

ELECTRONIC BLUEPRINT is the principal point of reference and knowledge base for Architects, Engineers and Builders and the only package that fully integrates regulatory & standards requirements with comprehensive, editable specifications, CAD details and approved industry training.

ELECTRONIC BLUEPRINT Update

CPD for Architects, Engineers & Builders

Dear Building Professional

Thank you for receiving the ELECTRONIC BLUEPRINT Update.

Bi-monthly issues are emailed (six per year) to keep architects, engineers and builders informed of:

- Changes to the Building Code of Australia and relevant Australian Standards
- Commentary on the changes and other important design considerations
- Appropriate specifications and drawing details to comply with those standards
- A range of building products that meet the particular requirements.

In a major training initiative, Electronic Blueprint Updates will provide the focus for **coordinated Continuous Professional Development Training programs** by Distance Learning techniques for practising Architects, Engineers and Builders in conjunction with the following organisations:

- **Archicentre**,
- **ACEA NSW, Victoria & Tasmania** (Association of Consulting Engineers, Australia)
- **MBA (NSW)** (Master Builders Association)

Distance Learning is a program of training carried out in the convenience and comfort of your own home or office, using material downloaded from the internet. For further information, or to participate in this CPD Training Program, [click here](#).

Should you require more information of any of the matters raised herein, please refer to our website www.electronicblueprint.com.au or contact us by email info@electronicblueprint.com.au.

Rod Johnston – Principal Author

Karen Bloomfield – Chief Executive Officer

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The Product Directory enables specifiers and purchasers to quickly access a list of building products that comply with the specific requirements of the Electronic Blueprint.

[Engineers Feature - more](#)

AS 3700 Amendment 3 Masonry Detailing for Earthquake

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New, Superseded and amended Australian Standards.

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AS/NZS 4455 Masonry Units, Retaining Walls, Pavers & Flags

[Breaking News](#)

AS 4773 *Masonry in Small Buildings* nears completion.

We are conscious that professionals receive large quantities of technical information.

To cease receiving these newsletters (six per year) please email us at info@electronicblueprint.com.au.

Email addresses are never sold nor used for reasons other than **ELECTRONIC BLUEPRINT** notification and information.

Distance Learning Training Program

The **ELECTRONIC BLUEPRINT** Distance Learning Packages allow Architects, Engineers and Builders to upgrade their Continuing Professional Development and obtain the required CPD points without having to attend formal lectures.

Each presentation is a Power Point presentation on CD, complete with full text, audio voice-over and tutoring opportunity.

B - Building Modules – Specifications, Details and Inspections for Builders.

D - Design Modules – Advanced Concepts and Specifications for Architects and Designers.

E - Engineering Modules – Complex design calculations and engineering detailing.

More information including registration forms and further course information may be obtained from the website at; <http://www.electronicblueprint.com.au/training.html>

Non-structured Distance Learning

Architects, Engineers and Builders may select Distance Learning Packages from a comprehensive list to suit their particular needs. The training is carried out at the convenience of the participant, an assignment is submitted and assessed, the Certificate of Completion is issued and the CPD points assigned.

Structured Distance Learning Program

Every two months, a coordinated Distance Learning Package consisting of several related topics will be offered. Each package will include an Electronic Update, which summarises the content, and several voiced-over presentations, as follows:

- Specification, detailing and problem solving for Architects
- Structural, civil and/or mechanical/electrical design for Engineers.
- Problems, solutions, and site control for Builders.

Summary of Structured Distance Learning Program	
Module 1	Site establishment & preliminaries
Module 2	Masonry
Module 3	Sustainability (Energy Efficiency) Windows, doors & glazing Insulation
Module 4	Earthworks & site drainage
Module 5	Retaining walls Fencing Landscaping
Module 6	Slip Resistance Floor & wall tiling Resilient floor coverings Carpets & soft furnishings
Module 7	Sustainability (Water Conservation) Drainage & plumbing Roof cladding Roof plumbing
Module 8	Paving Public kerbs, gutters, footpaths etc
Module 9	Sustainability (Air quality & toxicity) Painting & coatings Cleaning
Module 10	Concrete
Module 11	Loading Standards

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	Structural steelwork Wall, roof & floor framing Carpentry, Joinery, Cladding & Floor Ceiling & wall lining
Module 12	Electrical installation Mechanical ventilation & services Kitchen Vehicular doors Window & door shutters Metalwork & balustrades
<p>Complimentary Packages Site establishment & preliminaries - This demonstration module will be made available free-of-charge to Architects, Engineers or Builders interested in participating in the program.</p> <p>BCA – A module on the amendments to the BCA Volumes 1 & 2 which are published 1st May each year will be made available free-of-charge with the May module of each year</p>	

Further Assistance

For more help on any subject, participants may contact the tutor by email. The tutor will respond within 48 hours. On completion of the presentation, participants may complete a short assignment and email it to the tutor. The purpose of the assignment is to provide focus for the presentation, and to enable participants to apply the information to practical situations. The tutor will assess it, provide comments and forward a certificate by return email.

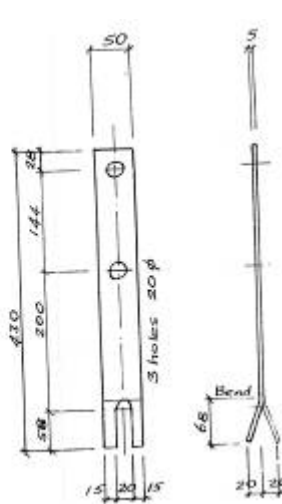
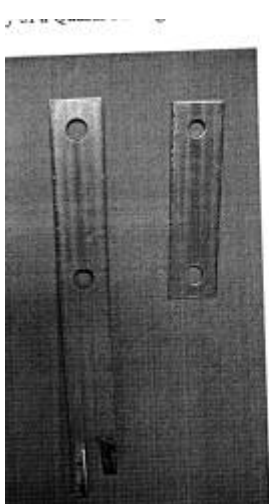
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Architects – AS 4773 Parts 1 and 2 - Masonry in Small Buildings

It has been recognised for some time that the design rules and details for masonry housing, and other similarly sized small buildings, in AS 3700 Section 12 are quite restrictive. Standards Australia is drawing close to the publication of AS 4773.1 *Masonry for small buildings – Part 1 Design* and AS 4773.2 *Masonry for small buildings – Part 2 Construction*. These two standards will provide designers and builders with a practical design tables and details that cover all aspects of the design and construction of unreinforced masonry (brick veneer, cavity masonry, and single-leaf masonry) and reinforced single-leaf hollow blockwork for houses and other small buildings. Some of the more significant improvements over AS 3700 Section 12 are discussed below.

Control Joint Spacing

Clay brickwork expands and concrete blockwork contracts. Reactive clay foundations heave and shrink, inducing cracks in both types of masonry superstructure. The incorporation of control joints (including articulation joints, expansion joints and/or contraction joints) is an important means of limiting and controlling cracking in both brickwork and blockwork. The current masonry control joint spacings in AS 3700 Section 12 are not practical. AS 4773 provides modified spacing, recognising the practical differences between veneer and cavity construction, the effect of widow and door openings and the need to stabilise corners while simultaneous catering for “push past” of expanding clay brickwork.



Hold-down Capacity of Anchorages

AS 4773 provides details and design capacities for roof anchorages in both unreinforced cavity masonry (cavity brickwork) and reinforced single-leaf hollow blockwork, for high wind applications.

Steel Lintel Tables

Steel lintels are often used to bridge openings over windows and doors in masonry veneer and cavity masonry construction. The design criteria for such lintels have now been clarified and the tables expanded.



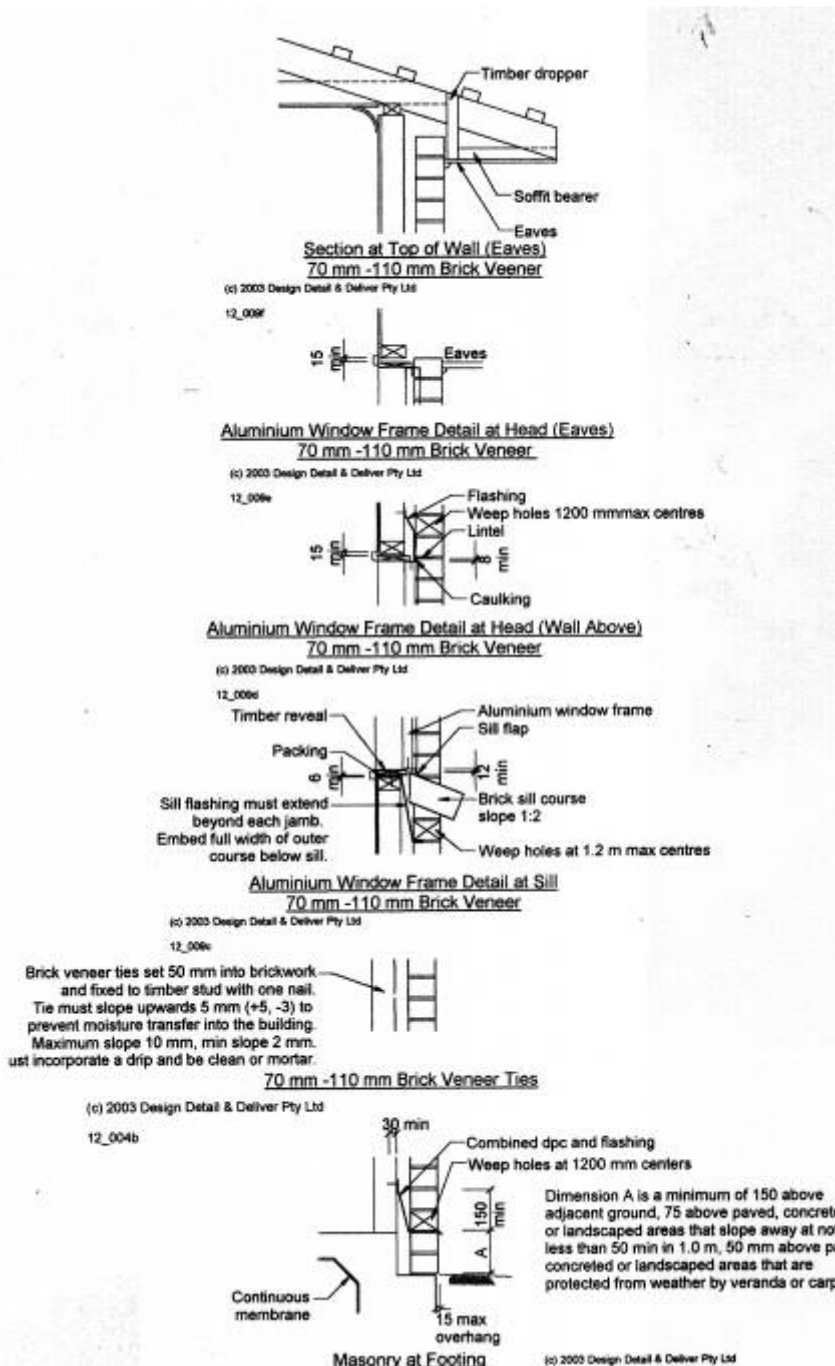
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Reinforced Hollow Concrete Blockwork Lintel Tables

Reinforced hollow concrete blockwork lintels bridge openings over windows and doors while simultaneously forming part of the bond-beam "ring beam" that ties a reinforced blockwork building together to form a "stiff box". A wide range of reinforced masonry lintel tables, for both wind uplift and downwards gravity load are provided.

Flashing Details

It is important that the building designer understand, and communicate clearly to the builder, the limitations and practices in regards preventing water penetration to the inside of buildings. The range of flashing details has been expanded to cover all common housing applications. For the complete background, tables and details, please refer to website www.electronicblueprint.com.au



For further information on this topic, or for relevant Continuing Professional Development Distance Learning Packages, please contact **ELECTRONIC BLUEPRINT** at info@electronicblueprint.com.au

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Engineers – AS 3700 Amendment 3 Masonry Detailing for Earthquake

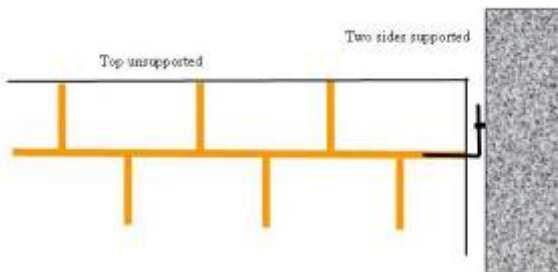
BCA 2008, which will come into force 1 May 2008, will incorporate the new earthquake loading standard AS 1170.4-2007 and an amendment to the masonry structures standard, to account for design and detailing masonry for earthquake loads, AS 3700 Amendment 3.



The key to good design of masonry in multistorey construction is:

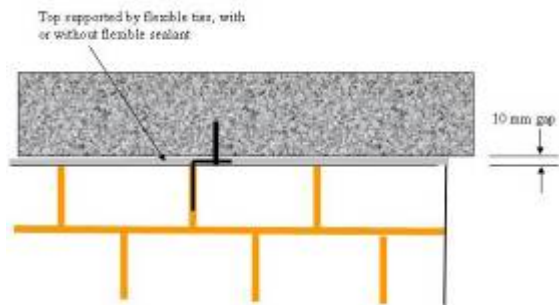
- Provide suitable gaps to isolate stiff masonry walls from the a ductile reinforced concrete frame (or similar ductile lateral force resisting structure), and
- Simultaneously provide support to prevent masonry walls from being displaced by the horizontal earthquake inertia forces.

The following details are similar to those that will be included in AS 3700 Amendment 3. They provide guidance to structural engineers, to ensure that masonry walls have the required separation and/or support for suitable earthquake performance. Details must be properly designed and adapted by the Engineer and communicated accurately by the Builder. Clause references are to AS 3700.



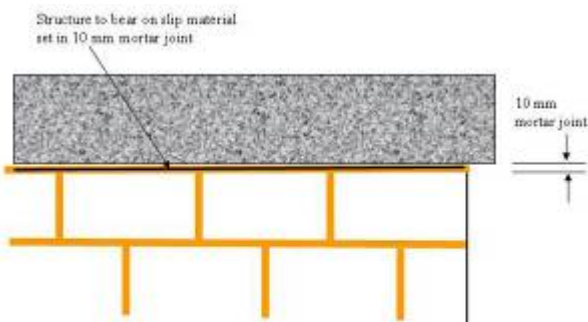
1. Type T1 (No top support) shall be used only if two side supports are provided.

Top Support T1 – No Top Support



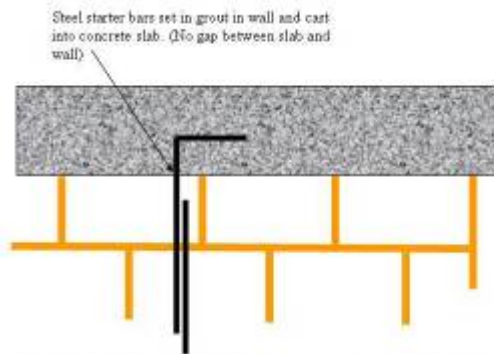
Type T2 requires at least 10 mm gap, with or without flexible sealant, and with flexible ties to a rigid support. Flexible ties shall provide out-of-plane support for the wall, while permitting in-plane movement.

Top Support T2 – Flexible Ties with Gap to a Rigid Support



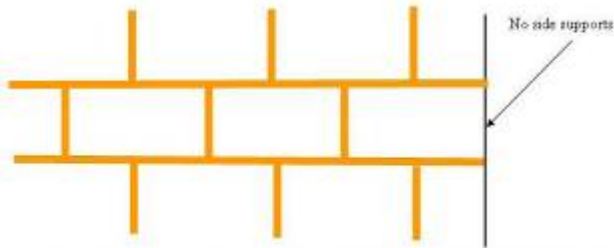
1. Type B3 (Bed with slip joint or DPC) shall comply with Clauses 4.9 and 4.7.3.
2. Slip joint material, dpc or similar shall have a shear factor k_s , not less than 0.15 and not more than 0.3, determined in accordance with Clause 3.3.5.

Top Support T3 – Mortar Bed with Slip Joint or DPC



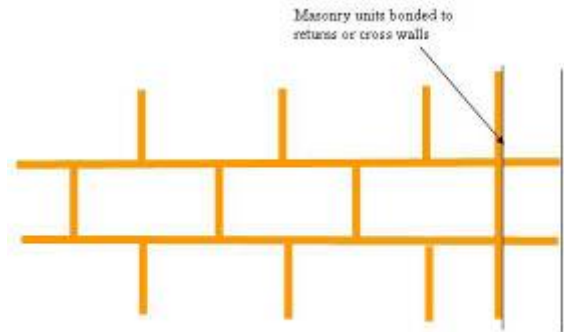
1. Type T4 shall be such that the interface is confined by bonded reinforcement.
2. Shear strength of the joint shall be determined in accordance with Clauses 8.6 and 3.3.4(d).

Top Support T4 – Steel Starter Bars



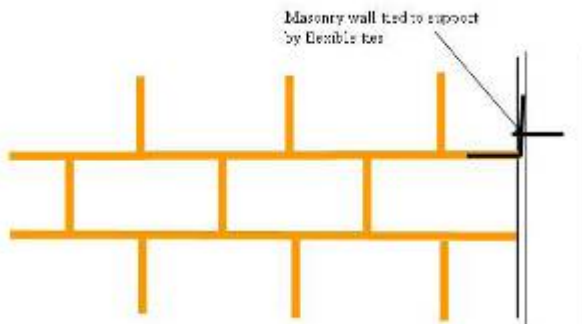
1. Type S1 (No side support) shall be used only if both the top and bottom of the masonry wall are supported by the structure.

Side Support S1 – No Side Support



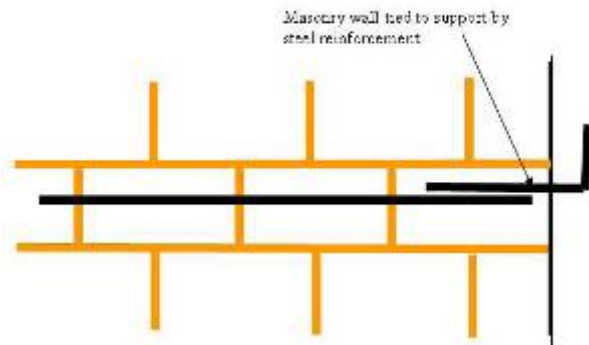
1. Type S2 (Built into returns or cross-walls) shall comply with Clauses 4.11.2 or 4.11.3.

Side Support S2 – Built into Returns or Cross-walls



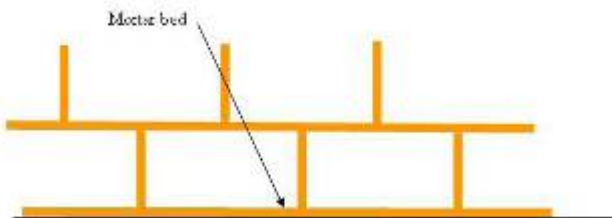
1. Type S3 (Tied to piers, Mullions or cross-walls) shall comply with Clause 4.11.3.
2. Flexible ties shall provide out-of-plane support for the wall, while permitting in-plane movement.

Side Support S3 – Tied to piers, mullions or cross-walls



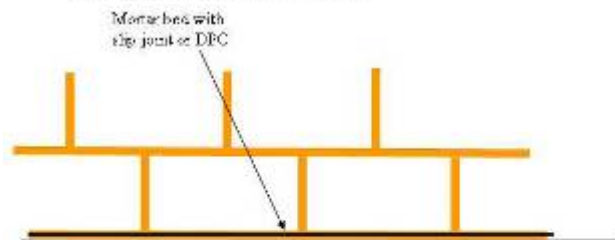
1. Type S4 (Steel reinforcement) shall be such that the interface is confined by bonded reinforcement.
2. The shear strength of the joint shall be determined in accordance with Clauses 8.6 and 3.3.4(d).

Top Support S4 – Steel Reinforcement



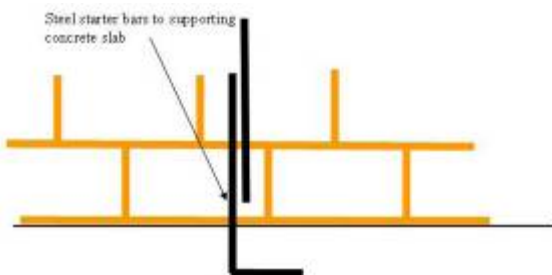
1. Type B1 (Mortar bed) shall comply with Clause 4.8 of this Standard.

Bottom Support B1 – Mortar Bed



1. Type B2 (Bed with slip joint or DPC) shall comply with Clauses 4.8 and 4.7.3.
2. The shear strength of the joint shall be determined in accordance with Clauses 7.5 and 3.3.4(a) and 3.5.
3. Slip joint materials, dpc or similar shall have a shear factor k_s not less than 0.15 and not more than 0.3, determined in accordance with Clause 3.3.5.

Bottom Support B2 – Mortar Bed with Slip Joint or DPC



1. Type B3 (Steel starter bars) shall be such that the interface is confined by bonded reinforcement.
2. The shear strength of the joint shall be determined in accordance with Clauses 8.6 and 3.3.4(d).

Bottom Support B3 – Steel Starter Bars

For further information on this topic, or for relevant Continuing Professional Development Distance Learning Packages, please contact **ELECTRONIC BLUEPRINT** at info@electronicblueprint.com.au

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Builders – AS/NZS 4455 Masonry Units, Retaining Walls, Pavers & Flags

Masonry units (bricks and blocks) are some of the most common building materials, yet are often incorrectly specified and ordered. The revised Australian Standard covering these units, AS/NZS 4455-2007, is close to publication in three parts:

Part 1: Masonry units (bricks and blocks) to be laid in mortar to construct walls, piers and the like.



Part 2: Retaining wall units, intended to be dry-stacked without the aid of mortar.



Part 3: Pavers and flags, for segmental pavements.



Specifiers and builders should bear in mind that the standard does not specify particular values for the relevant properties (strengths, tolerances, exposure grades, contractions, expansion and the like). The designer must determine this information and ensure it is included in the specification.

A typical specification (subject to modification and confirmation by the designer) for bricks and blocks, complying with AS/NZS 4455 Part 1, is set out below.

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Masonry Units

Unless specified elsewhere in the documents, masonry units shall be fired clay, concrete or calcium silicate units complying with AS/NZS 4455.1 and the following requirements.

- *Masonry units shall comply with Dimensional Category DW1 (determined using AS/NZS 4456.3 Method A), except that split or irregular faces may be DW0. Concrete units usually comply with Dimensional Category DW4 (determined using AS/NZS 4456.3 Method B), which is more stringent than for DW1.*
- *Masonry units shall meet General Purpose Salt Attack Resistance Grade, except for applications requiring Exposure Grade in accordance with AS 3700 Table 5.1 or Table 12.2. Applications requiring Exposure Grade are:

 - *saline wetting or drying,*
 - *aggressive soils,*
 - *severe marine environments,*
 - *saline or contaminated water including tidal or splash zones, or*
 - *within 1 km of a industry producing chemical pollutants**
- *Masonry units shall have a Characteristic Compressive Strength not less than a value specified by the Engineer. In the absence of such specification, masonry units shall have Characteristic Compressive Strengths not less than the following values.*

Minimum Characteristic Compressive Strength of Masonry Units ¹		
Application	Hollow units ²	Solid, cored or horizontally cored units ³
Reinforced masonry	15.0 MPa ⁴	
Loadbearing masonry	15.0 MPa ⁴	10.0 MPa
Non-loadbearing masonry	10.0 MPa ⁴	3.0 MPa
Notes 1. Values of minimum characteristic compressive strength specified by the Engineer override the values given in this table. Designers and specifiers should check with the manufacturers the availability of particular strength grades. 2. For hollow units, compressive strength is measured using face shell bedding. 3. For solid, cored or horizontally cored units, compressive strength is measured using full bedding. 4. AS 3700 Section 12 permits the use of 12 MPa units for reinforced hollow masonry in small buildings. However, 15 MPa units are commonly available and form the basis of many design charts in common use.		

- *Masonry units intended for face applications and exposed to the weather shall have:

 - *Permeability not more than 2 mm/minute*
 - *Efflorescence Potential of Nil or Slight*
 - *Colour and texture within an agreed range.**
- *Masonry units intended for exposure to lateral loads in excess of 0.5 kPa shall have a Characteristic Lateral Modulus of Rupture not less than 0.8 MPa.*
- *Concrete masonry units shall have a Mean Coefficient of Residual Drying Contraction not more than 0.6 mm/m.*
- *Clay masonry units shall have a Mean Coefficient of Expansion not more than 1.0 mm/m.*

For further information on this topic, or for relevant Continuing Professional Development Distance Learning Packages, please contact **ELECTRONIC BLUEPRINT** at info@electronicblueprint.com.au

Changes to Australian Standards

New Standard	Superseded Standard
AS 1926.1-2007 Swimming pool safety - Safety barriers for swimming pools	AS 1926.1-1993
AS 1926.2-2007 Swimming pool safety - Location of safety barriers for swimming pools	AS 1926.2-1995
AS/NZS 60335.2.97:2007 Household and similar electrical appliances - Safety - Particular requirements for drives for rolling shutters, awnings, blinds and similar equipment (IEC 60335-2-97 Ed 2.1, IDT)	AS/NZS 3350.2.97:2000
AS/NZS 60335.2.103:2007 Household and similar electrical appliances - Safety - Particular requirements for drives for gates, doors and windows (IEC 60335-2-103: Ed 2, IDT)	



Amended Standards
AS/NZS 3350.2.35:1999 Safety of household and similar electrical appliances - Particular requirements - Instantaneous water heaters
AS/NZS 60335.2.35:2004 Household and similar electrical appliances - Safety - Particular requirements for instantaneous water heaters (IEC 60335-2-35 Ed 4.1, IDT)



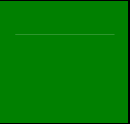
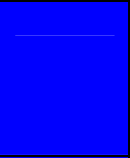









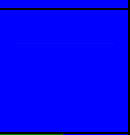






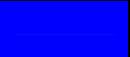
These changes are reflected in the updated version of the **ELECTRONIC BLUEPRINT**, which is available at www.electronicblueprint.com.au . For more information on changes to Australian Standards, visit SAI Global at www.standards.com.au.

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PRODUCT DIRECTORY

Enabling specifiers fast access a list of building products which comply with the specific requirements of the Electronic Blueprint specifications.

Key:	
Supplier name	Hyperlink to Product Page for particular Supplier
EB Sections	Electronic Blueprint section listing Supplier product specifications
Spec Type:	 Electronic Blueprint Specification
	 Electronic Blueprint Sustainability Specification

Supplier	Product Details	EB SECTION(S)	SPEC TYPE
Abey Australia Pty Ltd	Wall ties for all environments, including stainless steel cavity ties for use in Marine (R3) and Severe Marine (R4) environments	12	
Armacell Australia Pty Ltd	Engineered foam for thermal and acoustic insulation solutions.	5,23	
Ausdrain	Drainage cells for horizontal and vertical applications ; Geotextiles; Protection Boards; Underground rainwater storage & re-use; Stormwater infiltration & filtration; Retention tanks; Septic leach drainage.	2,4,5	
Breezeway Australia Pty Ltd	Energy and cyclone rated louvre windows made from non-corrosive materials complying with AS 2047; Skylights manufactured in accordance with AS2485 and AS1288 and energy rated according to WERS Scheme; Solid timber loft ladders with a high load capacity of 160kg; insulated and dust retardant trap doors	6, 9	
Brunswick Sales	Vertical control joint ties to AS 2699 Part 1. Available fully galvanised or grade 316 stainless steel.	12	
C&M Brick	Retaining wall systems to meet the requirements of AS 4678; Water-repellent masonry blocks	4, 12, 27	
Canterbury Windows & Doors	Timber framed windows and doors.	6	
Concrete Colour Systems	Pigments and systems for resurfacing, colouring and stencilling existing and new concrete surfaces	3	
Connolly Key Joint Pty Ltd	Preformed concrete control joints and ancillary products	3	
Cultured Stone	Manufactured Stone Veneer Cladding	9	
CVC Centravac	Built -In Vacuum Systems	23	
Devi Heating Systems	Underfloor and ceiling heating systems.	16	
Easy Living Home Elevators	Home & commercial elevators, dumbwaiters and limited mobility lifts to AS 1735	23	
Electronic Blueprint	Steel mullions for brickwork and blockwork to provide wind and earthquake resistance to the new AS/NZS 1170.2 and AS 1170.4. Resilient ties to comply with BCA Vol 1&2 for the separation of leaves of cavity walls to eliminate the transmission of impact sound	7, 12	
Edwards Solar Hot Water	Solar Hot Water Systems	5	
Endless Solar Corporation	Solar Hot Water Systems	5	
Elmich Australia	Landscape Engineering Solutions	2,5,25,27	
Ensystex Australasia	Termite barriers complying with the requirements of AS 3660.1 Non-toxic, in-ground or above-ground, termite colony elimination and protection system complying with AS3660.2.	3,8,12	
Erosion Control Systems	Retaining wall systems up to and over 1500mm for both domestic and commercial applications in accordance with AS 4678 (Including Amendment 1)	4	
Expella Pty Ltd	Ventilation solutions	23	
Fibercon	Steel fibre reinforcement used for enhancing toughness and impact resistance of concrete	3, 27	

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Ford Timbers Pty Ltd	Hardwoods with enhanced performance.	8,9,10,26,28	
Hanson Building Products	Retaining wall systems to meet the requirements of AS 4678; Water-repellent masonry blocks; Concrete block systems, including insulated blocks and acoustic block systems, to meet the BCA requirements; Segmental pavers for roadways, driveways, gardens and pool surrounds to meet AS 3727 Residential pavements Energy Efficient Masonry Housing Systems	4,12	
Helifix (Australia) Pty Ltd	Products to repair cracked or damaged brickwork	12	
Higgins Insulation	Higgins Insulation manufacture high quality, high performance, safe, natural, environmentally friendly insulation products	14	
Make It Mudbricks	Traditional puddle mixed mud bricks suitable for use in load bearing or post and beam style homes.	12	
Master Builders Association	Construction area safety signage.	1	
New Water	Complete Underhouse Rainwater Storage System	5	
Nuplex Constructions	Nuplex Construction Products manufacture and market floor coatings and sealers complying with AS/NZS 2310, AS/NZS 2311 & AS/NZS 2312.	19	
Perpetual Water	Mechanical water saving device for recycling of household grey water	5	
Polyslab	Permanent bases and Safe trays for Hot Water Systems, Plant & Machinery	5,23	
Protect-A-Window Australia	Protective window, tile and tub coatings	0,19	
Raven Product Pty Ltd	Sealing Systems, for doors and windows, which are frequently multi-purpose, sealing against a combination of intrusions and leakages including sound (AS 1191), fire (intumescent) & smoke (to AS 1530.4 & AS/NZS 1905.1), rain, draughts, dust, embers, light insects, vermin, and energy inc. heating & air conditioning (to AS 4420.4, AS 4420.5, AS 2047, AS 1939, AS 1530.7)..	6, 18	
Resene Paints (Aust) Ltd	Environmentally friendly (low VOC) paints complying to APAS requirements and Electronic Blueprint Sustainability Specification.	19	
Robert Bosch (Australia) Pty. Ltd.	Commercial and domestic continuous flow gas hot water systems- Hydropower, Pilot & Electronic ignition, available in natural gas & LPG. All gas hot water systems compliant with AS 4552.	5	
RootBarrier	Moisture and tree root shields	3	
Skydome Skylight Systems	Tubular skylights, roof windows, domed skylights, overhead glazing, mechanical roof ventilation	6, 23	
SmartFlo Gutters	Enclosed self-shedding gutter systems.	11	
Stramit Building Products	Cold-rolled galvanised steel products complying with AS 4600 Permanent formwork of cold-rolled steel complying with AS 1538 and AS 1397 Sheet steel metal roof and wall cladding complying with AS 1397 Metal rainwater goods complying with AS 2179.1	3, 7, 8, 10, 11	
Sunplus CPC Solar	Commercial and domestic evacuated tube solar hot water system complying with AS 2712 Solar and heat pump water heaters – Design and construction.	5	
Timbercrete	Unique Brick Suppliers	4	

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