey), open or closed hutch, two drawer pedestal, two visitor chairs, two storage cabinets or book case, fabric tack board, task light, and fabric panels and/or drywall surface. Workstation will include Interior Health Regional Standard office chair and keyboard tray.



B1 Closed Workstation (11.15m<sup>2</sup> (120 ft<sup>2</sup>)) including an L shaped workstation and either a bullet top or table (colour: sand), open or closed hutch, two drawer pedestal, two visitor chairs, two filing cabinets or book cases, fabric tack board, and task light. Workstation will include Interior Health Regional Standard office chair and keyboard tray.





B2	Closed Workstation (13.9m <sup>2</sup> (150 ft <sup>2</sup> )) including an L shaped workstation with a bullet top and a table (colour: sand), pen or closed hutch, two drawer pedestal, four visitor chairs, two lateral filing cabinets or book cases, fabric tack board, and task light. Workstation will include Interior Health Regional Standard office chair and keyboard tray.
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