



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Exemplar for Internal Achievement Standard Technology Level 3

This exemplar supports assessment against:

Achievement Standard 91624

Demonstrate understanding of a structural system

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade boundaries.

New Zealand Qualifications Authority

To support internal assessment

	Grade: Excellence
	<p>For Excellence, the student needs to demonstrate comprehensive understanding of a structural system.</p> <p>This involves discussing and justifying possible ways of increasing the structural integrity of a structural system.</p> <p>There is no student work currently available at this grade.</p> <p>A student may, for example, investigate a timber framed house as the structural system.</p> <p>The student would discuss and justify any improvements needed on the house that they have studied, for example if it was to change location within NZ to a different wind and/or earthquake zone, or for a change of roof material type. This discussion should include how and why structural components need to change to conform to this new zone or roof type.</p> <p>The student could enhance their report with annotated photographs, diagrams, sketches, a slideshow, and/or video evidence.</p>

	Grade: Merit
	<p>For Merit, the student needs to demonstrate in-depth understanding of a structural system.</p> <p>This involves:</p> <ul style="list-style-type: none">• discussing how the structural members and materials work together to enable a structural system to achieve structural integrity• evaluating the structural integrity of a structural system. <p>There is no student work currently available at this grade.</p> <p>A student may, for example, investigate a timber framed house as the structural system.</p> <p>The student would evaluate the house that they have studied and comment on the integrity of the system as a whole, from the foundations upward. This could involve explanations of how different structural members work together to ensure that the house maintains structural integrity and meets the needs for a house located within the specified wind and/or earthquake zone, or for a change of roof material type.</p> <p>The student would typically use terms such as durability, fitness for purpose, strength, loading, shear planes, and should relate their comments to the particular wind and/or earthquake zone or roof type change it was designed for.</p> <p>The student could enhance their report with annotated photographs, diagrams, sketches, a slideshow, and/or video evidence.</p>

	Grade: Achieved
	<p>For Achieved, the student needs to demonstrate understanding of a structural system.</p> <p>This involves:</p> <ul style="list-style-type: none"> • explaining the structural members and materials that are used to achieve a structural system • explaining how a structural system has been designed to withstand known load requirements and dynamic loads using technical language, diagrams and symbols as appropriate • discussing the structural integrity of a structural system and how this impacts on the selection of structural members, and construction materials and techniques. <p>There is no student work currently available at this grade.</p> <p>A student may, for example, investigate a timber framed house as the structural system.</p> <p>The student would typically explain foundations, wall construction, roof construction, and the connection between the members to achieve a certified NZ timber-framed house (and hence a safe, dry, and long-lasting dwelling). The explanation would refer to materials used in these members such as concrete foundations, timber frames and timber trusses.</p> <p>The student may include diagrams to assist their explanations and use correct technical language such as studs, sheet bracing, and trusses.</p> <p>The student would typically explain the effect the zone in which the house is situated has on its structural system, such as, changes in terms of wind, topography, and earthquake.</p> <p>The student could illustrate and annotate the structural system and use symbols that comply with NZS/AS1100.301:1985.</p> <p>The student would typically discuss the way a timber-framed house is assembled, the materials used, and what structural members are used to ensure that the house complies with NZS3604, and hence address structural integrity.</p> <p>The student could enhance their report with annotated photographs, diagrams, sketches, a slideshow, and/or video evidence.</p>