

Competency level – commercial 3

| COMPETENCY – COMMERCIAL 3 | |
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| All uses of buildings that are over four storeys high, or contain over 500 occupants or purpose groups (SC) or (SD) greater than a single storey. | |
| Regulation 10(3)(a): ²⁹ 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 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 it 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.³⁰</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 and truss frames, laminated structures, 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 d. assessment of complex design methods including unconventional engineered solutions. |
| 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 framework³¹ 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 |

²⁹Building (Accreditation of Building Consent Authorities) Regulations 2006.

³⁰A 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>

³¹Guidance on items a.-r is provided in the Building Code Handbook.

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- m. building consents
- 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, sections 75(1)(b) and 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 in buildings 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 owners' 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 114–115 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. NZS³² 3604, NZS 3602, NZS 3640, NZS 4229 and AS/NZS 1170 as they relate to four storey (and over) 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, rigid air barriers, 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 4a 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 is 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 parts 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). Can 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 can assess the compliance of glazed barriers and identify the required locations for safety glass, manifestation of glass etc for commercial buildings. Understands and can 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
 - p. understands requirements for safeguarding people 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. 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
 - 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).
 - t. F8 and F8/AS1 (luminance, sign layout, size, proportions, colours, wording etc) and understands the interface with F6 (as specified systems)

³²All references to Standards are to the current cited version of the quoted Standard (eg, NZS 3604:1999).

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| | <ul style="list-style-type: none"> u. can assess compliance with G2 and G2/AS1 for spatial laundering requirements v. 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) w. natural and mechanical ventilation requirements for domestic 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) x. G5 and G5/AS1 requirements for accessibility heating, listening systems and temperature control for certain building types y. 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; and exhibits an excellent understanding of the interface between C3 and G6, particularly in relation to penetrations to fire and sound rated areas z. can assess natural light and visual awareness as required by G7, G7/VM1 and G7/AS1 aa. requirements for providing artificial lighting to enable safe movement as required by G8 and G8/AS1 bb. requirements for certifying compliance with electricity provisions as required by G9, G9/AS1 and sections 19 and 94(3) of the Act cc. 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 dd. understands the requirements to store solid waste for this type of building work in accordance with G15 Solid Waste ee. 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 ff. can identify inspection requirements necessary to confirm compliance for this level of building work gg. can compile accurate compliance schedule information that meets the requirements of section 103 of the Act hh. 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 a complex alternative solution assessment and can outsource work for technical review when required ii. 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 jj. can mentor and/or provide technical oversight to others assessing Building Code compliance for commercial (competency) 1 and 2 type building work. |
| <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> | <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 and E1/AS1 (minimum floor heights, design, construction and conveyance of storm water catchment) b. laundering and spatial requirements to satisfy G2 and G2/AS1 c. can assess compliance with G1 and G1/AS1 for location, sizing and number of sanitary fixtures d. 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) e. 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 protection devices) f. 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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- 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. can explain and competently demonstrate inspection procedures for stack systems. Understands requirements for provision of grease traps in accordance with G13/AS2
- i. identification of inspection requirements necessary to confirm compliance for this level of building work
- j. can explain inspection procedures for each inspection type covered in this competency
- k. can identify fire walls and determine a compliance path for plumbing and drainage piping penetrating these walls
- l. can identify inspection requirements necessary to confirm compliance for this level of plumbing and drainage work
- m. can explain competently demonstrate inspection procedures for each plumbing and drainage inspection type
- n. can assess, engage, and manage the requirement to obtain expert opinion, advice and peer review for specifically designed building elements for this level of building work
- o. can mentor and/or provide technical oversight to others assessing Building Code compliance for commercial (competency) 1 and 2 type building work.

**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 3 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 3 buildings.

Guidance for assessors and candidates:

6. Knowledge areas for inspections may include, but are not limited to:

- a. can read and interpret complex plans and specifications
- b. the use of Standards used in the design of commercial buildings such as AS/NZS 1170 and the Compliance Documents as they relate to commercial/industrial 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 and geotechnical requirements
- common foundation systems including raft, driven piles, bored piles shear walling, pointloads, load paths, reinforcing (laps and size), reinforcing type (identification of deformed and round, high tensile or normal, mesh and mesh support), pipe penetrations, bond beams, wash outs, tanking requirements, seismic design considerations
- 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 (PS4 Inspection requirements), geotechnical reports, compaction certificates, concrete docketts.

Preline

- timber and concrete 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 and fixings including fixing of panels
- access and facilities for people with disabilities including fixing requirements (handrails), sizes, dimensions and lengths and accessibility including gradients
- impervious surfaces, membrane areas, accidental overflow, wall and floor surfaces
- ventilation ducting, penetrations, fire dampers
- cladding requirements – underlays/wraps, wind barriers and rigid air barriers, fixings, penetrations and flashings, junctions, sill tapes, air seals etc, cavity systems, curtain walls, structural and fire rated cladding systems, rain screens, penetrations, masonry block work
- membrane roof and deck requirements including substrates, penetrations, fall, overflow
- sound and fire rated walls and building components – installation requirements including isolation, insulation, penetrations, fixings
- insulation installation – type, rating, thermal and fire resistance, thermal bridging, installation requirements
- fire treatments (eg, intumescent coatings and seals)
- certification requirements including producer statements, PS4 inspection requirements, commissioning certificates, concrete docketts and other third party verifications.

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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 3 buildings.

Final

- **Fire safety:**

- surface finishes, smoke development and spread of flame requirements
- means of escape – travel distances escape routes, final exits, visibility, signage
- fire and smoke separations and penetrations, collars, sealants, dampers, doors and door hardware

- **Access to and within the building:**

- steps (and isolated steps), stairs, ladders and ramps – installation – tread, riser, handrails, non-slip provisions,
- lifts and escalators – accessibility, commissioning requirements
- accessible car parks and avoidance of conflict with vehicles
- signage

- **Moisture:**

- finished ground level and ground clearances to claddings (if applicable) and floor levels
- awareness of completion requirements for cladding systems (eg, protective coating systems)
- flashing of penetrations (roof and cladding systems)
- internal linings and surfaces including, impervious surface requirements, waterproof membranes, water splash areas
- accidental overflow requirements to protect other property

- **Safety of users:**

- identification and management of risk from hazardous agents or contaminants on site
- glazing requirements, safety glass identification, locations and manifestation requirements,
- safety from falling – barriers, change of levels, roof access, barrier construction, compatibility of barriers with intended uses of areas, window restrictors

- **Services and facilities:**

- accessible requirements including locations and dimensions of fixtures, fittings and counters and spatial requirements of areas
- internal linings and surfaces including, impervious surface requirements, waterproof membranes, water splash areas that relate to kitchens, laundries, bathrooms (or other spaces where sanitary fixture are located) and solid waste disposal areas
- ventilation – mechanical and natural for odours, gasses or moisture
- assessment of airborne sound (IIC and STC)
- assessment of lighting in access routes and common spaces
- knowledge of use of energy work certificates to demonstrate compliance with G9 Electricity and G11 Gas as an Energy Source
- knowledge of certification requirements for piped services G10

- **Specified systems:**

- knowledge and identification of specified systems
- identification of installation, commissioning and certification requirements for specified systems
- interconnectivity of specified systems such as requirement for activation of automatic doors on activation of an alarm

c. can identify when external technical assistance is required and can outsource work for technical review when required.

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| <p>Performance indicators required for plumbing and drainage compliance:</p> <p>13. Inspect building work to establish whether compliance with the New Zealand Building Code (plumbing and drainage related inspections only) has been achieved for commercial 3 buildings.</p> | <p>Guidance for assessors and candidates:</p> <p>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 commercial construction; and in particular:</p> <p>Foundations</p> <ul style="list-style-type: none"> • 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. <p>Preline</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – mains, low pressure, wet back, solar – tank supply – structural support/safe tray/overflow/seismic restraint – solar and its structural support and penetrations – network utility cold water supply connections, backflow prevention systems – floor waste requirements <p>Drainage</p> <ul style="list-style-type: none"> • 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 • on site disposal systems/sewer (NUO)/soakage system stormwater • rainwater tank supply (potable)/overflow within consented property/pump/gravity (air locks) <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) • solar relief valve discharge position and its structural support, position, pipe insulation, and penetrations requirements • 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 • backflow prevention requirements and testing • can identify fire walls and determine a compliance path for plumbing and drainage piping penetrating these walls. |
| <p>Regulation 10(3)(d)(iii): Ability to certify building work.</p> | |
| <p>Performance indicators:</p> <p>14. Can issue certification (building consent or code compliance certificate) for this commercial 3 building work.</p> | <p>Guidance for assessors and candidates:</p> <p>8. Knowledge areas may include, but are not limited to:</p> <p>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 3 building work.</p> |

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Regulation 10(3)(e):
Ability to communicate with internal and external people.

Performance indicators:

- 15. Communicates with internal and external customers.
- 16. Can use phone, email, internet and fax.
- 17. Demonstrates good active listening, questioning and assertiveness skills in dealing with day-to-day tasks and responsibilities.

Guidance for assessors and candidates:

- 9. Knowledge areas may include, but are not limited to:
 - a. correctly prepares sophisticated letters, memos and reports and checks the work of others
 - b. is 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 including peer review reports and other supporting evidence and is able to compile accurate, clear and readable written responses such as requests for further information or notices to fix etc
 - h. is able to 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.

Regulation 10(3)(f):
Ability to comply with the building consent authority's policies, procedures and systems.

Performance indicators:

- 18. Observes the building consent authority's policies, procedures and systems for this type of building work.

Guidance for assessors and candidates:

- 10. Knowledge areas may include, but are not limited to:
 - a. accurately and carefully follows established procedures for completing work tasks.