

### Unit 3 9672 V6

**Title: Determine and describe construction methods for medium and large buildings**

**Level: 6 Credits: 25**

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#### Special notes

- 1 Assessment against this unit standard should be for examples of a medium and large building as described in the Phase 2 Consultation - Building Scenarios document or against a building benchmarked against the listed scenarios and agreed to by your assessor prior to assessment commencing.
- 2 Evidence should include sketching whenever possible.
- 3 It is expected that the candidate will demonstrate an understanding of the concept of buildability. buildability refers to ease of construction, availability of plant, equipment and materials, site access, construction sequence.
- 4 Assessment of this unit standard can be by simulation and/or observation.1 Assessment against this unit standard should be for examples of a small building as described in the Phase 2 Consultation - Small Building Scenarios or against a building benchmarked against the listed scenarios and agreed to by your assessor prior to assessment commencing.
- 5 All aspects of this unit standard have to comply with the Health and Safety in Employment Act 1992, the Resource Management Act 1991, the Building Act 1991, and their subsequent amendments.
- 6 Codes covered by this unit standard may include but are not limited to - New Zealand Building Code 1992; sections C2, C3, and C4.
- 7 Construction methods for medium and large buildings are similar and therefore previous distinctions between medium and large buildings is not required. Medium and large buildings can include domestic and commercial buildings that are not covered by the definition of small buildings. Small buildings are small scale, light weight buildings, generally of non-specific design, and of domestic scale with lightweight framing and/or concrete or concrete masonry construction.
- 8 Reference documents:  
New Zealand Building code and any subsequent amendments <http://www.dbh.govt.nz/building-code-compliance-documents>  
New Zealand Building Code Handbook <http://www.dbh.govt.nz/UserFiles/File/Publications/Building/Compliance-documents/handbook.pdf>  
Building officials' guide to the Building Act <http://www.dbh.govt.nz/UserFiles/Image/Publications/publications-covers/building/building-officials-guide.pdf>  
New Zealand Standard <http://www.standards.co.nz/default.htm>  
Select glass to meet the requirements of New Zealand Standard: 4223 Part 3.

Element 1		
Describe the site.		
Performance Criteria	Candidate	Assessor
1.1 Site is described in terms of legal title.	Describe a site/s:  <input type="checkbox"/> Identify at least 2 of the following: Tags, caveats, encumbrances, consent notices, certificates (Building Act RMA) easements, restrictions, covenants, town planning requirements and their effect on the site.  <input type="checkbox"/> Include topographical, physical features, site works and orientation of the site.  <input type="checkbox"/> Include physical features which may include but are not limited to - existing vegetation, water, structures, services, adjacent sites, geotechnical.  <input type="checkbox"/> Include site works are described as roading, site services, landscaping, and access.  <input type="checkbox"/> Reference and include copies of reports relating to the site.  Use sketches and/or photos as appropriate.	The description identifies at least 2 of the following: Tags, caveats, encumbrances, consent notices, certificates (Building Act RMA) easements, restrictions, covenants, town planning requirements and their effect on the site.  The description includes topographical, physical features, site works and orientation of the site.  The description includes physical features which may include but are not limited to - existing vegetation, water, structures, services, adjacent sites, geotechnical.  The description includes site works such as roading, site services, landscaping, and access.  The description should reference and include copies of reports relating to the site.  Sketches and/or photos should be used as appropriate.
1.2 Site is described in topographical and survey terms.		
1.3 Site is described in terms of physical features.  Range: may include but is not limited to - existing vegetation, water, structures, services, adjacent sites, geotechnical.		
1.4 Site is described in terms of Territorial Authority requirements.		
1.5 Siteworks are described in terms of roading, site services, landscaping, and access.		

**Element 2**

Determine and describe the foundations and sub-structure.

Range: specific, non-specific.

Comment [WUL1]: Delete

Performance Criteria	Candidate	Assessor
2.1 Description addresses geotechnical factors.	Determine and describe the foundations and sub-structure requirements for a building equivalent to scenario 3.	The description appropriately covers the following foundations and sub-structure requirements for a building equivalent to scenario 3
2.2 Description is in accord with building use and regulatory requirements.  Range:regulatory requirements - New Zealand Building Code 1992, designated legislation.	Description includes:  <input type="checkbox"/> The ability of the soil to resist vertical and horizontal loads imposed by the foundation and building design. <input type="checkbox"/> The characteristics of foundation materials. <input type="checkbox"/> Characteristics may include but are not limited to - general cost implications, durability, maintenance requirements, practicality for intended use, weathertightness.  <input type="checkbox"/> The description should reference and include copies of reports relating to the foundations or sub-structure. <input type="checkbox"/> Identify relevant sections and clauses of the building code.  Use sketches and/or photos as appropriate.	The ability of the soil to resist vertical and horizontal loads imposed by the foundation and building design.  The characteristics of foundation materials.  Characteristics may include but are not limited to - general cost implications, durability, maintenance requirements, practicality for intended use, weathertightness.
2.3 Materials required are in accord with building use and regulatory requirements.  Range:characteristics of materials may include but are not limited to - general cost implications, durability, maintenance requirements, practicality for intended use, weathertightness.		The description should reference and include copies of reports relating to the foundations or sub-structure.  Identify relevant sections and clauses of the building code
2.4 Determination of foundation system matches its requirements to resist vertical and horizontal loads.  Range:foundation system to include pre-consolidation.		Sketches and/or photos are used appropriately.

**Element 3**

Develop and describe the passive fire protection system.

Range: New Zealand Building Code 1992 Section C2, C3, and C4, selection of materials and systems.

**Comment [WUL2]:** Delete this element should consider alternative solutions not design.

Performance Criteria	Candidate	Assessor
<p>3.1 The passive fire protection system is developed and described in accordance with design brief.</p> <p>Range: passive fire protection characteristics include but are not limited to - general cost implications, durability, maintenance requirements, practicality for intended use, weathertightness.</p>	<p>Describe the passive fire protection system requirements and how they comply with the building code for a building equivalent to scenario 3 with an open floor plan.</p> <p>The description includes:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> general cost implications,</li> <li><input type="checkbox"/> durability,</li> <li><input type="checkbox"/> maintenance requirements</li> <li><input type="checkbox"/> practicality for intended use.</li> <li><input type="checkbox"/> provisions for later services, materials, cladding, and finishes.</li> <li><input type="checkbox"/> an alternative solution to an element of the passive fire protection system.</li> </ul>	<p>The description appropriately covers the passive fire protection system requirements and explains how they comply with the building code for a building equivalent to scenario 3 with an open floor plan.</p> <p>The description includes general cost implications, durability, maintenance requirements and practicality for intended use.</p> <p>The description includes provisions for later services, materials, cladding, and finishes.</p>
<p>3.2 The selection of passive fire protection and materials meets the requirements of the structure and the relevant codes of practice.</p> <p>Range: may include but is not limited to - fire rated partitions, fire doors, encased steel; codes - New Zealand Building Code 1992, Sections C2, C3, and C4.</p>	<p>Passive fire protection systems may include but are not limited to - fire rated partitions, fire doors, encased steel;</p> <p>New Zealand Building Code Sections include - C2, C3, and C4.</p> <p>Use sketches and/or photos as appropriate.</p>	<p>The description includes an alternative solution to an element of the passive fire protection system.</p> <p>Passive fire protection systems may include but are not limited to - fire rated partitions, fire doors, encased steel;</p> <p>New Zealand Building Code Sections include - C2, C3, and C4.</p>
<p>3.3 Description includes provision for later services, materials, cladding, and finishes.</p>		<p>Sketches and/or photos are used appropriately.</p>
<p>3.4 Construction process is explained in terms of site constraints, materials, and time and general cost implications.</p>		

<b>Element 4</b>		
Determine and describe the structure of a building of specific design.		
4.1	Description of structure is in accordance with design brief.	<p>Describe the design, site constraints, materials and construction process requirements for a building equivalent to scenario 3 with and open floor plan that will be fitted out at a later date</p> <p>The description includes allowances for and sequencing including constraints, time and general cost implications of:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> later services,</li> <li><input type="checkbox"/> materials,</li> <li><input type="checkbox"/> cladding,</li> <li><input type="checkbox"/> finishes.</li> </ul> <p>Construction process materials may include but are not limited to - timber, structural steel, precast concrete, concrete masonry blockwork, tilt slab, laminated timber, concrete floor slabs.</p> <p>Use sketches and/or photos as appropriate.</p>
4.2	Construction process is explained in terms of site constraints, materials, and time and general cost implication.	
	<p>Range: may include but is not limited to materials - timber, structural steel, precast concrete, concrete masonry blockwork, tilt slab, laminated timber, concrete floor slabs.</p>	
4.3	Description includes provision for later services, materials, cladding, and finishes.	<p>The description appropriately covers the design site constraints, materials and construction process requirements for a building equivalent to scenario 3 with and open floor plan that will be fitted out at a later date.</p> <p>The description includes allowances for and sequencing of later services, materials, cladding, and finishes including constraints, time and general cost implications.</p> <p>Construction process materials may include but are not limited to - timber, structural steel, precast concrete, concrete masonry blockwork, tilt slab, laminated timber, concrete floor slabs.</p> <p>Sketches and/or photos are used appropriately.</p>

Element 5		
Design and describe the envelope of a building.		
<p>5.1 Envelope is designed and described in accordance with the design brief.</p> <p>Range: characteristics include but are not limited to - general cost implications, durability, appearance, maintenance requirements, practicality for intended use, weathertightness.</p>	<p>Describe the design principles, characteristics, materials, construction methods and jointing systems for a building equivalent to scenario 2.</p> <p>The description then compares how the building envelope aligns to relevant code requirements and matches or exceeds those that apply.</p> <p>Include sketches and photos for each of the following situations covering at least four different cladding materials:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> One cladding to cladding jointing systems detail</li> <li><input type="checkbox"/> One window flashing detail.</li> <li><input type="checkbox"/> One construction/control joint</li> <li><input type="checkbox"/> One services penetration in an external wall</li> <li><input type="checkbox"/> One roof penetration detail</li> <li><input type="checkbox"/> One change in roof angle</li> <li><input type="checkbox"/> One balcony wall junction detail</li> <li><input type="checkbox"/> Parapet with internal gutter</li> </ul>	<p>The description appropriately covers the design principles, characteristics, materials, construction methods and jointing systems for a building equivalent to scenario 2.</p> <p>It goes on to compare how the building envelope aligns to relevant code requirements and matches or exceeds those that apply</p> <p>Sketches and photos are included for each of the following situations covering at least four different cladding materials from the following list: one cladding to cladding jointing systems detail, one window flashing detail, one construction/control joint, one services penetration in an external wall, one roof penetration detail, one change in roof angle, one balcony wall junction detail, parapet with internal gutter</p>
<p>5.2 Selection and design of wall and roof claddings and openings match the characteristics of the required structure.</p> <p>Range: at least four of the following materials - timber, rendering, metal, metal sheet, cellulose cement, masonry, concrete, glass, plastic.</p>	<p>Design principles of typical cladding jointing systems include sealants, flashings, compatibility and jointing between systems.</p> <p>Characteristics include but are not limited to - general cost implications, durability, appearance, maintenance requirements, practicality for intended use, weathertightness.</p>	<p>Design principles of typical cladding jointing systems are described including sealants, flashings, compatibility and jointing between systems.</p> <p>Characteristics include but are not limited to - general cost implications, durability, appearance, maintenance requirements, practicality for intended use, weathertightness.</p>
<p>5.3 Design is aligned to relevant codes, and matches or exceeds the requirements that apply to the approved solutions.</p>	<p>Materials include at least four of the following wall and roof claddings materials - timber, rendering, metal, metal sheet, cellulose cement, masonry, concrete, glass, plastic.</p>	<p>Materials include at least four of the following wall and roof claddings materials - timber, rendering, metal, metal sheet, cellulose cement, masonry, concrete, glass, plastic.</p>
<p>5.4 Description includes provision for later services, materials, and finishes.</p>	<p>Design principles of typical cladding jointing systems are described in terms of sealants, flashings, and compatibility and jointing between systems.</p>	<p>The description compares how the building envelope aligns to relevant code requirements and matches or exceeds those that apply.</p>
<p>5.5 Design principles of typical cladding jointing systems are described in terms of sealants, flashings, and compatibility and jointing between systems.</p>		

<b>Element 6</b>		
Determine and describe the methods used to construct the interior of a building.		
Range: lining, finishes, joinery, fitments.		
6.1	Selection of interior matches the characteristics of the required structure.	<p>For a building equivalent to scenario 3 describe the methods used to construct:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> framing,</li> <li><input type="checkbox"/> interior lining,</li> <li><input type="checkbox"/> finishes,</li> <li><input type="checkbox"/> joinery,</li> <li><input type="checkbox"/> glazing</li> <li><input type="checkbox"/> fitments.</li> </ul> <p>The description compares how the methods used to construct the interior of the building align to relevant code requirements and matches or exceeds those that apply.</p>
6.2	Description is aligned to relevant codes, and matches or exceeds the requirements that apply to the approved solutions.	
		<p>The description appropriately covers the the methods used to construct framing, interior lining, finishes, joinery, glazing and fitments for a building equivalent to scenario 3.</p> <p>The description compares how the methods used to construct the interior of the building align to relevant code requirements and matches or exceeds those that apply.</p> <p>The description of glass selection meets the requirements of New Zealand Standard: 4223 Part 3.</p>

**Integration of the Key Competencies within this unit standard.**

<p><b>1 Collecting, analysing and organising information</b></p> <p>The capacity to locate, sift and sort information in order to select what is required and to present it in a useful way, and evaluate both the information itself and the sources and methods used to collect it.</p>	<p>Candidates will need to source manufacturers information including product specifications and producer statements. Drawings may be copied from supplied documentation but a mix of copied drawings and sketched details is preferred. Drawings must always be supported by candidate descriptions.</p>
<p><b>6 Using mathematical ideas and techniques</b></p> <p>The capacity to use mathematical ideas, such as number and space, and techniques such as estimation and approximation, for practical purposes.</p>	<p>Values and simple calculations of bracing in one wall</p>