

## 11 STRUCTURAL DESIGN

### Minimum Standards

- 11 .1.00 The minimum requirements for structural design in Health Care Facilities shall be those listed in Enclosure E1.

All clauses outlined in the following section shall be in addition to statutory requirements.

### Compliance With Regulations

- 11 .2.00 The design and construction of all building elements shall be in accordance with the current Victorian Building Act.

### Cost Effectiveness

- 11 .3.00 It is the policy of The Department of Human Services to actively encourage the design and construction of health facilities for the minimum cost consistent with the minimum requirements set out in the Benchmark and Guidelines reference documents. The following principles have been adopted to achieve this objective:
- Alternative structural systems may be considered
  - Minimum loading requirements may be adopted
  - Rationalised and repetitive structural systems are most likely to be more cost effective
  - Standardised structural details and connections are recommended to be adopted
  - Services integration shall be considered
  - Prefabrication and modularisation is recommended to be considered
  - Future flexibility which involves additional costs shall be approved by the Department of Human Services
  - Rigorous commercial approaches and practices are recommended to be adopted.
- 11 .4.00 Where possible, the design and structure is recommended to offer maximum opportunity for local trades, materials and Australian products.

### Structural Drawings and Documentation

- 11 .5.00 Structural drawings shall include a set of general notes with the following information:
- The design codes used in the design
  - The design live loading including service loads
  - The design wind loading (ultimate) and terrain category
  - Any imposed construction / erection loadings such as earth moving equipment
  - Foundation design parameters
  - Required concrete strength and cover to reinforcement and slump
  - Welding categories
  - Corrosion protection treatment.
- 11 .6.00 A set of 'As Constructed' drawings shall be handed over to the occupier during the 'Approval to Occupy' inspection.

### Design Loads

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- 11 .7.00 WIND LOADS  
Refer to Architectural section.

SEISMIC LOADS  
Refer to Architectural section.

LIVE LOADS  
Areas designed for compactus loadings shall be clearly identified on the drawings. Final locations of these compactus areas shall be determined during the planning of the building.

### Superstructure

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- 11 .8.00 STRUCTURAL RESISTANCE AND DURABILITY  
The structure is recommended to be designed to provide a projected building life equivalent to either the anticipated useful economic life of the facility, or 50 years, whichever is the greater.
- 11 .9.00 DEFLECTION  
The structure shall be designed to avoid excessive deflections, vibrations or resonance that may affect the serviceability of the structure, services, Operating and Procedure Room light fittings, applied finishes, equipment or any secondary construction such as partition walls.
- 11 .10.00 PLANNING CONSIDERATIONS  
Attention is recommended to be paid to the ability to change floor layouts at reasonable cost without undue effect on other parts of the building. Load bearing is recommended to be restricted to those elements which will not inhibit future planning.
- 11 .11.00 The spacing, size and nature of the elements shall be appropriate for the functions of the buildings, after consideration of the cost economics of various spans and planning flexibility.
- 11 .12.00 ROOF  
Complex roof designs, internal box guttering and high maintenance features are recommended to be avoided. The roof design shall be appropriate to the intended use. Open vented roof types such as sheet metal decking on purlins with suspended ceilings shall not be used over critical care areas.
- 11 .13.00 COVERED WAYS  
External walkways, footpaths and entrances shall be designed and constructed, taking due account of ground movement, storm water drainage, surface type to prevent slipping when wet or icy, thermal movement and durability.
- 11 .14.00 Coverings to walkways shall be designed and constructed to provide waterproofing, protection from weather and well lit for users both day and night. They shall be braced for stability.
- 11 .15.00 Roofs may be constructed with metal sheeting supported on timber or steel purlins spanning between timber or steel trusses or beams. Columns may be timber, steel, concrete or brick. All timber used shall be properly seasoned. Unless alternative paving is required, all areas are recommended to be concrete paved with appropriate edge thickenings and column footings.

## Part E- Building Services and Environmental Design

### Modifications & Alterations to Existing Structures

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- 11 .16.00 The existing structure shall be reviewed and a report provided to the Department of Human Services stating current condition and compliance with the requirements of these Guidelines.
- 11 .17.00 Projects involving alterations and/or additions to existing buildings shall be programmed and phased to minimise disruption of retained existing functions.

### Competence / Certification

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- 11 .18.00 The Department of Human Services has the authority to require an independent check of the structural design if deemed necessary. Design calculations and assumptions may be requested by the commissioned independent consultant to verify the structural adequacy, and shall be made available as required. Copies of calculations are acceptable provided they are legible.

### Site / Civil Works

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- 11 .19.00 Paved roads shall be provided within the boundaries of the site for access to all entrances, parking areas, service, delivery and maintenance points and emergency receiving points (if applicable).
- 11 .20.00 Paved pathways shall be provided for external pedestrian traffic within the site. Fortis shall include movement from bus stops to all accessible on-site locations. Where applicable, Council crossovers are recommended to be considered when designing site roadways, as their impact on public roadways will affect the neighbourhood by impacting local traffic patterns and road design.
- 11 .21.00 All side entry pits, lintels, kerbs, channels and grated drains shall be constructed of reinforced concrete. Road surfaces are recommended to be bitumen paved with appropriate base, sub-base and sub-grades, all formed to provide adequate storm water drainage. Aprons to the ambulance bay, the main entry and the loading docks are recommended to be constructed of reinforced concrete on the appropriate base, sub-base and sub-grades.
- 11 .22.00 Bulk oxygen vessel foundation slabs and truck loading aprons shall be constructed of concrete. Bitumen products shall not be used due to the risk of ignition if an oxygen leak occurs during filling.