AS3600 - 2025 Concrete Code Structure

Dr. Sam Mazaheri

Who writes AS 3600?

- Standards Australia Committee BD-002
- Consulting Engineers
- Engineers from Manufacturers or Suppliers
- Engineers from Universities
- Builders
- Engineering Software Developers
- ABCB Representative

History of Structural Concrete Codes in Australia

- First published as AS CA2-1934
- Second Edition AS CA2-1958
- Third Edition AS CA2-1963
- Fourth Edition AS CA2-1973
- Revised and redesignated AS 1480-1974
- Second Edition AS 1480-1982
- **Revised incorporating AS 1481 as AS 3600-1988**
- Second Edition AS 3600-1994
- Third Edition AS 3600-2001
- Fourth Edition AS 3600-2009
- Fifth Edition AS 3600-2018 Amdt 1and 2
- Sixth Edition AS 3600-2025

What’s New in AS3600-2025

WHAT HAS CHANGED

WHY IT HAS CHANGED

WHAT IT MEANS TO YOU

Major Changes to AS3600

Design for Earthquake Actions – addressing lessons from the Christchurch Earthquake

Fire provisions updates – updates for columns and spalling

Serviceability provisions – revised for shrinkage, creep, crack width, and deflection

Higher strength steels – further development of design factors

Punching shear – updated rules for slabs

Design life – recognition of periods longer than 50 years

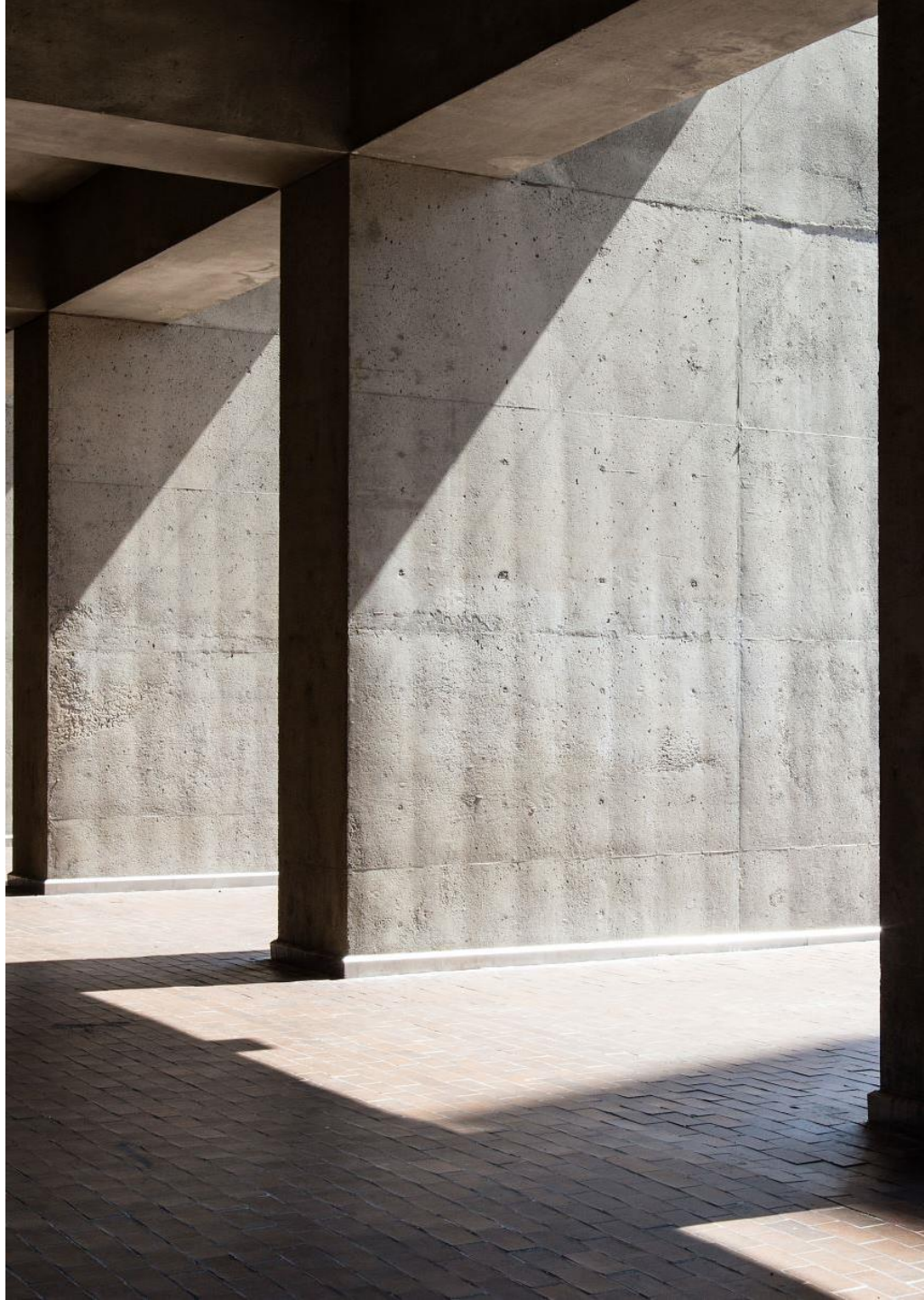
Curvilinear stress blocks – introduced for software compatibility

Prefabricated concrete elements – now in a new and expanded section

Assessment of existing structures – addressed in an appendix

Design for Earthquake Actions

- Includes extensive changes in Slabs, Walls and Earthquake Sections
- Structural integrity reinforcement in slabs and band beams extensively revised to reduce the additional reinforcing required.
- Aspect ratio defining transition from flexural to squat walls reduced.
- Upper bound on shear strength of walls introduced.
- Concept of Critical Detailing Regions introduced for areas such as plastic hinges across walls and earthquake Sections
- Guidance added on buildings where ductility varies vertically.
- Vertical reinforcement in critical detailing regions reduced by 15%.
- New clause recognising the ductility of footings supporting structural walls .
- Specific requirements for prefabricated walls for limited and moderately ductile conditions.
- New clause permitting low rise buildings with squat walls to adopt a system where ductility can be developed in the footings.
- Modelling and scaling requirements set down for non-linear pushover analysis.
- Reinforcement and confinement provisions on Boundary Elements extensively updated and relaxed.

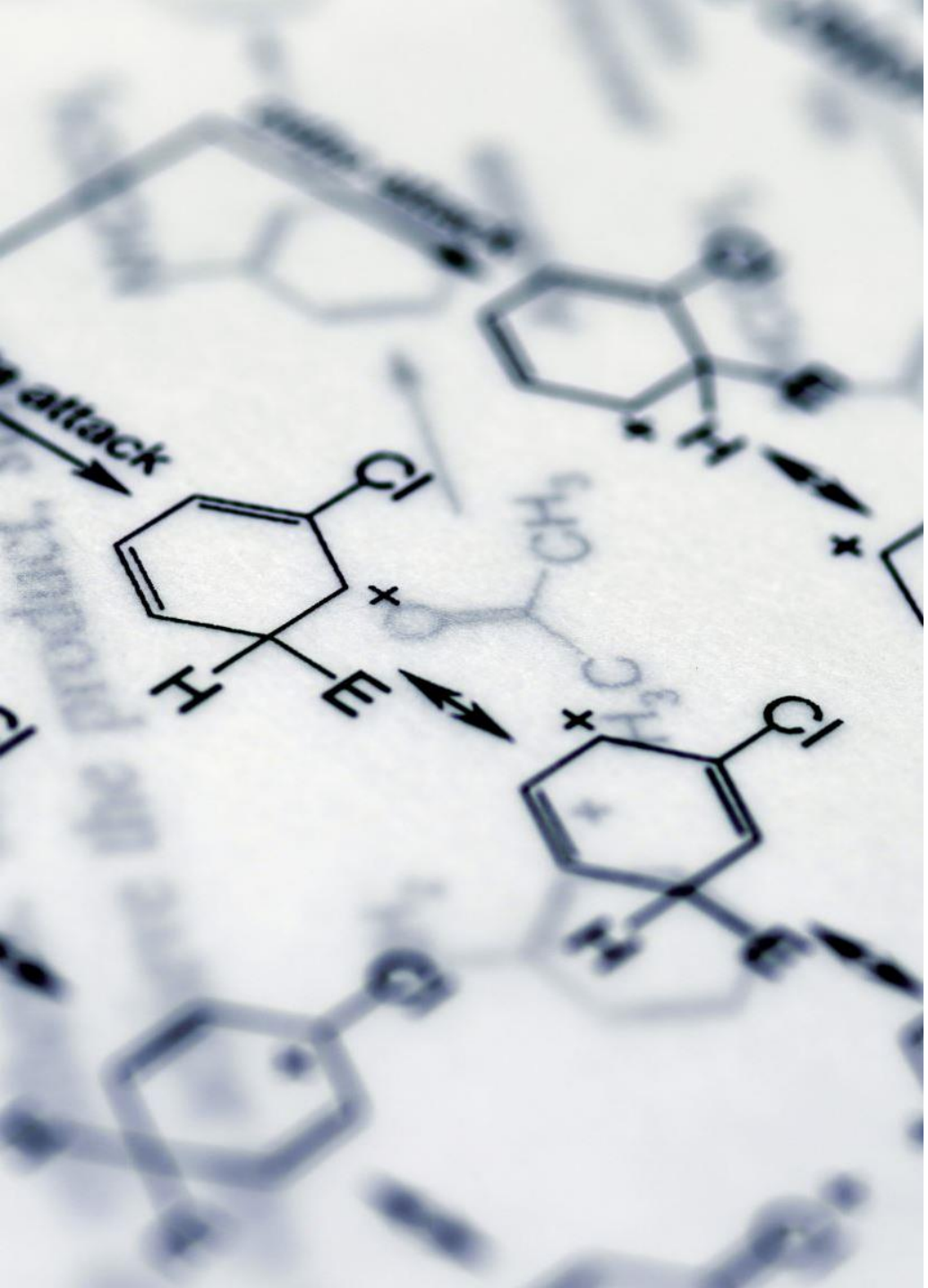


Strength and Analysis

- Provisions for designing with **600 and 750Mpa** steels in columns, shear, anchorage and stress development
- Increase in Phi for slender columns to 0.65 making it consistent with stocky columns.
- Option of using **curvilinear stress** block for linear elements for easier transition between SLS and ULS.
- New rules for punching shear in slabs to bring it in line with **MCFT**.
- Additional guidance on design for concentrated forces developing tension within the element.
- Consideration being given to new rules for use of 750Mpa reinforcing steel in as shear reinforcement

Construction, Tolerances, Detailing and Quality

- New Section on Prefabricated Concrete Elements and Structures added, and all references to ‘Precast' moved from other Sections and expanded.
- Waterproofing and Weatherproofing defined.
- Weatherproofing added in detail to enable Deemed to Satisfy status in NCC.
- Design for Safety added to align with NCC.
- Durability specified for cast in fittings and fastenings.
- Factor for undue or differential settlement in slabs on ground added



Durability

- Longer design life in excess of 50 years for specific structural components included in Notes
- Clarifications and clearer descriptions on Exposure Classifications.
- Adjustment of entrained air for 10 and 20mm aggregates and removal of entrained air for 40mm aggregate.
- Changes to Notes to make more consistent with AS5100.5
- Changes to concrete cover requirements for Exposure Class A2 to account for the increased carbonation rate in concrete with high supplementary cementitious material (SCM) content
- Required cover for Stainless Steel Reinforcement added.
- Required cover for Galvanised Steel Reinforcement added.

Serviceability

Shrinkage and Creep factors added for 120Mpa concrete.

Minor changes to deflection of floor beams for serviceability limit state.

The specified procedure for calculating crack widths in beams and slabs at the serviceability limit state has been improved, covering elements both with and without fibres.

Assessment of Existing Structures

New content added as an Appendix.

Sustainability and Economic considerations.

Existing structures should not be arbitrarily demolished because they might not comply with the fine details of current codes.

Follows the principles established in **fib Model Code**.

Digital Transformation and Artificial Intelligence

Add hyper-links or modal for cross-references

Add hyper-links or modal to definitions for important terminology

Inline, linked, or side-by-side commentary

Hover over graphs for exact values

Additional diagrams, videos, or other learning content in online view

Dedicated webpage listing learning materials

Dropdowns to look up table data

Digital note-taking shared within organisations

Side-by-side comparison between document revisions

Calculators for full design

Digital Transformation and Artificial Intelligence

- Calculators for individual equations
- Flowcharts with clause links for common workflows
- Smart searching capabilities
- Worked examples of workflows for typical designs
- Conformance & compliance requirements from other codes
- Sponsored learning materials in the document
- FAQ for AS 3600
- Add hyper-links to the Commentary
- Moderated knowledge sharing
- Markup format where you can make your own notes.
- Video's & / or photos linked to the commentary
- Interactive diagrams & formulae

What is the current status of AS 3600-2025?

- Final draft of AS 3600-2025 was completed in May 2025.
- The draft is expected to be released for public comment in mid-2025
- The final edition is scheduled for publication in late 2025
- AS3600-2025 is expected to be recognized by ABCB as complying with NCC
- A new edition of the commentary is currently under way.

Future Expectations – Opportunities for Contribution in AS3600

The impact of Artificial Intelligence (e.g., Chat GPT) on future codes?

Technology Updates

Geopolymer Concrete

FRP Reinforcing Bars and Mesh

Non-metallic Fibres

Continuous Digital Transformation

Climate Change Considerations

Maritime Structures

Sprayed Concrete

Links between codes and the design software

Summary and Concluding Remarks

- AS 3600-2025 brings Australia in line with modern and international practice.
- Opportunity for the maritime industry and PIANC to contribute further to future codes (e.g. adding a maritime section to the code, linking the code to PIANC guidelines).
- Digital transformation and implementation will dominate future codes

Thank you

Dr. Sam Mazaheri
Sam.Mazaheri@dbct.com.au
Sam.Mazaheri@bia-co.com