3. Human Engineering

3.1 General

The discipline of human engineering is concerned with the design of machines, work systems and environments to consider the safety, comfort and productivity of humans, both able bodied persons and persons with determination. These Guidelines aim to provide designers with principles to guide their planning design in order to develop a space that is in line with these aims of human engineering. Designers must also comply with Dubai Universal Design Code applicable to people with determination, and Occupational Health and Safety (OHS).

A key consideration in hospital design is to provide an environment that promotes the independence of patients. Designers need to take into consideration:

- The needs of abled bodied persons including staff, visitors, patients.
- The needs of persons with determination including mobility impaired, visually impaired and hearing impaired persons. This includes people using short term mobility aids and staff with disabilities.
- Bariatric patients and visitors.
- Parents with children and prams.
- The needs of patients with mental illness or cognitive disorders.
- Minimise duplication and confusion between various Standards and Guidelines.

3.1.1 Planning

Initial planning should include provisions for people with special needs as noted above to avoid future building alterations that may be cost prohibitive.

3.1.2 Fixtures & Fittings

Fixtures and fittings that will be used for support including grab rails, handrails, shower rails, towel rails, soap holders and footrests should be able to support the weight of a heavy person including the concentrated load of a falling person.

Fittings and fixtures suitable for bariatric persons should accommodate weights of between 250kg and 500kg. Refer to Part B – Inpatient Unit – Bariatric for further information.

3.1.3 Handwashing Basins

Location and arrangement of fittings for hand-washing shall permit their proper use and operation. Particular care should be given to the clearances required for elbow action type handles. Non-thermal transmitting standard handles are preferred, with effective finger grips. Heights are to suit the particular function, such as paediatric, people with determination and standard.

Hand-washing facilities should be securely anchored to withstand an applied vertical load of not less than 115kg at any point on the basin. Additional provisions may be required for bariatric patients.

The basins provided for handwashing must be designed to avoid the risk of splashing to patient care areas. The water discharge point of the handwashing basin faucets should be a minimum of 255mm above the bottom of the basin and provided with regulated water pressure. Handwashing basin used by medical and nursing staff, patients, the public, and food handlers should have fittings that can be operated without using hands.

3.1.4 Staircases and Ramps

Where ramps are required for patient access, minimum gradients are to comply with the requirements of the Dubai Universal Design Code. Ramps should be designed to suit their intended purpose and provide for the correct width and slope, particularly if used for mobile equipment such as beds, manual trolleys, motorised trolleys, pallet movers or vehicles.

Special consideration should be given to the surface covering of ramps to provide a non-slip finish and reduce the force required to move mobile equipment.

Design of staircases are to comply with the Dubai Universal Design Code. Consideration should be given to:

- Security to prevent objects being thrown or falling down the staircase
- Use of non-slip treads
- Provision of adequate lighting

Recommended gradient to ramps is 1:20.

As per the Dubai Universal Design Code, the maximum gradient to ramps is 1:12, the compliance of which should be ensured.