

Specification Writing

Selecting and specifying the most appropriate materials and systems for a project to meet regulations, and the client's requirements and expectations of quality, time, value, environmental impact, durability and maintenance is a fundamental part of building design.

This paper highlights the importance of specifications, specification methods and the structure of technical information. It provides advice on using the AUS-SPEC and NATSPEC systems, specifying ESD and suggests standards for use by offices of different disciplines.

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NATSPEC

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1 THE IMPORTANCE OF THE SPECIFICATION

There are many design decisions which cannot be expressed in drawn form. These must rely on being expressed in words. There are, also, many design decisions which would be too tedious, or too impractical for some other reason, to be recorded in drawings. The specification is thus created to complement the drawings so that together they convey all the design decisions. This is why a construction specification is primarily a design document. It is evidence of many design decisions which are not found elsewhere.¹

1.1 Definition

John Gelder, a former Chief Editor of NATSPEC, defined the specification as both a process and a product. Specifications are written descriptions of the required quality of the built product and its component products. A specification may also include the procedures for determining that the requirements of the specification have been met.

1.2 Purpose

The specification links the drawings with the general conditions of contract. It complements, without duplication, the information in the drawings or the general conditions of contract. Drawings are graphic descriptions which primarily define quantity, position and sometimes quality. Specifications are written descriptions which define quality. Together they express the designer's intentions.

The specification has many roles including:

- A document demonstrating compliance with statutory requirements.
- A written record of design decisions, materials used and set standards.
- An estimating document.
- A tendering document.
- A legal, contractual document.
- An on-site working document.
- A dispute settlement document.
- A project management tool.
- A facilities management tool.
- A document to be analysed for feedback into the office master specification and office procedures.

1.3 Users

Designers, clients, certifying authorities, estimators, tenderers, contractors and subcontractors, contract administrators, legal representatives, project managers, construction managers and facilities managers all have an interest in the specification. It is important to ensure the various users interpret the specification in the same way. A good specification will:

- Answer the questions posed by the client, the National Construction Code (NCC) and local requirements.
- Cover the total range of the project elements.
- Have a logical structure which is easy to navigate.
- Cite other documents precisely and meaningfully.
- Have a consistent approach to grammar and language.
- Be unambiguous.
- Complement the drawings and be consistent with the other documents and the method of procurement.

National Construction Code (NCC) Abbreviations

NCC: National Construction Code.

BCA: National Construction Code Series Volume One: Building Code of Australia Class 2 to Class 9 Buildings and Volume Two: Building Code of Australia Class 1 and Class 10 Buildings.

PCA: National Construction Code Series Volume Three: Plumbing Code of Australia.

NATSPEC cites *Deemed-to-Satisfy* standards and clauses from:

BCA Volume One

- A General provisions
- B Structure
- C Fire resistance
- D Access and egress
- E Services and equipment
- F Health and amenity
- G Ancillary provisions
- H Special use buildings
- J Energy efficiency

BCA Volume Two

- Part 2.6 Energy efficiency
- Part 3.1 Site preparation
- Part 3.2 Footings and slabs
- Part 3.3 Masonry
- Part 3.4 Framing
- Part 3.5 Roof and wall cladding
- Part 3.7 Fire safety
- Part 3.8 Health and amenity
- Part 3.9 Safe movement and access
- Part 3.12 Energy efficiency

PCA Volume Three

- A General provisions
- B Water services

1. Standen (1995)

SPECIFICATION METHODS

2 TYPES OF SPECIFICATION CLAUSES

*It is not difficult to peruse a sampling of specifications and to discern some basic and distinct styles or methods adopted by different specifiers and even by the same specifier, for differing reasons, in the same specification.*¹

2.1 Descriptive

A descriptive specification clause describes in detail the materials, workmanship and installation required to be used by the contractor or tradesperson. In practice, many specification clauses are a combination of descriptive and performance specifications.¹

For example:

Fabrics: 3 mm diameter piping beads with core.

2.2 Reference

A reference specification clause is a reference to a published document, with which processes and products must comply. It is incorporated by a reference to the title or other identification of the document which may be a standard or a manufacturer's manual.

For example:

Grading to AS/NZS 2269.0: DD.

*Know the standard before you use it, and enforce it after you have used it.*²

On the currency of cited standards, the NATSPEC 0171 *General requirements* worksection contains the following text:

Use referenced documents which are the editions, with amendments, current 3 months before the closing date for tenders, except where other editions or amendments are required by statutory authorities.

Editions cited in the NCC for example, may not accord with the current edition, hence the exception.

2.3 Performance

*A performance specification clause specifies an item in a construction project by prescribing a desired end result and the criteria by which the result will be judged for its acceptability.*²

For example:

Pole taper: Maximum 1 in 120.

The NCC has Performance Requirements that can be met by either *Deemed-to-Satisfy Solutions* or *Performance Solutions*. The NCC defines these terms as follows:

Performance Requirements: A requirement which states the level of performance which a *Performance Solution* or *Deemed-to-Satisfy Solution* must meet.³

Deemed-to-Satisfy Provisions: Provisions which are deemed to satisfy the *Performance Requirements*.³

Performance Solution (Alternative Solution): A method of complying with the *Performance Requirements* other than by a *Deemed-to-Satisfy Solution*.

2.4 Direct/Proprietary

*The specification of an item in a construction project by reference to a proprietary trade name.*⁴

For example:

*Coating systems: Apply XYZ paints coating systems to the **Exterior painting schedule** and the **Interior painting schedule**.*

Standards

If relevant, AUS-SPEC and NATSPEC cite standards for materials and installations.

Some 140 of the NCC referenced standards are cited.

A further 1,100 non-NCC standards are also cited in the worksection *Templates*.

In the *Guidance* text, some 750 additional standards are cited.

Where a standard is cited, the specifier may choose to retain it, replace it with a proprietary product or delete the standard altogether.

If no standards exist for a specification item, performance criteria are provided.

Many standards are themselves explicitly performance based, such as: AS/NZS 2728 *Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements*.

Refer to NATsource for a complete listing of *Open* text standards cited in NATSPEC and AUS-SPEC specification packages.

- 1. Standen (1995)
- 2. Norman (1977)
- 3. NCC 2016
- 4. Standen (2001)

USING THE NATSPEC SYSTEM

3 TECHNICAL INFORMATION

The technical matter in the specification must of necessity cover a very wide range of trades, materials, equipment, applications and practices...The grouping of this material into logical subdivisions is the obvious starting point in the preparation of a specification.¹

3.1 Technical worksection Templates

NATSPEC uses the term *worksection* to describe the foundation unit of a specification. Some worksections are trade based (e.g. brick and blockwork) and others follow processes (e.g. windows, lining).

In NATSPEC, each worksection is provided as a *Template* for the specifier to customise by completing prompts, adding relevant material and deleting material which is not applicable to the particular project.

Specification information typically includes finishes, standards, quality, material grades and thicknesses, tolerances, performance requirements, and requirements for fabrication and installation. Both drawings and specifications must address the NCC and other relevant state and local regulations and reflect good practice in the particular activities.

NATSPEC worksections can be generic or branded. A generic worksection is general and comprehensive. Branded worksections are developed by NATSPEC in conjunction with the manufacturer (known as a Product Partner). Each branded worksection is based on the associated generic worksection and shares the same classification number.

3.2 The National Classification System

Worksections need to be classified and sequenced in a logical order, responding to common local construction industry sequence. Locations need to be allocated for specification material provided by the various specialist designers and consultants.

The National Classification System provides locations for specification material produced by the architect and landscape architect, the interior designer, the civil and structural engineer, and the mechanical, hydraulic and electrical engineers. It is a modified version of the 1989 NATSPEC Classification system by Bryce Mortlock (the father of NATSPEC) and Hans Milton (a former chairman of the National Committee on Rationalized Building).

In 2007 NATSPEC incorporated AUS-SPEC, used by Local Councils for the life-cycle management of assets, into the National Classification System. Many new workgroups and worksections have been added as a result. At present the workgroups include:

- | | |
|---------------------------------|--|
| 00. Planning and design | 10. Conveying |
| 01. General | 11. Construction – Road reserve |
| 02. Site, urban and open spaces | 13. Construction – Public utilities |
| 03. Structure | 14. Maintenance and operations – Urban and open spaces |
| 04. Enclosure | 15. Maintenance and operations – Buildings |
| 05. Interior | 16. Maintenance and operations – Road reserve |
| 06. Finish | 17. Maintenance and operations – Bridges |
| 07. Mechanical | 18. Maintenance and operations – Public utilities |
| 08. Hydraulic | |
| 09. Electrical | |

As new worksections are produced, they are added to the system. Users may wish to add their own worksection titles and classification numbers where no material is provided.

Product Partners

- NATSPEC Product Partners include:
- ACCULINE
 - AFS
 - AIROCLE
 - ALSPEC
 - ANCON
 - ARMACELL
 - ASKIN
 - AWS
 - BLUESCOPE STEEL
 - BOSTIK
 - CAPRAL ALUMINIUM
 - CON-FORM
 - CS CAVITY SLIDERS
 - CSR BRADFORD
 - CSR CEILECTOR
 - DAMTEC
 - DANPALON
 - DINCEL
 - DTAC
 - DULUX
 - ENSYSYTEX
 - ERICO
 - FANTECH
 - FERMAX
 - FIELDERS
 - FMC
 - GERFLOOR
 - GI BUILDING SCIENCES
 - KARNDEAN
 - KEYSTONE
 - KINGSPAN INSULATION
 - KINGSPAN INSULATED PANELS
 - LAWN SOLUTIONS
 - LYSAGHT
 - MAPEI
 - MAX FRANK
 - MODDEX
 - PARCHEM
 - PASCO
 - POLYFLOR
 - PPG PROTECTIVE COATINGS
 - QUATTRO SHADING
 - RAVEN
 - REGUPOL
 - RESENE
 - REVOLUTION ROOFING
 - RONDO
 - SAFETYLINE JALOUSIE
 - SGI ARCHITECTURAL
 - STUDFORM
 - TAUBMANS
 - TARKETT
 - TERMGUARD
 - TLB
 - VICTAULIC
 - VIRIDIAN GLASS
 - WATTYL

Relevant NATSPEC TECHnote:
 GEN 008 Branded vs generic worksections
 1. Standen (1995).

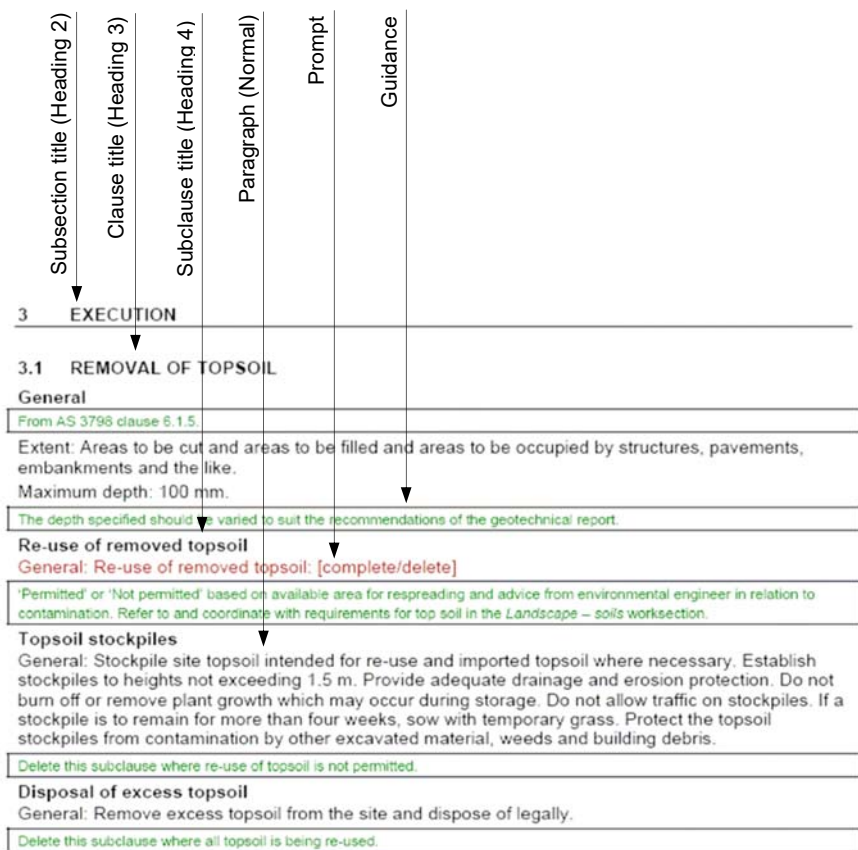
USING THE NATSPEC SYSTEM

3.3 Worksection structure

In NATSPEC, each worksection *Template* is generally divided into four parts: GENERAL, PRODUCTS, EXECUTION and SELECTIONS.

1. GENERAL contains clauses applying to the worksection as a whole, including:
 - Responsibilities.
 - Cross references.
 - Standards.
 - Interpretation.
 - Tolerances.
 - Submissions.
 - Inspection.
2. PRODUCTS describes the basic materials, components and fabricated items.
3. EXECUTION sets out the performance criteria to prepare the substrate, assemble materials to produce an installation and carry out the works.
4. SELECTIONS contains schedules that refer to generic products by their properties or to the selection of actual proprietary products by the specifier for the project. These schedules can be included in the specification or on the drawings.

The *Templates* are further structured into a hierarchy of subsections, clauses, subclauses, paragraphs, prompts, tables, schedules and references with *Guidance* notes provided in hidden text.



In AUS-SPEC, *Templates* are similar to NATSPEC *Templates* but the parts differ to suit the AUS-SPEC content.

AUS-SPEC Design *Templates* are divided into: GENERAL, PRE-DESIGN PLANNING, DESIGN and DOCUMENTATION.

AUS-SPEC Construction *Templates* are divided into GENERAL, PRE-CONSTRUCTION PLANNING, MATERIALS, EXECUTION, and ANNEXURES.

Quality Management

NATSPEC addresses quality management systems in the *Tendering and Quality* worksections and in each technical worksection where product quality, quality control and quality assurance are covered.

NATSPEC requires reports for various matters including:

- Emergency construction joints.
- Geotechnical investigation.
- Load tests.
- Nominated tests.
- Non-conforming products.
- Physical performance.
- Termite control systems.
- Waterproofing membranes.

NATSPEC'S 0171 *General requirements* worksection and other worksections, where appropriate, cover:

- Completion tests.
- Pre-completion tests.
- Production tests.
- Progressive tests.
- Site tests.
- Type tests.

Many standards cover tolerance. Where there is an absence of tolerance requirements, NATSPEC generally provides tolerance defaults.

USING THE NATSPEC SYSTEM

4 PROJECT SPECIFIC INFORMATION

4.1 Tender

The tender documents are pre-contract documents. The tendering worksections note conditions of tender and do not form part of the contract. Items covered in NATSPEC's tendering worksections include:

- Description of works.
- Site description.
- List of tender documents.
- Contact details.
- Tender information (e.g. tender period, procedures).
- Tender requirements.
- Tender form.

AUS-SPEC worksections also include Schedule of rates.

Tendering is a separate self-contained transaction which terminates with the awarding of a contract. The technical worksections make no reference to tendering.

4.2 Preliminaries

Preliminaries cover project-specific and site requirements of the owner, not included in standard contracts, which do not constitute work that could be allocated to a particular worksection. Items might include:

- Contract documents.
- Surveys.
- Protection of persons and property
- Railings and hoardings.
- Temporary buildings.
- Signboard.
- Site meetings.
- Site noise control.
- Adjoining properties.
- Provisional quantities.
- Temporary services.
- Occupancy requirements.

NATSPEC provides both generic *Preliminaries* worksections as well as preliminaries *Templates* for the following contracts:

- ABIC BW-1 (2002) Australian Building Industry Contract – Basic works.
- ABIC EW-1 (2003) Australian Building Industry Contract – Early works.
- ABIC MW- 2008 Australian Building Industry Contract – Major works.
- ABIC MW- 2011 C QLD Australian Building Industry Contract – Major works.
- ABIC SW- 2008 Australian Building Industry Contract – Simple works.
- ABIC SW- 2011 C QLD Australian Building Industry Contract – Simple works.
- AS 2124 (1992) General conditions of contract.
- AS 4000 (1997) General conditions of contract.
- AS 4902 (2000) General conditions of contract for design and construct.
- AS 4905 (2002) Minor works contract conditions (Superintendent administered).

4.3 General requirements

The *0171 General requirements* worksection covers administrative topics common to all the technical worksections and is cross referenced by each technical worksection. Items include:

- Interpretation.
- Inspection.
- Tests.
- Samples.
- Submissions.
- Substitution.
- Completion.
- Warranties.

Procurement methods

The NATSPEC material generally addresses a single contractor in a single prime contract, but it may also be used to produce different types of specifications for different contracts and procurement such as:

- Alliance.
- Design and construct contracts.
- Managing Contractor.
- Public Private Partnership (PPP).
- Single trade packaging contracts.

See NATSPEC TECHreports TR 03 for specifying design and construct for mechanical services, and TR 06 for specification and procurement.

NATSPEC includes:

- 1 Tendering worksection.
- 13 Contract preliminaries worksections.
- 233 Full technical worksections.
- 34 Basic technical worksections.
- 80 Branded worksections.
- 192 AUS-SPEC worksections.

USING THE NATSPEC SYSTEM

4.4 Common requirements

The *018 Common requirements* workgroup covers material relating to more than one worksection. Rather than repeating the same material over many worksections, NATSPEC gathers it into single worksections which include:

- Adhesives, sealants and fasteners.
- Timber products, finishes and treatment.
- Fire-stopping.
- Metals and prefinishes.
- Termite management.
- Building IT components.

5 USING NATSPEC

5.1 General

NATSPEC is a National Master Specification for use with projects of many types and sizes. As a master specification it will not contain all the technical requirements for every project. For each project, the specifier will need to select the appropriate NATSPEC worksections and edit the material to suit the project.

Editing may include:

- Deletion of inappropriate options where the NATSPEC *Template* provides mutually exclusive options (e.g. different roofing or door frame assembly types).
- Deletion of lengthy prescriptive or performance material where a proprietary specification is appropriate and is permitted by the client.
- Deletion of clauses with prompts where schedules or drawings are better suited to conveying the information (e.g. location).
- Deletion of NATSPEC material intended only for custom-made options or for generic specifying. Many items are not usually custom-made (e.g. roller shutters and luminaires).
- Allowance for silence in the documents, permitting the contractor to decide on the method, material, or quality to use, where the *Templates* offer acceptable alternatives from which the contractor must choose. The contractor may reasonably be expected to select some appropriate, minor materials (e.g. fasteners, adhesives) in any case.
- Deferral to the NATSPEC default provision (e.g. AS/NZS 4455.1 for masonry, AS/NZS 3982 for urinals) where satisfactory.
- Deletion of **Prototypes**, **Samples** and **Tests** clauses and subclauses where they are not warranted by the size and complexity of the project. Note that testing of structural elements such as concrete, and other elements which are built to a performance specification, is always advisable.
- Revision of the default quality level so that it is above the industry standard, or the requirement level stipulated in the NATSPEC documents, after determining the quality level available in the market.
- Additional requirements not covered in the NATSPEC worksections, eg. additional performance testing or specific submissions.

5.2 Office edited worksections

NATSPEC *Templates* can be pre-edited to create Office edited worksections to include:

- Office policies on the use of some materials and components.
- Office specialist project material.

For example, a practice specialising in housing might delete the material which is never required for this class of project. Default proprietary items can also be pre-selected at this stage. The pre-edited document can then be used as an Office Master file for all housing specifications. Conversely, practices dealing with schools may need to prepare additional standard worksections or subsections.

Office edited worksections

Some offices have set standard design criteria for the majority of their projects. Office-edited worksections can be developed and stored with the NATSPEC worksections as an Office Master System. This is useful where an office routinely:

- Includes Office edited worksections not covered by NATSPEC.
- Re-orders worksections to suit their documentation system.
- Includes performance text and standard selections.
- Incorporates text based on office and site experience.
- Customises to house style.

Create your own worksections if NATSPEC does not have one that you need. Consider sending these to NATSPEC for future reference via email at mail@natspec.com.au.

Relevant NATSPEC TECHnote:
GEN 007 NATSPEC updates and office master specifications.

USING THE NATSPEC SYSTEM

Choosing an appropriate starting point is critical. Rather than altering NATSPEC material, which may complicate the updating process, consider preparing office or project type specifications.

Offices can also prepare standard prompts with office preferred schedules which specifiers can insert into the NATSPEC *Templates* at appropriate points.

5.3 Project specific worksections

NATSPEC does not cover everything. If it is necessary to create your own project specific worksections, select the NATSPEC worksection that is closest to the one you need. Follow the sequence for creating an Office edited worksection, giving the worksection a new name and classification number. The classification number allows you to place the Office edited worksection where you wish it to appear in the specification.

5.4 Step-By-Step

The following is a step-by-step guide on how to produce a specification from NATSPEC *Templates*. Refer to *QUICKstart* on SPECbuilder Live.

MAINTENANCE

Step 1 – Update office-edited master files

Make sure each project specification incorporates standards and mandatory requirements current at the time of writing.

GENERIC EDITING AND PLANNING

Step 2 - Reformat Templates

Refer to the *NATSPEC Specification Word Processing and Production* on formatting NATSPEC *Templates* in line with office policy on document style, if required.

Step 3 – Office edited worksections

Collect material such as office policy requirements, client requirements (e.g. preliminaries) and project type supplements (e.g. schools). If possible, obtain electronic copies of client requirements in a suitable format. Draft new text in NATSPEC style.

Step 4 - Select the working version of Templates for your project

Decide which updated *Template* version will best suit the project specification e.g. NATSPEC Domestic, Basic or Professional or Office edited worksection *Templates* which have been pre-edited by an office to include office policy, client policy or building type requirements.

Step 5 - Select worksections required

Use SPECbuilder Live to select worksections required for the new project specification and compile a draft specification.

Step 6 - Decide on working medium: Digital or hardcopy markups

Decide whether to customise the *Templates* directly on-screen, or by first marking-up paper copies. The first review - at worksection, sub-section and clause level - can be on-screen. Subsequent reviews can be marked up on printed copies. Print out as late as possible to reduce the bulk of the master document for marking up.

Step 7 - Decide on a working pattern

Be systematic and keep a record of work which is planned and completed. Take time and resource restraints (budget, number and grade of personnel, access to computers) into consideration when preparing the program.

The working pattern will be influenced by the procurement method. For example, in Multiple Contracting, a particular worksection package, such as windows, will be required early in the process (due to lead times off-site) whereas the painting package may commence later.

NATSPEC is not a specification. It is a system of specification worksection *Templates*, for use in the preparation of project specific worksections.

SPECbuilder Live is a specification compilation tool which helps you to manage, create and edit your project specifications.

USING THE NATSPEC SYSTEM

TECHNICAL CUSTOMISING

Step 8 - Identify clauses not required

Delete unnecessary clauses from the worksections. Highlight uncertain clauses and leave until later.

At this stage, it is often best to concentrate on completing particular worksections rather than jumping from one to the other. Print the edited working document, if not already done, as it may be easier to work on the hard copy from now on.

Step 9 - Identify subclauses not required

Delete unnecessary subclauses (and associated prompts) from the worksection. Highlight uncertain subclauses and associated prompts and leave until later.

Step 10 - Identify paragraphs and subparagraphs not required

Delete unnecessary paragraphs and subparagraphs (and associated prompts). Refer to the hidden *Guidance* text.

Step 11 – Complete the write-in options

Complete the options, [complete/delete] prompts and schedules.

Step 12 - Add new material

Add original material not in the NATSPEC *Templates* (although sometimes mentioned in the *Guidance* text) where required.

Check against standards and other technical literature, particularly for availability and the variables, which need to be specified. Begin with the worksections about which you know the most. Use the NATSPEC style.

Step 13 - Edit standard text

Systematically edit standard (default) NATSPEC *Template* text where it conflicts with project requirements, the drawings, completed prompts or with added new material. In particular, default standards or descriptions may conflict with proprietary items.

If required, you may insert hyperlinks (on-screen) into the worksection text for office or client policy requirements. Standard NATSPEC *Template* text may also be modified to incorporate a preferred style or where greater detail is required. A word of warning: the more this is done, the less valuable the standard text becomes and the more work for the specifier.

Optional text (blue with a grey background) covers items specified less frequently. It is provided for incorporation into *Template* text where it is applicable to a project.

Step 14 - Complete

Run through from Step 8 as often as required until the project specification is complete. In particular make sure all NATSPEC text options have been considered, all defaults evaluated and all prompts completed/deleted. Make sure that no uncertain items remain – if in doubt at this stage, leave them out.

EDITORIAL CUSTOMISING AND PRODUCTION

Step 15 - Check cross-references

Check all cross-references in the project specification to other worksections, standards, referenced documents, and contract documents. Make sure, in particular, that cross-referenced material has not been accidentally deleted (thereby creating conflict). Minimise repetition and make sure there is no conflict between drawings and the specification.

Step 16 - Proofread

Print and proofread (perhaps several times). Check the format, number the pages, finalise the contents and prepare an index. Delete hidden text using the NATSPEC Toolbar button.

Step 17 - Correct

Check details again. NATSPEC SPECbuilder Live allows you to easily renumber subsections and clauses. Add headers, footers and issue/revision Tables in accordance with office policy. Distribute to the principal, consultants, tenderers and other relevant parties. Retain working and library/archive copies.

Styles and formatting

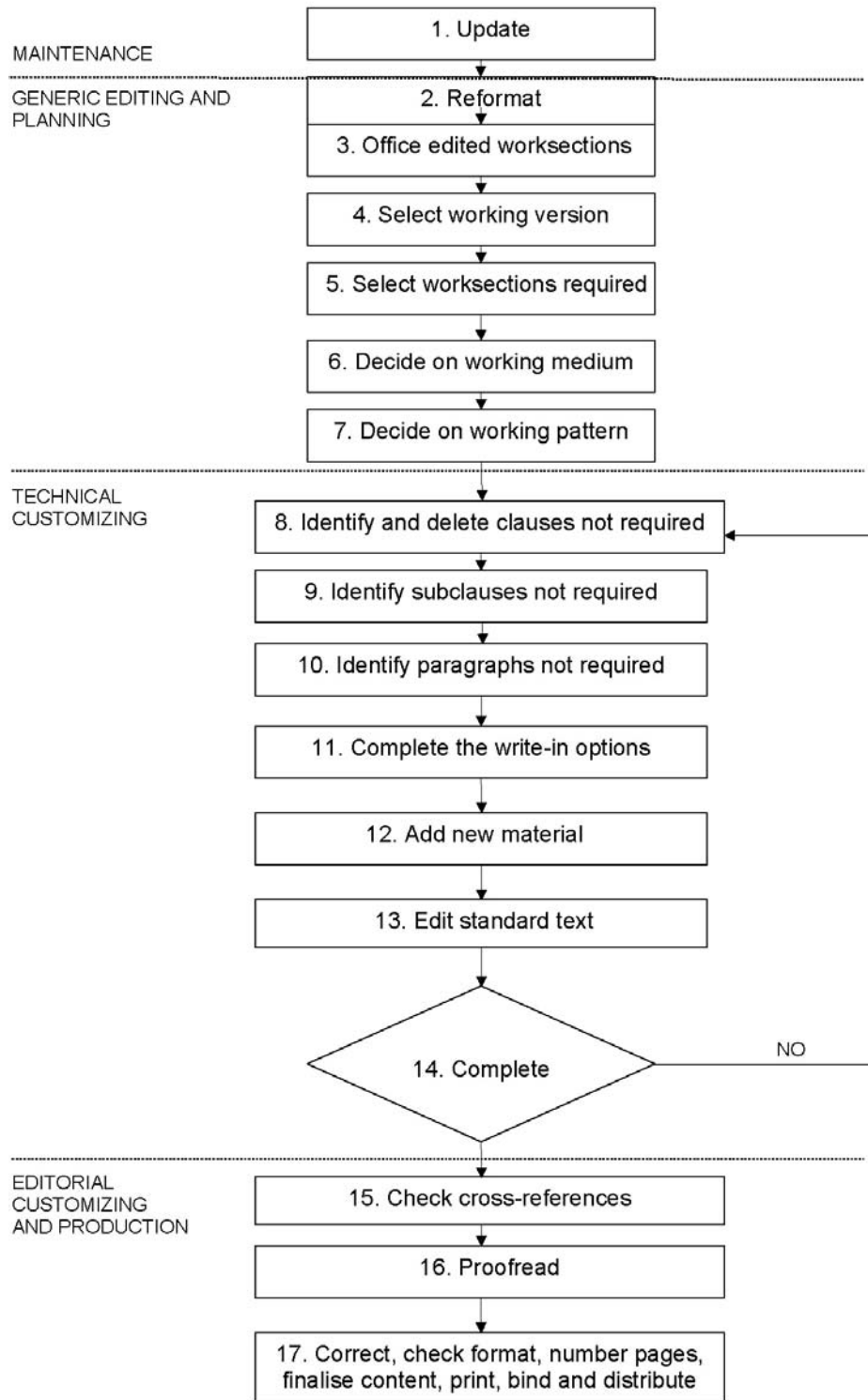
NATSPEC *Templates* have an attached .dot file which holds information about format including headings.

See also the NATSPEC STYLEguide.

The structure provided by NATSPEC's formatting style facilitates easy referencing of information in the specification.

USING THE NATSPEC SYSTEM

NATSPEC SPECIFICATION WRITING PROCESS



Substitution

NATSPEC worksections are written in generic terms, though many worksections will be made proprietary by the specifier.

If a specifier chooses a product, much of the NATSPEC material becomes redundant and will be deleted.

NATSPEC's *0171 General requirements* worksection permits substitution of documented products, methods or systems provided certain conditions are met. For example:

Evidence: If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence from the supplier.

Relevant NATSPEC
TECHnote: *GEN 006 Product specifying and substitution.*

SPECIFYING ESD WITH NATSPEC

6 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

6.1 The role of specifications in ESD

An ESD specification focuses on:

- Giving effect to ESD design decisions not shown on the drawings.
- Specifying ESD appropriate materials and methods of construction.
- Specifying components and products that permit the implementation of ESD.

6.2 Implementing ESD principles

The specification can be used to implement specific ESD principles in a number of broad categories:

- Energy conservation and greenhouse gas reduction.
- Conserving other consumables such as water.
- Using ESD appropriate materials, for example, low volatile organic compounds (VOC) emissions.
- Creating a quality environment, both inside and outside the building, based on ESD principles.

6.3 Specifying ESD with NATSPEC

To assist the specifier in achieving the full ESD potential of the design, NATSPEC:

- Provides industry with a comprehensive specification system that can be used for varying means of building procurement.
- Recognises that most aspects of ESD relating to buildings are design issues and that a primary function of the specification is to give effect to design decisions.
- Does not mandate ESD but provides options for specifiers to choose and adopt ESD principles. *Guidance* text, highlighting areas of ESD potential, is included within the worksection *Templates*.
- Does not attempt to arbitrate on competing claims made for the sustainability or otherwise of materials or methods and instead aims to present specifiers with impartial information that can be used to make informed decisions.
- Provides material for use in specifying ecologically sustainable, non-traditional construction materials and methods such as *0321 Monolithic stabilised earth walls*.
- Provides a means for meeting mandatory ESD requirements to the extent that these can be handled through the specification process.

6.4 NATSPEC, ESD and the NCC

The NCC incorporates a number of mandatory environmental provisions. These primarily relate to energy conservation and greenhouse gas reduction but include improving the comfort and amenity of buildings for their occupants.

NATSPEC's TECHreport *Specifying ESD* indicates which worksections can be used to document provisions conforming to NCC requirements and the ESD commitments necessary to meet NCC objectives. This is particularly relevant when the design is for a verification-based Performance (Alternative) Solution, rather than the *Deemed-to-Satisfy Provisions* of the NCC.

6.5 NATSPEC, ESD and environmental rating schemes

Many designers and specifiers adopting an ESD approach will also be seeking to achieve specific targets against voluntary environmental rating schemes such as NABERS and Green Star. NATSPEC can be used for specifying products and components to meet GBCA Green Star commitments.

ESD Rating

Achieving a star rating and complying with the Energy Efficiency in Government Operations (EEGO) policy largely involves design decisions, some of which need to be given effect through the specification.

The NATSPEC TECHreport, *Specifying ESD*, provides a valuable overview of how to use the NATSPEC system to specify buildings incorporating ESD principles and includes a matrix linking NATSPEC worksections and the ESD requirements of the NCC. The TECHreport, as well as TECHnotes about other ESD related issues, is available for download from the *Technical Resources, TECHreports* section of www.natspec.com.au.

ADVICE FOR SPECIFIERS

7 ADVICE FOR SPECIFIERS

Brevity

- Use the imperative form. For example, Lay tiles.... rather than.... Tiles shall be laid.
- Avoid lengthy verbal descriptions – use NATSPEC style (e.g. colons and keywords), draw it or schedule it instead.

Clarity

- Use precise, consistent language, structure and terminology.
- Avoid legal phraseology or stilted formal terms and sentences.

Content

- Develop an office policy regarding what material will be included in the drawings, schedules and written specifications.
- Do not include material in technical worksections that should be covered in preliminaries, general conditions annexures or the general conditions themselves, e.g. tendering, contractual material, project descriptions, drawing lists.

Compliance

- Establish if any Performance (Alternative) Solutions to the NCC are to be pursued.
- Consider initially preparing a NCC compliance document comprising only those worksections relating to the NCC.

Consultants

- Check specifications and schedules provided by consultants for consistency.
- Do not duplicate material common to various project consultants.

Cross References

- Minimise cross-references within the specification.
- Do not use phrases such as detailed on the drawings or unless otherwise specified. Use, as documented, making sure they are documented.

Fairness

- Be specific, so that a basis for pricing is clearly set.
- Do not specify anything which cannot be verified or which the contract administrator or the principal does not intend to enforce.

Redundancy

- Say it once and in the right place.
- Do not use redundant reference paragraphs at the start of each worksection. The contractor is responsible for all work and must read all documents together.

Repetition

- Avoid repetition within the specification and between the specification, drawings and other contract documents.
- Do not specify the same thing using a mix of proprietary, descriptive, performance or reference specification – conflict is bound to arise.

Standards

- Do not rely on a blanket instruction to comply with all relevant standards.
- Have access to the standards you need and evaluate their scope and currency.

Structure

- Break long clauses into subclauses, paragraphs and subparagraphs with titles or bullet points in a logical hierarchy, each dealing with one item.
- Standardise text of common clauses and subclauses.

Time

- Start documenting early, upon receipt of the client's brief.
- Establish the Conditions of Contract and check for items requiring early attention.

Contract administration

It is beyond the scope of NATSPEC to offer any management system to handle the approval process. Consequently definitions and directions such as 'approved' do not appear as default text. If adding a definition, the following text may be useful:

Approved: 'Approved', 'reviewed', 'directed', 'rejected', 'endorsed' and similar expressions mean 'approved (reviewed, directed, rejected, endorsed) in writing by the contract administrator'.

ABOUT NATSPEC

8 ABOUT NATSPEC

NATSPEC *Development*

The development of NATSPEC material is driven by:

- The NCC, including state and territory variations on safety, health, amenity and energy aspects of buildings.
- Developments in some 2,000 standards and documents, mostly Australian, relating to the worksections, *Templates*, and *Guidance*.
- Feedback from its users including specifiers, contractors, industry organisations and manufacturers.
- The knowledge base of NATSPEC editorial staff.
- The direction of the 21 stakeholders, expressed through a seven-member board.

NATSPEC values feedback given by its users. Comments can be emailed to: mail@natspec.com.au.

NATSPEC *Updates*

NATSPEC issues subscribers with a CD containing all worksections, including new, revised and branded twice a year. At the same time, new and updated files are uploaded to SPECbuilder Live. NATSPEC subscribers are also kept informed via the quarterly publication, SPECnotes.

Information, available to subscribers only, on the NATSPEC website includes:

- A monthly listing of revised standards which relate to NATSPEC material.
- NATSPEC TECHnotes.
- NATSPEC TECHreports.

NATSPEC *TECHnotes*

TECHnotes are a series of one or two page notes prepared by NATSPEC to give specifiers general information on specification writing or technical topics that relate to more than one worksection. Titles are grouped into 3 categories: General, Design and Products.

NATSPEC *TECHreports*

TECHreports are in depth reports prepared by NATSPEC to give general information on specification writing, and technical information that relates to more than one worksection e.g. *Specifying ESD*.

NATSPEC *Branded worksections*

Branded worksections are developed by NATSPEC in conjunction with the manufacturer, known as a Product Partner. Branded worksections follow NATSPEC style and format and offer specifiers an alternative to NATSPEC generic worksections.

NATSPEC *Benefits*

NATSPEC is a master specification system. It is not a specification. It provides a baseline for good building practice. It is not an Australian standard or a governmental regulation. No one is compelled to adopt NATSPEC but many in the industry believe that it is in the industry's best interest to do so.

The benefits of using NATSPEC are:

- Clear, simple and common language between the professional consultants.
- Up-to-date references to regulations and standards.
- Economy. NATSPEC is produced by a centralised agency monitoring construction industry developments and, as a not-for-profit organisation, the benefits of this are transferred to subscribers and the industry as a whole.

REFERENCES AND FURTHER READING

9 REFERENCES

Books

Gelder, John (2001), Specifying architecture.

Norman, Douglas A. (1977), Specifications.

Standen, David (1995), Construction industry specifications.

Standen, David (4th edition, 2011), Construction industry terminology.

Article

Peaslee, Horace W. (1939), Streamlined specifications, Pencil points magazine.

Standards

AS 2124-1992 General conditions of contract

AS/NZS 2269.0:2012 Plywood – Structural – Specifications

AS 2728-2013 Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements

AS/NZS 3982:1996 Urinals

AS/NZS 4000:1997 General conditions of contract

AS/NZS 4455.1:2008 Masonry units, pavers, flags and segmental retaining wall units – Masonry units

AS 4902:2000 General conditions of contract for design and construct

AS 4905:2002 Minor works contract conditions (Superintendent administered)

NATSPEC

NATSPEC Quickstart

TECHnote GEN 006: 2007 Product specifying and substitution

TECHnote GEN 007: 2007 NATSPEC updates and office master specifications

TECHnote GEN 008: 2008 Branded vs generic worksections

TECHreport TR 01: 2017 Specifying ESD

TECHreport TR 03: 2016 Specifying design and construct for mechanical services

TECHreport TR 06: 2014 Procurement: past and present

Further reading



10 SUGGESTED STANDARDS FOR OFFICES

The following are lists of suggested references appropriate to offices dealing with typical projects. Many are design standards that must be complied with in order to meet National Construction Code (NCC) and other mandatory requirements while others are related handbooks. These are considered to be the foundation upon which other specialist and appropriate references are added. As with all standards, they must be kept up to date. Standards cited in the Building Codes of Australia Volumes 1 and 2 are marked NCC 1 and 2, and Plumbing Code of Australia citations are marked NCC 3.

10.1 For All

AS 4120:1994	Code of Tendering
AS 4122:2010	General conditions of contract for consultants
AS/NZS ISO 9001:2016	Quality management systems - Requirements
NCC 2016	National Construction Code

10.2 Architects

	AS/NZS ISO 717.1:2004	Acoustics - Rating of sound insulation in buildings and of building elements -Airborne sound insulation
NCC 1	AS ISO 717.2:2004	Acoustics - Rating of sound insulation in buildings and of building elements -Impact sound insulation
NCC 1,2	AS 1288:2006	Glass in buildings - Selection and installation
NCC 1,3	AS 1428.1:2009	Design for access and mobility -General requirements for access - New building work
NCC 1,3	AS 1428.2:1992	Design for access and mobility -Enhanced and additional requirements - Buildings and facilities
NCC 1	AS/NZS 1428.4.1:2009	Design for access and mobility -Means to assist the orientation of people with vision impairment - Tactile ground surface indicators
NCC 1,2	AS 1562.1:1992	Design and installation of sheet roof and wall cladding -Metal
NCC 1	AS 1657:2013	Fixed platforms, walkways, stairways and ladders - Design, construction and installation
NCC 1,2	AS 1684.4:2010	Residential timber-framed construction -Simplified non-cyclonic areas
	AS 1735.1:2016	Lifts, escalators and moving walks -General requirements
NCC 1	AS 1860.2:2006	Particleboard flooring -Installation
NCC 1	AS 1905.1:2015	Components for the protection of openings in fire-resistant walls - Fire-resistant doorsets
NCC 1,2	AS 2047:2014	Windows and external glazed doors in buildings
NCC 2	AS 2179.1:2014	Specifications for rainwater goods, accessories and fasteners
	AS/NZS 2311:2009	Guide to the painting of buildings
	AS/NZS 2312.1:2014	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings -Paint coatings
	AS/NZS 2312.2:2014	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings -Hot dip galvanizing
	AS/NZS 2589:2007	Gypsum linings - Application and finishing
	AS 2601:2001	The demolition of structures
NCC 1,2	AS 2870:2011	Residential slabs and footings
	AS/NZS 2890.1:2004	Parking facilities -Off-street car parking
NCC 1	AS/NZS 2890.6:2009	Parking facilities -Off-street parking for people with disabilities
NCC 1,2	AS/NZS 2904:1995	Damp-proof courses and flashings
NCC 1,2,3	AS/NZS 3500.3:2015	Plumbing and drainage -Stormwater drainage
NCC 1,2	AS 3660.1:2014	Termite management -New building work
NCC 1,2	AS 3700:2011	Masonry structures
NCC 1,2	AS 3740:2010	Waterproofing of domestic wet areas
	AS 3958.1:2007	Ceramic tiles -Guide to the installation of ceramic tiles
	AS 3958.2:1992	Ceramic tiles -Guide to the selection of a ceramic tiling system
NCC 1,2	AS 3959:2009	Construction of buildings in bushfire prone areas
NCC 2	AS 4055:2012	Wind loads for housing
NCC 1,2	AS 4072.1:2005	Components for the protection of openings in fire-resistant separating elements -Service penetrations and control joints
NCC 1,2	AS/NZS 4200.2:1994	Pliable building membranes and underlays -Installation requirements
	AS/NZS 4858:2004	Wet area membranes
NCC 1,2	AS/NZS 4859.1:2002	Materials for the thermal insulation of buildings -General criteria and technical provisions
	AS 5604:2005	Timber - Natural durability ratings

NCC 1,2	NASH-1:2005	NASH Standard Residential and Low-rise Steel Framing -Design criteria
NCC 1,2	NASH-2:2014	NASH Standard Residential and Low-rise Steel Framing -Design solutions

10.3 Electrical Engineers

	AS/CA S009:2013	Installation requirements for customer cabling (Wiring Rules)
	AS/NZS 1367:2016	Coaxial cable and optical fibre systems for the RF distribution of analog and digital television and sound signals in single and multiple dwelling installations
	AS 1428.5:2010	Design for access and mobility -Communication for people who are deaf or hearing impaired
	AS 1470:1986	Health and safety at work - Principles and practices
NCC 1,2	AS 1670.1:2015	Fire detection, warning control and intercom systems - System, design, installation and commissioning -Fire
NCC 1	AS 1670.4:2015	Fire detection, warning control and intercom systems - System, design, installation and commissioning -Emergency warning and intercom systems
	AS 1670.5:2016	Fire detection, warning, control and intercom systems - System design, installation and commissioning.
	AS 1670.6:1997	Fire detection, warning control and intercom systems - System, design, installation and commissioning -Smoke alarms
NCC 1,2	AS/NZS 1680.0:2009	Interior and workplace lighting -Safe movement
	AS/NZS 1680.1:2006	Interior and workplace lighting -General principles and recommendations
	AS/NZS 1680.2.1:2008	Interior and workplace lighting -Specific applications - Circulation spaces and other general areas
	AS/NZS 1680.2.2:2008	Interior and workplace lighting -Specific applications - Office and screen-based tasks
	AS/NZS 1680.2.3:2008	Interior and workplace lighting -Specific applications - Educational and training facilities
	AS/NZS 2201.1:2007	Intruder alarm systems -Client's premises - Design, installation, commissioning and maintenance
	AS 2201.2:2004	Intruder alarm systems -Monitoring centres
	AS/NZS 2201.5:2008	Intruder alarm systems -Alarm transmission systems
NCC 1	AS 2293.1:2005	Emergency escape lighting and exit signs for buildings -System design, installation and operation
	AS/NZS 2967:2014	Optical fibre communication cabling systems safety
	AS/NZS 3000:2007	Electrical installations (known as the Australian/New Zealand Wiring Rules)
	AS/NZS 3008.1.1:2017	Electrical installations - Selection of cables -Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions
NCC 1	AS/NZS 3013:2005	Electrical installations - Classification of the fire and mechanical performance of wiring system elements
	AS/NZS 3080:2013	Information technology - Generic cabling for customer premises (ISO/IEC 11801:2011, MOD)
	AS/NZS 3084:2017	Telecommunications installations - Telecommunications pathways and spaces for commercial buildings
	AS/NZS 3439.1:2002	Low-voltage switchgear and controlgear assemblies -Type-tested and partially type-tested assemblies
	AS/NZS 3439.3:2002	Low-voltage switchgear and controlgear assemblies -Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
	AS 4282:1997	Control of the obtrusive effects of outdoor lighting
	AS/NZS 61439.1:2016	Low voltage switchgear and controlgear assemblies – General rules (IEC 61439-1:2011, MOD)
	AS/NZS 61439.3:2016	Low voltage switchgear and controlgear assemblies – Distribution boards intended to be operated by ordinary persons (IEC 61439-3:2012, MOD)
	SAA HB 301:2001	Electrical installations - Designing to the Wiring Rules

10.4 Hydraulic Engineers

	AS/NZS 1221:1997	Fire hose reels
	AS 1470:1986	Health and safety at work - Principles and practices

	AS/NZS 1596:2014	The storage and handling of LP Gas
	AS/NZS 2032:2006	Installation of PVC pipe systems
	AS/NZS 2033:2008	Installation of polyethylene pipe systems
NCC 1,3 (1999)	AS 2118.1:2006	Automatic fire sprinkler systems -General systems
NCC 1,3	AS 2118.4:2012	Automatic fire sprinkler systems -Sprinkler protection for accommodation buildings not exceeding four storeys in height
NCC 1,3	AS 2118.6:2012	Automatic fire sprinkler systems -Combined sprinkler and hydrant systems in multistorey buildings
NCC 1,3	AS 2419.1:2005	Fire hydrant installations -System design, installation and commissioning
	AS 2419.2:2009	Fire hydrant installations -Fire hydrant valves
NCC 1,3	AS 2441:2005	Installation of fire hose reels
NCC 3	AS/NZS 3500.0:2003	Plumbing and drainage -Glossary of terms
NCC 3	AS/NZS 3500.1:2015	Plumbing and drainage -Water services
NCC 3	AS/NZS 3500.2:2015	Plumbing and drainage -Sanitary plumbing and drainage
NCC 1,2,3	AS/NZS 3500.3:2015	Plumbing and drainage -Stormwater drainage
NCC 3	AS/NZS 3500.4:2015	Plumbing and drainage -Heated water services
NCC 2,3	AS/NZS 3500.5:2012	Plumbing and drainage -Housing installations
NCC 1,3	AS/NZS 3666.1:2011	Air-handling and water systems of buildings - Microbial control - Design, installation and commissioning
NCC 3	AS/NZS 3666.2:2011	Air-handling and water systems of buildings - Microbial control - Operation and maintenance
	AS 4118.1.4:1994	Fire sprinkler systems -Components - Valve monitors
	AS/NZS 4645.2:2008	Gas distribution networks -Steel pipe systems
	AS 4809:2003	Copper pipe and fittings - Installation and commissioning
	AS/NZS 5601.1:2013	Gas installations -General installations
	SAA/SNZ HB 32:1995	Control of microbial growth in air-handling and water systems of buildings
	ICANZ:2003	Industry code of practice for the safe use of glass wool and rock wool insulation

10.5 Interior Designers

	AS/NZS ISO 717.1:2004	Acoustics - Rating of sound insulation in buildings and of building elements -Airborne sound insulation
NCC 1	AS ISO 717.2:2004	Acoustics - Rating of sound insulation in buildings and of building elements -Impact sound insulation
NCC 1,2	AS 1288:2006	Glass in buildings - Selection and installation
NCC 1,3	AS 1428.1:2009	Design for access and mobility -General requirements for access - New building work
NCC 1,3	AS 1428.2:1992	Design for access and mobility -Enhanced and additional requirements - Buildings and facilities
NCC 1	AS/NZS 1428.4.1:2009	Design for access and mobility -Means to assist the orientation of people with vision impairment - Tactile ground surface indicators
NCC 1,2	AS/NZS 1680.0:2009	Interior and workplace lighting -Safe movement
	AS/NZS 1680.1:2006	Interior and workplace lighting -General principles and recommendations
	AS/NZS 1680.2.1:2008	Interior and workplace lighting -Specific applications - Circulation spaces and other general areas
	AS/NZS 1680.2.2:2008	Interior and workplace lighting -Specific applications - Office and screen-based tasks
	AS/NZS 1680.2.3:2008	Interior and workplace lighting -Specific applications - Educational and training facilities
	AS/NZS 2107:2016	Acoustics - Recommended design sound levels and reverberation times for building interiors
	AS/NZS 2208:1996	Safety glazing materials in buildings
	AS/NZS 2270:2006	Plywood and blockboard for interior use
	AS/NZS 2310:2002	Glossary of paint and painting terms
	AS/NZS 2311:2009	Guide to the painting of buildings
	AS 2454:2007	Textile floor coverings - Terminology
	AS/NZS 2589:2007	Gypsum linings - Application and finishing
	AS/NZS 2633:1996	Guide to the specification of colours
	AS 2700:2011	Colour standards for general purposes
	AS/NZS 2785:2000	Suspended ceilings - Design and installation
	AS 2796.1:1999	Timber - Hardwood - Sawn and milled products -Product specification

AS 2946:1991	Suspended ceilings, recessed luminaires and air diffusers - Interface requirements for physical compatibility
AS 3715:2002	Metal finishing - Thermoset powder coating for architectural applications of aluminium and aluminium alloys
AS 3958.1:2007	Ceramic tiles -Guide to the installation of ceramic tiles
AS 3958.2:1992	Ceramic tiles -Guide to the selection of a ceramic tiling system
AS 4288:2003	Soft underlays for textile floor coverings
AS 4506:2005	Metal finishing - Thermoset powder coatings
AS/NZS 4668:2000	Glossary of terms used in the glass and glazing industry
AS 4785.1:2002	Timber - Softwood - Sawn and milled products -Product specification
AS/NZS 4858:2004	Wet area membranes
AS/NZS ISO 9001:2016	Quality management systems - Requirements
SAA HB 161:2005	Guide to plastering
SAA HB 197:1999	An introductory guide to the slip resistance of pedestrian surface materials

10.6 Landscape Architects

AS 1604.1:2012	Specification for preservative treatment -Sawn and round timber
AS 1720.2:2006	Timber structures -Timber properties
AS 1725.1:2010	Chain-link fabric fencing -Security fences and gates - General requirements
NCC 1,2 AS 1926.1:2012	Swimming pool safety -Safety barriers for swimming pools
NCC 1,2 AS 1926.2:2007	Swimming pool safety -Location of safety barriers for swimming pools
AS 2303:2015	Tree stock for landscape use
AS 2423:2002	Coated steel wire fencing products for terrestrial, aquatic and general use
AS 3704:2005	Geosynthetics - Glossary of terms
AS 3743:2003	Potting mixes
AS 3798:2007	Guidelines on earthworks for commercial and residential developments
AS 4373:2007	Pruning of amenity trees
AS 4419:2003	Soils for landscaping and garden use
AS 4422:2016	Playground surfacing - Specifications, requirements and test method
AS 4454:2012	Composts, soil conditioners and mulches
AS/NZS 4486.1:1997	Playgrounds and playground equipment -Development, installation, inspection, maintenance and operation
AS 4970:2009	Protection of trees on development sites

10.7 Mechanical Engineers

NCC 3 AS 1324.1:2001	Air filters for use in general ventilation and airconditioning - Application, performance and construction
AS 1470:1986	Health and safety at work - Principles and practices
NCC 1,3 AS/NZS 1668.1:2015	The use of ventilation and air conditioning in buildings -Fire and smoke control in multi-compartment buildings
NCC 1,2,3 AS 1668.2:2012	The use of ventilation and air conditioning in buildings -Mechanical ventilation in buildings
AS 1668.3:2001	The use of ventilation and air conditioning in buildings -Smoke control systems for large single compartments or smoke reservoirs
NCC 1 AS 1668.4:2012	The use of ventilation and air conditioning in buildings -Natural ventilation in buildings
AS 1682.2:2015	Fire, smoke and air dampers -Installation
AS 1940:2004	The storage and handling of flammable and combustible liquids
AS/NZS 2032:2006	Installation of PVC pipe systems
AS/NZS 2033:2008	Installation of polyethylene pipe systems
AS 2896:2011	Medical gas systems - Installation and testing of non-flammable medical gas pipeline systems
NCC 1,3 AS/NZS 3666.1:2011	Air-handling and water systems of buildings - Microbial control - Design, installation and commissioning
NCC 3 AS/NZS 3666.2:2011	Air-handling and water systems of buildings - Microbial control - Operation and maintenance
AS/NZS 3666.3:2011	Air-handling and water systems of buildings - Microbial control - Performance-based maintenance of cooling water systems

NCC 3	AS 4041:2006	Pressure piping
NCC 1,2,3	AS 4254.1:2012	Ductwork for air-handling systems in buildings -Flexible duct
NCC 1,2,3	AS 4254.2:2012	Ductwork for air-handling systems in buildings -Rigid duct
	AS 4809:2003	Copper pipe and fittings - Installation and commissioning
	AS/NZS 5149.1:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Definitions, classification and selection criteria
	AS/NZS 5149.2:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Design, construction, testing, marking and documentation
	AS/NZS 5149.3:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Installation site
	AS/NZS 5149.4:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Operations, maintenance, repair and recovery
	SAA/SNZ HB 32:1995	Control of microbial growth in air-handling and water systems of buildings
	AIRAH Refrigerant:2013	Flammable Refrigerants Safety Guide
	ASHRAE STD 111:2008	Measurement, testing, adjusting, and balancing of building HVAC systems
	ICANZ:2003	Industry code of practice for the safe use of glass wool and rock wool insulation

10.8 Structural Engineers

NCC 1,2	AS/NZS 1170.0:2002	Structural design actions -General principles
NCC 1,2	AS/NZS 1170.1:2002	Structural design actions -Permanent, imposed and other actions
NCC 1,2	AS/NZS 1170.2:2011	Structural design actions -Wind actions
NCC 1,2	AS/NZS 1170.3:2003	Structural design actions -Snow and ice actions
NCC 1,2	AS 1170.4:2007	Structural design actions -Earthquake actions in Australia
	AS/NZS 1554.1:2014	Structural steel welding -Welding of steel structures
	AS/NZS 1554.5:2014	Structural steel welding -Welding of steel structures subject to high levels of fatigue loading
NCC 1,2	AS 1684.2:2010	Residential timber-framed construction -Non-cyclonic areas
NCC 1,2	AS 1684.3:2010	Residential timber-framed construction -Cyclonic areas
NCC 1,2	AS 1684.4:2010	Residential timber-framed construction -Simplified non-cyclonic areas
NCC 1,2	AS 1720.1:2010	Timber structures -Design methods
	AS 1720.2:2006	Timber structures -Timber properties
	AS 1720.3:2016	Design criteria for timber-framed residential buildings
NCC 1	AS 1720.4:2006	Timber structures -Fire-resistance for structural adequacy of timber members
NCC 1,2	AS 2159:2009	Piling - Design and installation
NCC 1,2	AS 2327.1:2003	Composite structures -Simply supported beams
NCC 1,2	AS 2870:2011	Residential slabs and footings
NCC 1,2	AS 3600:2009	Concrete structures
	AS 3610.1:2010	Formwork for concrete -Documentation and surface finish
NCC 1,2	AS 3700:2011	Masonry structures
	AS 3735:2001	Concrete structures retaining liquids
	AS 3850.1:2015	Prefabricated concrete elements -General requirements
	AS 3850.2:2015	Prefabricated concrete elements -Building construction
NCC 1,2	AS 4100:1998	Steel structures
NCC 1,2	AS/NZS 4600:2005	Cold-formed steel structures
	AS 4678:2002	Earth-retaining structures
NCC 2	AS 4773.1:2015	Masonry in small buildings -Design
	AS/NZS 5131:2016	Structural steelwork - Fabrication and erection
	SAA HB 71:2011	Reinforced concrete design in accordance with AS 3600-2009
NCC 1,2	NASH-1:2005	Design solutions -Design criteria
NCC 1,2	NASH-2:2014	NASH Standard Residential and Low-rise Steel Framing -Design solutions

Corporate Information

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NATSPEC, founded in 1975, is a national not-for-profit organisation that is owned by the design, build, construct and property industry through professional associations and government property groups. It is impartial and is not involved in advocacy or policy development. NATSPEC, the National Building Specification, is for all building structures with specialist packages for architects, interior designers, landscape architects, structural engineers, service engineers and domestic owners. AUS-SPEC is the Local Government specification system for the life-cycle management of assets. Packages include Urban and Open Space, Roadworks and Bridges, Public Utilities, and Maintenance. NATSPEC is also responsible for the National BIM Guide and its associated documents.

NATSPEC's objective is to improve the construction quality and productivity of the built environment through leadership of information.

STAKEHOLDERS

- // Air conditioning and Mechanical Contractors' Association of Australia
- // Australian Council of Built Environment Design Professions
- // Australian Elevator Association
- // Australian Institute of Architects
- // Australian Institute of Building
- // Australian Institute of Building Surveyors
- // Australia Institute of Quantity Surveyors
- // Chief Minister, Treasury and Economic Development Directorate (ACT)
- // Construction Industry Engineering Services Group
- // Consult Australia
- // Department of Finance (Federal)
- // Department of Finance (WA)
- // Department of Finance, Services and Innovation (NSW)
- // Department of Housing and Public Works (QLD)
- // Department of Infrastructure, Planning and Logistics (NT)
- // Department for Planning, Transport and Infrastructure (SA)
- // Department of Treasury and Finance (TAS)
- // Department of Treasury and Finance (VIC)
- // Engineers Australia
- // Master Builders Australia
- // Standards Australia

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