

Competency level – commercial 2

COMPETENCY – COMMERCIAL 2	
Commercial, industrial, communal residential and communal non-residential buildings equal to or less than four storeys and an occupancy load of equal to or less than 500 people or purpose groups (SC) or (SD) single storey.	
Regulation 10(3)(a): ²⁴ Understanding the philosophies and principles of building design and construction.	
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. Comprehends and has satisfactory can apply knowledge of sections 3, 4 and 5 of the Building Act 2004. 2. Comprehends and has satisfactory knowledge of design and construction techniques and construction sequencing for this type of building work. 	<p>Guidance for assessors and candidates:</p> <ol style="list-style-type: none"> 1. Knowledge areas may include, but are not limited to: <ol style="list-style-type: none"> a. the purpose of the Building Act 2004 (the Act) b. TAs' functions, duties and powers under the Act, particularly as they relate to commercial, industrial and non-residential building work c. can discuss the hierarchy of New Zealand building legislation and the various compliance paths provided for under the Act d. can discuss building design, construction techniques and sequencing of building work as its relates to this competency level. <p>Note this information is covered in Sections 2.1, 2.2, 2.3, 3.0, 3.1, 3.2, 3.3, 3.5, 3.6 and 3.7 of the Preface to the Building Code Handbook.²⁵</p>
Regulation 10(3)(b): Understanding and knowledge of building products and methods.	
<p>Performance indicators:</p> <ol style="list-style-type: none"> 3. Comprehends and has satisfactory knowledge of proprietary systems and building products for this type of building work. 4. Demonstrates the ability to research, analyse and assess building methods and products associated with this type of building work. 	<p>Guidance for assessors and candidates:</p> <ol style="list-style-type: none"> 2. Knowledge areas may include, but are not limited to: <ol style="list-style-type: none"> a. commonly used building materials and systems (eg pre-nailed truss and frames, conventional and unconventional commercial cladding and flashing systems) b. product literature, testing and Verification Methods, appraisals and producer statements c. portal frame, pre-stressed and pre-cast concrete, tilt-slab, common bracing, fire rating, and sound rating systems.
Regulation 10(3)(c): Knowledge and skill in applying the Act, the Building Code, and any other applicable regulations under the Act.	
<p>Performance indicators:</p> <ol style="list-style-type: none"> 5. Comprehends and can apply knowledge of the application of the Act. 6. Comprehends and can apply knowledge of the roles and responsibilities of a BCA and TA. 7. Comprehends and can apply knowledge of the linkage and interface between the Resource Management Act 1991 and the Building Act 2004. 	<p>Guidance for assessors and candidates:</p> <ol style="list-style-type: none"> 3. Demonstrates knowledge and skill in applying: <ol style="list-style-type: none"> a. the building control framework²⁶ b. the Building Act 2004 c. purpose d. principles e. application f. the New Zealand Building Code g. compliance paths h. producer statements i. the Department of Building and Housing j. territorial authorities k. building consent authorities l. project information memoranda m. building consents

²⁴Building (Accreditation of Building Consent Authorities) Regulations 2006.

²⁵A Compliance Document prepared by the Department of Building and Housing. Available at: <http://www.dbh.govt.nz/UserFiles/File/Publications/Building/Compliance-documents/building-code-handbook.pdf>

²⁶Guidance on items a.-r is provided in the Building Code Handbook.

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- n. code compliance certificates
- o. certificate of acceptance
- p. compliance schedules
- q. building warrant of fitness
- r. certificates for public use
- s. can define the term 'natural hazard' and can describe the requirements for granting or refusing to grant building consents on land that is subject to a natural hazard
- t. can describe the legislative process for building over two or more allotments (eg, 75(1)(b) and section 76 of the Act)
- u. can assess alterations to existing buildings in accordance with section 112 of the Act
- v. has a working knowledge of waivers and modifications and provide an overview of how a TA grants a waiver or modification of the Building Code
- w. can explain how the classified uses and the change the use provisions are used in the legislation
- x. can explain and interpret building legislation and demonstrates thorough understanding of sections 7–9 of the Act and Clause A2 Interpretation of the New Zealand Building Code
- y. can discuss access and facilities for people with disabilities requirements of the Building Code and the limits on the application of the Building Code for industrial and commercial buildings. Has an excellent working knowledge of NZS 4211
- z. demonstrates a clear knowledge of the provision for access and facilities for people with disabilities in accordance with sections 117–120 and Schedule 2 of the Act
- aa. has knowledge of the HSNO Act and the processes for compliance with F3, F3/VM1, F3/AS1 and G14/VM1
- bb. demonstrates knowledge of the Fire Service Act 1975, sections 21A–21I, and the Fire Safety and Evacuation of Buildings Regulations 2006
- cc. can apply DRU requirements in accordance with the *Gazette* notice in section 26 of the Act
- dd. can apply knowledge of specified systems and compliance schedule requirements in accordance with sections 100–111 of the Building Act 2004
- ee. has higher level of understanding with regard to compliance schedule and specified systems technical considerations (as is discussed in the Compliance Schedule Handbook)
- ff. understands owner's requirements in relation to building warrants of fitness in accordance with sections 108–111 of the Act
- gg. can demonstrate knowledge of change of use requirements in accordance with sections 114–15 of the Act and the Building (Specified systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005
- hh. understands requirements to issue a notice to fix in accordance with sections 163–168 of the Act and the BCA's policies and procedures (within their authority)
- ii. can demonstrate an understanding of the determinations process in accordance with sections 176–190 of the Act
- jj. can demonstrate an understanding of certificates for public use and where they are required in accordance with sections 362A–363C of the Act
- kk. if inspecting, understands the Minor Variations Regulations and understands the process for formal amendments to building consents
- ll. the provision for inspections by a BCA as described in section 90 of the Act
- mm. if inspecting, the provisions on inspecting and requirements for entering land in accordance with sections 222–228 of the Act.

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Regulation 10(3)(d)(i):
Ability to process applications for building consent.

Performance indicators:

8. Process building consent applications (plans and specifications) to establish compliance with the New Zealand Building Code for this type of building work (building related processing only).

Guidance for assessors and candidates:

4. Knowledge areas may include, but are not limited to:
- a. NZS²⁷ 3604, NZS 3602, NZS 3640, NZS 4229 and AS/NZS 1170 as they relate to four storey commercial construction. Understands how to determine compliance requirements for corrosion zones, ground bearing, piles, footings, foundations, reinforcing, concrete strength, fill and compaction, bracing demand and design, subfloor framing, wall framing, roof structures, timber treatment, load paths, fixings and connections, underlay and wraps, cladding systems, internal linings and durability
 - b. B1, B1/VM1 – excellent understanding of how this Verification Method and referenced Standards are used for structural design B1/VM4 – as it relates to foundation design, B1/AS1 – as it relates to the Standards and items raised in item 4.a above
 - c. B2, B2/VM1 and B2/AS1 as they relate to this type of building work (eg, 5, 15 and 50 year durability requirement of nominated building elements)
 - d. can assess building 'importance levels' in relation to different building types and the relevant risk analysis of these buildings as identified in AS/NZS 1170
 - e. can identify issues relating to the Acceptable Solution for fire compliance for this type of building work by identifying the design sequence referred to in C/AS1 Part 1
 - f. can apply commonly used fire rating systems for walls built in close proximity to boundaries and separating residential household units and other tenancies achieving compliance with clauses C2 and C3; and C/AS1
 - g. C4 and C/AS1 as they apply to structural elements for building work within the scope of this competency level
 - h. can recognise and understands the implications of fire designs that do not use the Acceptable Solution as a means of compliance with the Building Code
 - i. can assess accessibility to enable safe and easy movement of people as required by D1, D1/VM1 – slip resistance for walking surfaces and D1/AS1 (eg, steps, handrails, non-slip provisions, and understands safe stair construction and the definitions of private and secondary private stairs. Has thorough understanding of NZS 4121 (code of practice for design for access and use of buildings by persons with disabilities)
 - j. can assess mechanical installations for D2, D2/AS1, D2/AS2 and D2/AS3 NZS 4332, EN81 Part 1 and 2, EN115 (passenger lifts, escalators and moving walks)
 - k. can apply weathertightness principles and knowledge to assess compliance with E2 External Moisture. Understands the principles of specific design, E2/VM1; and has a higher level of understanding with regard to complex junctions, flashing detailing, wind action and loading on buildings, sound technical knowledge of structural cladding and cavity systems and rain screens. Is able to assess specifically designed cladding systems, curtain walls and building facades
 - l. internal moisture management within buildings as required by E3 and E3/AS1 (eg, understands ventilation, temperature, thermal resistance, condensation, impervious surfaces for floor and wall linings)
 - m. hazardous agents or contaminants on site as required by F1, F1/VM1 and F1/AS1 and knows how to read a PIM and check hazard files in the absence of a PIM
 - n. F2 and F2/AS1 using NZS 4223: Part 3, and is able to assess the compliance of glazed barriers and identify the required locations for safety glass, manifestation of glass etc for commercial buildings. Understands and is able to assess the health and safety requirements for asbestos and other hazardous building materials
 - o. F3, F3/VM1 (interface with HSNO Act and storage of hazardous substances in buildings) and F3/AS1 (depot construction, buildings component-doors, windows venting of gas storage etc) and understands the interface between G4 (as specified systems) and F8 requirements for safeguarding persons from falling as required by F4 and F4/AS1 (barrier construction, barrier height and the correlation between B1, B2 and F4, SED Barriers including B2 implications for structural fixings and other elements)
 - q. site safety requirements can determine site hazards and understands compliance requirements for managing these in accordance with F5 and F5/AS1. Understands the interface between B1 and F5 for safe gantry construction as they relate to medium and large scale building projects
 - r. F6, F6/VM1 (acceptable luminance in buildings) and F6/AS1 (lighting for emergencies) and understands the interface with F8 (as specified systems)
 - s. F7 and F7/AS1 and has a higher level understanding of NZS 4512 (fire alarm systems in buildings) and NZS 4541 (automatic fire sprinkler systems)

²⁷All references to Standards are to the current cited version of the quoted Standard (eg, NZS 3604:1999).

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<p>Performance indicators required for plumbing and drainage compliance:</p> <p>9. Process building consent applications (plans and specifications) to establish compliance with the New Zealand Building Code for this type of building work (plumbing and drainage related processing only).</p>	<ul style="list-style-type: none"> t. F8 and F8/AS1 (luminance, sign layout, size, proportions, colours, wording etc) and understands the interface with F6 (as specified systems) u. G1 and G1/AS1 for location, sizing and number of sanitary fixtures v. can assess compliance with G2 and G2/AS1 for spatial laundering requirements w. spatial, hygiene, storage and preparation requirements for cooking and G3 and G3/AS1 (eg, impervious surfaces, food storage, spatial, hygiene, storage and preparation requirements for cooking and refrigeration) x. natural and mechanical ventilation requirements for commercial buildings as required by G4, G4/VM1 and G4/AS1. Can assess compliance pathways for mechanical installations for access for this type of building work (eg, producer statements, peer review in accordance with the BCA's policies and procedures) y. G5 and G5/AS1 requirements for accessibility heating, listening systems and temperature control for certain building types z. can define STC and IIC and assess commonly used and alternative solutions to determine compliance with G6, G6/VM1 and G6/AS1 Airborne and Impact Sound between occupancies. Exhibits an excellent understanding of the interface between C3 and G6, particularly in relation to penetrations to fire and sound rated areas aa. can assess natural light and visual awareness as required by G7, G7/VM1 and G7/AS1 bb. requirements for providing artificial lighting to enable safe movement as required by G8 and G8/AS1 (eg, access routes and minimum lux levels) cc. requirements for certifying compliance with electricity provisions as required by G9, G9/AS1 and sections 19 and 94(3) of the Act dd. requirements for certifying compliance with gas as an energy source as required by G11, G11/AS1 and sections 19 and 94(3) of the Act ee. understands the requirements for storage, access and temperature control of solid waste for this type of building work in accordance with G15 and G15/AS1 Solid Waste ff. requirements for assessing energy efficiency as required by H1, H1/AS1 and H1/VM1. Good working knowledge of NZS 4243 and modelling method used to achieve compliance gg. can identify inspection requirements necessary to confirm compliance for this level of building work hh. can compile accurate compliance schedule information that meets the requirements of section 103 of the Act ii. has a strong comprehension of their individual limitations and the wider BCA's internal technical capability. Is able to identify when external technical assistance is required for complex alternative solution assessment and can outsource work for technical review when required jj. can assess, engage, and manage the requirement to obtain expert opinion, advice, peer review and who should provide this for this type of construction. Understands the requirement for third-party verification, observation of building elements by experts such as chartered professional engineers and accredited inspection bodies etc kk. can mentor and/or provide technical oversight to others assessing Building Code compliance for commercial (competency) 1 type building work. <p>Guidance for assessors and candidates:</p> <p>5. Knowledge areas may include, but are not limited to:</p> <ul style="list-style-type: none"> a. requirements for protecting people and other property from adverse effects of surface water as required by E1, E1/VM1 and E1/AS1 – (minimum floor heights, design, construction and conveyance of storm water catchments) b. laundering and spatial requirements to satisfy G2 and G2/AS1 c. understands requirements for protecting people from extreme temperatures or hazardous substances associated with building services in accordance with G10, G10/VM1 and G10/AS1 Piped Services or provides a compliance pathway to determine compliance (eg, producer statement, peer review in accordance with the BCA's policies and procedures) d. understands requirements for specification and installation of commercial water supplies as required by G12, G12/VM1 and G12/AS1 for this type of construction (identifying non-potable water pipes and outlets, temperature requirements, cross connection hazards and backflow prevention devices) e. requirements for provision of sanitary fixtures and appliances and for conveying foul water to drainage systems as required by G13, G13/AS1, G13/AS2, G13/VM1 and AS/NZS 3500 Part 2 as they relate to commercial construction (system design principles – avoid odour, design loading, falls, venting, materials, connections, access and maintenance, and imposed loads)
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- f. can explain and competently demonstrate inspection procedures for stack systems. Understands requirements for provision of grease traps in accordance with G13/AS2
- g. collection, storage, treatment and disposal of industrial liquid waste in accordance with G14, G14/VM1 and G14/AS1. Understands the treatment and disposal methods illustrated in figure 1 of G14/VM1
- h. identification of inspection requirements necessary to confirm compliance for this level of building work
- i. can identify fire walls and determine a compliance path for plumbing and drainage piping penetrating these walls
- j. can identify inspection requirements necessary to confirm compliance for this level of plumbing and drainage work
- k. can assess, engage, and manage the requirement to obtain expert opinion, advice and peer-review for specifically designed building elements for this level
- l. can mentor and/or provide technical oversight to others assessing Building Code compliance for commercial (competency) 1 type buildings

**Regulation 10(3)(d)(ii):
Ability to inspect building work.**

Performance indicators:

10. Inspect building work relating to foundation type inspections to establish whether compliance with the New Zealand Building Code (building only) has been achieved for commercial 2 buildings.

11. Inspect building work relating to preline type inspections to establish whether compliance with the New Zealand Building Code (building only) has been achieved for commercial 2 buildings.

Guidance for assessors and candidates:

6. Knowledge areas for inspections may include, but are not limited to:
- a. demonstrated ability to read and interpret plans and specifications
 - b. use of technical equipment (eg, moisture meters, cameras, thermometers etc) and administrative resources (checklists, copies of technical information eg, NZS 3604) to establish compliance.
 - c. NZS²⁸ 3604, NZS 3602, NZS 3640, NZS 3622, NZS 4229 and the Compliance Documents as they relate to residential construction; and in particular:

Foundations

- requirements for corrosion zones – concrete strength requirements (different zones and different foundation types), fixing materials
- ground bearing – determination methods, fill and compaction requirements
- pile foundations – types (including bracing types), sizes and dimensions (ground clearance, max heights, foundation depths etc), siting, fixings for different pile types, treatment and identification, how bracing is calculated for subfloors, point load piles
- concrete foundations (includes concrete masonry) – reinforcing (laps and size), reinforcing type (identification of deformed and round, high tensile or normal, mesh and mesh support), pipe penetrations, point load pads, bond beams, wash outs 'A', 'B' and 'C' grade masonry
- concrete slabs – reinforcing (laps, size, supplementary reinforcing requirements, cover), control joint and slab size limitations, pipe penetrations, thickness and thickenings of slab, DPM
- certificate requirements including producer statements, geotechnical reports, compaction certificates, concrete dockets.

Preline

- timber mid floor systems
- framing and truss requirements size span and spacing, timber grade and treatment, load paths, moisture content, fixings and connections, truss design and layout information, penetrations, bracing systems, including diaphragm ceilings and fixings
- cladding requirements – underlays/wraps, wind barriers and rigid air barriers, fixings, penetrations and flashings, complex junctions, sill tapes, air seals, cavity systems, direct fix systems, penetrations, brick veneer requirements, mixed cladding systems, compartmentalisation of cavity systems over two stories
- membrane roof and deck requirements including substrates, penetrations, fall and overflows
- access and facilities for people with disabilities including fixing requirements (handrails), sizes, dimensions and lengths and accessibility including gradients
- sound and fire rated walls and building components – installation requirements, including isolation, insulation, penetrations, fixings
- fire treatments (eg, intumescent coatings and seals)
- insulation installation – type, rating, installation requirements (refer to NZS 4246 Energy Efficiency – Installing Insulation in Residential Dwellings).

²⁸All references to Standards are to the current cited version of the quoted Standard (eg, NZS 3604:1999).

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12. Inspect building work relating to final type inspections to establish whether compliance with the New Zealand Building Code (building only) has been achieved for commercial 2 buildings.

Performance indicators required for plumbing and drainage compliance:

13. Process building consent applications (plans and specifications) to establish compliance with the New Zealand Building Code for this type of building work (plumbing and drainage related processing only).

14. Inspect building work to establish if compliance with the New Zealand Building Code (plumbing and drainage related inspections only).

Final

- access to building – steps (and isolated steps), stairs, ladders and ramps – installation, tread, riser, handrails, non-slip provisions, accessible car parks and avoidance of conflict with vehicles and associated signage
 - lift and escalator installation certification requirements and associated signage
 - accessible requirements including locations and dimensions of fixture, fittings and counters and spatial requirements of areas
 - internal linings and surfaces, including impervious surface requirements, waterproof membranes, water splash areas
 - smoke detectors placement and location
 - ventilation – mechanical and natural
 - fire rated walls and other building components
 - assessment of airborne sound (STC)
 - glazing requirements, safety glass identification, locations
 - finished ground level and ground clearances to claddings and floor levels
 - knowledge and identification of specified systems including identification of installation, commissioning and certification requirements for specified systems
 - third party verification (eg, producer statements, energy work certificates)
- d. can follow manufacturer requirements for installation of freestanding and in-built solid fuel heating appliances, requirements for: appliance clearances, hearth, insulation barrier, shielding, restraints, flue heights, flashings, finishes and furnishings, ventilation and associated prescribed electrical work (if applicable)
- e. identification and management of risk from hazardous agents or contaminants on site
- f. can identify when external technical assistance is required and can outsource work for technical review when required.

Guidance for assessors and candidates:

7. A good working knowledge of AS/NZS 3500, G12/AS1 and AS2, G13/AS1 and AS2, E1/AS1, E2/AS1 (pipe penetrations, deck drainage etc), E3/AS1, G1/AS1, H1/AS1 as they relate to residential construction; and in particular:

Foundations

- pipe material, gradients, size, bedding, backfill, protection, insulation, access points, jointing and sleeving, testing, supports, changes of direction, conveyance to approved outfalls, bridging
- HW relief drain and discharge outlet, drain access points, amendments to plans and specifications.

Preline

- pipe materials, thermal movement, sizing, compatibility, insulation, testing, penetrations through envelope, roof flashings, soil stacks (graded), elevated drainage principles, waste pipes, venting systems
- hot water/cold water expansion relief drain discharge outfall point
- hot water supply:
 - mains, low pressure, wetback, solar
 - tank supply – structural support/safe tray/overflow/seismic restraint
 - solar – structural support – penetrations
 - wetback – open venting of HWC exhaust
 - network utility cold water supply connections
 - floorwaste
- Drainage
 - maintenance of water trap seals – floor waste gullies/gully traps, sewer surcharge gully
 - venting (open or air admittance valves)
 - pipe inspection points, protection including pipe trench and foundations, materials, jointing, bedding, outfall, testing
 - septic tank/sewer (NUO)/other/soakage system SW
 - grease traps and separators

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	<p>Final</p> <ul style="list-style-type: none"> • HWC seismic restraint, hot and cold water – valves, tempering device, cold water expansion relief, tundish, safe tray, • HWC water supply temperature checks (personal hygiene, legionella) • wetback/HWC height above wood burner, flow and return pipe insulation, exhaust vent – pipe penetration flashing • solar relief valve discharge position – structural support – position – pipe insulation, installation same as building consent – penetrations flashed • test sanitary fixtures trap seal retention • equipotential bonding • gully dish/grating height, waste pipe connections to gully riser or gully dish, surface water ingress • pipe penetrations watertight • main drain vent • drainage as-built plan – amendments to plans/specifications • swimming pool backflow prevention • can identify fire walls and determine a compliance path for plumbing and drainage piping penetrating walls.
<p>Regulation 10(3)(d)(iii): Ability to certify building work.</p>	
<p>Performance indicators:</p> <p>15. Can issue certification (building consent or code compliance certificate) for this commercial 2 building work.</p>	<p>Guidance for assessors and candidates:</p> <p>8. Knowledge areas may include, but are not limited to:</p> <ul style="list-style-type: none"> a. candidate can compile and review information received during the processing of a building consent or information received during the inspections/construction process and determine and record the outcome to issue, suspend, request further information and/or refuse to issue a building consent or code compliance certificate (within their authority) for commercial 2 building work.
<p>Regulation 10(3)(e): Ability to communicate with internal and external people.</p>	
<p>Performance indicators:</p> <p>16. Communicates with internal and external customers.</p> <p>17. Can use phone, email, internet and fax.</p> <p>18. Demonstrates good active listening, questioning and assertiveness skills in dealing with day-to-day tasks and responsibilities.</p>	<p>Guidance for assessors and candidates:</p> <p>9. Knowledge areas may include, but are not limited to:</p> <ul style="list-style-type: none"> a. correctly prepares letters, memos and reports for senior staff b. appears confident and has a good understanding of building related subject matter when dealing with customers and colleagues c. communicates effectively with other team members, consent applicants and other members of the public d. accurately input written/electronic data on internal forms, checklists, field inspection records etc; and completes prescribed forms in accordance with the Building Forms Regulations 2004 e. has the ability to administratively manage large amounts of information and resolve problems through clear and open lines of communication f. has the ability and necessary skill to communicate at a high level with building sector professionals and other technical areas within the BCA and TA g. can accurately interpret building consent correspondence and is able to compile accurate, clear and readable written responses such as requests for further information or notices to fix etc h. can clearly articulate findings and provide feedback to fellow staff members, the public and building sector professionals i. presents a convincing and rational argument in support of decisions made.
<p>Regulation 10(3)(f): Ability to comply with the building consent authority’s policies, procedures and systems</p>	
<p>Performance indicators:</p> <p>19. Observes the building consent authority’s policies, procedures and systems for this type of building work.</p>	<p>Guidance for assessors and candidates:</p> <p>10. Knowledge areas may include, but are not limited to:</p> <ul style="list-style-type: none"> a. accurately and carefully follows established procedures for completing work tasks.