

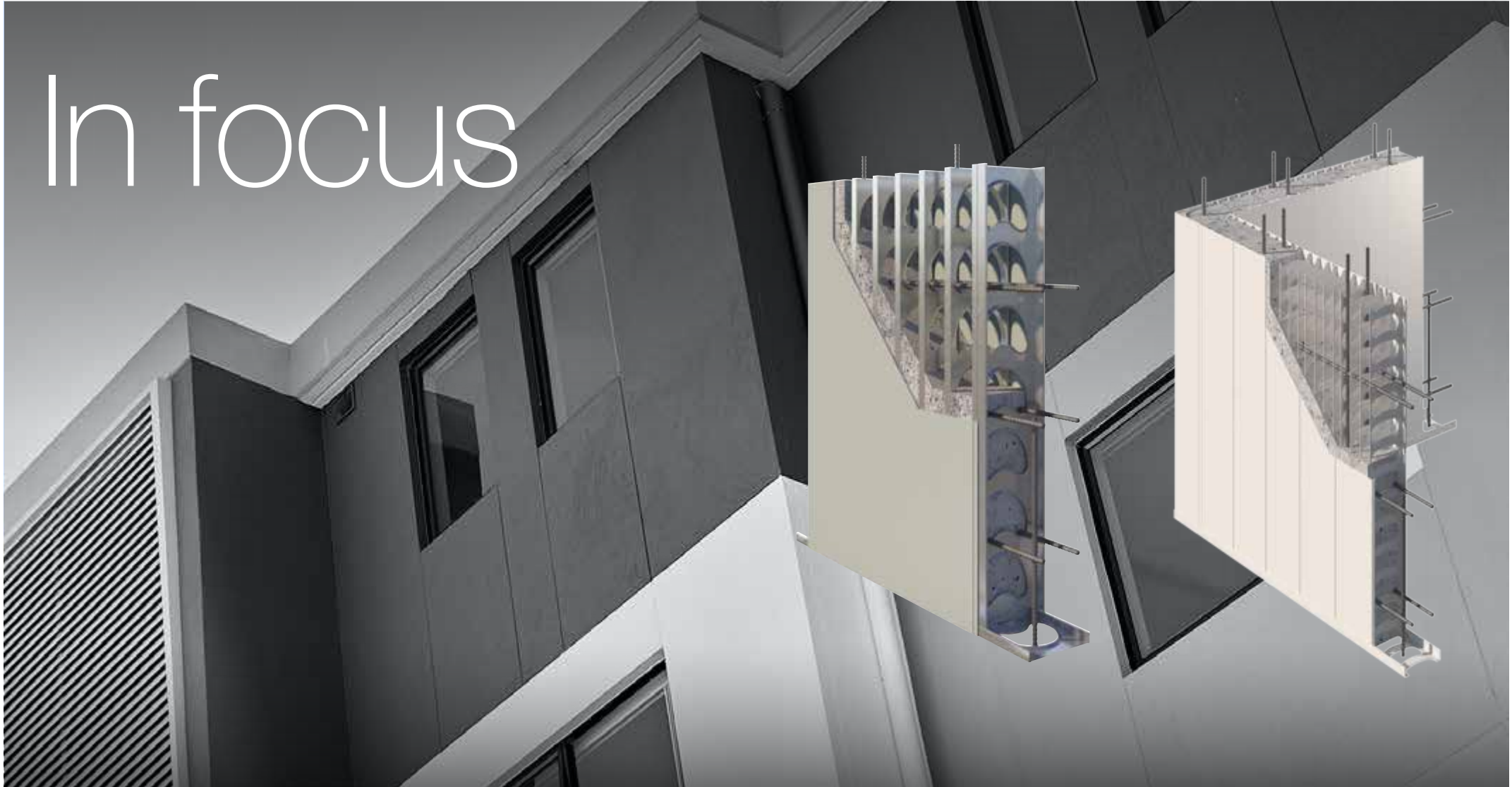


smarter  
permanent  
formwork.™

afs logicwall®

afs rediwall®

# In focus





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## who we are

- AFS has been supplying the construction industry with innovative proprietary walling systems since 1996.
- In 2014 AFS became part of CSR's portfolio of trusted brands.
- AFS has earned a reputation as a leader in permanent formwork walling systems through our logicwall® and rediwall® products.
- AFS has now completed projects in many countries globally including Australia, New Zealand, Papua New Guinea, UK, USA, Canada and the West Indies.



## what we have achieved

- AFS is a leader in the provision of permanent formwork walling solutions.
- Strong presence in NSW, VIC, QLD, ACT & WA
- Supply to major tier one clients and landmark projects Australia-wide
- Over 2,000,000m<sup>2</sup> supplied to projects throughout Australia.





## Introducing **afs rediwall**

afs rediwall® is a polymer-based permanent formwork for concrete walls.

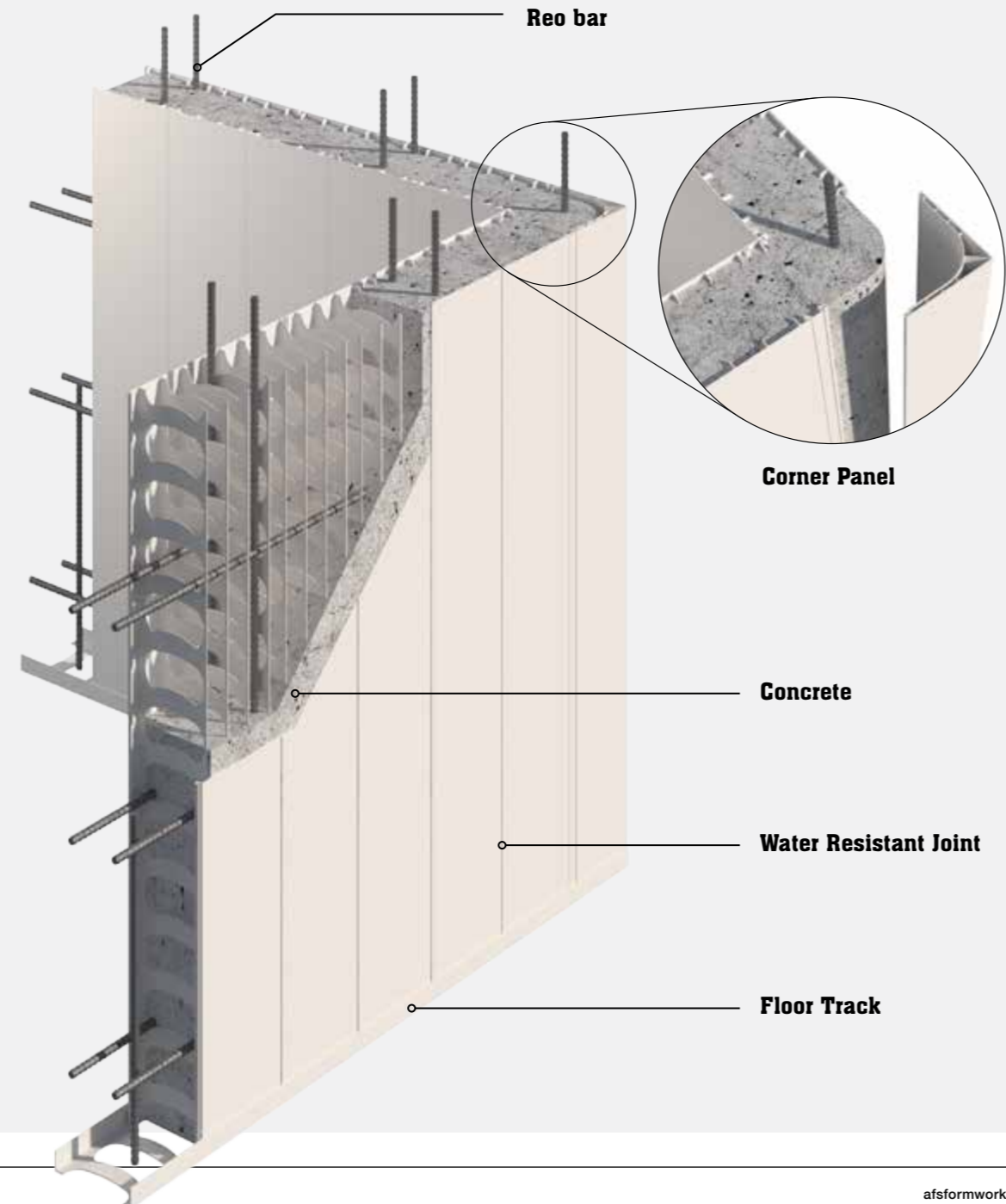
The extruded components simply snap or slide together to create a concrete formwork, erected with maximum efficiency whilst achieving an attractive, low-maintenance wall finish.

# advantages

## ideal solution for:

- » Basement Walls
- » Retaining Walls
- » Party Walls
- » Foundation Walls
- » Columns
- » Service & Stormwater Pits
- » Retention Tanks
- » Planter Boxes

-  Speed of construction
-  Ease of installation & materials handling
-  Lightweight durable system
-  Significant waste reduction
-  Semi Gloss high quality low maintenance finish
-  AS3600 and performance compliance
-  Water resistant



# profiles



**RW110**  
(snap together)



**RW156**  
(snap together)



**RW200**  
(snap together)

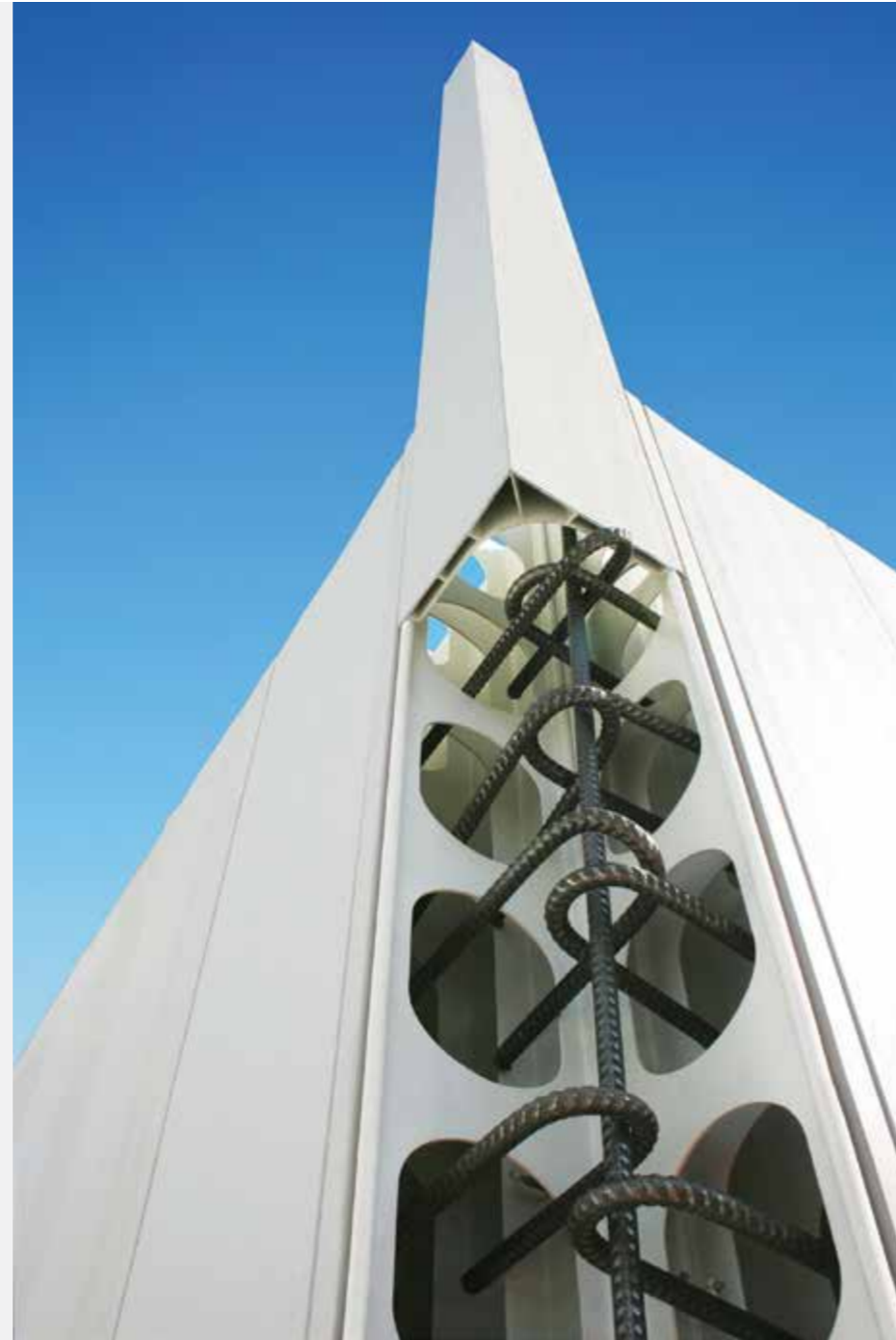


**RW256**  
(slide together)

# Ezy-Fit™ Corner Panel

## Introducing the revolutionary patented Ezy-Fit™ Corner Panel.

The removable corner cover allows complete unobstructed access for the trouble free installation and inspection of reinforcement bars.



Floor Track



accessories



End Cap



M/F Joiner



H-Joiner



T-Joiner



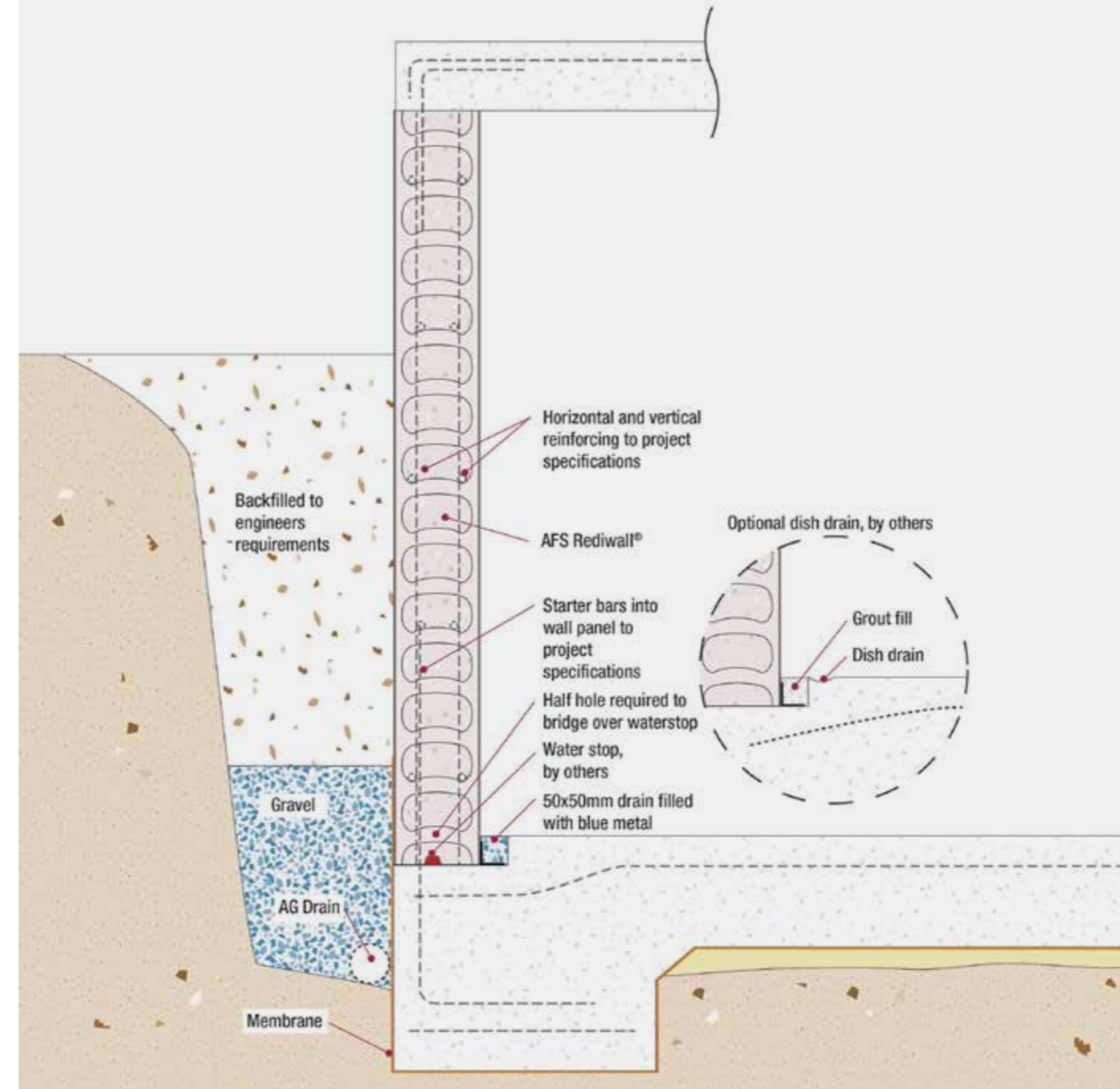
J-Joiner



# construction overview



# overview





design

afs rediwall® panels		RW110	RW156	RW200	RW256
<b>MECHANISM</b>		Snap-In	Snap-In	Snap-In	Slide-In
<b>THICKNESS</b>	<b>Overall</b>	110	156	200	256
	<b>Concrete m<sup>3</sup> / m<sup>2</sup></b>	0.105	0.150	0.195	0.251
<b>APPLICATION</b>		Basements, party walls, columns, retaining walls and retention tanks, service and stormwater pits			Blade Walls
<b>ACOUSTIC RATING (SCT)</b>		RW 51	RW 57	RW 60	RW 61
		RW + Ctr 44	RW + Ctr 50	RW + Ctr 53	RW + Ctr 54
<b>FIRE RESISTANCE LEVEL</b>		1.5 hours	4 hours	4 hours	4 hours



# rediwall® installation

## » Speedy-Snap-In™ Panels for easy installation



## » Bracing



## » Core filling







# Introducing **afs** logicwall®

afs logicwall® is a permanent formwork system for concrete walling for external and internal walls. It consists of lightweight panels created by bonding hard-wearing fibre cement sheets to galvanised steel stud frames.

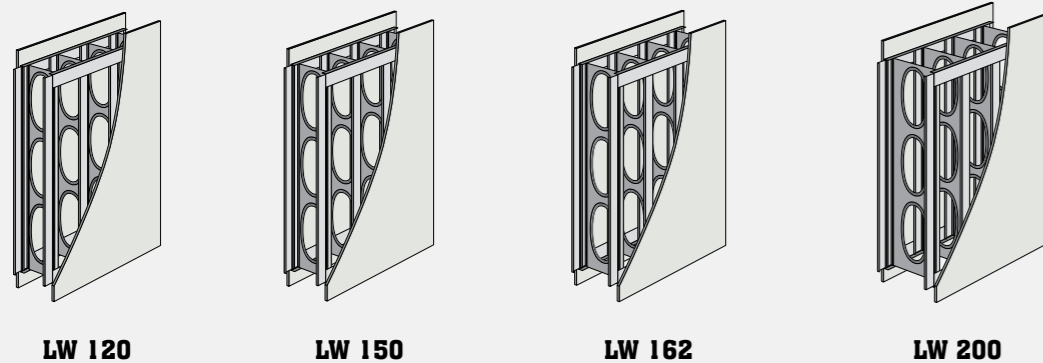
## advantages

-  Speed of construction
-  Efficient handling - not crane dependent
-  Shop drawn modular system
-  Structural load bearing capacity
-  Significant reduction in waste
-  AS3600 and performance compliant.
-  CodeMark Certified
-  Ease of design & specification

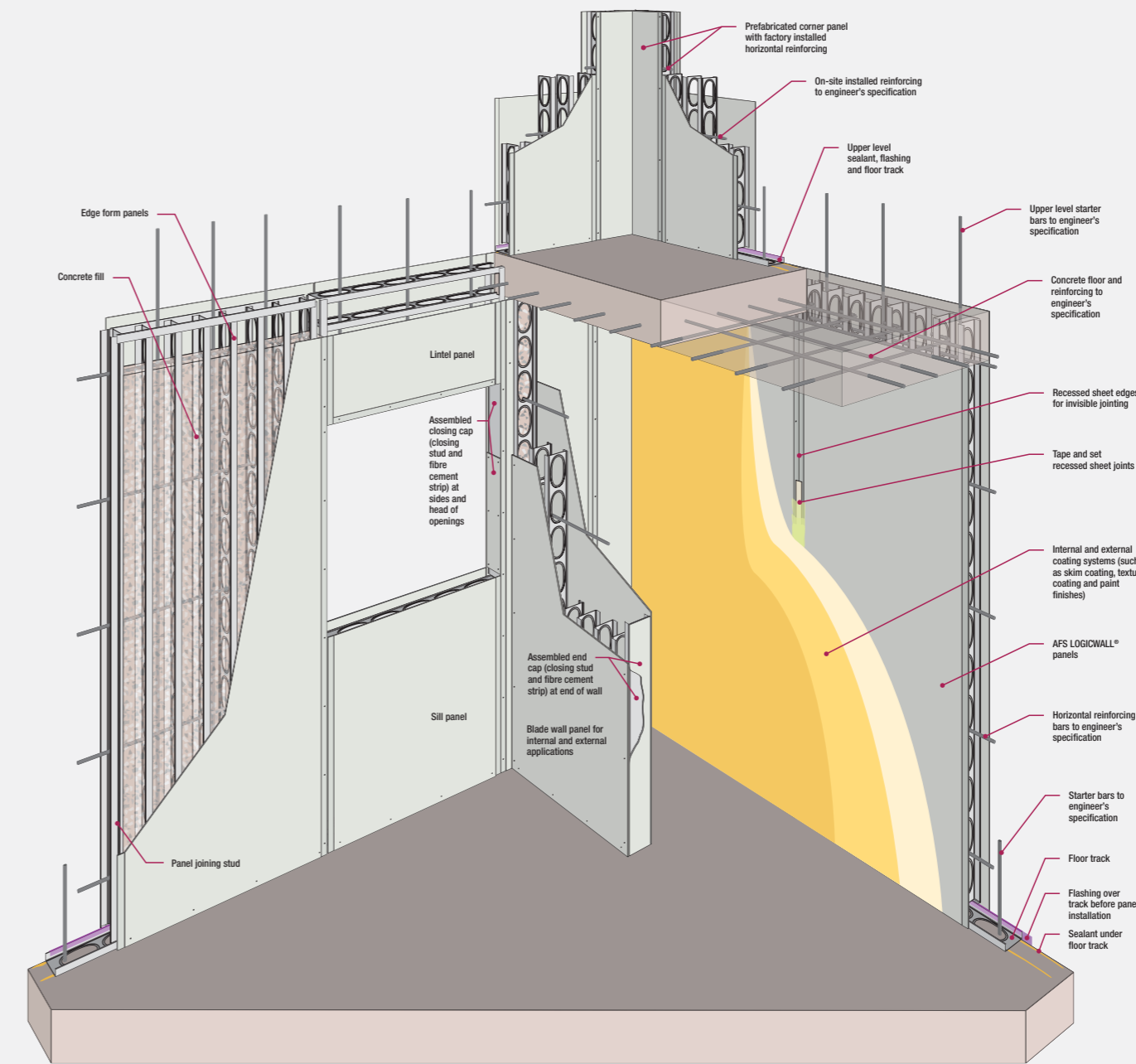
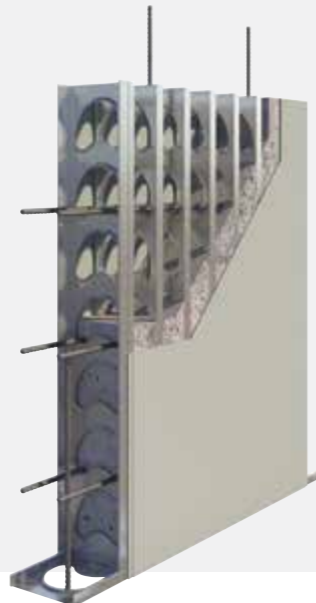
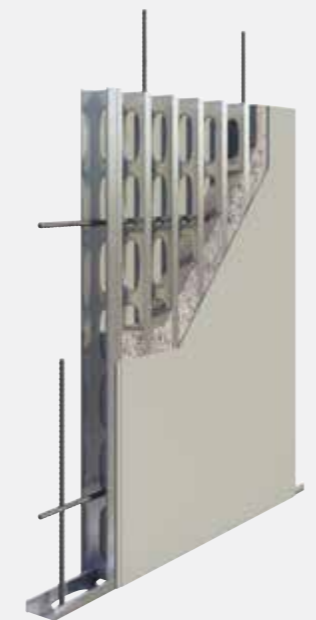
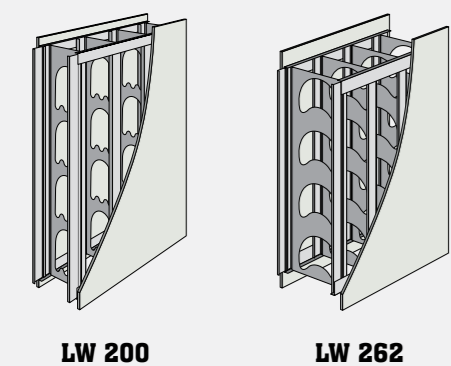


# system

## single reinforcement carriers



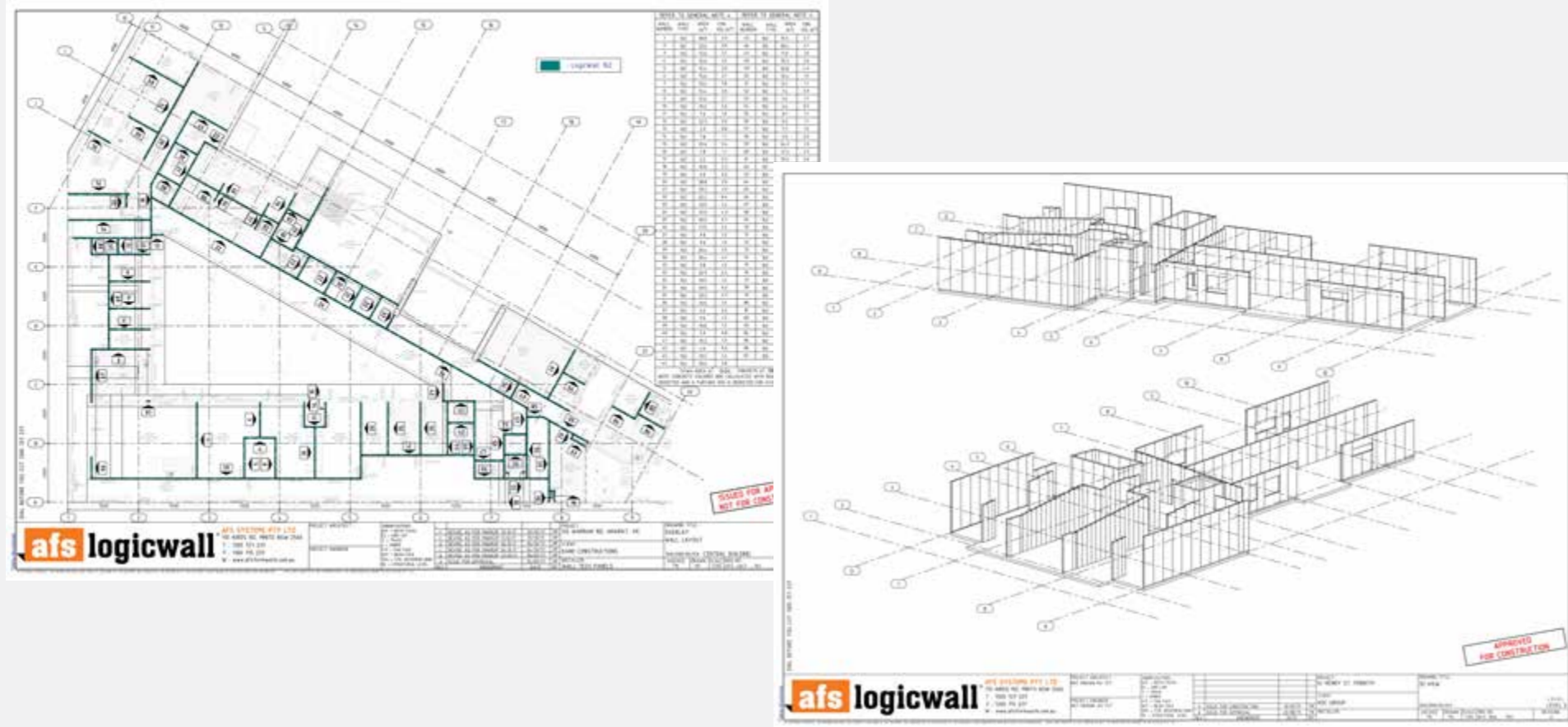
## double reinforcement carriers



# construction overview

## shop drawings

afs logicwall® is a shop-drawn system and is custom manufactured to suit the design of each project.



## panel identification

Every panel is labelled with a panel ID code which corresponds with the shop drawings.





## delivery

afs logicwall® is freighted to site in bulk quantities of up to 400m<sup>2</sup> per load.



The pallet of panels can be unloaded by a custom-made panel lifter.

Pallets of panels can also be easily unloaded by a Manitou and either forked onto the floor slab or craned up later.





## installation process

The floor track is fixed to the marked out slab over reinforcement starter bars.



## installation process

The panels are erected by hand in teams of three men using a set technique.



The panel joiner stud is aligned with the standing panel and lowered down over the reinforcement starter bars into place over the floor track.





## panel end cap

Panel end caps are installed on site.



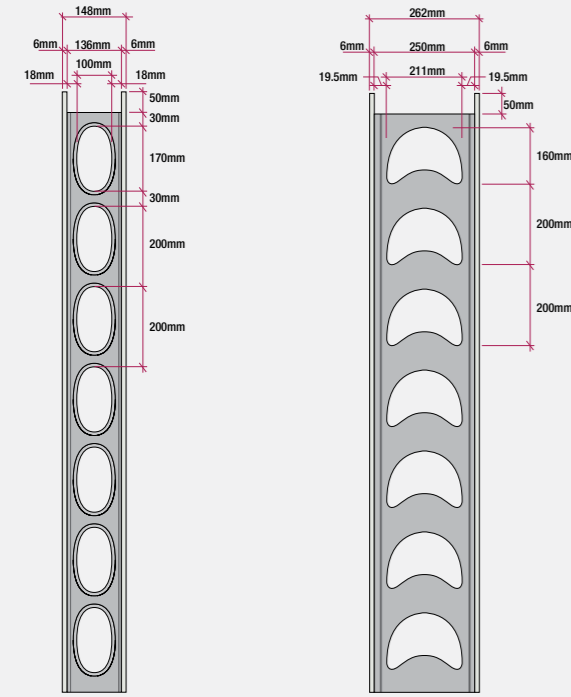
## bracing

Walls are temporarily braced at panel joints with purpose-built adjustable braces which also serve to plumb and straighten the walls.



# reinforcement

Vertical and horizontal reinforcement bars are placed in the walls to project engineer's specification.



Single Reinforcement (LW 150)

Double Reinforcement (LW 262)



# wall straightening

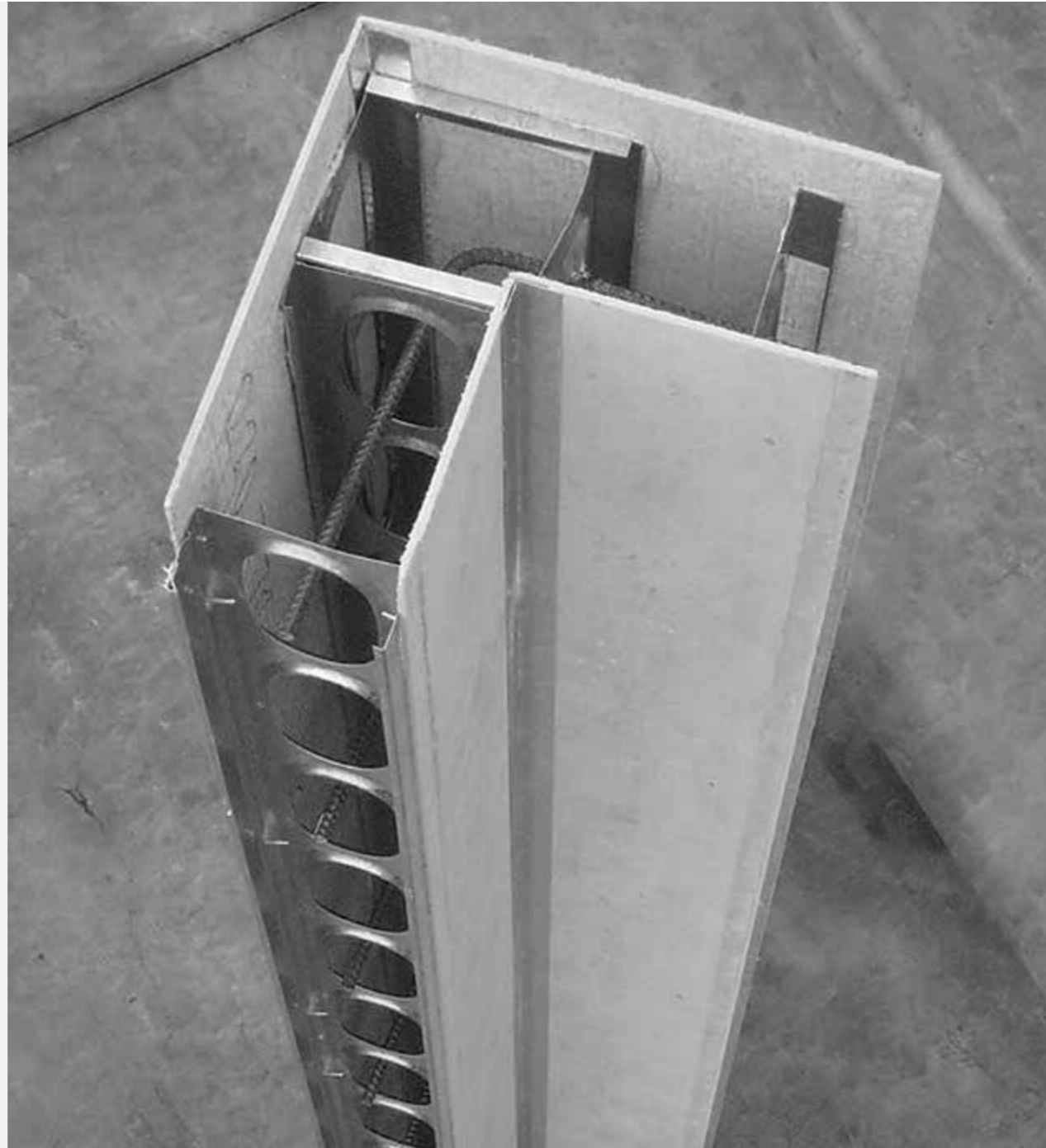
The panels are plumbed and straightened with string lines.





## corner panels

Reinforcement bars can be pre-installed in corner panels at the time of production.



Open corners allow for easy access for installation and inspection of reinforcement placement.

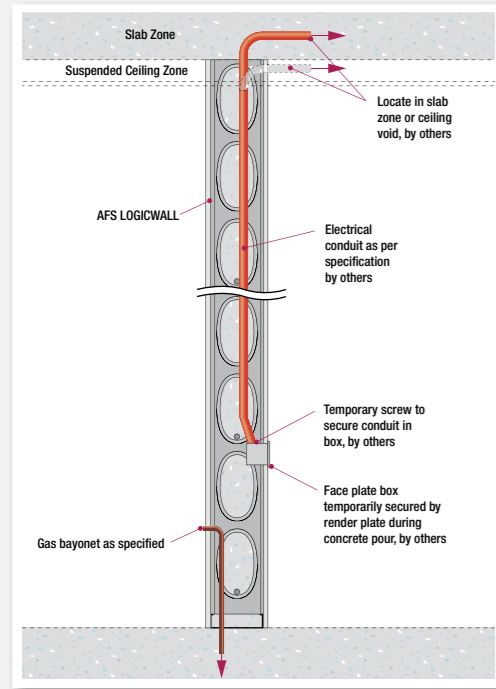




# electrical services

Electrical conduits are installed from the top of the panel prior to core filling.

Electrical boxes are attached to the conduit and secured with a face cover plate.





## plumbing services

Conduits and pipes for plumbing services are generally attached to the wall which is battened and sheeted.

This is the case for most wet areas in order to comply with 'impact isolation' provisions under the NCC.



## door frames

Steel door frames are installed with the panels and core filled.

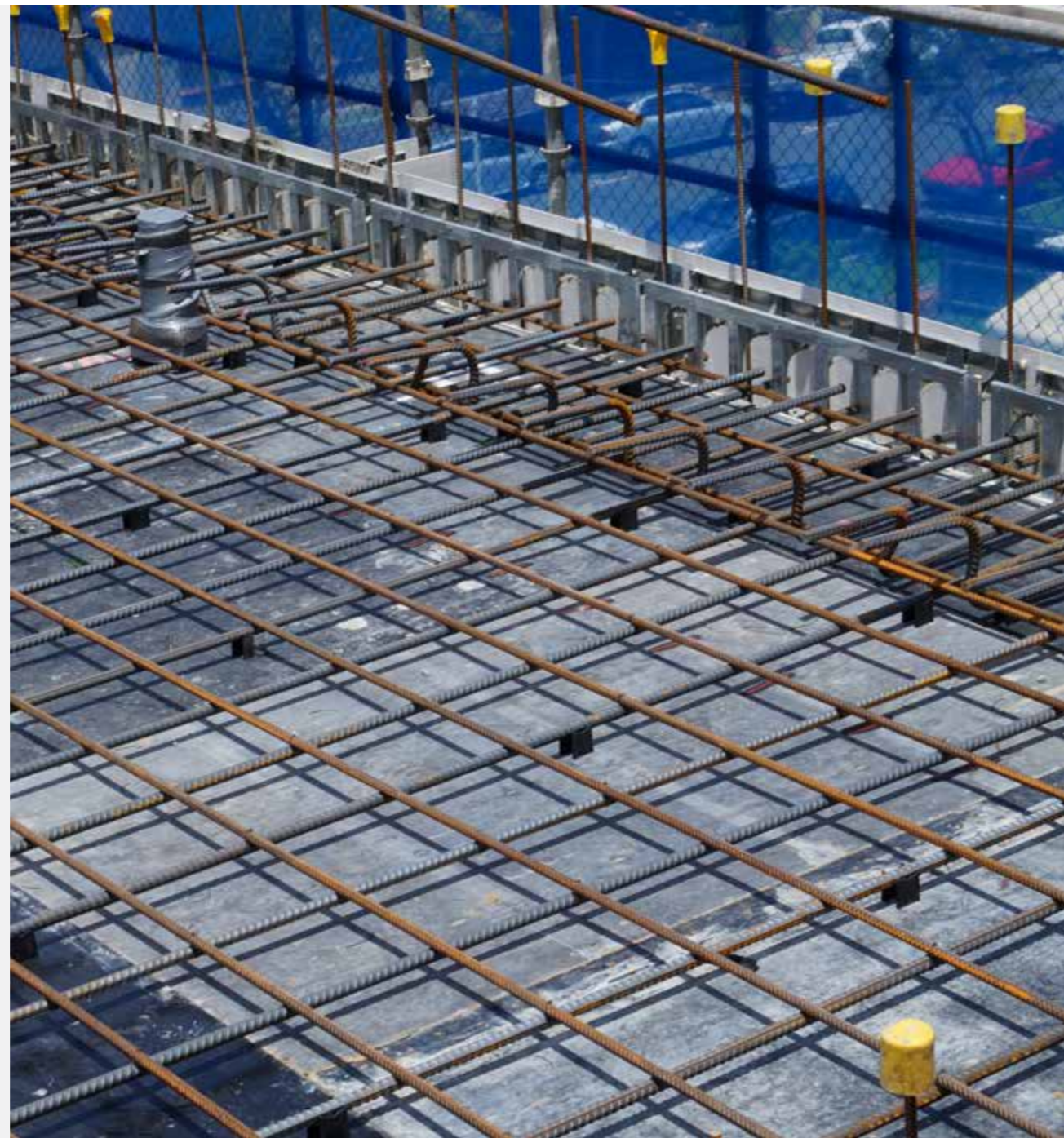




## edge form

afs logicwall® provides edge form for external walls and is designed to suit your slab thickness.

This eliminates the need for conventionally formed edge form and there are no exposed slab edges.



## panel ends and openings

The panel openings and ends are closed with the end cap system consisting of steel studs lined with fibre cement.

This image also shows custom-made sill and lintel panels for a window.





# floor slab construction

**A frames & bearers in place, ready for formwork.**



**Conventional formwork deck with afs logicwall®**



**Bondek with  
afs logicwall®**



## core filling

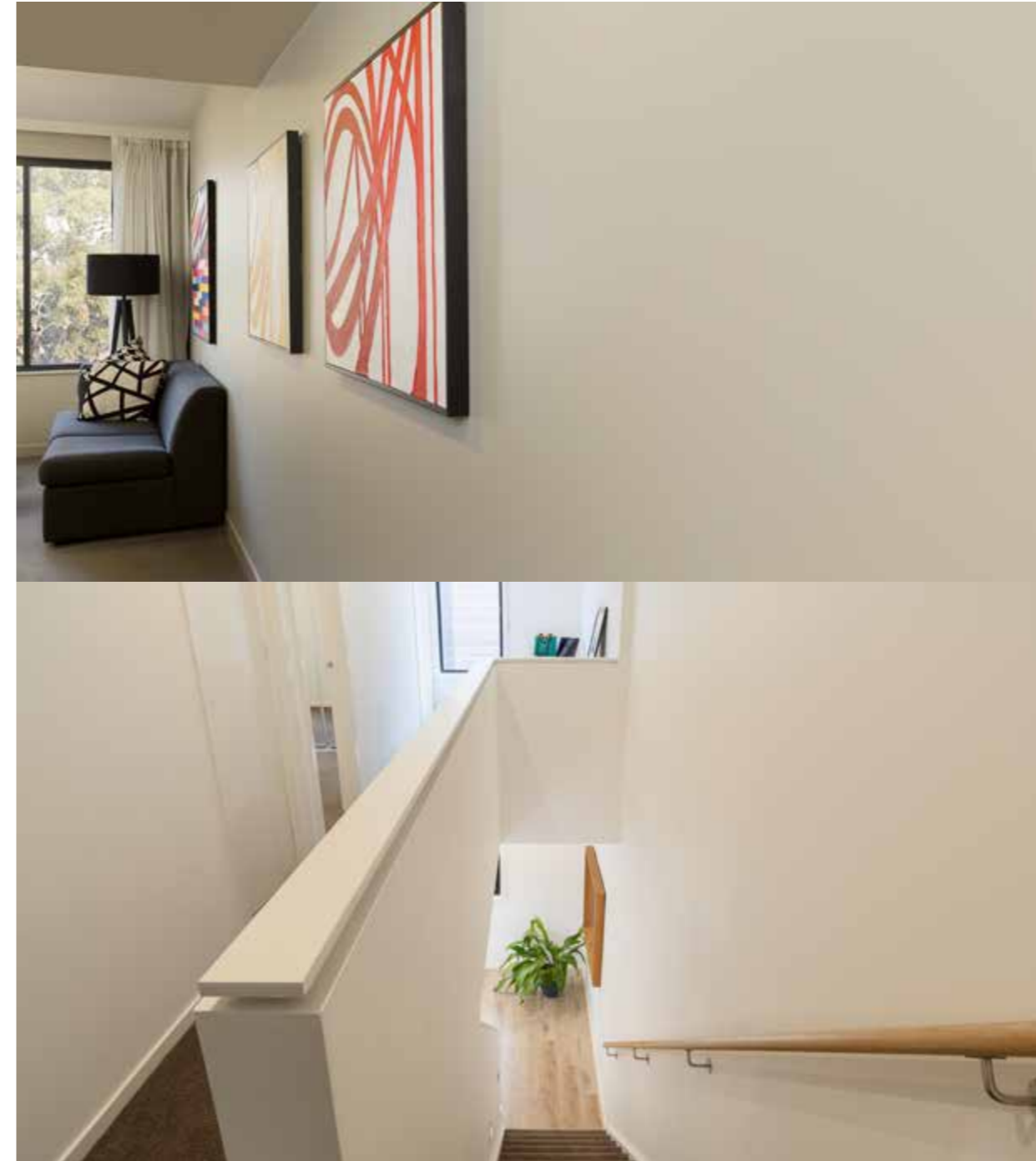
The panels are then core filled with concrete using concrete pumping methods, generally using a boom pump. Core filling is mostly performed from the formed deck of the slab or off a scaffold.



## interior wall finishing

Walls can be finished by:

1. Joint setting only
2. Joint setting and skim coating
3. Lining with plasterboard



AFS recommend skim coating for walls that are subject to glancing light only.

The walls are then ready for applied finishes and painting with leading brand products to deliver quality masonry-feel walls for a range of applications.

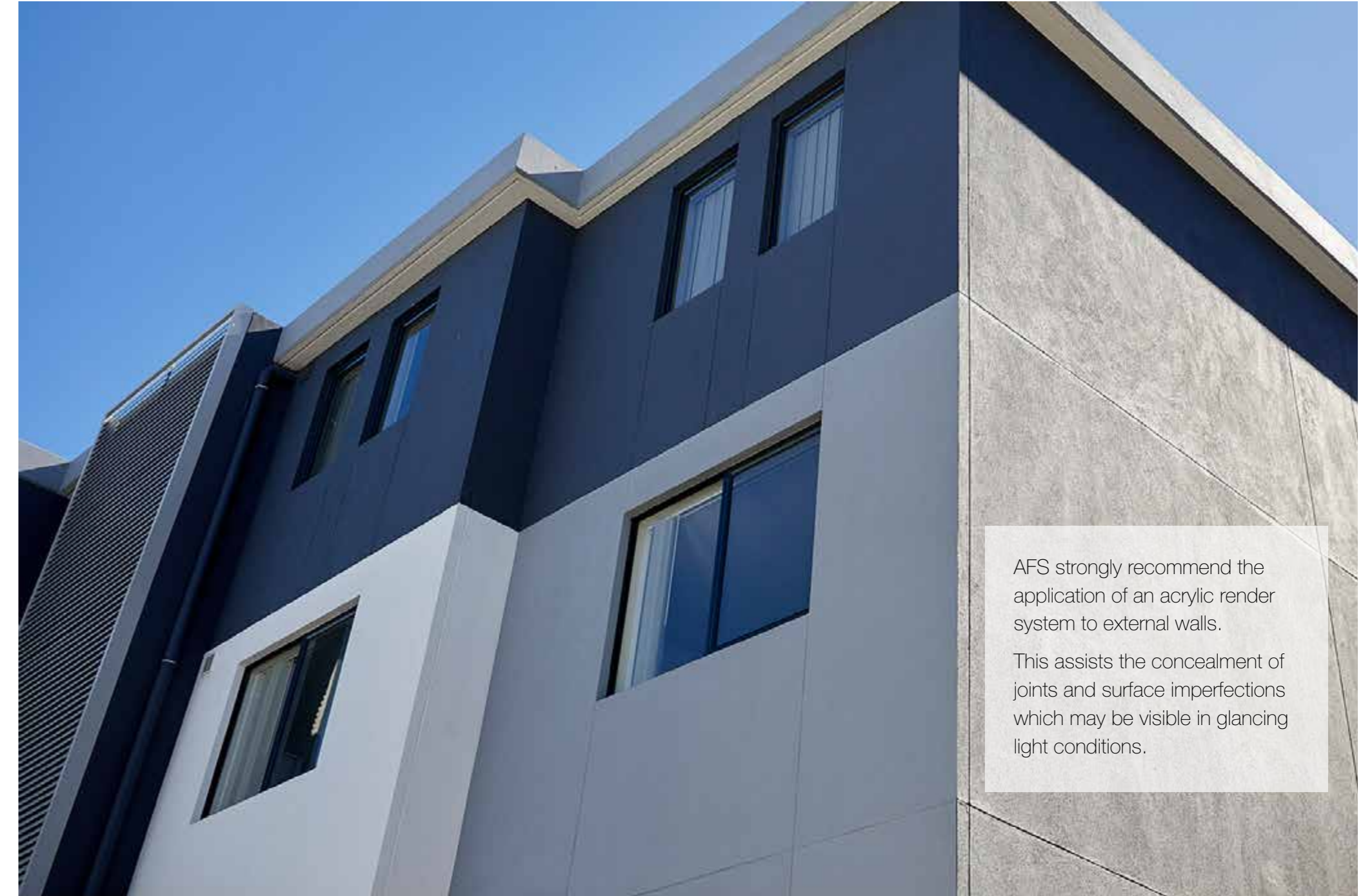


## exterior wall finishing

AFS offers several external slab junction details to provide a watertight joint and to suit the architectural design of the building.



Flush set with control joint



AFS strongly recommend the application of an acrylic render system to external walls. This assists the concealment of joints and surface imperfections which may be visible in glancing light conditions.



## window reveals

Internal and external window reveal, with commercial window section.





# applications

afs logicwall® is used for a variety of load-bearing internal and external walls such as:



**internal party walls**



**corridor walls**



**external façade walls in construction**



**external façade walls**



**balustrade in construction**



**balustrades**



**external blade walls**



**boundary walls**



**lift shafts**



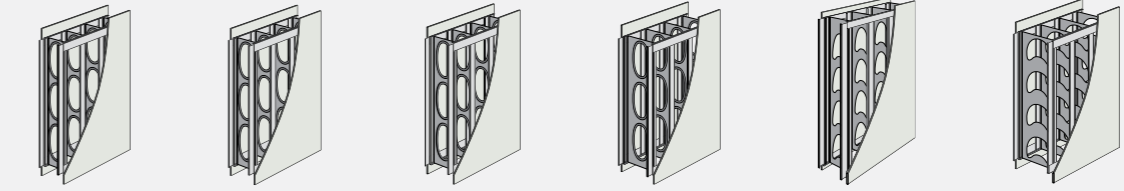
**stair shafts**







design



single reo

double reo

WALL TYPE	LW 120	LW 150	LW 162	LW 200	LW 200	LW 262
WALL THICKNESS (mm)	120	150	162	200	200	262
TYPICAL APPLICATION	<ul style="list-style-type: none"> <li>External facade</li> <li>Batten/sheet party walls</li> <li>Balustrades</li> </ul>	<ul style="list-style-type: none"> <li>External facade</li> <li>Blade walls</li> <li>Stair shafts</li> <li>Corridor walls</li> </ul>	<ul style="list-style-type: none"> <li>Stand alone party walls</li> <li>External facade</li> <li>Blade walls</li> <li>Stair shafts</li> </ul>	<ul style="list-style-type: none"> <li>Lift shafts</li> <li>Stair shafts</li> <li>Columns</li> <li>Stand alone party walls</li> <li>Blade walls</li> </ul>	<ul style="list-style-type: none"> <li>Deep beams</li> <li>Lift and stair shafts</li> <li>Heavily loaded shear walls</li> <li>Blade columns</li> </ul>	<ul style="list-style-type: none"> <li>Lift shafts</li> <li>Stair shafts</li> <li>Shear walls</li> <li>Columns</li> </ul>
ACOUSTIC RATING (R <sub>w</sub> +Ctr) (field tests) D <sub>nT,w</sub> + Ctr	47 46-42	50 49-45	50 49-45	53 48-52	53 48-52	57 52-50
DESIGN AXIAL STRENGTH (KN/m) Based on 2700 mm high wallsee e=0.05tw	820 (f'c = 32MPa)	1195 (f'c = 32MPa)	1715 (f'c = 40MPa)	2290 (f'c = 40MPa)	2290 (f'c = 40MPa)	3095 (f'c = 40MPa)
FILLED WALL MASS (kg/m <sup>2</sup> )	290	360	394	480	480	630
FIRE RESISTANCE LEVEL	240/240/180	240/240/180	240/240/240	240/240/240	240/240/240	240/240/240

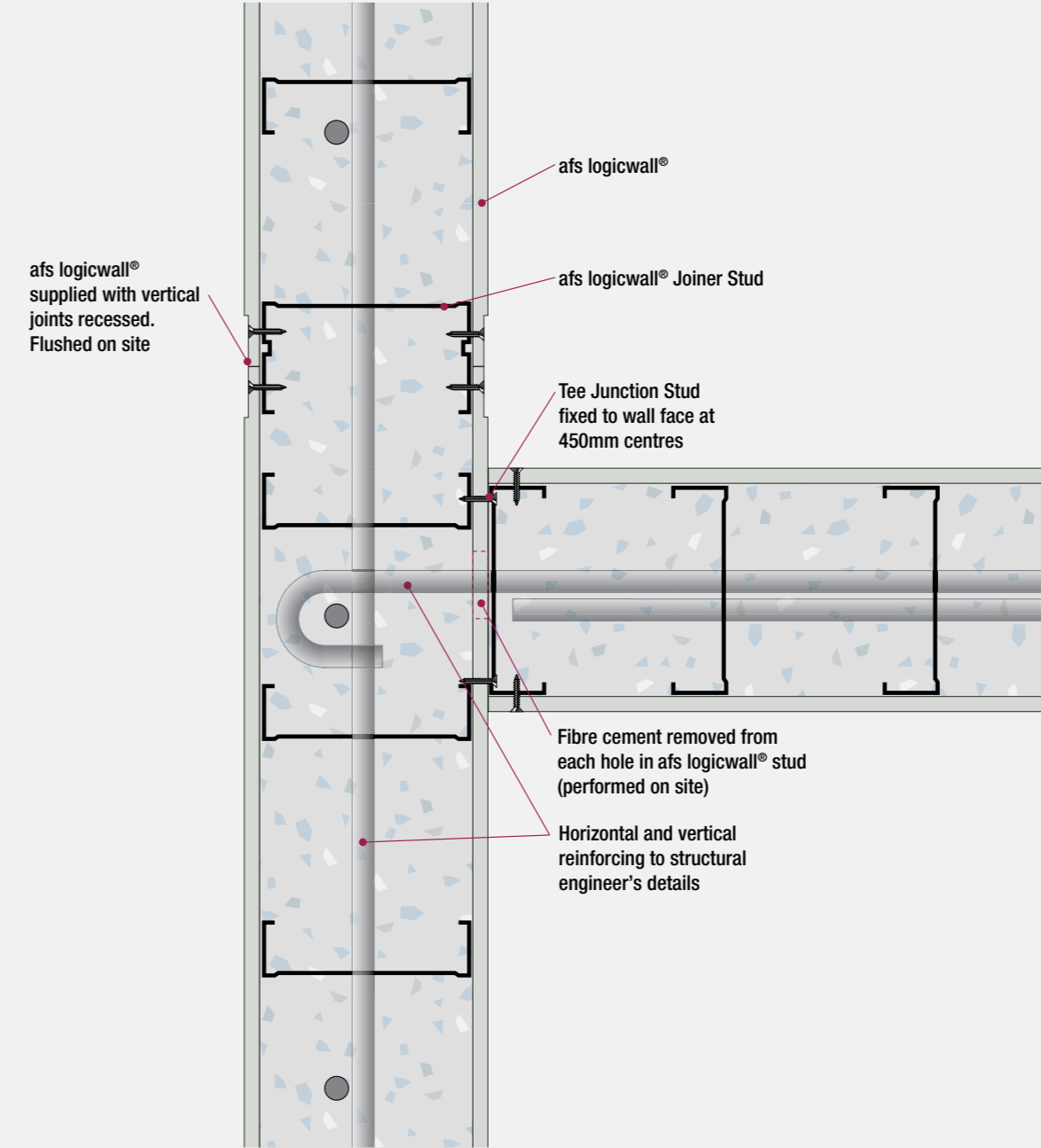
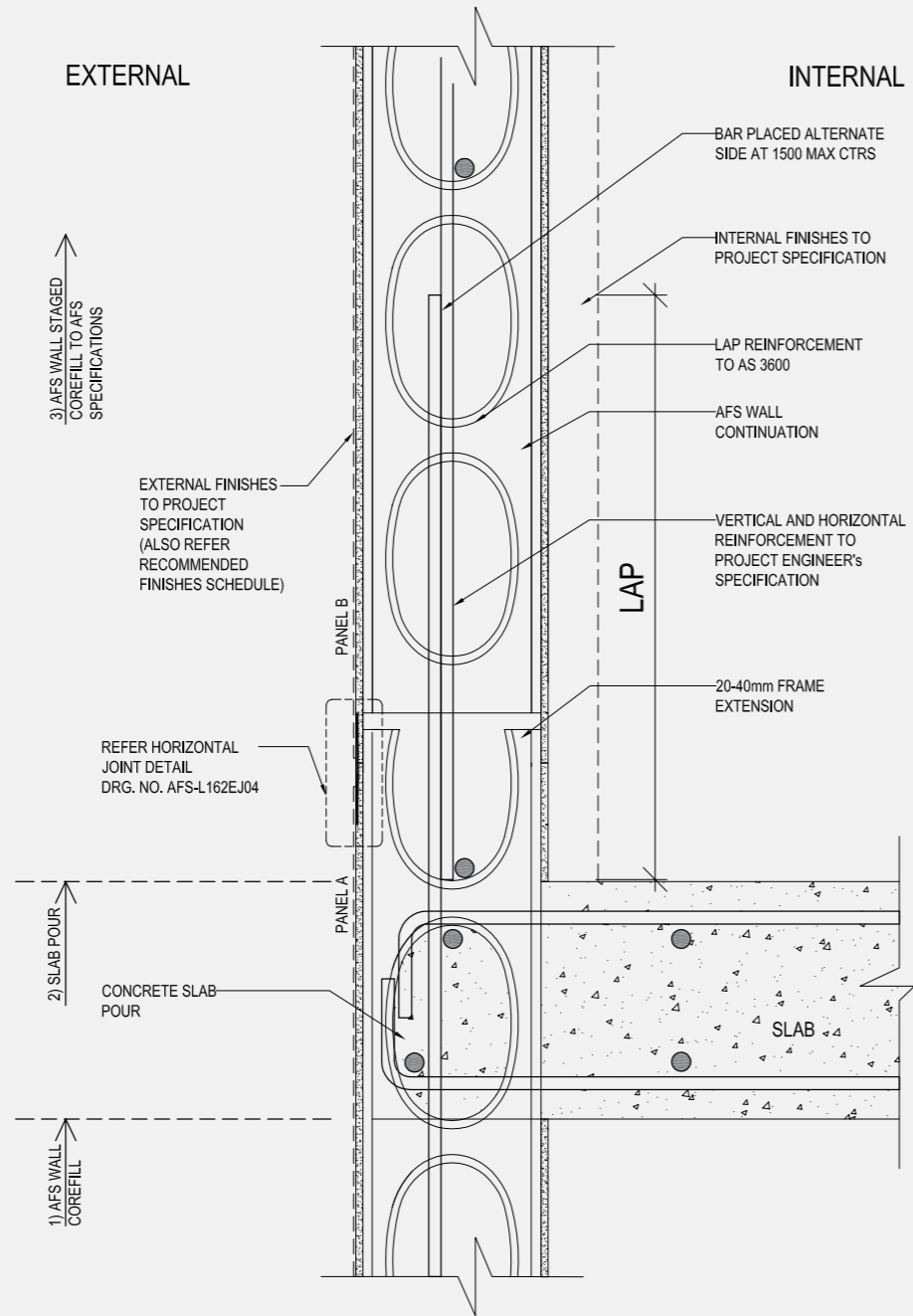




# standard details

## external wall / slab junction

Trowel on acrylic render and waterproof membrane is applied to the entire wall surface area (by external coating applicator)

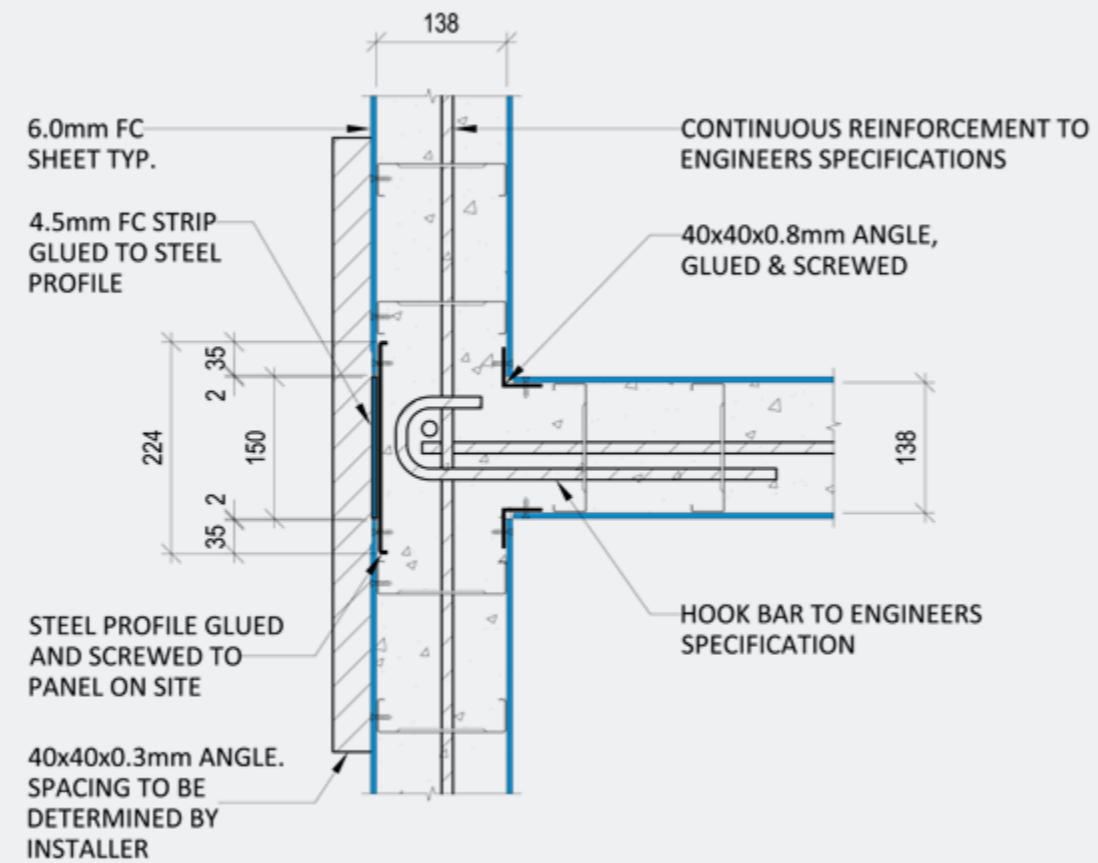


## afs logicwall® t-junction

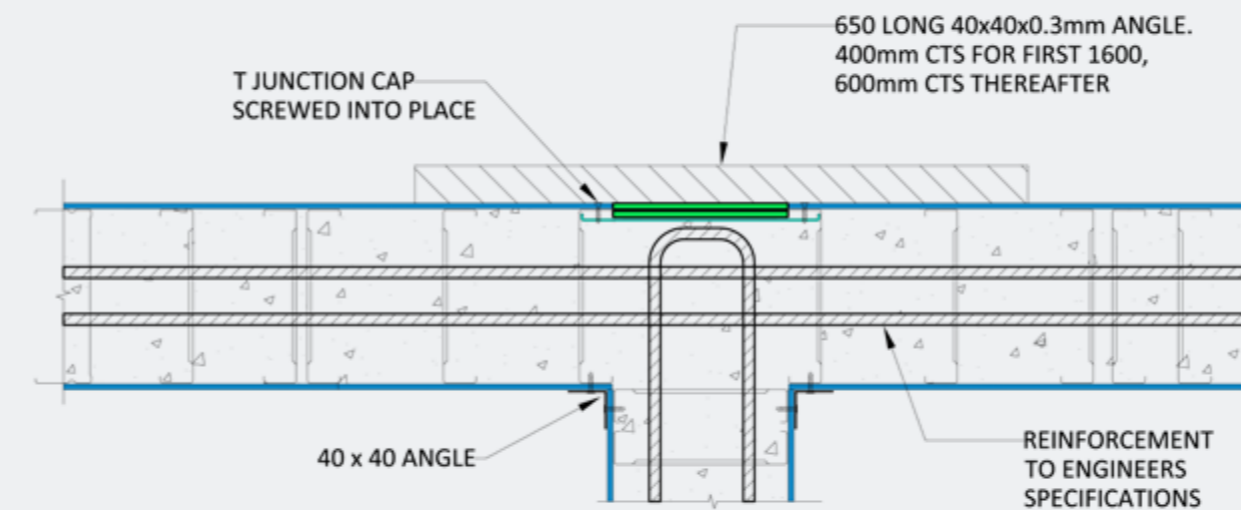


# standard details

## t-junction cap



## special t-junction detail

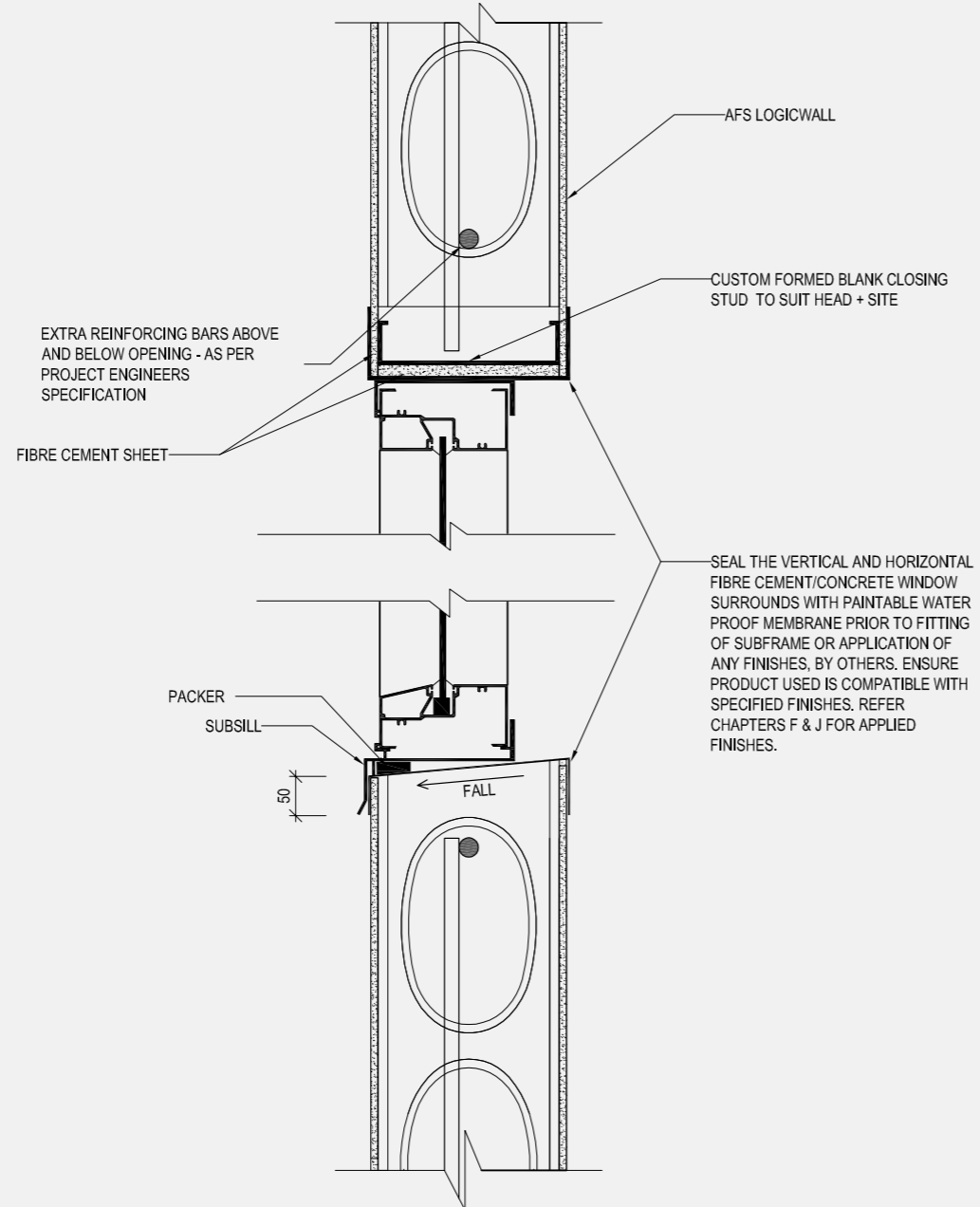




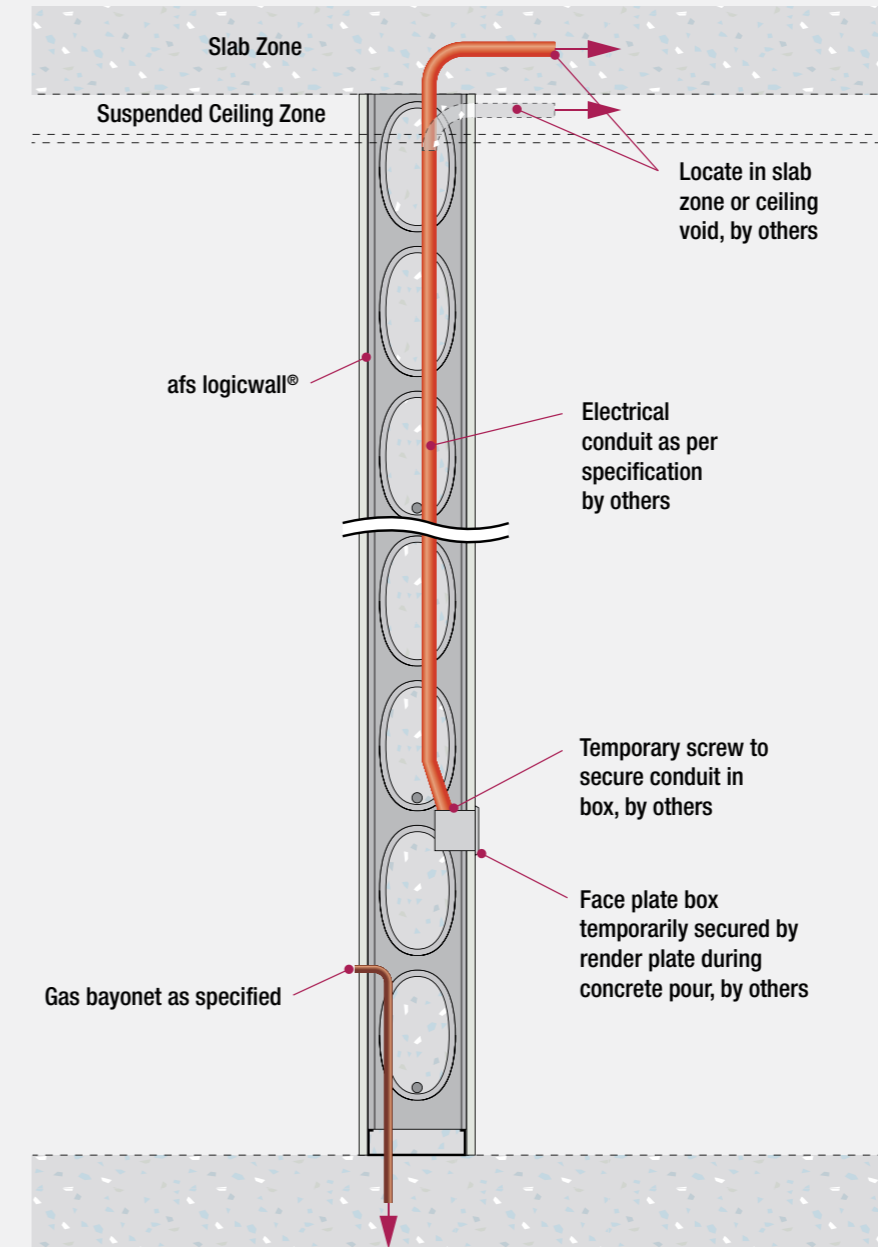
# standard details

## external wall / slab junction

Commercial window section



## services detail





# benefits

## speed of construction

Enoggera Barracks, QLD

360 Units • 3 Levels, 7 Buildings

13,500m<sup>2</sup> **afs logicwall**

11 months construction time

AFS were initially contacted by John Holland Group in the search of an ultra-fast and efficient structural walling systems for the LIA Stage 1-3 within the Gallipoli Barracks Army Base in Enoggera QLD

Conventional block work and other walling systems were investigated but afs logicwall<sup>®</sup> was chosen due to its unique features including:

- Pre-fabricated 90 degree corner panels with inbuilt "L" reo bars providing the necessary bracing for the buildings
- Inherent steel stud framework contributing to the reinforcement
- Water-resistant durable fibre cement face sheeting

AFS were given high commendation by the builder for our contribution to the completion of this project.



January 2011



November 2011



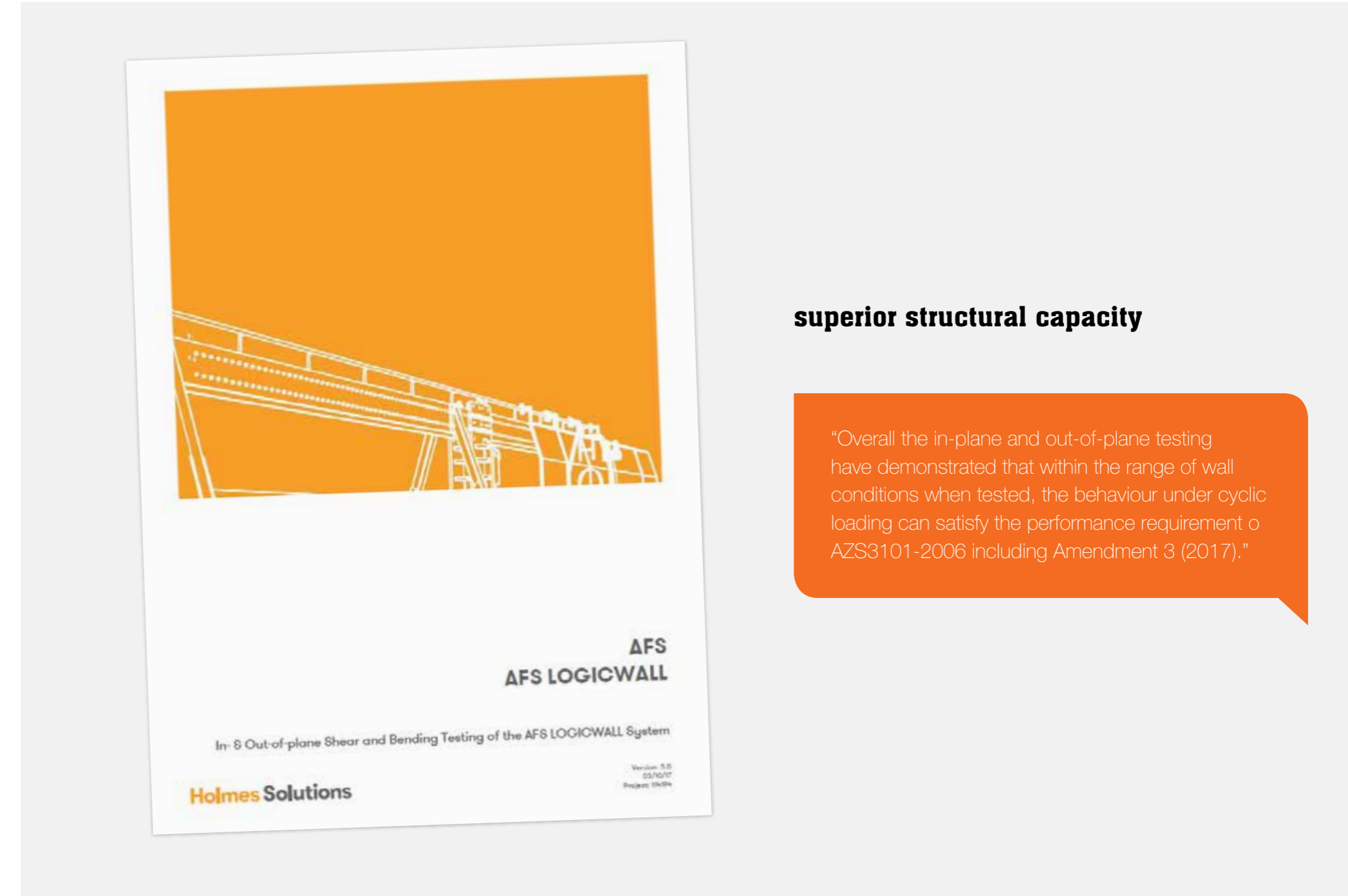
## Optimum efficiency in materials handling

Not crane dependent. Small teams of installers can work on multiple fronts without the crane setting the pace.



## Shop-drawn modular system

Accommodating columns, beams, sills and lintels, corners and raked walls etc. Reduces waste onsite.



## superior structural capacity

“Overall the in-plane and out-of-plane testing have demonstrated that within the range of wall conditions when tested, the behaviour under cyclic loading can satisfy the performance requirement of AZS3101-2006 including Amendment 3 (2017).”



# reports and certification

## CodeMark Accreditation

afs logicwall® has achieved CodeMark Certification which confirms:

- Durability, fire, weatherproofing, thermal and acoustic performance
- Compliance of end to end process from time of manufacture right through to installation
- Quality Control

## Installer Certification

afs logicwall® recommended installers are regularly audited to ensure they are fully proficient in the construction methodology of our afs logicwall® product. At the conclusion of the audit process our recommended installer are issued with a 'Certificate of Installation' confirming that their practices conform with our recommended installation of the product.

**CERTIFICATE OF CONFORMITY**  
This is to certify that  
**AFS LOGICWALL®**

Page 1 of 2

**Description**  
A permanent formwork system for load-bearing reinforced concrete walls designed by a Professional Engineer in accordance with the Australian Standard AS 3600-2009 (including Amendment 1 and Amendment 2). The system comprises galvanneal cold-formed steel studs at 140mm centres, the studs having large lipped penetrations in their web element to facilitate placement of reinforcing steel and flow and subsequent bond of concrete fill. The studs are bonded to each other with an adhesive compound. The system also includes reinforcing steel and concrete fill.

**Product purpose or use**  
Load bearing structural concrete walls with fire, weatherproofing, acoustic and thermal performance characteristics.

**Certificate holder**  
CSR Building Products Ltd - AFS Structural Systems, Trinitri 3, 39 Dehi Road, North Ryde, NSW 2113, Tel: 1300 727 237, [www.afswall.com.au](http://www.afswall.com.au)

**Complies with the National Construction Code 2015:**

- Volume One BP1.1 (a) and (b) in respect of structural resistance to the following actions:
  - permanent actions
  - imposed actions
  - wind action
  - earthquake action
  - liquid pressure action
  - ground water action
  - rainwater action
  - earth pressure action
  - differential movement
  - time dependant effects
  - thermal effects
  - ground movement
  - construction activity actions
- Volume One BP1.2 by complying with AS 3600 – 2009 (including Amendment 1 and Amendment 2) as specified in Deemed-to-Satisfy Provision B1.4(i).
- Volume One CP1, CP2 and CP3 in respect of the walls having fire resistance levels as follows:
  - For walls constructed with the properties listed below, FRL 240/240/180 for ASF120 and AFS150 wall types; FRL 240/240/240 for AFS192 and thicker wall types.
    - Max. 3.0 m height
    - N2 reinforcing steel at 400 mm centres vertically and 600mm centres horizontally
    - 32 MPa, 120mm slump, 10 mm max. aggregate size concrete
    - Applied compressive load not exceeding 230 kN/m
  - For walls outside the scope of (a) above, the FRL determined in accordance AS 3600-2009 (including Amendment 1 and Amendment 2).

CodeMark Certification Body	Signature	Date	Version	Certificate Number
Global-Mark Pty Ltd, Suite 4 07, 32 Dehi Road, North Ryde NSW 2113, Australia <a href="http://www.Global-Mark.com.au">www.Global-Mark.com.au</a>	Herve Michoux Managing Director	14/1/2016	14/1/2019 Rev A	GM-CM-30062

The purpose of construction site audits is to confirm the practicability of installing the product, and to confirm the appropriateness and accuracy of installation instructions. This Certificate of Conformity is issued by an accredited certification body under arrangement with ANZ-ANZ. The ABCB does not in any way warrant, guarantee or represent that the Product the subject of this Certificate of Conformity conforms with the BCA, nor accepts any liability arising out of the use of the Product. The ABCB disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product referred to in this Certificate. It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the ABCB website. [www.abcb.gov.au](http://www.abcb.gov.au)

## CERTIFICATE OF CONFORMITY

**CERTIFICATE OF CONFORMITY**  
This is to certify that  
**AFS LOGICWALL®**

Page 2 of 2

ion CT 12(i) in respect of the fibre-cement formwork board. Erection of the formwork shall be in accordance with the relevant approval authorities, and, 2015 Edition (October) and AS 3600:2009 (including Amendment 1 and Amendment 2).

**Product purpose or use**  
Load bearing structural concrete walls with fire, weatherproofing, acoustic and thermal performance characteristics.

**Certificate holder**  
CSR Building Products Ltd - AFS Structural Systems, Trinitri 3, 39 Dehi Road, North Ryde, NSW 2113, Tel: 1300 727 237, [www.afswall.com.au](http://www.afswall.com.au)

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  - thermal effects
  - ground movement
  - construction activity actions
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**ACOUSTIC LOGIC**

Commercial-in-Confidence Report prepared on behalf of Expert Opinion Services, A business of UNSW Global Pty Limited.

**AFS WALLING SYSTEMS**

Colin Diggers & Paving  
Your reference: Client 01/14

Mark Blackall  
Business Professor & Professor of Civil Engineering, Australian Institute of Building, Faculty of Engineering, The University of New South Wales.

Date of Issue: 5 May 2014  
Due Reference: 0001172

**Likely fire performance of AFS Logicwall systems**

Assessment Report

Author: AFS Logicwall  
Report number: FRL 240/240/180  
Date: 1 October 2014

Client: CSR Building Products Pty Limited  
Contract reference: 0001172

**UNSW Global** | Unisearch Expert Opinion Services

Commercial-in-Confidence Report prepared on behalf of Expert Opinion Services, A business of UNSW Global Pty Limited.

**AFS WALLING SYSTEMS**

Colin Diggers & Paving  
Your reference: Client 01/14

Mark Blackall  
Business Professor & Professor of Civil Engineering, Australian Institute of Building, Faculty of Engineering, The University of New South Wales.

Date of Issue: 5 May 2014  
Due Reference: 0001172

**Certificate of Test**

AFS WALLING SYSTEMS

Author: AFS Logicwall  
Report number: FRL 240/240/180  
Date: 1 October 2014

Client: CSR Building Products Pty Limited  
Contract reference: 0001172

**MAHAFFEY ASSOCIATES**

Commercial-in-Confidence Report prepared on behalf of Expert Opinion Services, A business of UNSW Global Pty Limited.

**AFS WALLING SYSTEMS**

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Your reference: Client 01/14

Mark Blackall  
Business Professor & Professor of Civil Engineering, Australian Institute of Building, Faculty of Engineering, The University of New South Wales.

Date of Issue: 5 May 2014  
Due Reference: 0001172

**STEPHEN GRUBITS & ASSOCIATES**

Commercial-in-Confidence Report prepared on behalf of Expert Opinion Services, A business of UNSW Global Pty Limited.

**AFS WALLING SYSTEMS**

Colin Diggers & Paving  
Your reference: Client 01/14

Mark Blackall  
Business Professor & Professor of Civil Engineering, Australian Institute of Building, Faculty of Engineering, The University of New South Wales.

Date of Issue: 5 May 2014  
Due Reference: 0001172

## afs logicwall® is fully compliant with AS3600-2009 (Concrete Structures)

**Compliance**  
Unisearch UNSW Report  
BBA (British Board of Agreement)

**Durability**  
External Export Opinion (Mahaffey & Associates)  
Internal CSR Corrosion Review

**Fire**  
CSIRO Test Results & Certification  
External Determination of FRL (Stephen Grubits & Associates)

**Acoustics**  
Acoustic Logic - 150mm Thick Concrete Floor Slabs  
Acoustic Review

**Mould & Mildew**  
Supplier Performance Statement

**Other**  
NATSPEC  
Uni. Canterbury Lateral Load Resistance





## Talk to our experts, the AFS Design Team

We're able to provide you with the very best project advice through our team of in-house Engineers.

Our team can assist you with:

- Technical advice
- Engineering concepts
- Training and guidance.



## ease of design & specification

AFS have developed a Design Toolbox featuring:

- Individual afs logicwall® and afs rediwall® Design Guides
- Standard Details (pdf & dwg)
- Architects Specification
- NATSPEC Specification
- BIM Objects
  - ArchiCAD
  - Revit



# logistics

Our Logistics Division ensures that deliveries to our clients are;

- Reliable
- On time
- Delivered safely
- Flexible







**smarter permanent formwork.™**

**1300 727 237**

**afsformwork.com.au**



**AFS Systems Pty Ltd**

110 Airds Road, Minto NSW 2566

ABN 45 576 072 788

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