NATSPEC
Product Partners

Quality Reputation Support

Case Studies and Technical Articles

Welcome

Many misunderstand the meaning of conformance and see it as a costly exercise. Conformance is not only about meeting a certain level of standard. It is a crucial element of design that ensures risk-averse practice and a level of quality that will protect the building from rework, building owners from wasting time and money and building dwellers from accidents that affect their livelihoods. The value of meeting building standards and using products that have been adequately tested for conformance to standards is unquestionable. This first step in the process affects the life-cycle of the building as well as maintenance.

NATSPEC has developed this booklet to assist designers in their quest for good product information. The case studies and technical articles demonstrate manufacturers' willingness to work with designers to provide the most appropriate solution to meet their client's needs and desires.

NATSPEC continues to develop branded worksections with our Product Partners using the latest regulations and standards for inclusion in the National Building Specification. Branded worksections include a wide range of products and systems and are freely available to NATSPEC subscribers and non-subscribers to use as part of a project specification.

Branded worksections can be downloaded for free from www.natspec.com.au.

Richard Choy
Cheif Executive Officer
NATSPEC//Construction Information

Product Partners Program

The NATSPEC Product Partners program was developed to provide manufacturers with an opportunity to place a branded worksection in the National Building Specification. The objective is to allow design and construction industry professionals to easily access a proprietary specification from manufacturers offering reputation, quality to Australian Standards and support. Selection of products is also easier, saving you time and reducing your risk.

NATSPEC is the trading name of Construction Information Systems Limited, ABN 20 117 574 606.

NATSPEC, founded in 1975, is a 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's major service is the comprehensive national specification system endorsed by government and professional bodies. 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

Australian 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 Housing and Public Works (QLD)

Department of Infrastructure, Planning and Logistics (NT)

Department of Planning, Transport and Infrastructure (SA)

Department of Treasury and Finance (TAS)

Department of Treasury and Finance (VIC)

Engineers Australia

Master Builders Australia

Office of Finance and Services (NSW)

Standards Australia

NATSPEC//ProductPartner

Branded Worksections have been completed by NATSPEC and our Product Partners using the latest regulations and standards. Download for free at www.NATSPEC.com.au

NATSPEC Branded Worksections

01 General

0181p BOSTIK in adhesives, sealants and fasteners
0181p MAPEI in adhesives, sealants and fasteners
0184p ENSYSTEX termite management
0184p FMC termite management
0184p TERMGUARD termite management
0191p ACCULINE sundry items
0192p ANCON structural components
0194p RAVEN door seals and window seals
0195p DTAC tactile indicators and stair nosings

02 Site, urban and open spaces

0242p OXWORKS in landscape - fences and barriers
0279p PASCO BUZON in paving - on pedestals

03 Structure

0310p AFS wall systems in concrete - combined
0310p MAX FRANK in concrete - combined
0311p FIELDERS KingFlor in concrete formwork
0341p FIELDERS SlimFlor in structural steel
0341p GALVASPAN STEEL purlins and girts in structural steel
0341p LYSAGHT purlins and girts in structural steel
0345p DULUX steel protective paint coatings
0345p PPG COATINGS STEEL - protective paint coatings
0345p VALSPAR - WATTYL in steel protective paint coatings
0381p TLB TIMBER in structural timber
0383p TLB TIMBER in sheet flooring and decking

04 Enclosure

0411p MAPEI in waterproofing - external and tanking
0411p PARCHEM waterproofing - external and tanking
0423p ASKIN XFLAM performance panel roofing
0423p COLORBOND steel and ZINCALUME steel in roofing
0423p FIELDERS roofing - profiled sheet metal
0423p KINGSPAN in roofing - profiled sheet metal
0423p LYSAGHT roofing - profiled sheet metal
0423p REVOLUTION ROOFING in profiled sheet metal
0424p FIELDERS roofing - specialised sheet metal
0428p DANPALON roof glazing
0434p ASKIN XFLAM performance panel cladding
0434p DANPALON translucent façade cladding
0434p KINGSPAN insulated panel cladding
0434p SGI ARCHITECTURAL cladding panels
0436p COLORBOND steel and ZINCALUME steel cladding
0436p FIELDERS cladding - profiled sheet metal
0436p LYSAGHT cladding - profiled sheet metal
0437p FIELDERS cladding - specialised panels
0451p ALSPEC aluminium windows and doors
0451p AWS aluminium windows and doors
0451p CAPRAL ALUMINIUM windows and doors
0453p CS Cavity Sliders in doors and access panels
0456p SAFETYLINE JALOUSIE louvre windows
0461p VIRIDIAN glazing
0471p CSR BRADFORD in thermal insulation and pliable membranes
0471p GI BUILDING SCIENCES in thermal insulation and pliable membranes
0471p KINGSPAN in thermal insulation and pliable membranes
0472p CSR BRADFORD in acoustic insulation
0473p DAMTEC acoustic floor underlays
0473p REGUPOL acoustic floor underlays

05 Interior

0511p KEYSTONE ACOUSTICS in lining
0528p ASKIN XFLAM performance panel partition system
0531p AMF AUSTRALIA in suspended ceilings
0531p ASKIN XFLAM performance panel ceilings
0531p CSR CEILECTOR in suspended ceilings - combined
0531p STUDFORM in suspended ceilings - combined
0552p CON-FORM in metalwork - fabricated
0554p MODDEX steel handrails, guardrails, balustrades and other barriers
0574p QUATTRO SHADING in window coverings

06 Finish

0612p MAPEI in cementitious toppings
0612p POLYFLOR KIESEL self-leveling cementitious toppings
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0651p KARNDEAN in resilient finishes
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07 Mechanical

0731p FANTECH fans
0735p AIROCLE natural ventilation and smoke management
0745p FANTECH attenuators and acoustic louvres
0751p VICTAULIC in mechanical piping
0752p ARMAFLEX FRV in mechanical piping insulation
0752p SEKISUI FOAM AUSTRALIA mechanical piping insulation
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08 Hydraulic

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Branded Worksections can be downloaded for free from ***www.natspec.com.au***

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GETTING HELP

INTRODUCTION

This TECHnote summarises the variety of ways in which NATSPEC provides help to specification writers.

NATSPEC *Guidance*

NATSPEC worksections include extensive *Guidance* text with suggestions on filling in prompts, alternatives, and background material. *Guidance* is in Microsoft Word hidden text format which can be turned on or off, and appears like this:

> NATSPEC does not recommend the use of SCOPE OF WORK clauses. If you wish to include such a general description you may add it here, or in the corresponding location of selected worksections.

If you work with an office master, you may find it convenient to add your own guidance notes using NATSPEC's hidden text styles.

Hidden text and other features that can help you in your specification writing are accessed via the NATSPEC toolbar. See sidebar.

NATSPEC *Optional text*

Some worksections include *Optional text* in this font (blue with a grey background) that covers items specified less frequently. It is also a Microsoft Word hidden text format which can be incorporated into *Open* text, where it is applicable to a project, by highlighting the text and changing the style and format.

NATsource

NATsource lists in excess of 1200 documents cited in the specification packages. Use it to check document titles, currency, content and publishers. Access *NATsource* via SPECbuilder Live/Resource material/Standards Information. Changes to cited standards are summarised in *Standards revising NATSPEC and AUS-SPEC* which is available on the NATSPEC website under Technical Resources/Standards.

NATSPEC TECHnotes, TECHreports and AUS-SPEC TECHguides

TECHnotes provide guidance of a more general nature that either relates to several worksections, or does not fit into the normal worksection structure, TECHreports provide more detailed information on specification issues and TECHguides provide guidance on compiling contract documentation for local government projects.

All these documents continue to be developed and updated. The latest versions are available in the Technical Resources area of the NATSPEC website or via the Resource material link in SPECbuilder Live.

NATSPEC Website

NATSPEC's website has a range of material including:

- Details of NATSPEC specification packages, including abstracts of worksections.
- A link to SPECbuilder Live.
- Links to Product Partners' websites arranged by worksection.
- Notification of latest changes to standards affecting NATSPEC worksections.
- Information on publications relating to specification writing.
- Answers to frequently asked questions (FAQs) on specification writing, purchasing NATSPEC, getting started with NATSPEC and word processing.

NATSPEC BIM Portal

The BIM Portal is home to the *NATSPEC National BIM Guide* and related documents. It also includes resources and tools to assist the implementation of BIM in the construction industry. To go to the BIM Portal click on the *NATSPEC BIM* logo on the NATSPEC website.

NATSPEC Training

NATSPEC provides training in specification writing-related subjects.

For details of monthly *Getting started with NATSPEC* webinars and annual training courses in venues around Australia see www.natspec.com.au.

Videos of previous courses are also available on the website.

Subscribers are notified of upcoming training courses.

Relevant Publications

Specifying Architecture - a guide to professional practice

NATSPEC toolbar

The NATSPEC toolbar lets you, among other things, turn *Guidance* text on and off with a click of your mouse, or delete it altogether. For instructions on installing it, see FAQs at www.natspec.com.au .

NATSPEC assistance

NATSPEC does not provide a design or specification service but we can assist with specification writing techniques and dealing with problems using SPECbuilder Live and NATSPEC in Microsoft Word.

If you have problems finding what you want, feel free to contact us directly.

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SPECIFYING QUALITY

INTRODUCTION

Communicating the requirements for quality is the main technical function of the specification. This TECHnote outlines how the NATSPEC specification system may be used to promote quality in construction projects.

DEFINING QUALITY

Quality must be defined; it cannot be managed if it is not defined. Quality can have different meanings for different people in different situations. In construction this problem is amplified as the responsibility for a project is divided between many different people, within many organisations. Therefore, agreement on a defined quality level between all parties, and how it is to be measured, is key to achieving the desired quality and the satisfaction of the principal.

QUALITY LEVEL

Several factors drive the desired quality level of a project and its components; the main factor being anticipated life. It would be a false economy to poorly construct something which must last for many years or over design something which may only be required to last a number of weeks.

Other factors that influence the desired quality level include:

- The purpose of the building - Prestige or utility, flexibility or permanence.
- Required functional performance - Design repetition or one-offs, environmental.
- User perception - Convenience, comfort, ease of maintenance and repair.

WHEN CAN QUALITY BE ACHIEVED?

There is a common misconception that the quality of a project can be completely controlled during the construction stage. However, the level of quality that can be demanded during construction cannot be higher than that which is specified in the contract documentation, without additional cost.

The quality of a project is therefore dependent on documentation and supervision. The contract documentation includes the conditions of contract, the specification, the drawings and the schedules.

To achieve quality, care must be taken in material selection, documentation, workmanship and supervision. This does not necessarily increase time and cost, however these factors must be considered and balanced when defining the quality level required. Failure to take care may lead to poor quality and increased costs with greater rework, repair and maintenance required.

ROLE OF THE SPECIFICATION

Whilst the specification is a multi-purpose document, its primary role is to define precisely and succinctly the quality required and the processes necessary for achieving it. This also includes, but is not limited to, defining clear acceptance criteria for any item of work.

If specified acceptance criteria match the agreed defined quality level, then ultimately, conformance with the specification will achieve quality.

USING NATSPEC TO ACHIEVE QUALITY

The NATSPEC worksection *Templates* include the construction processes required for each particular item of work and also define clear industry standard acceptance criteria in the form of tolerances, performance requirements and testing requirements. All can be modified if necessary to suit the defined quality levels agreed for each individual project and its components.

NATSPEC promotes the achievement of quality through coordination of the contract documents. Guidance text discourages duplication of information included on the drawings within the specification, to avoid potential discrepancies and ambiguity. Duplication of information within the specification is minimised by reference to relevant worksections.

NATSPEC references and monitors updates to relevant Australian and International standards, including those cited within the BCA. Where standards define alternative levels of service, NATSPEC provides prompts to be completed by the specifier. It is essential that the specification defines the requirement, as blanket references to standards may not achieve the desired quality.

NATSPEC and AUS-SPEC also cover the requirements of project Quality Management Systems based on AS/NZS ISO 9001 and the provision of project Quality Plans in the **Relevant worksections** listed in the sidebar.

Poor quality timber construction – Split base-plate used.

"….If the building contract documents permit a sow's ear then all the quality control in the world cannot demand a silk purse……"

Inspection to confirm quality level achieved.

Poor quality concrete – Honeycombing and timber.

Relevant worksections

0010 Quality requirements for design (AUS-SPEC).

0160 Quality.

0161 Quality Management (Construction) (AUS-SPEC).

0162 Quality (Supply) (AUS-SPEC).

0163 Quality (Delivery) (AUS-SPEC).

LOGICWALL®, an essential element at Victoria Tower, Burwood

This contemporary development located on Victoria Road, Burwood consists of 77 units across 18 upper levels and two basements. Situated in Sydney's bustling Inner West, this development has enviable positioning, directly across from Westfield Shopping Centre and minutes' walk to parks, cafés and handy access to public transport.

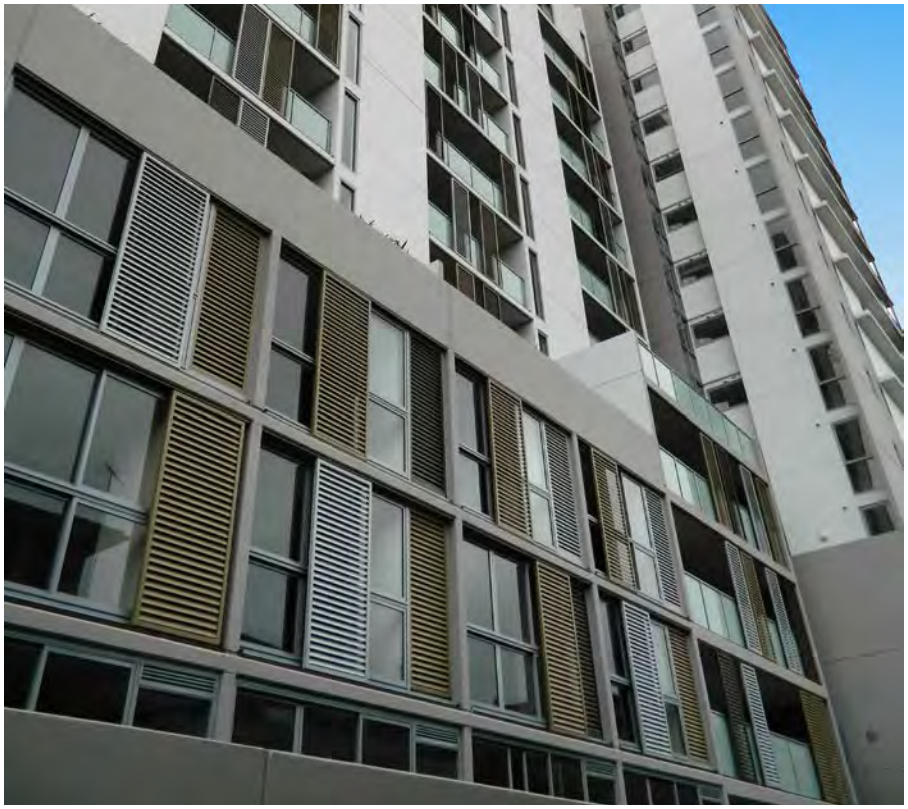
AFS Systems worked closely with the engineering, design and construction company throughout the design stage of this project, and the inclusion of AFS LOGICWALL® fibre cement permanent formwork was seen as an essential element.

LOGICWALL® was specified due to its load-bearing capacity. This, together with the overall structural system enabled cost efficiencies, including accelerated floor to floor cycle times which is critical for multi-residential construction.

The LOGICWALL® system, as a load-bearing wall option, is well suited to these types of multi-residential developments. The apartment party walls utilised the AFS162mm wall, which greatly simplified the conventional reinforced slab design. It also provided fire and acoustic separation and LOGICWALL's durable fibre cement surface enabled a high quality finish.

In addition to the inclusion of LOGICWALL® 162mm for party walls, LOGICWALL® 200mm and 262mm were utilised for lift and stair cores. The project also featured AFS REDIWALL® 200mm PVC permanent formwork in the development's two basement levels.

Overall, the structure consisted of a combined total of 9,000m^2 of AFS LOGICWALL® and 500m^2 of REDIWALL®.



The inclusion of 9,000m^2 of AFS LOGICWALL® was seen as an essential element in the construction of Victoria Tower, Burwood NSW

Reduced Heat Loads at BlueScope Steel

Client Background:
After modifications to the Metal Coating Lines at the BlueScope Port Kembla steel works it was found that the heat load within the building had increased dramatically and required the design of ventilation to reduce the temperature for both the reliability of the equipment and the safety of the people who work in the environment.

Airocle came onsite and quickly suggested what the appropriate layout of ventilation should be based on the geography of the building and the prevailing winds for the area. Airocle then used BlueScope Steel heat load data to provide the engineers with the required styles of static ventilators for installation on the roof.

Airocle drafted the proposed solution to determine if it would physically fit in the space available, providing cost estimates and calculations along the way.

Points to Note:
- Without this ventilation system the reliability of the equipment in the line is compromised. Most electrical equipment can operate in ≤ 55˚C. We recorded temperatures > 70˚C. With the installation of the static ventilation system designed by Airocle the temperature in the design area has been reduced to a maximum of 53˚C and an average of 32˚C.
- The overhead cranes would not operate in the elevated temperatures as the long travel lasers used to determine the cranes position in the building were not operating, crippling crane use in the area. Since the installation of the static ventilators the cranes have operated trouble free.
- There are no moving parts on the ventilation system including the roof top static units and the fixed wall louvres resulted in no increase in maintenance costs.

Client Comments:
"We would like to say that we were particularly impressed with the high quality of fabrication of the components, supplied in a very short time frame. Airocle's engineering design, and workshop teams should be congratulated."

"Airocle showed they have the engineering expertise to tackle any design challenge and produce a product that is both high quality and easy to install."

Scope of Works:
- Site area Appraisal.
- Design and Engineering Consultancy.
- Product Selection.
- Product application and detailing.
- Installation assistance and support.

Products Used:
- Four Series (Fire and Smoke Vent)
- A Series (Fixed Louvre)

Images of Airocle's installation of the new ventilation system at the BlueScope Port Kembla steel works

Quality documentation is one of the most important aspects for ensuring a project finishes on time, on budget, and meets the client's expectations of quality.

Without the guidance of NATSPEC and the inclusion of quality project specifications, there is an increased risk that projects will not achieve positive outcomes in terms of cost, quality, effectiveness, and timeliness of construction.

The NATSPEC Object Standards for Building Information Modelling represents another key contribution to the construction industry that will be highly sought after upon release.

AIQS CEO, Grant Warner.

Acculine Architectural Systems specialise in Building Protection from the Inside Out. Australian owned and operated, Acculine are small enough to care, while offering manufacturing, supply and installation capacities for larger more complex projects. Products include indoor wall, door and corner protection, handrails, signage systems, cubicle tracks and fabrics, and expansion joints from InProCorp. For outdoor protection, contact Acculine for specifications on a full range of louvres, sunshades and ventilation grilles from our in-house manufacturing division, allowing scope for custom products to meet specific design requirements. **www.acculine.com.au**

AFS Systems Pty Ltd® has over 18 years experience in supplying the construction industry with proprietary wall and framing systems. During this time AFS quickly earned a reputation for the manufacture and supply of innovative, permanent formwork walling solutions. So much so that CSR, the name behind some of the market's most trusted and recognised brands chose to acquire AFS.

To date AFS has completed in excess of 1,000 projects, including 30,000 multi-residential units, solidifying its position as a leading supplier of permanent formwork wall solutions.

Whether it be a builder, developer, architect or engineer AFS has earned a reputation throughout Australia and abroad for supplying innovative walling solutions coupled with a genuine commitment to service excellence. **www.afswall.com.au**

For over 90 years, AIROCLE has provided the building industry with effective and environmentally friendly solutions for natural building ventilation and smoke hazard management. AIROCLE has substantial expertise, experience and an absolute dedication to satisfying ventilation and smoke hazard management needs and expectations to deliver a comprehensive range of natural air, smoke, heat and pressure ventilation, and smoke hazard management. The result is some of the most reliable, effective and energy efficient solutions available for commercial, industrial and community projects.
www.airocle.com.au

Established in 1974, ALSPEC are the market leaders in the design and distribution of innovative, high performance aluminium systems to the architectural, industrial and home improvement markets. Our extensive range of window and door systems is suitable for all commercial applications and is complemented by our Carinya residential range and our Invisi-Gard Stainless Steel Mesh Security System. ALSPEC systems are synonymous with excellence in design and superior performance. **www.alspec.com.au**

Elements of Byron

Following six years of planning, design and development, the 20 hectare beachfront masterpiece has received much acclaim since welcoming its first guests.

Byron Bay's new $100 million Elements of Byron Resort at Belongil Beach, just north of Byron Bay township, has successfully hit upon a barefoot luxury formula that is distinctly its own and admirably place-sensitive.

Inhabiting 20 hectares once owned (but never developed) by Club Med, it comprises 94 villas and three main pavilions shaped to mimic the dunes. In fact all design, a collaborative effort between owner Peggy Flannery, Shane Thompson Architects and Coop Creative, was driven by the four "elements" of the landscape: rainforest, dunes, eucalypt trees and wetland.

Alspec Hawkesbury Bi-Fold doors along with ecoFRAME225 framing, accentuates the key features of the open-air main pavilion which houses the reception, bar and dining areas, where subtle creativity pervades bespoke sculpture and light installations. Feature colours reflect natural elements.

Alspec Hawkesbury Bi-Fold windows provide unobstructed views from the reception and dining areas out across a fire pit and large lagoon pool surrounded by plenty of cabanas and daybeds, a handful of those suspended above the shallow adults-only end.

Architect: Shane Thompson Architects
Builder: Bennit Constructions
Alspec Fabricator: Malone Glass
Alspec Products Used:

- ProGlide Commercial Sliding door.
- Hunter.
- ecoWall 225.
- Hawkesbury Bi-Fold door.
- Swan Commercial door.
- McArthur.
- Air-Flo frame with Breezway louvre galleries.
- Glazing Channels.

Byron Bay's new $100 million Elements of Byron Resort at Belongil Beach

Outdoor dining terrace

PERFORMANCE CEILINGS
More scope for innovation

The role of Knauf AMF at Walker Group's Tower Four

Knauf AMF's German-made high performance acoustic ceilings played a pivotal role in delivering Collins Square's fourth tower in Docklands Melbourne.

Walker Group's new $300m Tower Four on Batmans Hill Drive will serve as the headquarters to Link Group and signify the latest premier 'A-grade' office building in Docklands. Designed by Woods Bagot and delivered by Brookfield Multiplex, Collins Square is a tribute to innovation and sustainability.

Knauf AMF were engaged to supply an advanced acoustic ceiling system for the base building fit-out which includes 15 levels of premium office space out of the total 22 level high-rise. Knauf AMF specialises and produces mineral fibre acoustic ceiling panels, made in Germany since 1963. As part of Knauf Group worldwide established in 1932, Knauf AMF is providing performance ceiling systems including a suspension grid to the $8.5 billion/pa multinational group.

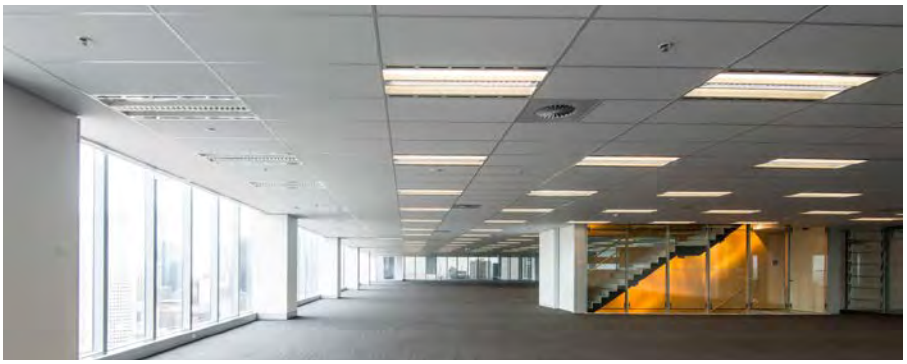
The ceiling tile itself comprises products found only in nature including clay, starch, perlite and a new generation bio-soluble mineral wool, resulting in a product that is 100% recyclable at end use. Raw materials are sourced within a 500km radius of the manufacturing plant near Munich, in a bid to reduce embodied energy of ingredients and the impact of land based transport. The production process is audited and certified to ISO 14001 & ISO 50001 for Energy Management. Material off-cuts are recycled back into production, whilst a recovery system ensures the efficient re-use of generated heat.

Each panel features a premium grade, smooth white fleece finish made from bio-degradable acoustic tissue. The surface finish ensures tiles achieve high light reflectance figures (LR) up to 90%. Materials with high LR promote the role of natural light within a building and reduce the need for electrical lighting systems, resulting in lower energy use and energy cost. Due to minimised air permeability of Knauf AMF ceiling tiles, dirt and other deposits on the surface are greatly reduced lowering the risk of staining or colour variances over time.

1200 x 600mm panel sizes were chosen along with Knauf AMF's performance steel T-bar grid system which features a unique click mechanism allowing easy de-mountability, critical to maintenance and servicing of the building and enabling the ceilings to be replaced and recycled at end use. The grid is powder coated in RAL 9010 white, ensuring a precise colour match with the tile surface eliminating colour discrepancies across the ceiling. Knauf AMF's near 100% automated production process ensures that the tiles are uniform in colour, texture and finish throughout the project, including replacement and refurbishment works in the future.

Collins Square sits comfortably alongside Knauf AMF's other recent A-grade commercial projects including 1 William Street in Brisbane, 177 Pacific Highway in Sydney, and BHP's striking Melbourne based headquarters 171 Collins Street. With an impressive portfolio of projects, Knauf AMF has truly established itself in the Australian commercial market. Through state-of-the-art technology and continuous product innovation Knauf AMF provides the winning edge over competitors.

Tower Four will signify the latest premier 'A-grade' office building in Docklands



THERMATEX Acoustic lay-in ceiling system

AMF is owned by KNAUF, a global market leading material manufacturer with approx. 23,000 employees and annual revenue of $7 billion. AMF began production of mineral fibre ceiling units in 1963 using a patented manufacturing process. Through expansion and investment AMF now attains an operating capacity of 60 million m2 of ceiling units per year and is a technological leader in performance ceiling systems. All AMF mineral fibre ceiling units and grid systems are manufactured at its head office and manufacturing plant in Germany. AMF's near 100% automated operating production facilities have enabled it to create the most advanced mineral fibre ceiling unit and steel grid production plant in the world, producing the world's first washable fleece finished acoustic ceiling unit with an RH of 100%, AQUATEC. **www.knaufamf.com.au**

Ancon Building Products designs and manufactures high integrity steel products for use in masonry and concrete construction and has earned a reputation for quality and technical expertise. The company operates from advanced manufacturing facilities and supplies projects worldwide ranging from small-scale residential developments to major infrastructure projects. **www.ancon.com.au**

Armacell is a global innovator in foam technologies and the world leader in the market for flexible technical insulation solutions. Our market coverage is second to none, with 19 manufacturing sites in 13 countries; including a facility located in Dandenong Victoria.

Half a century ago, Armacell were the first to develop an elastomeric insulation product. Armacell since then has had a focus on continuous innovation, supported by research and development teams across the globe, ensuring the ARMAFLEX range continues to deliver excellence in performance and quality.

Armacell provides insulation solutions for mechanical piping, tanks in both commercial and industrial applications including solar, ducting, refrigeration and hot or cold water.. **www.armacell.com.au**

ASKIN® is a leading manufacturer and installer of insulated architectural facade systems, roofing systems and temperature controlled facilities in Australasia. We embrace a customer first approach in delivering sustainable, lifetime value. With a network of 12 sites throughout Australia and New Zealand, ASKIN®'s vast experience has been built upon a strong foundation dating back to 1964. ASKIN®'s culture of customer first, constant improvement, quality and safety assurance is supported with our technical expertise and ISO 9001 accreditation. **www.askin.net.au**

Architectural Window Systems (AWS), is one of Australia's leading suppliers of aluminium window and door systems. AWS offers an extensive range of locally designed aluminium window and door suites for residential and commercial applications. AWS designs, tests, finishes and supplies aluminium window and door systems under the Vantage and Elevate™ brands to more than 130 licenced manufacturers throughout Australia.

Vantage Aluminium Joinery is the residential aluminium systems brand which has become the preferred choice of residential Architects and Building Designers. The innovative performance and design features of the Vantage range deliver outstanding outcomes in residential construction. **www.awsaustralia.com.au**

Creating attractive suspended brick features

Orange Hospital, NSW © Hansen Yuncken

Deep reveals and soffits are increasingly popular design features that add an extra depth and dimension to a masonry façade. Creating these effects can be key to the aesthetics of a building but can pose engineering problems as the main building façade must be maintained across an opening, while seeming to be unsupported by structural steelwork.

The unique expertise of Ancon in the design and manufacture of high integrity steel components has enabled the company to develop a number of effective solutions to achieve this popular design feature – allowing architects greater freedom in design.

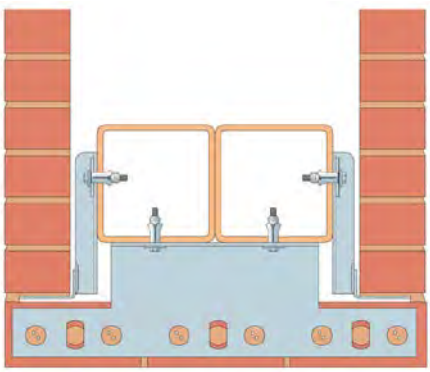
Ancon solutions range from hanger systems to prefabricated lift-and-fix soffit modules. In all cases, Ancon fixing systems are manufactured to meet individual project specifications.

Stitching Rods and Soffit Angles

This was the solution used at the 300-bed Orange Base Hospital in NSW, which was designed by Silver Thomas Hanley and DesignInc with contractors Hansen Yuncken and Macarthur Bricklaying undertaking the construction. Here, the soffit angles were bolted directly to the structural steel frame and the brickwork was suspended below.

Ancon soffit angles used in conjunction with Ancon 'MDC' shelf angles proved the ideal solution for architect DesignInc to extend the support of soffit brickwork on the project's east and west entrance canopies. Ancon stitching rods were used to span the soffit angle and support the three bricks between the brackets.

Ancon's innovative, high performance, Steelgrip bolt simplified the fixing of the shelf angles and soffit angles to the hollow steel section where access was only available from one side. The body of this unique Ancon bolt expands against the steel when the head is turned and an integral serrated washer interlocks perfectly with the serrated Ancon support system.



Soffit fixing design used on Orange Base Hospital

Ancon MDC support systems were used to create the continuous length of shelf angle to support the outer leaf of masonry above the soffit detail. These systems can be manufactured by Ancon in a variety of configurations to suit the specific load and cavity of individual applications and can support special masonry features including curves and arches. As part of Ancon's free design service, plans were produced illustrating the location and reference of all the fixings required. Ancon's project management service ensured all products were designed, manufactured and delivered to suit the contractors' progress on site.

Prefabricated Brick-Faced Soffit Systems

A new phenomenon that is increasing in popularity in other countries where Ancon operates e.g. the UK, is the use of factory-made brick-faced steel or precast concrete soffit modules that are simply lifted and bolted to an Ancon shelf angle. In this instance, the shelf angles are supplied with slots in the angle to facilitate the fixing and provide some lateral adjustment. An Ancon channel in the soffit unit provides longitudinal adjustment. Steel-backed systems are lighter than concrete and can be installed without mechanical lifting equipment. For more information on this innovative soffit solution, please contact Ancon.

ASKIN Performance Panels specified to redevelop the Boroondara Sports Centre

ASKIN Performance Panels were awarded, and have now successfully completed, the redeveloped Boroondara Sport Centre complex in Melbourne's east. The project was specified and designed with 4,000m^2 of ASKIN Performance Panels. FM compliant XFLAM Architectural exterior panels were used with a combination of 'Flat' and 'Silkline' profiles in a designed mix of Copper Penny and Citi metallic colours. The new ASKIN 'LIMITLESS" total façade system was also incorporated allowing a Woodform, Spotted Gum timber rainscreen façade to be fixed to selected areas of the panels exterior skins.

ASKIN's design team liaised closely with Ireland Brown Construction, Vandermeer Consulting Engineers and Williams Ross Architects, to bring the design intent and the building performance requirements together.

The local Council's brief was to give the already first class facility a 'state of the art' upgrade, offering the same swimming pool, basketball courts and children's designated areas, which have been in use by the local community since 2006.

The Boroondara design and construction team were able to design, specify and supply the 85mm thick ASKIN XFLAM 'FM' approved exterior panels to accommodate the NCC/BCA part J thermal requirement of R2.8 for this building.

The ASKIN XFLAM 'FM' approved exterior panels were used in conjunction with the Woodform Spotted Gum rainscreen façade, using the ASKIN 'Limitless' cancelled fixing system, with no detriment to waterproofing or moister ingress.

Williams Ross Architects and Ireland Brown Construction chose to work with ASKIN on this project because of the 'total solution' capabilities of the ASKIN team, bringing together the ASKIN 'Limitless' façade solutions, full design, manufacture and warranted approach that suited both architect and constructor alike.

ASKIN Limitless façade solution with XFLAM 'Seamless' profile and Woodform architectural 42x42 spotted gum façade

Close Commercial were chosen as the preferred subcontractor to install this architecturally designed, ASKIN Performance panel and ASKIN 'Limitless' façade system. Offering a coherent and experienced installation team that has made the building not only look good, but also conformed to the stringent fire and acoustic requirements of this building.

ASKIN XFLAM Performance Panels are a robust, long span, insurer endorsed, fire resistant product which easily complies and conforms to the rigorous demands of the National Construction Code (NCC) and the Building Code of Australia (BCA).

ASKIN Limitless façade solution with XFLAM 'Seamless' profile and Woodform architectural 42x42 Spotted Gum façade.

In addition to the already great reasons to use ASKIN XFLAM Performance Panels, ASKIN is a 100% Australian owned company and Australian manufactured system.

ASKIN Performance Panel capabilities have given Williams Ross Architects, Vandermeer Consulting Engineers and Ireland Brown Construction the confidence to continue to specify and use ASKIN and our high performance solutions.

ASKIN ViviD series architectural panels in 'Seamless' and 'Silkline' profiles with Copper Penny and Citi Metallic colours.

University walkway has golden touch

Rather than one long, monotonous bridge the pathway's grades change and zig-zag in different directions so pedestrians can see the grounds from different aspects

The University of Queensland has finished the roofing for a pedestrian link with a lavish COLORBOND® Metallic steel custom colour called Callisto™. Twelve tonnes of COLORBOND® Metallic steel in Callisto® adorns a 150mm-thick Bondor Equideck® insulated panel. This functions as the roof and soffit of the 75m open-sided walkway, with both sides being finished in the same colour (Callisto®).

Cox Rayner Architects' project architect, Jack Dodgson, said the need for a new walkway increased after a bus and pedestrian-only Green Bridge to the University's Lakes Entrance was built. "What was essentially designed as a back-of-house entrance became the primary entrance," said Mr Dodgson. "We decided to elevate the land and reduce the size of the proposed bridge to 35m, to reduce cost and also extend the experience of walking through the garden... We wanted people to experience the surrounding garden as much as possible so the bridge forms a natural landscape concept."

This included the decision to use COLORBOND® Metallic steel in the custom colour Callisto® to clad the Bondor Equideck® panel. "The choice of the custom colour was informed by a couple of things," he said. "First of all, it's a colour that is very natural and resonates with the local environment.

"In relation to the site specifically, there are fig trees all around the walkway which have little yellow flowers, the back of which are coloured in a remarkably similar gold. There's a lot of gold colour in other vegetation around the project and the colour is also sympathetic to the soil and sandstone. The colour on the steel brings a degree of warmth, especially when it has light on it because of its metallic finish."

Principal Consultant Nick Canto of icubed consulting said the Bondor Equideck® insulated panel also performed a structural function. "The panel has a structural edge and excellent spanning capabilities," said Mr Canto. "It was important to have the appropriate thickness in the panel because it has to support maintenance and solar loads and also perform a function as the bracing diaphragm for the structure. The 150mm panel allowed us to span seven metres."

Mr Canto said that as an engineer, it is important to him that all building products he specifies for projects comply with Australian Standards. "Using BlueScope products makes our job easy because we know they comply with the chemical composition requirements for the relevant Australian Standards. We were happy to find out the Bondor Equideck® product was specified for the job because we know that the panel and the incorporated COLORBOND® steel is tested and is reliable in Australian conditions and meets Australian Standards."

Construction project manager of builders FKG Group, Adam Finn, concurred with Mr Canto's views on compliance. "It was a design and construct project for us so we worked closely with the consultants and client during the design phase to ensure the products specified best met the design intent whilst maintaining compliance with Australian Standards."

He said using prefabricated steel components helped meet a short timeline for the build. "It was an extremely tight program so the speed of construction offered by the mostly prefabricated steel components, such as the panels and the structural steel, helped us meet the deadline. It was a lot quicker than using regular construction as it eliminated the need for additional cross supports and the panel once installed gave a prefinished roof and ceiling eliminating the need for multiple trades.

Builder Adam Finn said the Bondor Equideck® panel made from COLORBOND® Metallic steel in the custom colour Callisto® provided the kind of finish sought by the client.

CONSULT AUSTRALIA

NATSPEC fulfils a critical role in the building and construction industry in the provision and dissemination of information which not only assists those in the supply chain to conduct their day to day activities, but also assists in the standardisation of practices across the industry that produce better building quality outcomes, as well as outcomes in value for money delivery, health and safety and innovation. I congratulate NATSPEC on the quality provision of service it has delivered for the last 40 years, and look forward to working collaboratively with NATSPEC to continue to provide value driven services for our combined membership for many years to come. Consult Australia takes great pride in our founding membership of NATSPEC, and highly recommends NATSPEC documents to our industry.

Consult Australia CEO, Megan Motto

Billi™

BILLI Pty Limited is Australia's own filtered water system. Leading the way for over 20 years, it has maintained a commitment to leadership and innovation. The result is a range of uncompromising quality.

Award-winning BILLI water systems are specified by Australian designers and architects for their timeless styling and space-saving design. Offering energy and water efficiency benefits, BILLI is Australia's touchstone for filtered water systems and sensor tap technology. **www.billi.com.au**

BLUESCOPE

BlueScope is a leader in the provision of high quality metallic coated and painted steel products for the building and construction sector in Australia. Our most notable brands are COLORBOND® steel and ZINCALUME® steel.

BlueScope products are now an integral part of both new and retrofit housing, commercial and industrial projects. **www.bluescopesteel.com.au**

Bostik smart adhesives

Bostik Australia is supported by a worldwide research and development resource keeping it at the forefront with new and innovative technologies. The company is committed to providing sustainable and innovative solutions that combine technological performances, ease of use, cost effectiveness and respect for the environment.

Bostik actively integrates green building initiatives through developing products that have minimal impact on the built and natural environment. Bostik Australia has over 100 products that meet Green Building Council Australia low VOC criteria. **www.bostik.com.au**

Bradford™ more than insulation

Celebrating 80 years, **CSR Bradford** has been helping Australians live comfortable, more energy efficient lives through our knowledge, experience and innovative, energy-saving products. We're also backed by CSR, founded in 1864 and the name behind some of Australia's most trusted and recognised building product brands. CSR Bradford provides thermal and acoustic solutions for residential, commercial and industrial applications including glass wool, rock wool, foil, ventilation and specialty products designed for commercial buildings. **www.bradfordinsulation.com.au**

NATSPEC ProductPartner

Experts in roofing choose Bradford and Edmonds products

Warehouse featuring Thermoplast white decorative foil sarking

When Havendeen Roofing, a leader in commercial roofing in Queensland, needed to build their new office/warehouse, they naturally turned to their long-time suppliers, CSR Bradford, for products and technical support.

Moving from a leased building to their own architect-designed premises, the experienced team at Havendeen knew what they needed and turned to Bradford Insulation and Edmonds ventilation to provide tailored solutions for the two units, each featuring a separate office and warehouse. One unit is used by Havendeen as their offices and warehouse for products and equipment, with the other unit leased out to Deluxe Foods, specialty food wholesalers.

Acoustics between the two units, offices and warehouses was of particular concern so CSR Bradford helped Trevor J Allen Architects specify products to address this. Thermal performance in the hot Queensland summers was another key concern, and the combination of industry leading insulation and ventilation came to the rescue here.

The warehouse features Thermoplast white decorative foil sarking and 80mm building blanket, with Edmonds H900 Hurricane wind-powered ventilators to provide optimal comfort on those hot summer days. The Hurricanes were powder coated white to match the roof colour.

In the offices, the roof was fitted with Anticon Light Duty combined with the Ashgrid Roof Spacer System to raise the metal roof sheet and create a defined space for the insulation. The external walls of the offices feature R2.5 Gold Wall Batts for thermal performance, with R2.0 walls batts in the internal walls to lessen inter-office noise transfer. The floors were also lined with R2.0 floor batts and the ceilings with 100mm building blanket for extra acoustic treatment.

Completed in 2015, the 1500m^2 building had thorough testing and is performing above expectations. “Our energy bills are down and the acoustics are really good. It’s much better than we thought it was going to be, and our tenant is very happy too. The thermal performance is so good that on a lot of days we don’t even need to run the air-conditioning,” said Havendeen Director Rob McKinnon.

Dealing with the technical and customer service teams at Bradford and Edmonds was another great experience for Havendeen. “Everything was 10 out of 10. They are the best in the business. We sent them the plans and the technical team advised what insulation to use in the roof and walls for the acoustics. The price was good, customer service was good, and deliveries were on time. It was all great. They are our best supplier by far across the whole company,” reports Rob McKinnon.

Havendeen is now scoping a Bradford solar system for the roof to further reduce their energy bills. Bradford Insulation and Edmonds ventilation have been the main suppliers for Havendeen since Mr McKinnon bought the business

Aerial view of the two buildings

Epworth Hospital, Geelong

Main entry and fountain at the Epworth Hospital, Geelong (Peter Redmond)

The building
Epworth Hospital Geelong is owned and operated by Epworth HealthCare. The $277 million building, located over 10 hectares, is set to open in July 2016. It will be a comprehensive acute and rehabilitation private hospital, integrating clinical practice with teaching and research.

The 170 bed facility will have an emergency department, seven operating theatres, four birthing suites and a six bed Intensive Care unit.

In a unique partnership with Barwon Health, the plush hospital will offer cancer and renal treatment services to public as well as private patients. Complex neurosurgery - previously unavailable in Geelong - will also be performed at the quarter-billion dollar hospital.

Once fully operational, the hospital is expected to treat more than 46,000 patients annually and employ more than 700 fulltime staff. About 400 staff will start work from July.

The design
With mood lighting, Italian marble nurses' stations and luxurious wallpapers, carpets and fabrics, Geelong's new Epworth hospital has the look and feel of an opulent hotel.
No expense has been spared on this seven storey building with vast areas of sandstone, granite and curved glass, providing pristine 180 degree views. Regular rooms, wards and staff areas are also stylish and luxurious, creating an ambience similar to that of a plush five-star hotel.

On the ground floor, the hospital has a heated pool, central atrium with a grand staircase and landscaped courtyards and gardens.

The product
Pasco's Award Winning Buzon Pedestals were chosen by the architectural firm Silver Thomas Hanley for creating the large paved public pedestrian courtyards and plaza areas, as well as the large terraces for public, patient and staff use.

Concrete slabs with integrated falls were waterproofed using a liquid applied polyurethane membrane. Baron Forge were then engaged to install 1400m^2 of 500 x 500 x 30mm granite pavers on Buzon Pedestals ranging from 75mm to 285mm high.

Designed for use with pavers, timber or steel grating, Buzon pedestals are used to create raised floors on balconies, terraces, green roofs, temporary floors and water features. They allow builders to conceal services and offer easy access for maintenance of waterproofing membranes.

The Buzon pedestal supports were an easy choice to achieve the high-end finish required. With a patented slope-correcting device ensuring a level floor finish, interchangeable space tabs accommodate gaps between pavers for positive drainage, air ventilation and preventing ponding therefore reducing slip risks.

Furthermore, Buzon Pedestals reduce the weight bearing loads on concrete slabs, by eliminating screeding, sand/cement beds for pavers and tiles.

The pedestals improve thermal insulation, have sound proofing benefits for green roofs, multi-storey apartments and hotel terraces and balconies.

Buzon Pedestals have solid sustainability credentials, manufactured from 80% recycled polypropylene and are 100% recyclable.

Designed, manufactured and tested in Belgium, Buzon pedestals have been used on projects all over the world, and now have the Epworth Hospital Geelong as part of its illustrious portfolio.

Testimonial
Murray O'Donnell, Senior Site Manager, Brookfield Multiplex.

"The installation was critical as it was on a waterproofing membrane over the hospital wards and operating theatres, so we needed the best product for the job. Due to the large amount of pedestrian traffic... we needed a product with maximum loading capabilities."

"We were extremely happy with our choice as the process from approval to completion of installation was extremely easy and seamless, assisting us in meeting our deadlines."

Exchange Tower Perth

OWA Sinfonia C Mineral Fibre Ceiling Tiles and Fricker Top Hat Aluminium Grid in the Exchange Tower in Perth

CSR Ceilector have supplied OWA Sinfonia C Mineral Fibre Ceiling Tiles and Fricker Top Hat Aluminium Grid to Levels 15 , 20 , 22 , 25, 26 28 , 29 , 35 in the newly refurbished Exchange Tower in Perth.

Located in a prime position overlooking Elizabeth Quay, this landmark building is the fifth tallest skyscraper in Perth and is home to tenants such as Knight Frank, Morgan Stanley and Mitsubishi Australia. Co-owned by Primewest and AMP Capital, this building, managed by Knight Frank, has undergone a comprehensive refurbishment which has resulted in a major transformation of office space and amenities.

Ceilector supplied OWA Sinfonia C and Fricker Top Hat Aluminium Grid in order to achieve the clean, modern feel that Exchange Tower has designed to inspire success. Catherine Fenwick, Head of Division, Western Australia Project Management & Building Consultancy, stated that they decided to go with the German-made tile due to the clean face pattern and strong acoustic qualities that are imperative to the success of a commercial office environment. The tiles produced were custom size 1337 x 446.5 x 15mm to meet the requirements of the existing building module.

Ceilector is the exclusive Australian distributor of OWA mineral fibre ceiling tiles which have been manufactured in Germany for over fifty years. Their products are created to ensure that the design, acoustic and environmental needs of a ceiling in commercial applications are always met. Their products are produced from bio-soluble mineral wool, natural fillers such as clay, starch and recycled paper and are all Green Tag Green Rate Level A certified to ensure that products are environmentally sustainable.

Right: The Exchange Tower in Perth

Below: Interior view of the ceiling tiles exclusive to CSR Ceilector

Redevelopment to Halls Head Shopping Centre, Mandurah WA

Con-form® GROUP
value engineering

The redevelopment/extension to Halls Head Shopping Centre designed by The Buchan Group Architects in conjunction with 1:1 PH Architects included the ALDI Supermarket, contributing 5946m^2. The construction was completed by Doric Contractors.

When it came to selecting, Doric chose Con-form Group, a leading provider of innovative surface mounted platform systems with integrated screening and acoustic solutions, to provide a value engineered solution for the rooftop mechanical plant equipment

Con-form Group installed their flagship Series 1 Platform, designed specifically for metal deck pitched roofs, with Standard Screen Wall to three sides and Guardrail to the fourth, addressing fundamental aesthetic and safety requirements.

Con-form worked closely with ISECO Consulting Services throughout the project to address several key ALDI requirements, principally outlining a need to reduce excessive sound and vibration transference from mechanical plant equipment through the platform and into the building. This specific prerequisite was derived from ALDI's history of experiencing inferior plant platforms, which amplified mechanical equipment.

Due to the project's considerable height and distance from neighbouring homes, sound attenuation performance was low. Con-form Group's AVANT (Anti Vibration, Anti-Noise Technology) was an ideal choice in addressing sound and vibration transference problems, boasting an average vibration reduction factor of 70 times. With four specific acoustic and screening wall treatments available from Con-form, this choice was never going to be problematic for 1:1 PH Architects. Surf-mist was the chosen powder coat colour for the project however, the range is limited only to one's imagination as any colour and warranty powder coat can be selected.

Aldi, the hero of Halls Head Shopping Centre

Unlike other products on the market, Con-form's systems are truly surface mounted, providing a completely penetration-free solution, placed directly onto the roof sheeting panels. Double-sided very high bond tape is applied to the length of each aluminium z-purlin to provide a dissimilar metal break and further assists in reducing sound and vibration transference. With ratings of 2.5kPa, 5.0kPa and greater if required, Con-form's Series 1 platform was able to achieve the mechanical plant load requirements provided by Doric with ease.

Series 1 weighs in at 14kg/m^2, with an additional 6kg/m^2 for the Standard Screen Wall. These impressively low weights are largely attributable to the advanced aluminium and stainless steel construction method, specifically engineered to distribute loads more evenly across the roof, while dramatically reducing the need for excessively large, heavy and expensive structural steel members and welded mesh.

Combine this with a nationwide lead time of two weeks from date-of-order, speedy two day installation and a 20 year warranty standard, the benefits of using Con-form's holistic products and services becomes very clear and the true value of using such systems, self-apparent.

The finished results are clean, neat and safe, ensuring optimum performance and longevity of equipment with added ease of maintenance.

Top: The construction site at the Halls Head Shopping Centre.
Bottom: The completed project

As one of the earlier members of NATSPEC, the Air Conditioning and Mechanical Contractors' Association have long recognised and supported NATSPEC's vision to improve the construction quality and productivity of the built environment, through leadership of information. Whether you are a home builder, local government, commercial contractor or consultant, the range of products, training and other resources available through this not-for-profit organisation is extensive and up to date.

We congratulate NATSPEC the organization and all of its staff and industry supporters for its work and ongoing success.

AMCA National Executive Director, Christopher Rankin.

Capral Aluminium was established in 1936 and is Australia's largest manufacturer and distributor of aluminium profiles. Our comprehensive range of Commercial Residential Security and Industrial products has an enviable reputation for quality, style and high performance. As a local systems designer, NATA approved testing authority, and with innovative R&D capabilities we are well positioned to take advantage of changing building regulations in Australia and technically support our brands including ARTISAN, Urban, Futureline, Amplimesh, Intrudaguard, and AGS. **www.capral.com.au**

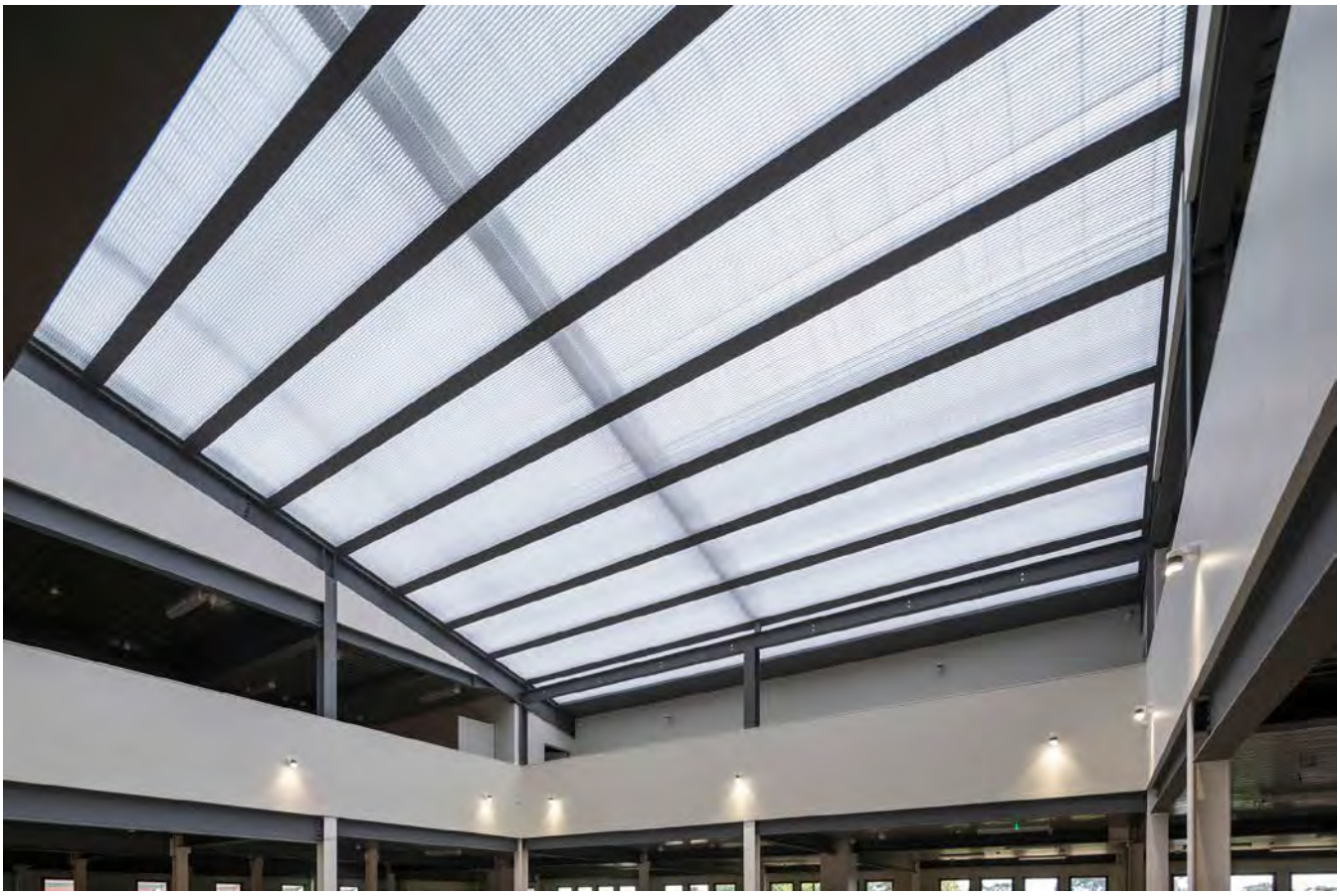
CSR Ceilector brings together Australia's widest range of ceiling tiles and accessories The product portfolio includes high-quality products to make sure the design and functionality needs of any project are always met. Ceilector distribute a range of ceiling tiles, including mineral fibre, timber, metal pan and high acoustic tiles, along with ceiling accessories such as steel and aluminium grid and lighting solutions. Ceilector also offer a range of timber and high acoustic wall panelling options. **www.ceilector.com.au**

Con-form Group is an energetic team dedicated to providing Australian designed and value engineered products that are quick to assemble, lightweight and affordable platform systems with 20 year warranty standard. Con-form's growing series of structurally unique, aluminium products are creating a new dimension in the approach to surface mounted platforms and are designed to eliminate the need for any cutting or welding, providing excellent flexibility and error free assembly, unlike traditional engineering methods. **www.con-formgroup.com.au**

CS Group started out in 1986 manufacturing CS Cavity Sliders. Our mission is to engineer and manufacture the best and most innovative door solutions. Over the years we have continued to rapidly develop new products, including track systems, wardrobe sliders, aluminium door leaves and most recently, automated cavity sliders. **www.cavitysliders.com.au**

DAMTEC is part of the KRAIBURG Group (Est. 1947), an organization rich in tradition with over 2000 employees worldwide and an annual sales volume of approximately AUD 500 million. They are an internationally acknowledged and recognized manufacturer of ready-to-install products for impact sound reduction. **www.damtec.com.au**

Complete lighting flexibility with Controlite operable louvres at Fluid Solar house, Adelaide



Fluid Solar – internal view

Fluid Solar House provides premium office and medical consulting space in a true zero energy building. All of the building's base energy demands will be met by solar energy, collected from the roof, using Fluid Solar concentrated solar thermal technology and photo-voltaic solar panels. The concentrated solar thermal provides potable hot water and powers space heating and cooling, whilst the photo-voltaic panels powers ventilation and lighting.

Fluid Solar – external view

A large central atrium provides abundant natural daylighting to the two primary levels of occupied space. This significantly improves the internal environmental quality for building users and reduces the need for the building's solar powered smart LED lighting. To ensure good control of the atrium environment and prevent high heat loads in Adelaide's hot summer, a Controlite operable roof system has been used for the 130m^2 atrium skylight. Controlite features opaque rotating louvres that can easily attenuate excess solar radiation when required, offering complete control of internal light and heat loads.

An external layer of Danpalon roofing above the Controlite (in continuous 17m lengths), ensures the system is watertight in all conditions and forms a double-skinned insulated trap for solar heat gain. The lightweight nature of the polycarbonate louvres allows the use of low voltage motors with excellent longevity, as well as large unbroken spans.

DTAC®

TACTILES, STAIR TREADS
& EDGING SOLUTIONS

DTAC delivers compliance and aesthetics for RMIT Bundoora West student accommodation

When it comes to the design, supply and installation of tactile indicators, stair treads and edging, DTAC Pty Ltd is a world leading innovator and has been a trusted name in the industry for almost 15 years. The company pioneered the architectural floor tactile industry in Australia, taking a utilitarian product and transforming it into a feature that compliments the aesthetics of any project.

DTAC's specialist team design and manufacture their own superior quality products to meet the ever changing requirements of Australia's tactile, stair tread and edging compliance regulations. All products are designed, manufactured and installed in line with the latest Australian NCC standards.The products also conform to the Disability Discrimination Act (DDA) including slip and luminance requirements with test certification data available.

"It's our technical support staff and highly trained contract installers unequalled attention to detail and their specialist knowledge that ensures architects, designers and builders can make the right choice for aesthetic and functional compliance in every project," explains DTAC Operations Manager Michael Moulding. "In addition to meeting the mandatory compliance, DTAC's products also offer visual appeal; this is why DTAC is the industry leader and continues to be the brand of choice for tactiles, stair treads and edging."

For the RMIT Bundoora West Student Accommodation project, DTAC was engaged to design and install tactile and stair tread installations in accordance with the required building standards and regulations. Thousands of DTAC Ecotac TGSI's were installed along with DTAC's Urban Edging range on steps across the site.

The uniqueness of these products is that DTAC's Ecotac is an environmentally friendly alternative to the classic solid tactile. Whilst it appears identical when installed, is AS/NZS 1428.4 and NCC compliant, the Ecotac features a cupped underside that uses less stainless steel therefore putting less demand on resources. It has a slip resistance classification of R12 and utilises a superior pressure fit fixing method ensuring performance and longevity.

DTAC's new Urban Edging is made from hard wearing silicon carbide inserted into an aluminium extrusion. Specially designed by DTAC in Australia, the Urban Edging range is available in a variety of angles and profiles suitable for all stable substrates, including carpet. The Urban Edging range complies with all national codes and regulations achieving a R13 slip resistance classification as well as luminance and fire testing compliance.

Michael explains that "as with most projects but particularly those in the public area like RMIT Bundoora, compliance and certification is of the upmost importance." "Our products are tested and certified in accordance with the NCC, AS/NZS 4586 and AS/NZS 1428.4." "All our installers go through an 18-step accreditation process before going onsite; therefore our clients can be assured that our DTAC trained contractors have the expertise and knowledge when it comes to the compliance and overall aesthetics of tactile and edging installations." Michael added.

DTAC's work can be seen throughout a number of iconic sites across Australia, including the new NAB building on Bourke Street, Melbourne, Hawthorn Town Hall, the Melbourne Fire Board Complex and Yarra Valley Water headquarters to name a few.

DTAC Ecotac DTO120 and Urban Edging DEO510B installed outside of RMIT Bundoora West Student Accommodation building

DTAC Ecotac DTO120 and Urban Edging DEO510B installed on a staircase inside RMIT Bundoora West Student Accommodation

Orbis Apartments

Project details
Orbis is a seven storey apartment building located near tranquil Albert Park Lake and the vibrant South Melbourne shopping precinct.

Arno Developments engaged the services of ARM Architecture to design a truly unique and aesthetically appealing building that deliberately avoids mediocre apartment block designs common across our city. Orbis brings together playful curves and elegant arches to achieve a highly liveable, beautiful building.

The stunning façade comprises curved fiberglass panels, which were whip blasted and primed with Dulux® Durepon® Sandable Primer and painted in Dulux® Quantum® FX, a bright metallic polyurethane with reflective metallic flakes. The metallic coating was finished with a coat of Quantum® Clearcoat, a high gloss clear polyurethane to impart depth of colour and enhanced metallic effect. The Clearcoat also protects the system from UV degradation and provides graffiti resistance.

The result is a spectacular, sculptural façade that responds to the ever-changing colours of the days and seasons, whether reflecting the sun's rays with golden brilliance, meeting a cloudy day with a serene sheen or glimmering under night time lighting.

The high performance nature of the coating system also provides long-term durability and low maintenance, whilst maintaining asset value and street appeal.

Fast facts
Location: South Melbourne, Victoria
Architect: A-R-M
Engineer: Mouldcam
Builder: LU Simon
Fabricator: Sheer Composites
Contractor: Doogood Specialised Coatings

The stunning Orbis apartments near Albert Park Lake

Transient discriminating technology

To meet the fundamental requirements of performance, longer service life and greater safety under real world conditions, ERICO CRITEC® has developed Transient Discriminating (TD) Technology. This quantum leap in technology adds a level of "intelligence" to the Surge Protection Device enabling it to discriminate between sustained abnormal overvoltage conditions and true transient or surge events. Not only does this help ensure safe operation under practical application, but it also prolongs the life of the protector since permanent disconnects are not required as a means of achieving internal over-voltage protection.

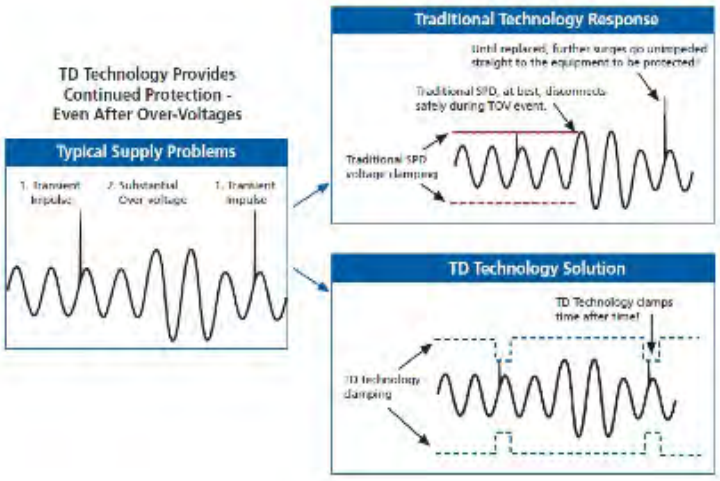
Traditional technologies

Conventional SPD technologies utilise metal oxide varistors and/or silicon avalanche diodes to clamp or limit transient events. However, these devices are susceptible to sustained 50/60 Hz mains over-voltage conditions which often occur during faults to the utility system. Such occurrences present a significant safety hazard when the suppression device attempts to clamp the peak of each half cycle on the mains overvoltage. This condition can cause the device to rapidly accumulate heat and in turn fail with the possibility of inducing a fire hazard. The diagram shows how a traditional SPD is chosen to have a nominal clamping voltage that is above the peak of the nominal AC mains voltage. However, in the following diagram, it can be seen that when the AC mains experiences a Temporary Over-Voltage (TOV), the SPD attempts to clamp the over-voltage, and rapidly heats up, resulting in failure, often accompanied by fire or explosion.

The core of TD technology

The secret to ERICO's CRITEC® Transient Discriminating Technology is its active frequency discrimination circuit. This patented device can discriminate between a temporary over-voltage (TOV) condition and a very fast transient, which is associated with lightning or switching-induced surges. When the transient frequencies are detected, the patented Quick-Switch™ within TD activates to allow the robust protection to limit the incoming transient. The frequency discriminating circuit that controls the Quick-Switch™ ensures that the SPD device is immune to the effects of a sustained 50 or 60Hz TOV. This allows the device to keep operating, providing safe and reliable transient protection, even after an abnormal over-voltage condition has occurred.

Effectively, TD Technology allows the SPD to have two clamping levels, one well above the peak of a TOV (up to twice its nominal AC voltage!), and the other much lower, to effectively and swiftly clamp lightning transients.



As the explanatory illustration shows, this allows the TD circuit to still remain operational after TOV events, thus continuing to clamp transients and providing a much longer operational life.

Meeting & exceeding Australian & UL standards

The ERICO CRITEC® range of surge protection devices from ERICO employing TD technology has been specifically designed to meet and exceed AS1768 and the new safety requirements of UL1449. To meet the abnormal over-voltage testing of UL1449, many manufacturers of SPD devices have incorporated fuse or thermal disconnect devices which permanently disconnect all protection from the circuit during an over-voltage event. Transient Discriminating technology on the other hand will allow the SPD device to experience an abnormal over-voltage up to twice its nominal operating voltage and still remain operational even after this event! This allows the device to provide safe, reliable and continuous protection to your sensitive electronic equipment. TD technology is especially recommended for any site where sustained over-voltages are known to occur, and where failure of traditional SPD technologies cannot be tolerated. Most reputable manufacturer's designs allow for up to a 25% overvoltage, while ERICO's CRITEC® TD Technology gives even greater overhead.

Critec Dinrail Mount TD technology modular SPD

A business school for future captains of industry

FANTECH Intelligent Ventilation

A new building at the University of Technology, Sydney (UTS) has everyone talking. Designed by Pritzker Prize-winning architect Frank Gehry, the Dr Chau Chak Wing building is part of the university's $1.2 billion City Campus Master Plan to enhance student learning through collaborative thinking among students and staff.

The $180 million project provides a new home for the UTS Business School which was divided across two campuses.

The new educational facility provides 35 teaching, learning and research spaces. These include two oval classrooms for a capacity of 60 people which encourage dialogue between students and teachers. In addition a 120 seat lecture theatre with mobile furniture can swiftly convert into a format allowing small-group work and back again.

Lend Lease appointed A.G. Coombs to deliver mechanical and HVAC services for the building. Andrew Robinson, Senior Project Manager at A.G. Coombs said "the building was designed 'from the inside out' and there is a real sense of that, it was a challenge to create a high quality high performing and energy efficient HVAC system to fit the unconventional shape and structure without compromising the architectural intent."

He goes on to say, "reticulation throughout the structure of risers, the roof plant and plant room locations were a focus for the team. We worked closely with Lend Lease Design Group and the Lend Lease bid team during the bidding phase, and with AECOM on the detailed design through the construction phase."

"Clearly the building's unusual shape provided many spatial challenges," he said. 3D Revit modelling was used to coordinate the services into structure and ceiling spaces. Throughout the installation phase, Trimble® digital equipment was used to help overcome

The Dr Chau Chak Wing building at UTS

set out challenges caused by the irregular shape of the building and the lack of easily referenced set out points. The team decided on an energy efficient air-cooled chilled water system and a condensing gas boiler plant. Smart air conditioning systems with occupancy sensing switch off when offices are empty for an extended period of time have further reduced energy use, and have contributed to the building's 5 Star Green Star Design rating from the Green Building Council of Australia. Fantech supplied a number of axial fans the basement mechanical plant room and the exhaust for the car park, loading dock, kitchen, kitchenette/ pantry and toilet areas.

Other green initiatives include energy efficient glazing on the façade, parking for over 150 bicycles and a 20,000-litre rainwater tank.

The building was completed in November 2014 and officially opened by the Governor-General of the Commonwealth of Australia, Sir Peter Cosgrove, on 2nd February 2015.

Andrew said the systems have operated well and A.G. Coombs will be closely involved in the building tuning process during the 12 month warranty period and the ongoing service and maintenance of the HVAC systems in the building.

Innovative Fielders KingFlor® at Meriton North Sydney

Project name: Meriton North Sydney
Profile: KingFlor® CF210
Builder: Meriton
Engineer: Enstruct
Architect: Tony Caro Architects
Installer: Santana Stud Welding

The project
Fielders was contracted by Meriton, Enstruct and Tony Caro Architects to provide 20,000m^2 of KingFlor® CF210 decking for the recently completed luxury Meriton apartment tower in North Sydney.

Heralded as a 'game-changer' for industry construction methods, the $200 million development is the first high-rise residential building in Australia to be constructed purely from structural steel, eliminating the use of the traditional concrete frame building method.

The Arthur Street tower is perfectly positioned within the North Sydney commercial district, with the Sydney CBD only 3.5kms away and the airport within a 30minute drive. The 30-storey building features breathtaking views of Sydney's most iconic landmarks including the Sydney Harbour Bridge, Sydney Opera House and Circular Quay. With 218 stylish short-stay apartments across 30 levels, each meticulously designed apartment provides unparalleled luxury featuring an oversized living and dining area, fully-equipped kitchen and internal laundry with clothes washer and dryer.

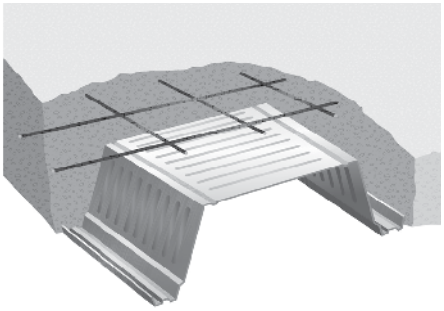
The solution
The KingFlor® CF210 SlimFlor system was chosen due to its ability to reduce the construction depth of the flooring from the traditional steel construction depth of 450mm to 650mm, down to 290mm. This allowed the construction method of steel to compete favourably with concrete framed buildings and in comparison, contributed to a significantly faster construction time and reduced costs.

The process
The supply of both KingFlor® decking profiles commenced in June 2015 and was completed in date of late 2015. The entire development was completed in mid-2016 with the stylish apartments opened up to residents thereafter.

Project specifics
- Total of 20,000m^2 of KingFlor® CF210
- 1.2mm steel formwork
- Construction depth of 290mm
- 7m sheet lengths
- Steel grade: G500

KingFlor®
Fielders KingFlor® is a revolutionary steel formwork solution ideal for complete concrete slabs in concrete and steel framed construction over lengthy spans. With five deckings available including two trapezoidal profiles, two re-entrant profiles and a deep deck profile, KingFlor® is Australia's largest range of composite steel formwork, with the longest spans and deepest profiles on the market.

Project uses include commercial buildings, shopping centres, multi-storey buildings, multilevel carparks, and residential construction.



Fielders KingFlor® steel formwork

View of the Meriton building in North Sydney

Danpalon is a patented glazing snap-connection system with concealed fasteners that provides for 100% watertightness; free structural and thermal movement within a flexible system; structural properties that allow for a significantly reduced substructure; quick and easy installation; the elimination of gaskets and sealants; the elimination of fixing penetrations through the sheet and 99.9% UV protection with the protection coating co-extruded with the sheeting, eliminating any chance of delamination. **www.danpal.com.au**

DTAC®

TACTILES, STAIR TREADS & EDGING SOLUTIONS

DTAC is an Australian company with over twelve years experience in design and manufacturing excellence, all backed by industry leading support. DTAC comprises a specialist team of professionals that prides itself on offering beautiful, BCA compliant, architectural tactile ground surface indicators and stair and joinery edging products. DTAC's range also includes urban landscape edge protection and more. DTAC's unequalled attention to detail enables architects, designers and builders to make the right choice for aesthetic and functional conformance in every project. **www.dtac.com.au**

DuluxGroup is an Australian publicly listed company. The company has been involved with the manufacture and marketing of paint and related systems in Australia since 1918 and is the largest manufacturer of decorative paint products in Australia. DuluxGroup is the manufacturer of iconic Australian brands which consists of Dulux, Selley's, Yates and Cabot's, Feast Watson, Intergrain, Toby. DuluxGroup is also Australia's largest manufacturer and marketer of surface coatings with well known brands such as Dulux Decorative, Dulux Protective Coatings, Dulux Powder Coatings, Dulux Acratex Texture Coatings, Berger, British Paints, Levene, and Walpamur brands. **www.dulux.com.au**

ENSYSTEX™

LEADING INNOVATION IN PEST MANAGEMENT

Ensystex is a global, research-based company with the vision to be '*the first choice for environmentally responsible, effective, long-term termite management solutions*'. The company's key brands for protecting new buildings are the **NOVITHOR™ Pesticide-Free Termite Protection System** and **TRITHOR™ Termite Protection**. Both Systems hold ABCB Codemark Accreditation.

Ensystex has the largest technical sales support team of any innovation based termite protection company in Australia, and we are present in all States to assist you. **www.ensystex.com.au**

ERICO®

ERICO is a global manufacturer and marketer of electrical products and technical solutions for lightning protection, surge protection and earthing. ERICO provides solutions in a wide range of market segments including Power Utilities, Telecommunications, Building Services, Water Utilities, Defence and Government. Products are marketed under the ERICO product brand. **www.erico.com**

NATSPEC ProductPartner

Stremaform® Stay-In Place (SIP) Jointing Formwork

Working joints are complicated to form due to the need to accommodate through reinforcement and waterproofing systems, whilst at the same time producing a rough/ scabbled surface.

Expansion joints may need to accommodate fire insulation and shear force dowels, etc. A practical solution for both type of joint will speed up the construction process and lead to a safer working environment. Stremaform® stay in-place formwork system offers all of these advantages for use in floor slabs, ceilings, walls, etc.

The system

The basic building block of this system is an element consisting of an expanded metal mesh that is welded between reinforcement bars. Maximum element dimensions are up to 2.4m in length by 6.0m high. Depending upon the height of the slab or the wall thickness additional stiffening of the element with the use of lattice girders will be required. The standard elements are produced flat but options for the inclusion of one or more indents are available.

For the optimum site solution, this SIP formwork system has many accessory products which help to improve the buildability and long term performance of joints:

1. Spacer - sealing the gap between the formwork and the bottom layer of reinforcement. To prevent concrete from escaping at this interface, a special combination Frank extruded fibre concrete spacer with glued in mesh combs of height and spacing to suit individual projects. The concrete spacer complies with the highest requirements of AS/NZS2425:2015
2. Support Anchor – for element heights of greater than 0.5m, support anchors are used to maintain the positioning of the SIP elements in the joint. They provide tensile and pressure resistant anchoring of the formwork during installation and concreting phases. Anchors can either be welded or clamped in position.
3. SCC concrete – where self-compacting concrete is used, the use of the standard mesh may not be appropriate with a finer expanded mesh being incorporated.
4. Waterproofing – including some form of waterproofing within a joint often leads to problems on joint formation as well as unsatisfactory sealing results. Solutions incorporated at the manufacturing stage can ensure that the best possible outcomes are achieved. Waterbar support cages ensure that waterbars are correctly located within the joint. Coated or uncoated metal waterstops can also be used.

The Stremaform system

Working Joints & Expansion Joints

Both types of joint require their own unique Stremaform® solution. Working Joints divide large structural components into concrete pours. Their positioning is planned in accordance with work flow requirements or as part of the structural design. Working joints can be sealed with pvc/rubber water bars or metal (coated/uncoated) water stops. Transverse force dowels can also be incorporated to transfer loads.

Expansion Joints separate structural elements made of concrete from each other. Although different in manufacture from the Working Joint elements, this form of our SIP system can also accommodate the incorporation of dowels and waterproofing elements as well as fire protection material. These units are generally prefabricated off-site in completed units and delivered to site for easy and quick accurate installation. Options for mass-spring systems are available.

Other applications:

This type of SIP formwork has many other sundry uses:

1. Kickers – kickers are always difficult to construct and the alternatives cause joint sealing problems. A SIP kicker which can be used with kickerless construction provides the solution.
2. Box-Outs – the same advantages of bond as shown for working joints make the use of this SIP formwork ideal for box-outs.
3. Controlled Crack Joints – used with Pecafil®, this gives a joint where positive connection between at least one third of the concrete section is prevented in order to produce a controlled crack.

State Drill Core Library South Australia

KEYSTONE
Architectural Linings & Acoustic Solutions

Presented in this case study are images of the recently completed State Drill Core Library. Designed by Thomson Rossi Architects, Keystone worked closely with the architect, Builder (Hansen Yunken) and Installer (Laser Linings) to achieve this outstanding result.

Thomson Rossi had the following to say: "Thomson Rossi were greatly assisted by the Keystone team to realise our vision of a grand space for the all-important core viewing room or "Discovery Room" as it has now been named, in the new state of the art South Australia Drill Core Reference Library, opened in March 2016.

The perforated acoustic ply ceiling is highly visible and contributes enormously to the significance of this pivotal space, adding both warmth and drama while maintaining acoustic performance of the highest level.

Keystone worked closely and collaboratively with the design team at Thomson Rossi to provide technical assistance and to reduce cost to ensure this important design feature could be realised within challenging budget constraints for the wider project."

Product: KEY-PLY perforations ceiling panels

The work of Keystone in South Australia

The Discovery Room at State Drill Core Library

Flinders Christian Community College

Located in the semi-rural township of Tyabb, Flinders Christian Community College recently completed construction on a new building for its senior school precinct.

School to over 1,000 students from prep right through to year 12, the vast and inviting campus grounds makes the most of its scenic pastoral surroundings – providing a sense of country community for the learning journey ahead for its students and faculty staff members.

Fostering a growing student population and a resulting facility expansion, the brief called for a 'rustic sensibility' to the exterior with a contemporary-inspired interior aligning to the school's education culture.

"Functioning as an open plan and multi-purpose space, we wanted to establish a visual point of difference to the area and create a graphic floor image using a textile floor covering as the palate. In response to the traffic and the amount of students coming through, we needed a floor covering that would be very robust and easy to maintain," explains Flinders Christian Community College project manager, Peter Cutting.

Referencing the schools existing country-style exterior, the completion of the atrium shell construction provided Paula Saltalamacchia, Interior Designer at CoCREATE, the opportunity to get a good feel for the space before devising an interior scheme.

"Delivering human centred design is the key element to creating a successful ambience. A space can only perform as good as the people within it," comments Saltalamacchia.

"It's about determining what the end user really wants to achieve in the space, going beyond pre-conceived thoughts, to come up with an original concept for that particular application." "For an education space, I aim to create an interior design, which cocoons the occupants in materials and finishes appealing to all their faculties."

Taking into consideration the connection with education and the subjects taught at Flinders, a geometric theme unfolded, offering layers of visual stimulation within the atrium.

Looking to Flotex Sheet to harness this visually intricate concept, a combination of Flotex Calgary was employed in various shades to showcase the elaborate layers – each angle offering a different dimensional perspective of the floor.

While students and staff admire the complex graphic concept, the selection of Flotex Sheet was also a considered option for its practical and trending applications.

"The very nature of the atrium is a general circulation and flexible space incorporating a food court where spillages and mess will occur. Flotex's durability and the ease of cleaning gave me great confidence in selecting a soft floor covering in a space that is a common shared area with high traffic and wear," explains Saltalamacchia.

Saltalamacchia adds: "The increasing use of flexible space concepts and common areas for collaboration is an evolving architectural trend…Creating concepts with colours, finishes and fittings which are 'timeless' in appeal is vital for an interior to last long term."

"I've used Flotex before and knew of its superior quality and great range of colours and patterns. It provided the design flexibility to bring the concept to fruition and the assurance of it lasting for the following generation of students."

Easily cleanable Flotex Sheets used at the Flinders Christian Community College

Meeting and exceeding the mark in Perth, WA

When mining and road construction machinery specialist Wirtgen Group developed plans to build a new, state-of-the art facility in Perth, they set very high standards in terms of design, function and aesthetics.

From the outset, Wirtgen were determined that the new building should demonstrate a strong and convincing local presence. The structure needed to function really well, look good and be a showcase for their superior technology, engineering facilities and precise, high-quality services.

Due to the harsh climate of Western Australia, they also needed a building that would:

- Have thermal performance durability, with excellent building longevity.
- Impeccable fire performance characteristics.
- Efficiency to construct and commission.
- Maximum design flexibility.

Perth-based firm, T&Z Architects was in charge of sourcing the high performing materials for the new facility. Products proposed for the Wirtgen project by Kingspan Insulated Panels did more than meet the mark in those key areas.

Kingspan Trapezoidal KS1000RW roof panels, Architectural Wall KS1000MM Mini Micro and KS1100CS Controlled Environment panel systems were selected for the complete building envelope. However, it was the integrated Kingspan pre-fabricated, membrane insulated gutters that were the crowning glory.

Working with a sophisticated syphonic drainage system, T&Z Architects encouraged Wirtgen to cap off the range of high performing building products with seamless and integrated Kingspan insulated gutters. T&Z recognised that Kingspan's insulated gutters were not only ideal for boundary and valley applications – but they ensured longevity, thermal performance and would contribute to the overall neat and functional aesthetics of the building.

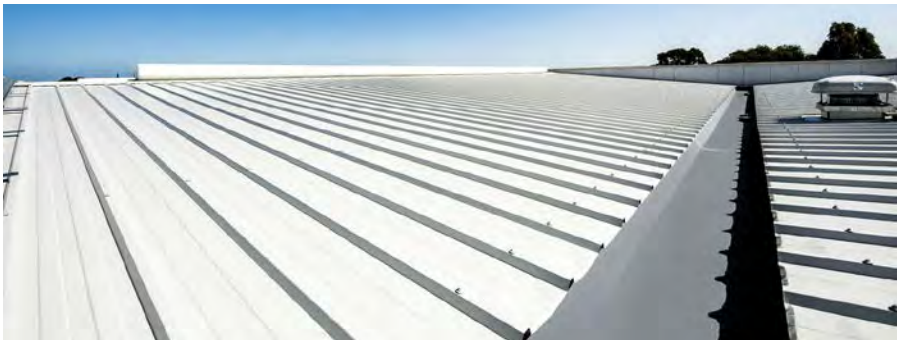
"When we saw the design called for a syphonic drainage system, we realised we needed a guttering system that was able to meet more stringent requirements. Kingspan's integrated and insulated gutter system works really well with syphonic drainage and we knew it was the product to recommend." the T&Z project architect commented.

He went on to say, "With no exposed materials and continuous insulation under the roof where there is often a level of thermal shortage, Kingspan's insulated guttering, roof and wall panel system working together as a whole, has done more than meet the standards for longevity, thermal and fire performance demanded by Wirtgen."

Looking at the finished result and the overall aesthetics of the facility, Kingspan's integrated roof, wall and guttering system has helped to create a showpiece for Wirtgen Group's range of technologies, sophisticated machinery and high quality services.

Kingspan Commercial Director, Nick Drummond said Kingspan had enjoyed working on a project where the exacting standards were matched and exceeded by the specifications and performance characteristics of Kingspan Insulated Panels:

"What really worked for the architects and the client was the holistic nature of the solution. The roof and wall panels, with the insulated gutters are all integrated. They form a total building envelope that not only looks good, but also performs exceptionally well. And all the products for the building envelope were sourced from Kingspan as one supplier and are all backed up by a single Kingspan warranty. That's often an important factor on a project of this high standard."



Integrated Kingspan pre-fabricated, membrane insulated gutters were the crowning glory.

PRODUCT SPECIFYING AND SUBSTITUTION

PROPRIETARY SPECIFYING

In NATSPEC *Proprietary means identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.*

GENERIC SPECIFYING

The aim of the specification writer in customising NATSPEC for a project is to describe performance as follows:

- Measurable outcomes in terms of:
  - Conformance to a standard.
  - Product tolerance.
  - Construction tolerance.
  - Delivery and energy use.
  - Durability.
  - Compatibility with existing systems.
- Comparable outcomes in terms of:
  - Colour and texture.
  - A benchmark description.

Evaluation criteria include:

- Type tests.
- Evidence of conformance to a recognised certifying body such as JAS-ANZ.

SUBMISSIONS

NATSPEC has provisions for specifying particular requirements for submissions. Provision is also made for specifying time and program constraints for submissions. The clause relating to information submissions for building products (under the 0171 *General requirements* worksection **SUBMISSIONS** heading) is:

Requirement

Products: Products and materials data, including manufacturer's technical specifications and drawing, evidence of conformance to product certification schemes, type test reports, performance and rating tables and installation and maintenance recommendations.

NATSPEC POLICY ON SUBSTITUTIONS

In order to maintain the contractor's contractual responsibility in regard to supply, NATSPEC allows for substitution within the 0171 *General requirements* worksection. The following italicised text is taken from the **PRODUCTS** clause:

Substitutions

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the item so identified, but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives including the following:

- *Evidence that the performance is equal to or greater than that specified.*
- *Evidence of conformity to a cited standard.*
- *Samples.*
- *Essential technical information, in English.*
- *Reasons for the proposed substitutions.*
- *Statement of the extent of revisions to the contract documents.*
- *Statement of the extent of revisions to the construction program.*
- *Statement of cost implications including costs outside the contract.*
- *Statement of consequent alterations to other parts of the works.*

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

Criteria: If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- *Is of net enhanced value to the principal.*
- *Is consistent with the contract documents and is as effective as the identified item, detail or method.*

Optional text (from *Guidance*):

Costs: Pay the cost of submissions and of evaluations and tests of proposed alternatives, whether subsequently accepted as a variation or not. The costs will be calculated at the current charge-out rates of the relevant consultant(s).

(Italicised text is from the NATSPEC *General requirements* worksection.)

ACUMEN ADVICE ON SUBSTITUTIONS AND VARIATIONS

An architect administering the contract should be aware that:

- *If the contractor proposes a substitution for materials specified in the contract documents, the architect should request approval from the owner for the substitution. If a substitution is made, the procedures set out in the contract for a variation of the works should be followed.*

(Italicised text is an extract from **Substitutions** in acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service.)

NATSPEC PRODUCT PARTNERS

A NATSPEC Product Partner is a building product manufacturer with an agreement with NATSPEC to include a purpose edited worksection in NATSPEC. See branded worksection.

A NATSPEC branded worksection is a technical worksection produced in NATSPEC format in conjunction with a Product Partner. Branded worksections provide specifiers with an alternative to the generic worksection where a particular product has been selected at the design stage.

The research prior to the selection of a product or system is filtered, both formally and informally, to eliminate inappropriate choices. The requirements of the client, regulators, standards, and the designer all affect whether the selection is presented as a generic or a proprietary item. The NATSPEC worksections facilitate the recording of both types.

All manufacturers are acutely aware of the problem of substitution by the contractor. It is being exacerbated by the lure of cheap and sometimes fake imports. Consultants are also affected as they spend considerable time and effort selecting a product, finish or electrical/mechanical system as part of their design responsibilities.

(Italicised text on the left is from the NATSPEC *General requirements* worksection.)

Relevant worksection

0171 General requirements

Related TECHnotes

GEN 014 Submissions and testing

BRANDED vs GENERIC WORKSECTIONS

BRANDED OR GENERIC?

The foundation unit of the NATSPEC specification system is the worksection. NATSPEC worksections are selected and customised by the specifier to produce a project specification. In some instances, the specifier can choose between a generic worksection and a branded worksection when compiling the specification. This TECHnote defines the alternatives and outlines their advantages.

BRANDED WORKSECTION	GENERIC WORKSECTION
Definition A NATSPEC branded worksection is developed by NATSPEC in conjunction with the manufacturer, known as a NATSPEC Product Partner. It is a MS Word document *Template* which follows NATSPEC style and format and can be customised by the specifier.	**Definition** A NATSPEC generic worksection is a MS Word document. It is a comprehensive *Template* which the specifier must customise by completing prompts, adding relevant material and deleting material which is not applicable to the particular project.
Classification Each branded worksection is based on the associated NATSPEC generic worksection and shares the same classification number.	**Classification** NATSPEC worksections are classified and sequenced in a logical order corresponding to common Australian construction industry sequence.
Advantages • Provides an alternative to a generic worksection where a particular product has been selected at the design stage. Associated generic material not manufactured by the Product Partner is still provided. • Minimal customising required as the *Template* has been approximately 90% pre-edited in conjunction with the Product Partner. • Current product information is readily available and accessible via hyperlinks between the *Template* and the Product Partner's website reducing research time and facilitating early decision making. • The possibility of product substitution by the contractor may be reduced as the unique performance characteristics of the product are clearly specified.	**Advantages** • Provides comprehensive coverage of a particular work area. • Adaptable for open proprietary specification where more than one brand or model number is acceptable. • Adaptable for closed proprietary specification where a branded worksection is unavailable. • Useful where the inclusion of brand names is not permitted. • The *Template* can be modified to create a new worksection where a NATSPEC worksection is not available.

Regulations, standards, client and designer requirements will all have some influence on whether a generic or branded worksection is appropriate.

SUBSTITUTION

Manufacturers are aware of the problem of substitution by the contractor. To maintain the contractor's contractual responsibility in regard to supply, NATSPEC allows for substitution. However, text in the 0171 *General Requirements* worksection requires the contractor to provide the designer with the appropriate technical information to make an informed decision regarding the proposed substitution. See related TECHnote Gen 006 *Product specifying and substitution.*

Worksection Structure

Each worksection is divided into:

GENERAL - applies to the worksection as a whole and includes cross referencing, standards, interpretation, tolerances, submissions and inspections.

PRODUCTS - describes the basic materials, components and fabricated items.

EXECUTION - sets out the construction performance criteria to prepare the substrate, assemble materials to produce an installation and carry out the works.

SELECTIONS - contains schedules that refer to the selection of proprietary products or to generic products by their properties.

Open specifications, such as descriptive, performance or reference specifications, can be satisfied by more than one product. An open proprietary specification is where there is more than one acceptable brand or model number.

Closed specifications can be satisfied by only one product. A single brand or model number may be nominated. However, some specifications which seem open are actually closed as only one product on the market will satisfy the criteria specified.

Related TECHnotes

NATSPEC TECHnote GEN *006 Product specifying and substitution* sets out the difference between proprietary and generic specifying, and explains the policy and means of managing contract variations related to requests for substitution.

Related Worksection

0171 General Requirements

Good maintenance requires good access

If there is no access to maintain something, it will not be maintained, if access is inadequate, it will be inadequately maintained

Access for maintenance is mandatory:

> *Every part of a building must be constructed in an appropriate manner to achieve the requirements of the NCC, using materials and construction being fit for the purpose for which they are intended* ***including the provision of access for maintenance****.*
>
> NCC clause A2.1

In addition to this NCC requirement, NATSPEC TECHreport TR07 Providing access for maintenance lists over 150 standards that also require access for maintenance.

Not only is the provision of access for maintenance mandatory but good access for maintenance:

- **Reduces maintenance costs.**
- **Increases reliability and reduces breakdowns.**
- **Improves the life of building components, plant and equipment.**
- **Improves safety.**

The provision of good access for maintenance comes from a combination of good design decisions, appropriate specification and the contractor's decisions:

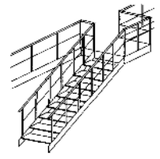
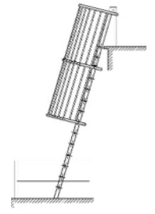
> *The specification cannot fix fundamental design flaws or remove the designer's liability for them but it can specify how the contractor's detailed design decisions regarding access for maintenance can support good practice.*
>
> NATSPEC TECHreport TR07 Providing access for maintenance

NATSPEC describes the contractor's responsibility for achieving good access for maintenance by relating it to how often the item must be inspected or maintained:

Type of access by frequency

Frequent maintenance	Occasional maintenance	Infrequent maintenance, repairs or replacement
Readily accessible	Semi-clear access	Limited access
Frequency: items requiring access for maintenance monthly or more often	Frequency: items requiring access for maintenance between monthly and six monthly	Frequency: items requiring access for maintenance less frequently than six monthly
NATSPEC Access class A.	NATSPEC Access class A or B	NATSPEC Access class A or B or C.

NATSPEC access classes table

NATSPEC Access class A	NATSPEC Access class B	NATSPEC Access class C
Clear and immediate access to and around plant items	Platform accessible by non-vertical ladder	Temporary access
If more than 2.0 m above the ground, floor or platform. Provide a platform with handrails accessible by a stair, all to AS 1657.	If more than 2.0 m above the ground, floor or platform: Provide a platform with handrails accessible by a non-vertical ladder, all to AS 1657.	Locate so that temporary means of access conforming to Work health and Safety regulations can be provided.
 Access from floor or ground level or from walkway or platform and stairs to AS 1657.	 Access from walkway or platform and inclined ladder to AS 1657.	 Access using portable ladder or other means conforming to Work health and Safety regulations.

For more information on providing access for maintenance see NATSPEC **TECHreport TR07** Providing access for maintenance.

HOLD POINTS AND WITNESS POINTS

INTRODUCTION

Hold points and *Witness points* are construction stages which may need additional inspection, verification and documentation to make sure of:

- The safety of the personnel, environment and the public, before proceeding.
- The technical quality and any legal requirements have been satisfied.
- The next stage in the construction process can be completed.

Verification measures will vary with the specification method. For performance specifying, verification involves testing. For specifying by reference, verification is to a standard, or through third-party certification to that standard. Verification procedures are documented in the specification as *Hold points* and *Witness points*.

HOLD POINT

A *Hold point* is a mandatory verification point beyond which a work process cannot proceed without authorisation by the contract administrator. *Hold points* are usually assigned to those critical aspects of the work that cannot be inspected or corrected at a later stage because they will no longer be accessible. The relevant work cannot proceed until the contract administrator is able to verify the quality of the completed work and releases the *Hold point*.

Hold points can be nominated by:

- The principal, in the contract documents.
- The contract administrator, with a Non-conformance or Corrective action report.

Use *Hold points* sparingly as each potentially affects project duration and cost.

WITNESS POINT

A *Witness point* is an identified point in the work process where the contract administrator may review, witness, inspect or undertake tests on any component, method or process of works. The contractor is required to notify the contract administrator who may or may not take the opportunity. The subsequent activity however, may proceed.

CONTRACTOR'S ROLE

The contractor is responsible for satisfying the documented contract requirements and planning, developing and maintaining a system assuring the detection of non-conformances and control of their resolution. The issue of a Non-conformance report or a Notice of non-conformance automatically creates a *Hold point*.

AUS-SPEC APPROACH

AUS-SPEC is a specification system for the life-cycle management of assets. In AUS-SPEC Templates, *Hold points* are part of:

- 0161 *Quality Management (Construction)* and 0167 *Integrated management* worksections. The Quality plan for the works incorporates checklists, inspections, testing and documentation to make sure that the works comply with the contract documents. *Hold points* and *Witness Points* should be included in the checklists. Examples of submissions include a quality plan or soil compaction test results for a prepared sub-base.
- The summary of *Hold points* and *Witness points* in the annexure of each construction worksection provides a checklist for programming sequential activities and communication obligations.
- A Maintenance management plan combines the requirements of the Technical specifications, Quality manual and the Quality plan, for assuring quality in construction projects. The Maintenance management plan covers policy, organisation, selected procedures, maintenance planning and Activity specifications for maintenance activities. The Activity specifications form the core of the document which includes the nominated *Hold points*. For example, test results confirming compliance of materials like asphalt or requirements of the work order for the proposed maintenance work.

AUS-SPEC TECHguides provide further guidance on the use of *Hold points* and *Witness points* for the AUS-SPEC specifications. For more information on AUS-SPEC visit www.natspec.com.au.

NATSPEC APPROACH

NATSPEC *Templates* do not nominate *Hold points* in *Open* text. The **INSPECTION** clause in individual worksections includes *Guidance* text for nominating *Hold points* where they may be appropriate for inclusion in a project specification, e.g. inspecting formwork and reinforcement prior to placement of concrete, or waterproofing.

NATSPEC *Templates* use **INSPECTIONS, Notice** in lieu of *Witness points*.

AUS-SPEC definitions:

Hold point: A defined position in the different stages of the contract beyond which work cannot proceed without mandatory verification and acceptance by the Superintendent.

Witness Point: A nominated position in the different stages of the Contract where the option of inspection or review may be exercised by the Superintendent, after notification of the requirement.

Non-conformance report (NCR): A mandatory (standard format) report submitted by the contractor that details the nonconforming work and the contractor's proposed disposition of the non-conformance.

Notice of non-conformance (NNC): Formal instruction from the superintendent regarding product non-conformance to that specified.

Corrective action: Measures, including preventative measures, taken to rectify conditions which have caused or might cause nonconformity.

Corrective action request (CAR): A formal advice/instruction from the superintendent regarding departures from the Quality system or methods as approved in the Quality plan.

Disposition: Action to be taken to resolve non-conformance.

NATSPEC definitions:

Hold point: An activity cannot proceed without the approval of the contract administrator.

NATSPEC defines **Hold points** in *Optional* text in the *General requirements* worksection along with *Guidance* text on minimising contractor intervention of this kind to *accord with principles of quality assurance and risk allocation.*

Contract administrator: Has the same meaning as 'architect' or 'superintendent' and is the person appointed by the 'owner' or 'principal' under the contract.

Relevant documents

0134 General requirements (Supply) (AUS-SPEC)

0135 General requirements (Services) (AUS-SPEC)

0136 General requirements (Construction) (AUS-SPEC)

0161 Quality Management (Construction) (AUS-SPEC)

0167 Integrated management (AUS-SPEC)

0171 General requirements

AUS-SPEC TECHguides

Austroads AGPD03/14 Guide to project delivery – Part 3 Contract Management.

SUBMISSIONS AND TESTING

INTRODUCTION

This TECHnote addresses the specification of the submissions and tests by the contractor which may be required during the construction process.

SUBMISSIONS

Contractual

Submissions, requiring approval before work can proceed, create hold points in the contract. Submissions which typically create hold points include:

- Authority approvals.
- Calculations.
- Certification.
- Design documentation.
- Drawings.
- Execution details.
- Fire hazard properties.
- Operation and maintenance manuals.
- Products and materials.
- Prototypes.
- Records.
- Samples.
- Shop drawings.
- Subcontractors.
- Technical data.
- Tests.
- Warranties.

Requesting these submissions requires the contract administrator to perform a duty and accept responsibility for that duty.

For information only

If submissions are required for information only, they are witness points, intended to assist the contract administrator. Submissions which typically form witness points include:

- Non-contractual construction programs.
- Inspection and testing plans.
- Accident reports.
- Type test reports.
- Site photographs.
- Environmental management proposals.
- Product certification and manufacturers' data.

Do not request submissions indiscriminately. Fewer should be required under a quality assurance scheme.

Submission approval and acceptance

NATSPEC, as a generic technical specification, does not contain management systems to handle the approval process. If an approval is required before implementation, consider nominating a hold point, to eliminate ambiguity. Consider documenting approval criteria and the acceptance procedure.

TESTS

Inspection and testing of the works can be requested in the documentation.

Testing and laboratory services may be procured by one of the following methods:

- Principal appointment, employment and payment.
- Principal appointment and employment but contractor payment.
- Contractor appointment, employment and payment.

NATSPEC worksections, which address the contractor, assume the third option applies.

It is the prerogative of the contract administrator to call for an inspection that may involve a hold point. Indicate in the worksections which tests, if any, are hold points and make sure the affected parts are not concealed, until directed.

Minimise the number of these tests as late approval can lead to delay claims.

Testing authorities

If a registered testing authority is required for particular site tests, say so in the appropriate technical worksection. Otherwise, the contractor may carry out site tests. If the testing authority must also be independent, say so in the appropriate technical worksection or, in the *0171 General requirements* worksection if it is a global requirement. NATA publishes a register of accredited testing authorities.

Product certification schemes

JAS-ANZ has an online register of certified organisations, Conformity Assessment Bodies (CABs) and products.

If a JAS-ANZ CAB is required for a particular product or system, say so in the appropriate worksection.

Product certification schemes

Include:

- ActivFire Scheme
- The Australian Gas Association (AGA)
- The Australian Communications and Media Authority (ACMA)
- The CodeMark Product Certification Scheme
- Forestry Chain of Custody (AS 4707)
- WaterMark Certification Scheme (WMCS) (AS 5200.000)
- Water Efficiency Labelling and Standards (WELS) Scheme

Relevant websites

National Association of Testing Authorities, Australia
www.nata.asn.au/

Joint Accreditation System for Australia and New Zealand
www.jas-anz.com.au

Related worksection

0171 *General requirements*

Related TECHnotes

GEN 006 *Product specifying and substitution*
GEN 009 *Hold points and witness points*

Dr Chau Chak Wing Building, UTS Sydney

Constructed in less than 18 months, the 12-storey Dr Chau Chak Wing Building at the University of Technology, Sydney (UTS) has been designed to accommodate the university's business school, including lecture and seminar rooms, research centre facilities, as well as a basement level for car and bicycle parking.

As with all Gehry projects, the UTS building's materials and artisanship represent world's best practice. With its ragged-edged folding eastern façade of custom-manufactured bricks, large expanses of west-facing dark glazing that rise upwards in geometric fits and starts, and protruding windows resembling Post-It Notes on a giant board, the structure is immediately striking for its 'handmade' qualities. As a 5 Star Green Star building, the structure is as efficient as it is bold, with innovation evident even at basement level.

Low-profile parking

Due to the low profile of the basement roof, it was necessary to find an insulation solution that would not only be thermally effective, but which would also take up minimal space and satisfy the required fire rating. Kooltherm® K10 FM Soffit Board was the obvious choice. This Kingspan-supplied insulation board was installed in over 2,000m^2 in the roof area of the carpark, with the foil surface exposed and positioned under the floor slab.

Another 400 m^2 of white-faced board was placed on the carpark ceiling near the entry. The thin profile of the board meant the ceiling height could be maximized without sacrificing performance. It is worth noting that Kooltherm® K10 FM Soffit Board achieves CodeMark certification standards, providing assurance to specifiers and designers that the product will meet its claimed performance benchmarks. This assurance is crucial when calculating energy efficiency targets for approved Green Star rating assessments.

The famous protruding windows at the Dr Chau Chak Wing building, UTS. Photography by Andrew Worssam

Protruding windows

Striking features of the façade are the protruding rectangular window boxes that jut out from the brickwork walls. These glazed marvels are a key feature of the building, providing strong linear focal points within the crumpled curvature of the brickwork. Interestingly, Kooltherm® K10 insulation boards, just 60mm deep, were installed in the window boxes to achieve superior thermal performance. These narrow-profile panels allow the boxes to maintain a visual lightness that is essential to the overall 'treehouse' playfulness of the façades. If not for the design freedoms afforded by the thin Kooltherm® K10 profiles, it is hard to see how the building could have maintained its light glazed aesthetics on the heavyset brick façades.

Similarly, Kooltherm® K8 Cavity Boards installed in cavity walls featuring block work again offer the design advantages of narrow-profile efficiency paired with reflective surfaces which improve the thermal resistance of without taking up excessive space.

Trusted quality

The Dr Chau Chak Wing Building showcases the genius of a team of dedicated design consultants, architects and engineers, all of whom were obviously committed to the task of assembling the best possible materials in the best possible way.

"We were confident in specifying the Kingspan Kooltherm® insulation products as it allowed us to meet both the space constraints and most importantly, performance criteria. Trust in every product we specify to perform as stated and in full compliance to the highest possible standard is critical," said Daniel Beekwilder of Daryl Jackson Robin Dyke, Local Executive Architect on the project.

Kooltherm® K10FM Soffit Board was installed in over 2,000m^2 in the roof area of the carpark

MASTER BUILDERS AUSTRALIA

The quality and productivity of the building and construction industry is enhanced by the work of the National Building Specification (NATSPEC). For more than 30 years NATSPEC has provided professional and specialty packages for all sectors of the industry and all building structures. NATSPEC is highly regarded by industry stakeholders in both the private and public sectors and is strongly supported by Master Builders Australia.

Master Builders Australia CEO, Wilhelm Harnisch

FANTECH Intelligent Ventilation

Fantech has been at the forefront of fan and acoustics technology by developing and implementing new and innovative products of virtually every air movement and ventilation need, as well as noise attenuation. With AS/NZS ISO 9002 accreditation since 1992 and more recently, AS/NZS ISO 9001 accreditation, Fantech maintains high standards of manufacturing and a continuous improvement culture. With modern manufacturing plants in Melbourne, Sydney and Brisbane and warehouses throughout Australia and New Zealand, Fantech provides unmatched delivery performance and customer service. **www.fantech.com.au**

FIELDERS

Fielders have been synonymous with quality and strength for over 100 years in an industry where success is reliant on satisfaction. Initially providing roofing materials, the company has now extended its product range and reach across Australia to include purlins, door frames, carports, verandahs, fencing, sheds and composite steel formwork. This ensures comprehensive product offerings and support for all aspects of building construction. Utilising their progressive culture, specialised resources and market leadership position, Fielders has won a reputation for its innovative approach to manufacturing and installation.

Being at the forefront of international cold formed steel products Fielders have attracted the loyalty of many architects, engineers, roofers, formworkers and builders who have experienced the benefits of reduced logistical, labour and time expenditures. With these and many other new developments, Fielders will continuously strive for growth through superior products, convenience, quality and service. With Fielders, you will always 'Finish On Top'. **www.fielders.com.au**

FMC

FMC Australasia has been successfully providing quality pest and crop management products to both residential and industry markets in Australia since 1975. In 1994 FMC developed Biflex, which became Australia's most widely used and successful termite product. Well over one million Australian properties have now been successfully protected with Biflex. **www.fmcaustralasia.com.au**

FRANK®

For over 50 years, the FRANK Group has been developing, manufacturing and distributing spacers, formwork, reinforcement, sealing and acoustic products. This diversity of products makes Max Frank Australia the partner of choice for planners, architects and construction companies.

Comprehensive technical service and assistance are of paramount importance to us. This includes providing application instructions, expert advice on detailed layouts and workshop drawings, technical documentation and software programmes to provide solutions.

FRANK is ISO 9001:2008 approved. **www.maxfrank.com.au**

NATSPEC ProductPartner

AIBS
Australian Institute of Building Surveyors

The Australian Institute of Building Surveyors (AIBS) endorses The National Building Specification published by NATSPEC.

Concern with the emerging issues of non-conforming products in the market place gives our professionals and the community assurance the quality, durability and longevity, safety of products and systems used in construction industry is inherited under adoption of minimum standards referenced in national specifications from the design and into construction specification on site. These national specifications meet the minimum performance requirements in the National Construction Code adopted by the Australian and respective State and Territory legislation.

AIBS fully supports the National Building Specification from NATSPEC.

AIBS National President, Jeffrey Brooks

GI BUILDING SCIENCES
Spend Less Build Better for Australians

GI Building Sciences is the next step in the evolution of the Green Insulation that was founded almost 15 years ago. GI Building Sciences today continues to follow a strong heritage in innovation and research to deliver a range of insulation and other products that specifically address the challenges presented by the modern world including building affordability, sustainability and social responsibility.

We believe everyone deserves smarter, safer and healthier options in building, design and lifestyle. **www.gibuildingsciences.com.au**

Karndean Designflooring

Karndean Designflooring was founded back in 1973 and is a global supplier of commercial and residential luxury vinyl flooring.

Karndean International, Inc. is a UK based company, with operations in Australia, has a reputation for creating unique vinyl floor designs that are inspired by natural materials such as ceramic, glass, slate, limestone, wood, and marble. **www.karndean.com**

KEYSTONE acoustics
architecturally designed solutions

For more than 40 years, Keystone Acoustics, an Australian owned and operated company, has been redefining its processes and machinery to create patterned, perforated and slotted panelling solutions, engineered for optimum performance.

Showcased in many of Australia's iconic buildings, Keystone Acoustics' solutions combine the widest range of quality substrates with the latest in innovative finishes to deliver acoustic performance, durability and design versatility. Panels are engineered to suit diverse applications - from contemporary office fitouts to exemplary facades. **www.keystoneacoustics.com.au**

Kingspan
Insulated Panels

KINGSPAN Insulated Panels is the global leader in the design, development and delivery of advanced building envelopes. Its wide range of products includes insulated roof panels, BENCHMARK high end roof systems and standing seam systems. KINGSPAN Insulated Panels is widely recognised in the industry for the high quality and performance of its products as well as its commitment to excellent customer services and technical support. **www.kingspanpanels.com.au**

Kingspan
Insulation

Kingspan Insulation manufactures AIR-CELL® thermo reflective insulation, and Kooltherm®, a CFC/HCFC-free rigid thermoset insulation with zero Ozone Depletion Potential (ODP). The Kingspan Insulation range delivers innovative, high performance solutions in roof, wall and underfloor applications for both residential and commercial buildings. Kingspan Insulation's technical experts can provide thermal solutions for Section J, Green Star and 6 Stars. **www.kingspaninsulation.com.au**

LYSAGHT LONGLINE 305® shows style one of its greatest strengths

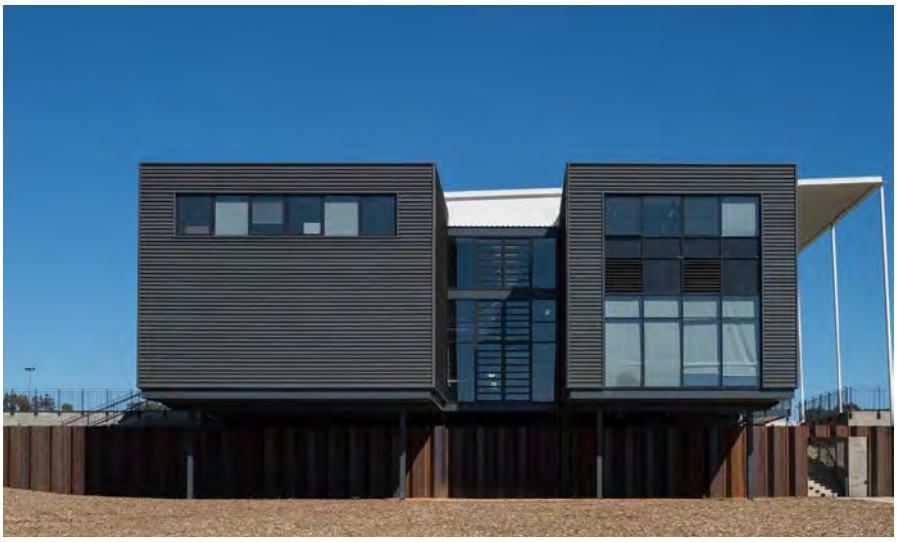
The University of Canberra's new Sporting Commons perfectly embodies its vision of a campus that is exciting, stimulating and has a distinctive character. Designed by Cox Architecture, the building makes a bold statement, which is dramatically underlined inside and out by the clean, strong lines of LYSAGHT LONGLINE 305® steel cladding.

Part of the University of Canberra's plan for growth and renewal, the new $16 million Sporting Commons is the product of a joint collaboration between the university, the ACT Government and Southern NSW Rugby Union Limited which will ensure Canberra is at the forefront of development and innovation in sport.

The site will provide a modern new home for tenants, including the University of Canberra Brumbies, ACT Sport, the Special Olympics and the UC Research Institute for Sport & Exercise. The entire building is characterised by the seamless linear look delivered by LYSAGHT LONGLINE 305® steel cladding in the Woodland Grey® COLORBOND® steel colour specified by Cox Architecture for external and internal walling.

"We had seen LONGLINE 305® steel cladding in the flat pan style on another building and liked the clean, linear horizontal lines provided by the product's deep rib and hidden fixings," Belinda Barnes, the building's architect, said. "We required a product that would provide external and internal continuity between the three boxform buildings and various spaces of the Sporting Commons and LONGLINE 305® steel cladding was a good product that delivered the aesthetics and buildability we required for the project."

While Cox Architecture appreciated the aesthetics of the Lysaght product, Bay and Coast Metal Roofing Directors, Neil Smith and Darren Browning, appreciated the ease of installation of the product. Smith and Browning, who installed the LYSAGHT LONGLINE 305® steel cladding, admitted the requirements of the design made things very simple.



The Sporting Commons at the University of Canberra

"LYSAGHT LONGLINE 305® steel cladding is very easy to work with. However, the need for the product to line up very precisely to deliver clean architectural lines that matched up externally and internally throughout a fairly complex building made the task a bit of a challenge," Darren explained. "Lining up the product throughout the buildings and spaces was quite tricky; we had to do some quite elaborate flashing to ensure the cladding all lined up extensively as required."

Approximately 1588m² of LYSAGHT LONGLINE 305® steel cladding, specific tools required for installation and custom flashings made to measure for the challenging project were required for completion of the Sporting Commons. Nearly 5,000 Start/ Finish and Top Fixing clips were also required to fix the cladding to internal and external walls.

"It was a long and very exacting project which took several months but we were supported very capably once again by Lysaght Batemans Bay, who we've worked with on many projects over a long period of time," Darren said.

LYSAGHT LONGLINE 305® is a concealed-fixed, watertight steel roofing and wall cladding, which fixes to underlying clips so no fasteners pass through. The steel cladding is characterised by bold ribs and wide pans made from durable COLORBOND® steel and available in a range of colours and three styles: plain (flat pans), fluted and also tapered pans, which allow fanned and rounded-plan roof shapes to be clad with ribs radiating from a central point.

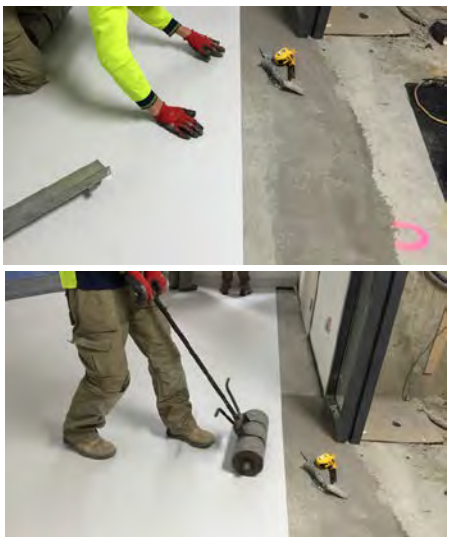
"Lysaght was invaluable in helping us deliver on the architect's vision of a multi-faceted yet unified centre for sports at the University of Canberra," Browning concluded.

"The architect specified LYSAGHT LONGLINE 305® steel cladding because it delivered everything they wanted, and Lysaght Batemans Bay once again ensured we had all we needed."

The building required approximately 1588m² of LYSAGHT LONGLINE 305®

Victorian Comprehensive Cancer Centre, Melbourne

The new Victorian Comprehensive Cancer Centre



MAPEI covered 130,000m² in total

The new Victorian Comprehensive Cancer Centre (VCCC) facility is located in the heart of Melbourne's research and biomedical precinct. Peter MacCallum Cancer Centre, Melbourne Health and The University of Melbourne were the building partners for this exciting project. The project provides a brand new home for the Peter MacCallum Cancer Centre, new cancer research and clinical services for Melbourne Health (including the Royal Melbourne Hospital), new cancer research facilities for The University of Melbourne and new education facilities.

Covering 130,000m² in total, the project includes the new building on the former Dental Hospital site, as well as new facilities built on top of the existing Royal Melbourne Hospital buildings. The main building has 13 floors above ground level and two below ground, and an additional four basement floors. Education and training facilities include 47 seminar and meeting spaces and a large lecture theatre. There is also an amphitheatre leading down to Radiation Therapy on the lower levels of the facility that can be used for educational presentations and forums.

The new facility features eight operating suites, two procedure rooms, 27 treatment rooms and 97 consulting rooms. There are 10 purpose-designed research laboratory clusters and wet laboratory research floors located on the upper levels. Space for approximately 330 dry researchers is also included.

One of the key elements to Mapei's success with this project was the ability to provide Grocon (the builder) and Floor91 (the contractor) with a one manufacturer specification, ensuring no compatibility issues with all the Mapei products required for the floor and wall installations. As Mapei is a global leader with a vast range of products we were able to fulfil the request to exceed the requirements of the Australian standards and the flooring manufacturer's needs.

With stability testing previously completed in the Mapei laboratories in Italy, Mapei confirmed the compatibility and performance of the adhesives and specified Gerflor flooring products. The concrete substrates throughout the entire project were primarily treated with Planiseal EMB (a two-component/one coat moisture vapour barrier), primed with Eco Prim T (undiluted) and then levelled with Ultraplan (premium ultra-fast self-levelling compound) throughout all general areas in the new facility.

All the bathrooms and wet areas had a set down formed in the concrete substrate so falls could be created to the waste drains. All wet areas were waterproofed with Mapegum WPS (fast drying flexible liquid waterproofing membrane for interiors). Falls were then created to waste drains by firstly priming with Eco Prim T, levelled with UC Leveller (fast hardening levelling and smoothing compound for thicknesses from three to 70mm) and again waterproofed over by laying Mapetex Sel (non-woven, macro-holed polypropylene fabric for reinforcing waterproofing membranes) into the Mapegum WPS (waterproofing membrane) on the floors and walls.

At completion of the waterproofing applications any surface irregularities were smoothed with an application of Latexplan Trade (two-component smoothing/levelling compound) and Planiprep SC (high-performance fibre-reinforced skimcoating compound) to create a perfectly smooth surface on both floor and wall. Floor91 then installed 60,000m² of Gerflor vinyl on the floors using Ultrabond V4 SP (universal adhesive for installing resilient floorcoverings) and 2000m² on the wall with Rollcoll (universal adhesive for installing vinyl and textile floor and wall coverings).

40,000m² of Interface carpet tiles were also installed using Mapei's Ultrabond Eco Tack (acrylic tackifier for self-laying textile tiles).

Lysaght's diverse product range now includes roofing and walling, gutters and downpipes, purlins, fences, structural formwork and home improvement products. As a division of BlueScope we can rely on the backing and support of Australia's largest steelmaker. Made from 100% Aussie steel, the products are extensively performance-tested, come with a BlueScope warranty, and offer customers confidence and peace of mind. For 150 years, customers have relied on Lysaght as the trusted experience in steel. Lysaght: the Australian steel people. **www.lysaght.com**

MAPEI is a world leader in the manufacture of innovative products for the construction industry. Products include adhesives, grouts, waterproofing membranes, levelling compounds, repair mortars and quality related building products.

Numerous projects executed all around the world are testimony to the outstanding quality of Mapei products that are preferred by architects, designers and building contractors.

Mapei products are manufactured in Brisbane and distributed through an extensive network of distributors. **www.mapei.com.au**

MODDEX GROUP is Australia's leading developer and manufacturer of an extensive range of modular, steel handrails, guardrails, balustrades and other barrier solutions that ensure the safety of people and the protection of property. Moddex innovation is specified and sold throughout Australia and New Zealand. Moddex is recognised for its flexible, robust, cost effective and easy to install systems that simplify the installation of handrails and balustrades in all environments and for a broad range of applications within the Defence, Construction, Mining, Transport and Education industries, as well as the Public Utilities sectors. **www.moddex.com.au**

Oxworks is one of Australia's largest family owned manufacturer and distributor of quality fencing and balustrade products. It offers an industry leading service with a huge range of fencing in stock and technical advice on our full range. Custom orders can be manufactured with a 5-7 day lead time. The range of products is backed by an industry leading 10 year warranty. **www.oxworks.com.au**

Parchem Construction Supplies is a leading manufacturer and supplier of products and equipment to the Australian and New Zealand concrete and construction markets. Through all of its divisions and heritage, Parchem has built over 50 years' experience in servicing the construction, civil, and concrete industries. Parchem brings experience and technical expertise in the supply and manufacture of construction and decorative concrete products, equipment and tools. **www.parchem.com.au**

Pasco specialises in waterproofing and sealant products. With 30 years experience, we can advise on any waterproofing or sealant application. With suppliers, locally and overseas, we offer a comprehensive product range for every situation. We are Victorian distributors for Latham Architectural Flooring products, including stair nosings, entry mats expansion joints. Pasco's range includes the award-winning Buzon Pedestal. Designed and manufactured in Belgium, it allows construction of paved and timber floors on balconies, podiums, roof gardens. **www.pasco.net.au**

NATSPEC ProductPartner

For over 50 years Polyflor have been providing Australia & New Zealand with resilient vinyl flooring without comprising on design and functionality. Their floor coverings are suitable for a variety of commercial and domestic installations. Available in an array of colours and designs, Polyflor's ranges are hard wearing, durable and low maintenance, offering both style and substance. Polyflor's environmentally friendly flooring is GreenTag certified and 100% recyclable. Polyflor really is 'flooring design for a better environment'. **www.polyflor.com.au**

PPG Industries' vision is to continue to be the world's leading coatings and specialty materials company. Through leadership in innovation, sustainability and color, PPG helps customers in industrial, transportation, consumer products, and construction markets and aftermarkets to enhance more surfaces in more ways than does any other company. PPG operates in nearly 70 countries around the world. Reported net sales in 2014 were $15.4 billion. PPG shares are traded on the New York Stock Exchange. **www.ppgpmc.com**

Quattro Shading is a national supplier of high quality internal roller blind systems that utilise the latest in fabric, hardware and motorisation technologies. Our Quattro branded blinds bring all these technologies together to create innovative and high performance blind systems for commercial and premium residential projects. Sold and supported through a national dealer network, Quattro blinds create solutions without compromise, especially when it comes to internal roller blind solutions, including with fully automated control packages. **www.quattroshading.com.au**

Raven is one of the most trusted brands in the building hardware industry providing innovative, tested and certified door and window sealing systems.

Raven's door and window sealing systems have become synonymous with quality, value and reliability backed by service excellence which is why it is the brand that architects, specifiers and builders can rely on.

Raven's world class testing facility means that we are constantly developing new ways to respond to the rapid advances in the building industry. **www.raven.com.au**

Regupol (Australia) Pty Ltd is the Australasian office and distribution network for the Regupol® and everroll® sustainable flooring product brands. The company has been operating in the region for over 25 years offering solution based products and technical services for all kinds of sustainable flooring and soundproofing solution based projects. The company is conveniently located at Smeaton Grange, NSW and offers nationwide distribution of the Regupol® and everroll® product lines.
www.regupol.com.au

Moddex ensures safety handrails and guardrails deliver the ultimate emergency exit facilities

moddex

Moddex Systems was selected by Thiess John Holland to supply the handrail system required for the emergency exit tunnel of the 6.7km underground Brisbane Airport Link, Australia's largest road infrastructure project. The project managers were impressed with the design, engineering and end result of the Moddex handrail and guardrail systems.

Moddex worked directly with Thiess John Holland for the 4.5km central section of the $4.8 billion project [Kedron]. The Moddex team was found to be always responsive, delivering in a timely fashion on all orders.

Because the two systems installed, Assistrail and Tuffrail, were pre-designed and configured, ordering was a simple calculation by Moddex. The ready to assemble, modular kit form, enabled the contractors to order the handrails and guardrails in a just-in-time manner with the added benefit of not requiring to store the product onsite. The rapid delivery of the units, including off-loading, made the ordering process very simple throughout the project. All timelines and deadlines were able to be met.

Thiess John Holland staff undertook the installation of the fully-modular handrails and guardrails.

No welding or fabrication is needed, resulting in the market's most rapidly and easily installed galvanised guardrail system. Requiring no specialist trades, tools, no hot works permits, and no toxic fumes, Moddex ensured a safer working environment within the constricted tunnel area.

The configurations used met all compliance requirements and no toxic fumes.

The high corrosion resistant hot dipped galvanised handrails can also be supplied in a range of paint finishes to suit any application.

The handrail and guardrail systems at the Brisbane Airport Link

The project managers were impressed with the design, engineering and end result of the Moddex handrail and guardrail systems

Quest Apartments

Project details
Client: FKG
Address: 133 Margaret St Toowoomba
Size: 42 apartments over eight storeys
Project Value: $15+ Million
Contract Value: $250,000
Products:

- Semi Frameless Glass Balustrade
- Custom Slat Screening to Building and Balconies
- Steel Security Fencing
- Aluminium Slats Privacy Screens
- Feature Stainless Steel Battens
- Metalwork Fabrication

Objective
FKG have designed a landmark development in the heart of the Toowoomba CBD. The 74-room hotel complex, spanning eight levels comprises studio, one bedroom, two bedroom and three bedroom apartments. FKG have blended old and new, restoring the century-old former Church of Christ at the front of the complex and turning it into a lobby for the towering development.

The design teams have integrated modern touches such as Aluminium Slat Privacy Screens and Semi-Frameless Glass Balustrade into their designs to create one of Toowoomba's most iconic buildings.

Solution
Fencebuild Australia in conjunction with the manufacturing expertise of Oxworks were contracted to bring these design ideas to fruition.

Using Oxworks' balustrade specifications, Semi-Frameless Glass Balustrade was used to secure all balconies and offer uninterrupted views across Queens Park and its surrounds.

Combining modern style with functionality, face welded radiator style Aluminium Slat Screens were also integrated onto each balcony to screen the hot water units and air conditioners and installed by Fencebuild in accordance with the architects specifications.

Oxworks' specification Aluminium Slat Privacy screens were used to screen off the refuse and bin storage areas. Carpark safety and security was addressed using Custom Oxworks Hercules security fencing to secure the underground carpark.

Custom steel Hercules security

Semi-Frameless Glass Balustrade

Custom slat screening and semi-frameless glass balustrade

Testimonial
Mick Harwood, FKG Project Manager for Quest Apartments Project.

"Fencebuild supplied and fitted around $250,000 worth of glass balustrade and metal screens to our project. They were one of the best trades to deal with on site and I am very happy with the professionalism, quality of material and timely performance of their works. I will definitely use Fencebuild again on my major works and would recommend them to anyone."

The Marketplace Lidcombe

Artist's impression of The Marketplace, Lidcombe

Project details
Location: Lidcombe, NSW, Australia
Primary Contractor: Built Pty Ltd"
Contractor: Watergate Industries
Date: March 2015

Products supplied
- Fosroc Proofex Engage preapplied waterproofing membrane.
- Fosroc Proofex LSection / Detail Tape / Internal & External Corners.

Project background
The existing Lidcombe Power Centre retail space in Western Sydney was recently transformed into The Market Place shopping centre as part of $120 million redevelopment. The new centre opened in June 2015 to cater for an expected 160,000 shoppers, and will be home to new tenants including Woolworths, Aldi and K-mart together with existing tenants such as Anaconda. The redevelopment included major renovations including installation of new lifts.

Project requirements
- Keep the below ground lift pit structure completely dry from ground and surface water.
- Prevent moisture and contaminates entering the structure, which could lead to degradation of structural building elements through corrosion or other mechanisms.

Solution
Fosroc Proofex Engage was the ideal solution for this project, meeting the project requirements and addressing all site specific issues. The contractor used 90m^2 of Fosroc Proofex Engage to waterproof the lift pit. The membrane was placed over the lift pit slab and walls, by hand, and then detailed using compatible jointing ancillaries. Reinforcing steel was then set in place with the lift pit concrete floors and walls, poured directly over the membrane.

The unique mesh design of Fosroc Proofex Engage gives a permanent tenacious mechanical bond to freshly placed concrete. This bond is not dependent on any chemical reaction and can be assured each time concrete is cast. The heavy duty mesh design and properties result in a robust, proven membrane which is ideally suited for onsite conditions.

Work on the below-ground lift pit structure at The Marketplace, Lidcombe

Benefits of the solution
The benefits of using the Fosroc Proofex Engage system for this application:
- Rapid installation with no need for blinding concrete, priming or protection and can be trafficked immediately after application, saving time and labour costs.
- Provision of an integral bond to concrete walls and floors of the lift pit, ensuring complete waterproofing integrity even if settlement occurs, eliminating the damage, disruption, and cost of a waterproofing breach.
- Protection of the structure against harmful contaminates, and gases found within groundwater that could lead to degradation of structural building elements, resulting in costly and disruptive rectification works.

**Parchem is the Licensee of the Fosroc brand in Australia & New Zealand*
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For over 60 years, Resene have forged a reputation of excellence and quality in manufacturing products designed to meet the demanding standards of architectural and building industry professionals. The Resene product range includes paint and specialist coatings for residential and commercial buildings. To help building professionals keep abreast of new developments in our product range Resene has an innovative range of architectural services and reference materials, including technical and specification manuals, the Resene Total Colour System, samples and online information. Sophisticated tinting technology enables Resene to produce durable colour options that remain true to colour long after they have been applied. Interlinked systems for decorative and high performance coatings allow you to achieve the same spectrum of colours in a wide variety of products. **www.resene.com.au**

Revolution Roofing provides a range of steel roofing, walling and building products for the Australian domestic, commercial and industrial building industry. Using only BlueScope and Colorbond steel, our products are further backed by our extensive range of guarantees.

Since the opening of Revolution Roofing, our range has grown to include all the latest roofing profiles, gutters, fascias, ridge cappings, valleys, flashings, verandahs and even a customised sheet metal fabrication department.

We are working with building professionals to further develop new and unique roofing and walling products, which is evident in our latest release of the exclusive True Oak series of profiles.
www.revolutionroofing.com.au

Safetyline Jalousie is a leading louvre window brand with a history of more than 50 years in Europe. Since its arrival in the Australian market in 2009 Safetyline Jalousie has quickly established itself as high quality option for building specifiers looking for a louvre window system that delivers wide louvre spans (up to 1.4m), impenetrable building security and weatherproof seals. Safetyline Jalousie is distributed by SMR Designs who have been involved in the Australian home improvement and commercial building market for more than 20 years with its other external louvre product Vergola. **www.safetylinejalousie.com.au**

Sekisui Foam Australia products applicable to this worksection include Thermobreak Sheet, Thermobreak Tube, Thermacoil, Fi-Block, Thermaloc, and Thermobreak Hi-Temp.

Sekisui Foam Australia is the leading Australian manufacturer of crosslinked polyolefin foams and composites. We have been manufacturing in Sydney Australia since the 1970's. Sekisui Foam Australia is committed to total quality, and protection of the environment. The AS /NZS ISO 9001 standard forms the basis of the company-wide quality system. **www.sekisuifoam.com.au**

SGI Architectural is a key distributor of quality building facades to the Australian Construction Industry with a strong focus on the world's finest composite products. We supply the architectural market with eco-friendly aluminium facades, timber and cement composite panels, clay tiles, non combustible rockwool cored sandwich panels and architectural glass. Each of these products has the capabilities to allow architects and designers to achieve levels of design previously thought impossible.

Modern structures can now be built with fire-resistant, sustainable, lightweight and rigid materials allowing for stylish and contemporary designs. **www.sgi-architectural.com.au**

Studform Pty Ltd originally started as a small ceiling and partition contracting company in Adelaide in the early 1980s. Today, Studform manufactures and distributes doors, access panels, aluminium ceiling systems, and aluminium partitioning systems to the Australian and New Zealand construction markets. **www.studform.com.au**

How to properly prepare concrete sub-flooring

Vinyl flooring has become one of the most popular flooring solutions due to its durability, affordability and most of all, its range of colours and designs. But just like any construction material, vinyl must be carefully installed for it to perform at its best potential. Although it's generally a straight-forward experience, the preparation of the subfloor has great bearing not only on the finished installation but also the life of the floorcovering. An improper job can lead to severe and expensive repercussions.

Mitigating moisture

As everyone struggles to meet tight deadlines, often inadequate time is given to allow for concrete to fully dry. Excess moisture can occur during or immediately following the laying of the slab or can linger due to ground moisture entering the slab. It is essential to ensure that the subfloor is ready for the addition of another surface. The quality of the concrete and its water to cement ratio is one of the key factors affecting the drying process.

The lower the water to cement ratio, the fewer pathways that allow water to move through the slab to the surface, and the shorter the drying time required. A ratio of 0.5 or less is recommended. The general rule-of-thumb is to allow one month of drying time for every 25mm of concrete thickness. So for a 100mm thick subfloor, four months would generally ensure sufficient dryness. Once the allotted time for drying has been allowed, the relative humidity (RH) should be under 70% before floor coverings are laid.

Furthermore, when the alkalinity level is too high, it can stop the floor covering adhesive from bonding properly to the concrete. Australian Standards practice dictates that a pH test must be carried out on all concrete subfloors as part of the pre-installation process. Freshly mixed concrete is extremely high in alkaline, with a pH level well above 10. The pH levels will drop as the concrete cures and should be within the 9-10 range before proceeding.

Last but not least, concrete subfloors that come into direct contact with earth require a vapour barrier or damp proof membrane to prevent the entry of moisture.

Consequences of poorly prepared concrete floors

This can have tremendous adverse affects on the health and wellbeing of occupants and ultimately the risk of reputational damage to the builder or architect. When moisture builds up from the concrete subfloor under non-porous vinyl flooring and comes into contact with flooring adhesives, a chemical breakdown can occur which releases volatile organic compounds (VOCs) into the air, often rendering a room uninhabitable until rectified.

Additionally, if moisture rises from the slab to the flooring, the dampness and high alkalinity can lead to mould growth, which can quickly spread if not picked up, creating not just an unpleasant odour, but also potentially harmful health issues.

Dampness rising from the subfloor can cause the glue used to lose its adhesion, causing the flooring to bubble or warp. As the issue generally won't occur until many months after a project has been completed, the costly exercise of replacing or repairing the floor can often lead to lengthy unwanted disputes between builders, designers, developers and occupants.

Polyflor is here for you

Polyflor specialises in vinyl flooring, adhesives, screeds and moisture barriers suitable for a wide range of installations along with providing technical advice on preparation of subfloors, installation of vinyl flooring and ongoing maintenance, to ensure the best performance of their products.

Polyflor - Expona Flow PUR

We protect and beautify the world™

PSX 700 Epoxy Polysiloxane chosen to protect the QSV!

PSX 700 has over 20 years of case histories on projects around Australia and the world, protecting steel in the most extreme environments. PSX 700 was chosen for the breathtaking Queensland State Velodrome QSV project that will host the Track Cycling competition for the Gold Coast 2018 Commonwealth Games.

The project

The new velodrome will be more than just a track cycling facility and the in-field area will have the capacity to provide for a range of additional sport and recreation uses through the provision of mixed-use sports courts. Incorporated into the building design is a function room and cafe facility.

German company, Sportbau Schurmann GBH will design and build the velodrome track using their own patented design to Union Cycliste Internationale (UCI) standards and no two tracks are exactly the same.

The QSV is notable for its large saddle-form roof of over 10,000m^2 in area. The large steel superstructure is clad on the walls and roof with a combination of opaque and translucent Tensioned Membrane Fabric designed to minimise the requirement for artificial lighting through the day and provide significant energy savings.

The statistics

- Legacy seating 1500 seats.
- Overlay seating additional 2500 seats.
- Roof span North-South 120m.
- Roof span East-West 110m.

The PSX 700 solution

In order to meet the requirements of Stadium Queensland and the architects, the coating was chosen to protect the steel from corrosion over the long term, and also provide higher gloss and greater colour and gloss retention than acrylic polysiloxanes and traditional polyurethanes.

Only epoxy siloxane offers three times the abrasion resistance of polyurethanes, two times the adhesion of epoxies and reduced accumulation of dirt and mildew. The PSX 700 system provided improved productivity using the two coat system in place of the standard three coat system for these types of projects.

PPG worked closely with the applicator throughout the project, and also provided technical assistance to the fabricator, with on-site connection touch-ups.

The application

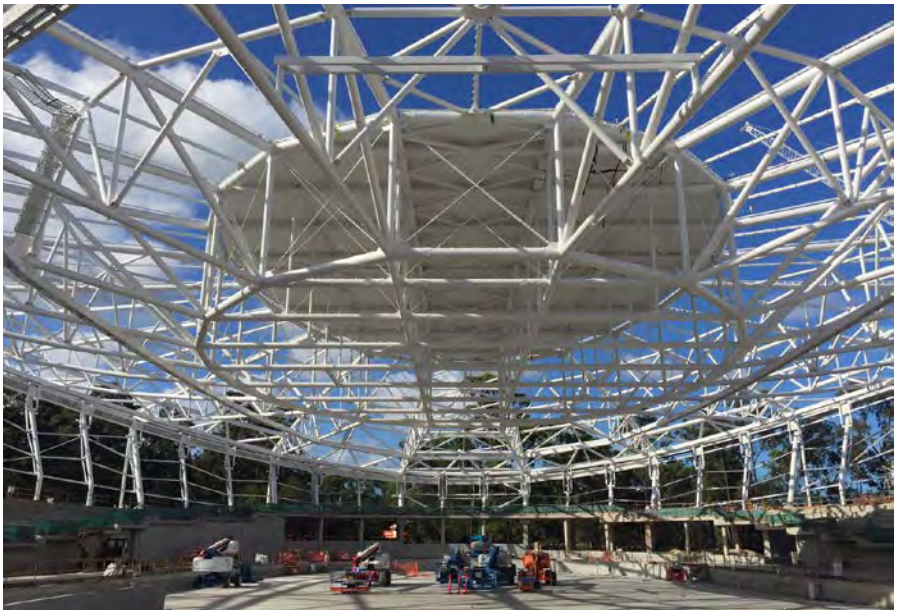
Tranzblast Coating Services successfully worked through the challenges of the project, one being the very large roof trusses and the complexity of handling and painting such large items. Their facility was designed to effectively manage such large members with improved productivity.

Cox Architects' amazing design and the PSX 700 system played a large role in the easy application of the coating system. PPG Protective Coatings played an integral part in linking the builder's and the architect's requirements by providing a paint system solution that allowed Tranzblast to deliver the required finish of the architect's impression.

A key take-away from this project was that it confirmed the requisite for a high quality, cost effective and protective coating system that is easily achievable by the Blast and Paint yard without adding excessive costs into the project. PPG & PSX 700 was the solution.

Features & benefits of PSX 700 Epoxy Polysiloxane

- Superior Gloss & Color Retention
- Excellent Corrosion and Chemical resistance
- Abrasion Resistance (3x typical Urethane)
- Superior Adhesion (2x typical Epoxy)
- Limited Accumulation of Dirt & Mildew
- Unlimited Recoat Window (Wash, Dry, Reapply)
- Reduced Maintenance Costs
- Lower application Time and Down Time
- Lower applied Costs
- Ultra-low VOC
- Isocyanate Free
- Graffiti Resistant
- Meets ISO 12944 in 2 coat system
- High solids = Low Odour
- Life Cycle Cost Reduction
- 20+ years of proven performance
- Unlimited color Palette



The new QSV under construction

Abercrombie precinct, University of Sydney Business School

Artist's impression of the Abercrombie building by the John Holland Team

Encompassing more than 9,100m^2 of flexible teaching and learning space, with the very latest technology and a prime position near the University's historic main campus, the purpose-designed Abercrombie Building will inspire and enable generations of leaders in the business world. It is a place for students who will imagine the next world-changing, innovative digital application. Academics will solve poverty through profitability, and alumni will mentor the company directors of tomorrow. The building has a focus on cross-disciplinary collaboration, cutting-edge research and interactive learning.

To enable world leading thinking, world leading spaces need to be created that inspire and challenge the mind to think in new ways.

- The large lecture theatre seats 550 people – the same as an A380 aeroplane.
- There is 1500m^2 of informal learning space available for students.
- There are 12 new lecture theatres and 42 new seminar rooms.
- The building was designed and built around an iconic 26m Sydney Blue Gum tree.

This $180 million design and construct project will enable the University to consolidate all Business School operations into one central location. At full capacity the building will accommodate 4,500 students and 490 staff.

The building will have a gross floor area of approximately 32,000m^2, spread across seven levels, with lower levels of the building to be occupied by teaching space. It will comprise of approximately 50 seminar and case study rooms, learning hubs of various sizes, and four large lecture theatres.

The theatres will be fit-out with advanced audio-visual systems, and architectural finishes of the highest quality. The largest of the four theatres (550 seats) will enable presentations and performances by external entities to be hosted and recorded/broadcasted over the internet. The upper building levels will contain offices and meeting rooms for the academic staff and the Dean.

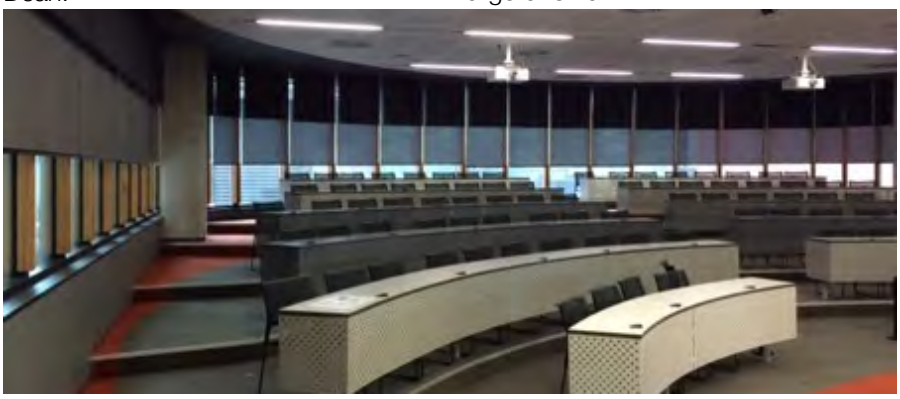
Quattro Shading, working with their NSW commercial partner, The Emporium, were able to meet the strict design brief set by Kann Finch's interior design team. It asked to provide world class indoor comfort and reduced glare whilst maintaining creative connectivity to the outside environment for the students.

This was achieved using the "SmartScreen" PVC Free, 100% Trevira CS Fabric with a high-performance metallized backing to all perimeters and the "SmartBlock" 100% PES Blockout fabric to all lecture rooms.

However, the challenge was how to transform these rooms from open, light, connective spaces to blocked out, pin point focused lecture rooms, without losing valuable time manually operating the blinds. This was achieved by motorizing over 1,000 blinds throughout the building and providing two-option control from either a wall switch, or a touch pad AV control located at the lecterns.

The connectivity of the blinds to the (AV) Audio Visual System was a first in Australia of this size utilising a Quattro Parallel wire motor, which resulted in a saving of over $100,000 in Blind control relays.

Quattro Shading have extensive knowledge of motorized blind integration from basic hand held remote control operation to full BMS, AV, KNX, SMI, BACnet integration and can assist in wiring and design solutions on projects large or small.



One of the lecture rooms in the Abercrombie building

Taubmans is one of the oldest paint brands in the market. Taubmans has been painting Australian homes for over 110 years. Back in the early 1900s, George Taubman built the company on a foundation of technical superiority. Since its inception, Taubmans has grown to become a major player in the Australian Architectural Coatings Market. It is also responsible for launching well known and innovative consumer paint brands such as Endure with Nanoguard, Living Proof Silk with Teflon, Easycoat with Microban and All Weather with Dirt Shedding Technology. **www.taubmans.com.au**

The Termguard Reticulation Systems have been extensively tested and successfully used over the past two decades, and have been specifically designed to offer long-term termite management and damage prevention systems. Together with today's environmentally acceptable termite control agents, Termguard's termite reticulation systems have been the perfect partner to provide an effective replenishable barrier, yet minimise the total impact on the environment. **www.termguard.com.au**

TLB Timber specialises in supplying the Australian Timber Industry with high strength, low shrinkage, durable, fire and insect resistant hardwood timbers and plywood which can be used in both internal and external applications. TLB Timber's extensive product range of tropical hardwoods includes merbau, kwila, hopea, rosewood and plantation mahogany, plus hardwood plywoods (CD Structural F14+ and appearance grade) and plantation sourced hoop pine plywoods (CD Structural F14+ and appearance grade). **www.tlbtimber.com.au**

VICTAULIC is a worldwide leader in mechanical piping solutions. Since pioneering grooved end technology for mechanical pipe joining in 1925, VICTAULIC has been providing customers the world over with innovative, reliable piping systems solutions for multiple applications and markets. **www.victaulic.com**

Viridian is Australia's number one glass provider and the only manufacturer of float glass and hardcoat performance glass products in Australia. Being a part of CSR Building Products, and with a long history of glass making in Australia, Viridian is able to offer comprehensive glass and glazing solutions across Australia and New Zealand.

Viridian was created in 2007 when CSR acquired Pilkington Australia and DMS Glass. This enabled CSR to strengthen its already impressive range of building and construction products by adding glass and glazing capabilities. Both Pilkington and DMS have proud histories of new and innovative ideas. Viridian continues that tradition of innovation and our goal is to help the building industry to use glass in extraordinary ways.

The Viridian brand will continue the Pilkington and DMS tradition of providing ingenious and environmentally sustainable glass solutions for our truly unique environment. Viridian Glass, in all of its forms, will bring us light, views, warmth and a sense of space. At the same time it will offer protection from noise, dust, pollution, glare, intruders and onlookers. Viridian offers glass that transmits light yet blocks heat, and glass that can clean itself. **www.viridianglass.com**

Wattyl® - Trusted by Australians since 1915

Wattyl is an iconic brand that has been providing professional Australian coating solutions for 100 years. Its range covers preparatory products, top-coats, sealers, stains, oils and varnishes; offering both interior and exterior coating solutions to suit many applications, across rresidential, commercial, industrial, marine and speciality buildings. Wattyl is manufactured by The Valspar Corporation, one of the world's largest global coatings manufacturers. In Australia, Valspar's Leading Paint Brand portfolio also includes Solver® and Granosite®. **www.wattyl.com.au**

126 year old vinegar factory given a new life

When ONE20 Architects Director, Adrian Light, came across the old Skipping Girl Vinegar factory in Northcote, Victoria, he had a dream but knew there would be a number of challenges. All that remained was a brick shell and many concrete vats below ground level. Adrian's vision was to transform the building into a four storey home and office premises featuring an internal walled garden and sustainability, a key aspect of the project.

No waste whatsoever left the building site and all existing steel windows together with the timber and brickwork were reused in the rebuild. The old vats were transformed into workstations, fishponds and other amenity spaces.

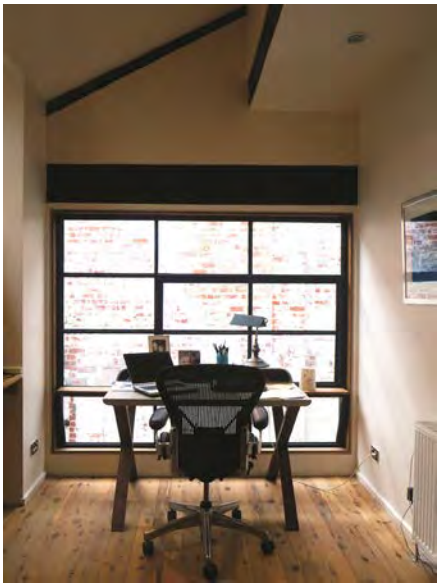
With any circa 1890 building that is left with rattling timber doors and misaligned windows, weatherproofing and acoustic sealing to NCC standards was always going to be a challenge.

When it came to the complex task of sealing the various doors and windows, Adrian turned to a trusted supplier, Raven, to consult with them on weather, energy and acoustic sealing. "Being located on a busy Melbourne laneway meant acoustic, as well as thermal comfort, was an important consideration" said Adrian.

Raven produce Australia's most comprehensive and innovative range of door and window seals so Adrian knew he would get the best products and service for his project. Raven's leading range is backed by unequalled industry knowledge and certified testing; so Adrian was confident his project would meet the various building standards and codes.

The vinegar factory's old steel doors and window frames were bent back into shape, sanded, painted and glazed. Some windows were turned at 90 degrees to become doors and the old mesh sills re-purposed to become tilting timber vents. "One of the best things about using Raven products was their depth of range. With such particular needs, I was able to find various profiles that were suitable or could be adapted whilst maintaining performance and compliance" said Adrian. "Over the years, I have come to rely on specifying Raven in my architectural business, which made their products an easy choice for my home and architectural practice. It was wonderful to be able to consult directly with the experts at Raven on this project and together, come up with some creative solutions" he added.

Raven invented and developed the first door seals in Australia and is celebrating 65 years in business whilst continuing to remain at the forefront of the industry here and overseas. With in-house NATA accredited testing facilities and a professional team of engineers and designers, Raven can quickly develop new and innovative ways to respond to advances in the building industry here in Australia and around the world.



Adrian's private study featuring the original window frames re-purposed and sealed by Raven.

The open plan design and re-purposing of the original doors and windows meant energy sealing was of significant importance.

The beginning of a new era in rubber flooring

We all know flooring is a decision as important as the very foundations of the building it's installed in. Get it right and your clients will love you. With great success Regupol have developed a rubber flooring that not only looks good, but works in areas that you may not have thought possible.

Objective

Regupol was tasked with a brief to showcase materials in a new and functional way, while maintaining the great trusted properties of everroll® rubber flooring; homogenous wear layer, long lasting, soft underfoot, easily cleaned, good value for money, Low VOC and great looks.

Solution

Rubber tiles that give the appearance of a consistent and harmonious floor. The Regupol Australia Head Office was fitted out with the new and exciting everroll® Rubber Flooring Tiles. Using everroll® Rubber Flooring Tiles gave Regupol the ability to spec outside the square and get creative. With geometric patterns of square tiles, hexagons and planks, coupled with over 43 different colours in seven ranges, creativity started to run wild.

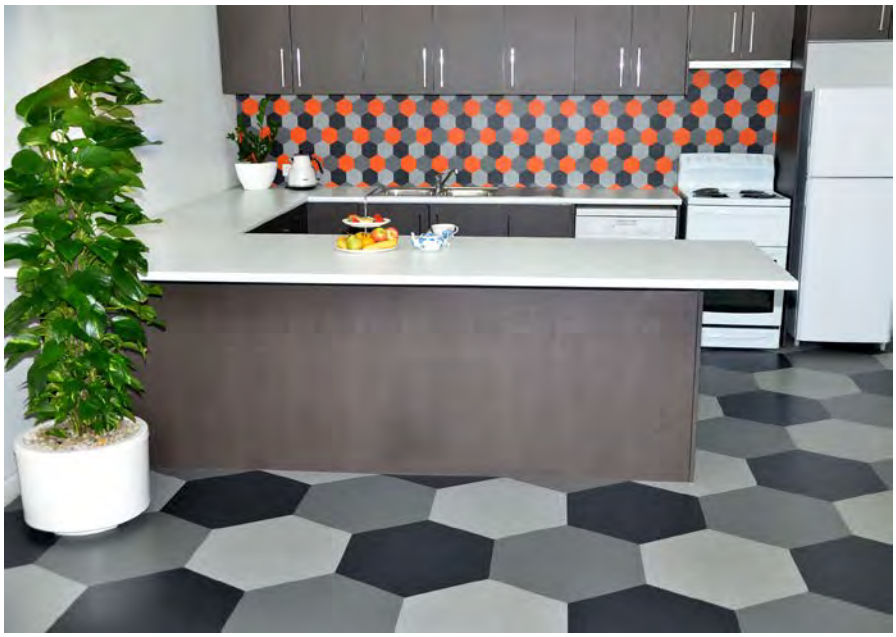
Regupol chose to use everroll® Intensity Mons in the reception and corridor areas to provide contrast to the wall colour and then used a lighter everroll® Intensity Berlin in each office to create a bright and spacious work area. In the staff kitchen, a simple but visually stunning checkerboard design was employed that transitioned from the main corridors. In the breakout area, a complimentary three toned hexagon pattern was chosen to showcase geometrical option, whilst keeping the flooring applicable to the commercial office environment.

Regupol's preferred installers found that using everroll® Rubber Flooring in a tile format installed quicker, was easier to transport and work with, whilst reducing the need for excess material during the installation.

everroll® Rubber Tile revolution

Since Regupol's installation, many others, such as Davenport Campbell and Partners. have seen the great results that can be obtained by specifying with everroll® Rubber Flooring Tiles. Commercial contractors such as MK Floors Queensland have enjoyed using everroll® Rubber Flooring Tiles on a recent higher education access floor. Also, Regupol's Western Australian distributor, ABS West have supplied 8000m^2 of everroll® Rubber Floor Tiles to the commercial sector.

All this points to one indelible fact, using everroll® Rubber Flooring Tiles is the quicker, easier, smarter choice in commercial flooring.



The breakout room

Reception

A bright paint highlight at Higher Ground, Sydney Festival

Irish artist Maser's colourful display at Higher Ground

Every January, Sydney Festival enlivens and transforms Sydney with a bold cultural celebration based on the highest quality art and big ideas.

Bold and colourful, Higher Ground by Irish artist Maser quickly became the photo-playground of the Festival and the visual world for the Village. This striped beacon let all Sydneysiders know that the Festival was on, and represented one of the largest temporary public artwork commissions Sydney Festival has ever undertaken.

Commissioned by the Sydney Festival, Higher Ground was the largest public artwork ever undertaken by Maser taking over seven months to design and construct, and a significant engineering challenge for Sydney Festival. Maser was clear that he required paints with the highest quality pigments. To maintain Maser's creative integrity and ensure uncompromising colour matching, Sydney Festival chose to collaborate with Resene.

The artwork had to be built offsite and so it was engineered as a demountable structure then loaded onto trucks and manoeuvred through narrow Sydney streets before being reassembled on site. The paint supply needed to be colour consistent to allow touch ups to be made to the artwork once reassembled on site without them being noticeable.

Resene Lumbersider low sheen waterborne paint was recommended as a durable finish with good coverage and a fast drying time. The artwork's skin was marine ply, and Resene Lumbersider weathered well outdoors as well as allowed for daily cleaning of the artwork. Sydney Festival is also the first festival in Australia to be certified to the new international environmental sustainability standard (ISO 20121:2012 Event Sustainability Management Systems). With the environment and sustainability at the heart of the festival's business practice, Resene Lumbersider's Environmental Choice approved status was very important.

With 30,000+ people walking over this artwork the floor paint needed to resist dirt and oils but match the look and colour of the Resene Lumbersider. Resene Uracryl 403 was recommended as it repelled stains and was very easy to keep clean.

Maser's artworks all over the world adopt a striking geometric pattern and use a bold palette of primary colours. This has become the signature of his artworks and the reason he is one of the most recognisable street artists in the world today. Colours for Maser's work were created by matching a bold collection of PMS colours to his exact requirements.

The quality and coverage of the Resene paint cut down on the painting time and number of coats required; without this the artwork would not have been finished on schedule.

With a nod to MC Escher's perspective-skewing artwork, Maser's Higher Ground reimagined a world of converging architecture and geometry on a grand scale. Rising up from the Hyde Park lawn and reaching over two storeys high the artwork's physical and visual boundaries collide, an explosion of colours, shapes and stripes offered visitors plenty of reasons to explore space. Part art installation, part photo-playground, Higher Ground was a dream come true for those who always wished they could step inside a painting.

With its bold and creative use of colour, Higher Ground won the Resene Total Colour Installation – Experiential – Product Award 2015.

Resene's bold colours used on the artwork

Trinity Grammar Aquatic Centre

The Aquatic Centre at Trinity Grammar School in Summer Hill NSW has utilised Safetyline Jalousie Louvre windows to create an impressive floor to ceiling external wall.

Objectives

Ventilation and security were the main objectives for architects at Gardner Wetherill & Associates when designing the new Aquatic Centre. They also needed windows to fit the module design of the building. Louvre windows were the only window style considered to achieve the level of ventilation required.

Product suitability

In researching louvre window options, the architect discovered that Safetyline Jalousie's louvre windows were the only choice when it came to meeting the specific security requirements. The inbuilt and impenetrable security feature, unique to Safetyline Jalousie, meant that regardless of whether the windows are left open or if the glass breaks, there would be no compromise to security.

The louvre windows are motorised so that when the weather conditions are right they can be opened and will automatically shut down the mechanical ventilation system, delivering significant energy cost savings. They are also integrated with an acoustic monitoring system that closes the louvres automatically when the noise level rises to a certain volume.

The wide spans of 1400mm suited the modular design of the building and added aesthetic appeal to the overall design of the centre.

Product specifications

Quantity Supplied :27
Height: 739mm – 1549mm (5-11 blades)
Width: 900mm – 1400mm
Colour/Finish: 25 micron satin sandstone anodised
Louvres: 6mm Sunergy clear toughened
Operation - Motorised - connected to and controlled by the BMS
Architect/Builder: Gardner Wetherill & Assoc./Lipman

Interior view of the louvre windows that create an impressive floor to ceiling external wall

The look of the louvre windows from outside

The new and modernised Newcastle Courthouse

Ventilated façade of Prodema PRODEX and Alpolic Zinc

The new Newcastle Courthouse presents a modern building that rejuvenates the heart of the Newcastle CBD. The $90 million seven-storey complex is the focus of the revamped civic precinct and holds 10 courtrooms and two tribunal rooms for Local, District and Supreme Court hearings.

Designed by Cox Richardson Architects, the 12,000m2 courthouse is the most secure and technologically advanced courthouse in the state. The building design needed to convey the appropriate reverence of a civic building, while at the same time being sympathetic to the surrounding urban environment. The selection of building materials and finishes therefore needed to be premium quality to denote the buildings importance and civic standing. Furthermore, the Courthouse was designed with environmentally responsible features including 190 solar panels, energy efficient air conditioning and smart use of natural light in order to reduce the building's carbon footprint.

The building's exterior facade, a striking combination of the natural wood grain of Prodema PRODEX and the natural grain on the mineral zinc in the Alpolic Zinc, convey the prestige of such an establishment. The incorporation of Prodema PRODEX and Alpolic Zinc is not merely a design choice of aesthetic significance, these products and the ventilated façade system used on the Newcastle Courthouse represent a high performance, low maintenance and stylish building enclosure solution proven to improve the building's energy efficiency, sustainability, acoustics and aesthetics.

Prodema products have been manufactured with raw forest materials managed in a socially and environmentally responsible way. Prodema is a world leader in their category, being awarded ISO 14006 certification in ECOdesign.

Prodema PRODEX panels offer a high level of durability as their composition renders them resistant to continuous exposure to sunlight and sharp changes in temperature and humidity. PRODEX panels are virtually maintenance free as the exterior PVDF film provides a maximum level of care for the wood, ensuring panels are protected from moisture, rain, sunlight, and even the build-up of dirt on the panel's surface. PRODEX panels also offer maximum resistance to vandalism as the outer chemical non-stick layer impregnated into PRODEX panels prevents aerosol paint from sticking permanently to the surface.

ALPOLIC Zinc Composite Material (ZCM) combines the functionality of composite material technology with the elegant look of zinc metal skins. The product finish is a pre-weathered grey of QUARTZ-ZINC® by VMZINC® that mimics the matte patina that will naturally occur in zinc with time.

Zinc is an extremely durable material choice. A zinc roof can last from 80 to 100 years in an urban environment and facades may last even longer as they are not exposed to the same amount of UV and rainfall.

Accents of Prodema used throughout the Courthouse

Prodema PRODEX on soffit

Inspiring Subi Strand interiors with Taubmans Pure Performance

The Western Australian suburb, Subiaco, is ideally located as a central hub of activity being just a few kilometers west of Perth. However for years, there has been a period of relative inactivity when it comes to development that changes both the architectural landscape and the lifestyle of the locals.

With the booming mining industry and strong population growth, there has been a great need for a development of this scope. WA's largest and most trusted apartment developer Finbar has risen to the challenge, setting the bar incredibly high in terms of delivering not only a residential development, but a community hub focused around a dynamic lifestyle rich in epicurean delights, entertainment, fashion and wellbeing.

The $170 million, seven-storey development is cleverly set around The Strand, a fully landscaped pedestrian laneway illuminated by an impressive LED artwork titled Aurora, spiraling through the air to create an enchanting nighttime atmosphere. The retail and commercial tenancies here thrive being adjacent to the Subiaco Markets and as part of the larger Subi Centro redevelopment that has transformed the largely derelict industrial land into a vibrant and sustainable space that residents and visitors can immerse themselves in.

As well as encompassing 245 apartments, the development also features a gym, sauna, theatre and pool, fortifying the highly desired lifestyle that Subi Strand has to offer.

Sustainability was a key consideration throughout the design and development process and Finbar ensured that all apartments were designed to achieve an average of six stars for the NatHERS energy rating.

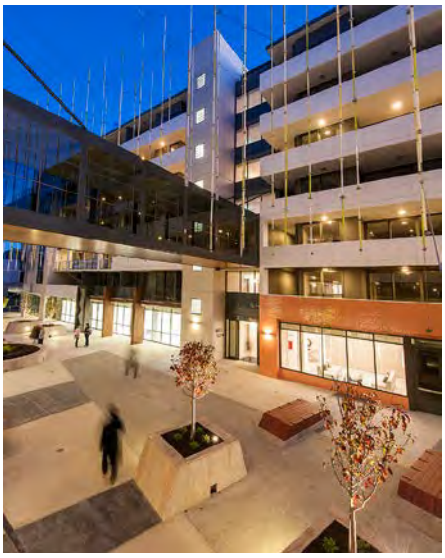
Subi Strand by Finbar proves to be at the forefront of intuitive, stylish and sustainable design. The carefully considered selection of sustainable elements extends past the construction components to the fittings, fixtures and even the applied finishes. It was this ecological ideal that led the developer to the conclusion that not just any paint supplier would suffice. Taubmans are known for their commitment to producing innovative products and Finbar understood that this was an important factor when selecting a paint supplier for this development.

The builders of Subi Strand were also in accord when it came to the paint. Colin Verth, Procurement Manager at Hanssen says, "when making the decision on a paint supplier for such a large-scale project, we had much to consider and found that our long-standing relationship with Taubmans proved invaluable."

Taubmans was enlisted to supply the paints used on the internal surfaces of the apartment building, as the products available were perfectly suited for the job. Pure Performance was specified throughout the interiors, as the formulation of the paint achieves a great balance across all the important attributes of a quality paint, including opacity, application, serviceability and gloss levels.

"The Pure Performance paint used throughout the Subi Strand development met with all of our needs and the low VOC formula made it the ideal product to help us achieve the Green star rating awarded to this outstanding project. We found that it was certainly a superior paint to work with and the finished outcome more than exceeded our expectations," explains Verth.

The unique formula of Pure Performance is not only low in VOC and odour, but is also exclusively engineered with Microban antibacterial protection. The combination of such important factors worked together to achieve the best indoor air quality for a fresher and safer indoor environment for the residents of Subi Strand. Taubmans is the only Australian paint brand to be approved by the National Asthma Council Australia's Sensitive Choice program.



From top: The Strand, and a private dining room for one of the restaurants

Buddhist Temple, Gold Coast Dharma Realm

Clarke Constructions Pty Ltd, in conjunction with Push Architects, are currently engaged in the technically challenging design and build of the new Buddhist Temple at the Gold Coast Dharma Realm, located in the Gold Coast hinterland.

Michael Chen, lead architect on the project, was tasked with designing a building incorporating traditional features and utilising predominantly timber materials, in a BAL29 bushfire prone area.

Large beams and posts up to 6m long were required. Although local species were preferred, the limited availability and a tight time frame were prohibitive which required the builder to look further afield. Enter the MagnaGlulamTM finger jointed laminated Merbau product supplied by local company TLB Timber.

MagnaGlulam offers finger jointed laminated hardwood products in Merbau (also known as Kwila) which is one of nine hardwood species listed in AS3959 as a Bushfire-Resisting Species suitable for use in BAL29 rated areas. Being a durability 1 rated species, with high strength and excellent stability in situ, Merbau is an ideal species for use in laminated hardwood products. The Resorcinol glues utilised in the manufacturing process were shown to have no effect on the fire performance of the timber.

TLB Timber is the largest stockist of the MagnaGlulam products in Australia. They were able to assist Clarke Constructions with sourcing the large beams and posts required for the project.

MagnaGlulam is produced in Indonesia utilising Rainforest Alliance Verified Legality Compliance timbers. Manufactured in accordance with strict quality assurance systems certified under AS/NZS 1328, MagnaGlulam is always supplied in Appearance Grade A, which means it is free of defects, dressed and suitable for clear finishes. The high strength of the product also enabled the builders to achieve spans of 10m utilising engineered steel connector plates.

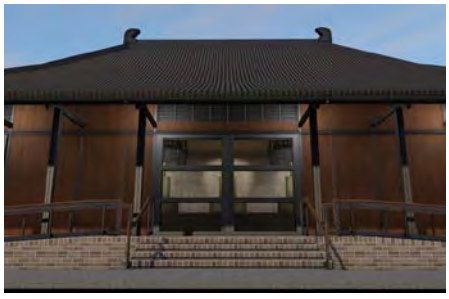
The timber's ready acceptance of a stain also enabled the client to achieve the look they desired. Clarke Constructions were also able to utilise a cleansing process developed by Dulux to assist in removing tannins from the timber prior to staining, which ensured there was little to no tannin leaching during the construction process.

Bruce Clarke of Clarke Constructions said "This has been a very interesting build, incorporating complex engineering, utilising excellent building products and innovative construction processes. We built the whole frame of the building off-site to ensure it all worked. The MagnaGlulam are a great product. They provide a well-priced, high quality alternative to local products."

Michael Chen of Push Architects said "the decision to switch from the local product to the MagnaGlulam was not made lightly. It was important their performance matched that of the local products in terms of strength, durability and BAL rating. Being readily available, from a certified source and at significantly less cost to the local product made the decision easy."

MagnaGlulam finger jointed laminated hardwood products in Merbau, stocked by TLB Timber

Interior view



Exterior view

Victaulic grooved piping solutions at Sydney's iconic Central Park

Focused on green-technologies, Central Park is characterised by its rooftop gardens, plant-lined walls and smart-metering systems. It has won a slew of architectural and environmental awards, as well as the hearts of the city's residents. The project's huge investment in environmental sustainability extends to an on-site central thermal tri-generation plant and an on-site water recycling plant.

The Central Thermal Plant (CTP) is a low-carbon natural gas powerplant, producing thermal energy that serves the complex's residents and workers. The first phase of the project was located within two basement levels under a heritage listed former brewery building. The second phase of the plant, CTP II, sits entirely within a basement level under a 14-storey residential building block.

Aircon Piping Installations, the subcontractor for the HVAC system installation, was required to design a system that would fit inside the spatial confines of an existing structure while allowing the present HVAC equipment to remain functional during installation.
"Being in the second stage, the plant room was already full of ductwork, operational HVAC pipework, cable trays, hundreds of hangers and operational chillers and pumps. Lifting 600mm/24" pipework and fittings to a high level in amongst the jungle of other trades was an extremely difficult task. To complete this project safely and on time, we opted to use the Victaulic grooved system," said Warren Atkins, Director of Aircon Piping.

Victaulic Advanced Groove System (AGS)
Victaulic AGS offers a wedge-shaped groove that's deeper and wider than that of any other grooved system to provide increased coupling-to-pipe engagement. This facilitates proper coupling positioning by decreasing initial installation sensitivity. Tightening the nuts to the proper specification completes the joint.

In addition, the surfaces of the two housings meet solidly between the head of the bolt and the securing nut, providing visual confirmation of proper assembly and joint integrity once the nut is properly torqued.

The 450mm-600mm/18"-24" pipework was cut to length and grooved on both ends by Victaulic distributors Antec while Aircon Piping grooved the smaller pipework themselves on site.

"Access was near impossible. Welding in these conditions and delivering the job on time would have been very difficult without the cold joining of the pipe with Victaulic mechanical couplings," said Atkins.

There are three main reasons that a Victaulic grooved mechanical system is the ideal solution for installing piping systems in confined spaces. Victaulic grooved couplings allow for a full 360 degree rotation of the pipe and system components before tightening, so that proper alignment can be achieved in the field - reducing the possibility for rework associated with field mate-up problems. It also allows piping systems to be installed in closer proximity to one another as it features a lower profile when compared to flanged systems. The system also means workers can eliminate the safety risks associated with welding since it is joined without the use of flame or fume.

Victaulic Construction Piping Services (CPS)
"The CPS team was extremely helpful and completely engaged from the start, making themselves available for late night or early morning phone calls to accommodate the work," says David Ellis, Regional Manager for Victaulic.

A cost comparison of a welded/flanged installation was supplied by the Victaulic CPS team and proved significant. Estimates indicated use of the Victaulic grooved AGS system would save Aircon Piping more than 1,300 man hours.

"Victaulic's solutions greatly assisted the Central Park Central Thermal Plant project to overcome the unique challenge of installing 600mm/24" piping above live existing equipment. We used Victaulic fittings to complete the piping system and we are very pleased with the result," said James Bolton, Renewable Energies Manager, Total Construction.

Central Thermal Plant Utilizing Victaulic Products

Geelong Library and Heritage Centre

A portion of yesterday spiced with plenty of tomorrow, the domed library is a rare civic design that stands out for all of the right reasons. Sited on the edge of historic Johnstone Park with commanding views of Corio Bay, the library as an intersection of printed word and cyberspace is reminiscent of a deep space observatory.

Viridian PerformaTech™ was chosen for the walls of transparency and reflection on the new Geelong Library and Heritage Centre. The light transmission, solar control and thermal insulation that PerformaTech™ provides, make a sublime fit with ARM Architecture's vision for this library.

The high levels of light transmission and very low levels of solar heat gain of PerformaTech™ provide a brighter and more comfortable space, and give the opportunity to design beautiful, affordable and sustainable buildings. The expressive glazing with various parabolas and faceting, contributes to the jewel-like quality. This is highlighted by the polished stainless steel on the leading edge of the glazing.

A complex building

The actual sphere is a simple geometric form. However, the erosion on the western side and the zigzag face of the glass make it quite complex. Structurally, there are very large members that arch across the west face, which then support suspended slabs. Levels three to five are partly suspended from this roof structure. As a result, the differential movement within the glazing system had to be very subtly resolved. Keeping the zigzag glazing details elegantly simple required different solutions on the south and west facades.

The Geelong Library and Heritage Centre is truly a community building. Regardless of the amount of input, time or any other effort, every person involved in the building of the library has their name inscribed into the building on the glass. Each of the 1,200+ people involved are included.

Testimonial

Ian McDougall, Director of ARM Architecture.

"Glass is a key component with any contemporary building. The extent of glazing and its performance is vital. Glass has two key roles here: it acts as a mirrored, reflective surface and some of the quality of light internally is from incidental reflection. The refracted light from these mirror strips looks like ribbons of light on the façade. The glass reinforced concrete skin acts as a canvas. The interesting quality is that those light rays are accidental rather than deliberate. The zigzag form of the glazing was a conscious decision to assist with the environmental performance.

By rotating the glazing away from the west, it faces the north-west and south west; the glazing system is more efficient. The technical input from Viridian was vital and their level of expertise and service was a contributing factor as to why we bring them on board."

The crystal clear view from inside the Geelong Library and Heritage Centre

The complex zigzag face of the glass

Darling Square apartments

Darling Square is a new residential and creative quarter that takes its place in one of Sydney's most economically and socially potent precincts. It will be considered a hotbed for innovation; future living that weaves its way into the fabric of the city, attracting a bustling community that can work, live, shop and play in a great new city neighbourhood

The South West residence apartments are currently under construction. It is a mixed use development comprising of:

- three residential towers
- 25, 9 and 40 storeys
- 542 apartments
- six storey podium mixed use, with IQ Hub and retail

Working with the Lend Lease design team, paint specifications were developed to suit the requirements of this building:

- Wattyl i.d Interior Design Advance are use used on the walls and ceilings.
- Wattyl Aqua Trim water based enamel is being used on the doors and trim.
- Granosite texture coating and Solagard paint are being used of the facades.

Wattyl is now working closely with the Painter (Morris C) and the Lend Lease construction team to ensure that paint is being supplied to suit the construction programme.

i.d Interior Design Advance is a new product to Wattyl, which was chosen because it suited the requirements for these premium apartments:

- Low VOC Emissions: Minimal at <1 gm/L and virtually no odour.
- Antibacterial: Specially formulated to resist the growth of bacteria on the surface.
- Anti-mould and Mildew: For areas prone to contamination, and for those vulnerable to asthma attacks, i.d Interior Design Advance provides a new level of protection.
- Total Clean Technology: Incorporates improved stain resistance and superior washability (an industry benchmark). Specially developed to cope with regular cleaning, it is ideal for use on walls that are subject to intense scrutiny.

Scale model and artist's impression of the apartment blocks

Darling Square currently under construction

NATSPEC'S USE OF STANDARDS

QUALITY AND STANDARDS

'. . . the level of quality that can be policed in the construction stage cannot be higher than that which is spelt out in the contract. If the building contract documents permit a sow's ear then all the quality control in the world cannot demand a silk purse. . . . True quality control starts with the documentation for a project and in the project specification in particular. . . .'

'. . . for many years an army of experts has been producing minimum quality standard specifications for reference in a variety of industries, including the building industry, and in regulations relevant to those industries.'

'Nothing could be more necessary, more logical, more timely or more useful in today's building industry or more responsive to the call for quality control than a specification system tied to relevant Australian standards. That is what NATSPEC sets out to be.'

NATSPEC AND AUSTRALIAN STANDARDS

'The NATSPEC method of using relevant published standards is to incorporate them by reference and not to quote, transcribe, repeat or paraphrase the text of the standards. To do so would not only interfere with copyrights but would also breed errors of transcription. It would also increase the physical size of NATSPEC and its derivative specifications, unnecessarily.'

'NATSPEC deliberately avoids blanket referencing of standards, the system by which specifiers expect contractors to allow for every conceivable and inconceivable standard in the world'

'NATSPEC provides a checklist of possible relevant standards. It also provides a means of exercising options contained in standards. It also allows for manufacturer's recommendations to be referenced or 'called-up' in the same way as standards. NATSPEC recognises the need for care in the specifying of standards.'

– Bryce Mortlock, RAIA Practice Division Report, August, 1988.

STANDARDS IN NATSPEC

NATSPEC continues to incorporate standards by reference to the standard's number. Where there are options in standards and decisions to be made, NATSPEC provides prompts and guidance. NATSPEC, with research and feedback from subscribers and industry, fills gaps that the consensus approach can leave out of standards.

NATSOURCE

The publication NATsource includes all NATSPEC cited standards, and their abstracts. It is provided to subscribers as part of their package, as well as being available for purchase.

STANDARDS TO OWN

The following should be considered:

- Design standards cited in the BCA and other regulations, with which you are legally bound to comply.
- Design standards that relate to your discipline and project type.
- Standards and handbooks that relate to construction.
- Lists of suggested standards for the offices of architects, landscape architects, structural, mechanical, hydraulic and electrical engineers are provided in the paper *Specification writing* on the NATSPEC website, under suggested standards for offices.

Whether the owning of a standard should be regarded as essential is a matter of professional judgement. Standards relating only to product manufacture or type testing may be considered non-essential provided compliance can be demonstrated by other means, such as certificates of compliance and labelling schemes.

KEEPING STANDARDS CURRENT

- Each month NATSPEC publishes *Standards revising NATSPEC and AUS-SPEC* in the Technical Resources area of http://www.natspec.com.au/index.php/resources/standards
- Every three months, NATSPEC lists the most important of these standards in SPECnotes, which is available on the SPECbuilder Live.
- Every six months, in April and October, NATSPEC issues updated specification material to its subscribers via CD and SPECbuilder Live.

Some National and International standards cited by NATSPEC

Australian Standards

bsi.
British Standards Institution

American Society for Testing and Materials

ISO
International Organization for Standardization

Bryce Mortlock - Federal NATSPEC, RAIA Gold Medallist

Relevant Websites
SPECbuilder
www.specbuilderonlinepro.com.au/

BCA
www.abcb.gov.au/

Acts and regulations
www.austlii.edu.au/

SAI GLOBAL
www.saiglobal.com/

FENDER KATSALIDIS
ARCHITECTS

Australia 108

Australia 108 is a highly sculptural residential tower. Its slender form is highlighted by a golden starburst expression which then morphs into a curvaceous profile against the sky. Two of the amenities levels are located within the Starburst, where swimming pools cantilever six metres out into the sky, and residents can enjoy a double-height sky garden.

The ground floor podium will be built around a heritage facade, which in 1899 housed a timber mill and warehouse. It will contain three retail tenancies and access to the tower's residences through a gold-clad entryway.

What was unique about the project?
The practice was commissioned to design Australia 108 in 2014. Within 12 months, Town Planning Approval had been granted and 80% of the apartments were sold. It is a residential tower unlike any other in Australia. At 319m, Australia 108 will become the tallest building to roof in the Southern Hemisphere. Located in Melbourne's Southbank precinct, it will contain 1,105 apartments over 100 floors, and unprecedented resident facilities, including dining and function spaces, theatrettes, gymnasiums, pools, spas and an extensive barbeque terrace.

Advantages of using the NATSPEC specification system
The provision of construction information is popularly associated with drawings. Underpinning those drawings, however, has always been a large body of non-graphic data provided by the specification. This data entails crucial information that reflects the design and build of the project and requires fine attention.

For a start it needs to be up to date. Constructional standards are always being updated, and we need to keep abreast of those changes. We also need to be aware of changing constructional techniques borne of newer products, materials and processes.

The information also needs to be correct, relevant and well structured. There is a large quantity of information contained in a construction specification, and relevant information needs to be located quickly and efficiently. The word-finding capabilities of electronic information certainly assists in that, but a good structure of the information creates a context for that information to assist in further understanding.

All of this can be done within an architectural practice. However to do the necessary research that underpins the data, and to then properly maintain that information takes a lot of effort-effort that can be expensive, or take valuable people away from other roles.

Which is why we appreciate NATSPEC. NATSPEC does all that work for us, and almost certainly does it better. We are delivered a document which is comprehensive, up to date, relevant and incredibly useful. The research and knowledge that underpins the content of the information NATSPEC provides cannot be replaced by architects or by a BIM model.

What are the lessons learnt from the project that you are prepared to share with other designers?
The key lesson from Australia 108 is having an up to date set of base specifications from NATSPEC, and the right people within your organisation with the skills to keep them up to date and integrated into your office systems.

NATSPEC is a great base platform for keeping your office specifications in sync with the latest best practices and Australian Standards, but they need integration into the systems and practices of your office. We have benefitted in Australia 108 having in-house people who are familiar with the NATSPEC format, and who keep it relevant and integrated with the way we work. The NATSPEC templates are a great starting point, they just need work to keep them current and relevant with the practice.

Soon to be the tallest building in the Southern Hemisphere

Artist's impression of Australia 108 in Southbank

Drill Hall Community Hub and Housing

Royal Melbourne Regimental Drill Hall by MGS Architects (MGS)

Description of the project
Located in the north fringe of the Melbourne CBD, the redeveloped Royal Melbourne Regimental Drill Hall by MGS Architects (MGS) stands proudly once again as one of Victoria's major Art Deco heritage listed buildings.

This project breathes new life into the valued heritage Drill Hall and establishes a new vibrant focus for community life in the city while providing high quality affordable housing for those in need. The objective underpinning the project brings together the aspirations for social sustainability within the Australian city and includes environmental, economic and cultural solutions.

What was unique about the project?
The challenge with this project was to integrate new social enterprise programmes within existing buildings while providing affordable housing in the new residential tower located directly above the existing Drill Hall building. The residential tower is supported by eight large columns located within the Drill Hall itself and can be accessed separately via a new ground level entry on Therry Street. The new entry is marked by an expressive green canopy, bringing the architecture of the tower to street level. Internally lift lobbies reference traditional domestic construction revealing timber stud walls, colour and texture.

Externally the efficiency of pre-cast concrete construction is exploited and is overlaid with vibrant green infill perforated metal panels to infuse the building with identity and differentiate it from the commercial neighbours. The green colour reflects the existing green coloured elements of the existing building elements such as the metal works and the brick mortar.

This project establishes a new vibrant focus for community life in the city and ensures that the valued 1937 Art Deco heritage asset continues to contribute to Melbourne life opening the facility as a new northern city Community Hub.

Advantages of using the NATSPEC specification system
NATSPEC was used as a tool in preparing architectural specifications during Tender Documentation and Construction Documentation. Writing an architectural specification for contract documentation requires precise and accurate description of the products, execution methods and procedures. With NATSPEC, MGS were able to access and download all of the latest and up to date information on specific products available in the construction industry and ensure that the products meet Australian Standards (AS) and National Code of Construction (NCC) via the live website. With the product specification being constantly updated according to the industry standard, the risk of specifying non-standard products for our architectural or interior projects was significantly reduced. Throughout our office we have found it easy to select the required products according to their specific Work Section or Trade Section, categories that can be customized according to the specific project requirements.

What are the lessons learnt from the project that you are prepared to share with other designers?
The Drill Hall redevelopment was tendered as partially documented (drawings), but with a full NATSPEC specification document, with construction undertaken as a 'Design and Construct' (DnC). By incorporating a full NATSPEC specification in the tendered documents we were able to ensure a high quality 'baseline' for the execution of the construction process for the Client. While revisions were allowed within the DnC process, and subsequently made to the design and material selection post tender, MGS were able to refer to the NATSPEC specification as an independent and best practice document confirming the requirements for the submissions of proprietary and custom construction systems, the execution methodology, and warranties.

BUILDING COMMISSIONING

INTRODUCTION

Carried out competently, commissioning will reduce contractors' on-site costs and reduce the costs of rectifying defects. Commissioning is a quality focused process for verifying and documenting that the facility and all of its systems and assemblies meet the principal's project requirements. Commissioning can be involved at all stages of a project. However, as NATSPEC is a specification system, commissioning in NATSPEC is focused on the commissioning function during construction. This aims to:

- Verify that applicable equipment and systems are installed in conformance with the owner's project requirements (OPR).
- Verify and document proper performance of equipment and systems.
- Verify that operation and maintenance (O&M) documentation is accurate and complete.
- Make sure that the principal's operating personnel are adequately trained.

There are several standards and guidelines relating to commissioning. NATSPEC has been written around ASHRAE Guideline 0 (including its terminology) because it offers a more comprehensive whole-building approach. CIBSE and AIRAH also accommodate the whole building, but tend to emphasise services. NATSPEC may be adapted to the other guidelines if desired.

FACTORS AFFECTING COMMISSIONING

Program planning

There are many factors affecting commissioning but by far the most significant is the project program. A program that includes adequate time for commissioning activities and makes sure that prerequisite tasks are completed on time, allows for timely completion of a project that satisfies the principal and occupants, and minimises expense to contractors. Conversely inadequate programming, or an adequate program that is only timidly enforced, will most likely lead to dissatisfaction all round.

The problem with commissioning is that, unlike pouring concrete, erecting ducts and most other building activities, it produces nothing physical in the building, so compressing commissioning activities can produce the illusion that program has been met, only to result in defects and issues after completion that are frustrating to the principal and occupants, and expensive to contractors. Of particular concern is the effect of program slippage caused by trades that are not involved in commissioning. If mechanical start up and balancing cannot be started because the ceiling contractor has not finished, it is the mechanical contractor who carries the potential costs of delay, not the ceiling contractor. Diligent explanation and enforcement of the program by the commissioning team and possible back-charging the culprits offer some degree of compensation.

Other factors

Other factors affecting commissioning include:

- Integration of commissioning into the whole project. It is misleading to assume that only the obvious trades, such as mechanical, involve commissioning.
- Lack of clarity of the principal's project requirements, poor design and specifications that are not clear.
- Commissioning requires effective communication between all parties including communicating non-contractual matters such as design assumptions and the contractor's commissioning procedures. In light of this it is important to document reasons for commissioning actions so all relevant participants know why they have been taken.
- Potential tension between the project manager/contractor responsible for meeting program targets and the Commissioning Authority.
- Principal enforcement of commissioning responsibilities and program.
- Variations.
- Responsibilities during the defects liability period.
- Statutory testing and inspections.
- Fitout.

Definitions

Principal: Principal has the same meaning as owner, client and proprietor and is the party to whom the contractor is legally bound to construct the works.

NATSPEC generally prefers the term principal. However, 0127 *Commissioning – information* and 0164 *Commissioning* follow ASHRAE Guideline 0 and use the term owner.

Relevant documents

AIRAH DA27 - *Building commissioning application manual*

ASHRAE Guideline 0 - *The commissioning process*

ASHRAE Guideline 1.1 - *HVAC&R technical requirements for the commissioning process*

ASHRAE Guideline 1.5 - *The commissioning process for smoke control systems*

CIBSE *Commissioning Codes*

BUILDING COMMISSIONING

COMMISSIONING STRATEGIES

Traditional
Contractor is responsible for commissioning or a commissioning contractor is employed.

Use of independent Commissioning Authority
The Commissioning Authority is defined in ASHRAE Guideline 0 as "An entity identified by the Owner who leads, plans, schedules, and coordinates the commissioning team to implement the Commissioning Process". Approximately equivalent terms in AIRAH and CIBSE are Commissioning Manager and Independent Commissioning Agent respectively. An important characteristic of the Commissioning Authority is their independence.

A common approach is for the Commissioning Authority to be employed by the principal, effectively as a consultant. The agreement between the Commissioning Authority and principal should detail the Commissioning Authority's authority and responsibilities (see ASHRAE Guideline 0). In some forms of contract such as project management, the Commissioning Authority's functions may be carried out within the project manager's organisation. Like the Principal Certifying Authority, the Commissioning Authority is not a party to the construction contract despite having an important part to play in it. The 0127 *Commissioning - information* worksection provides a place for the Commissioning Authority to be named.

COMMISSIONING IN NATSPEC WORKSECTIONS

0127 *Commissioning - information*
Because communicating the commissioning process is so important but involves describing relationships and responsibilities that are outside the contractual relationship between the contractor and the Principal, this worksection is provided for information only. For example, as the Commissioning Authority is not a party to the contract, submissions to the Commissioning Authority, in contractual terms, must be submissions to the contract administrator although in practical terms the contract administrator might either forward them directly to the Commissioning Authority or require duplicate submissions. This kind of relationship can be set out in this worksection without complicating the contract.

This worksection should only be included in specifications that use 0164 *Commissioning* and should be edited to suit the project.

0128 *Multiple contracts*
This worksection provides a framework for describing the interfaces between parties who may not be related contractually. As with 0127 *Commissioning - information*, this worksection provides a vehicle for informing all parties of overall project requirements.

0164 *Commissioning*
This supplements rather than replaces existing NATSPEC commissioning provisions. This worksection deals with the management and operational processes relating to commissioning but not technical requirements which remain in the relevant worksections. Similarly, requirements that relate to the whole project but are significant to commissioning remain in 0171 *General requirements* (see below). Although commissioning will be a requirement in virtually all projects, this worksection and 0127 *Commissioning - information* should only be included in those projects for which a Commissioning Authority has been engaged. In projects without a Commissioning Authority, commissioning and its management will still be the responsibility of the contractor (or contractors) and is covered by 0171 *General requirements* and other technical worksections.

0171 *General requirements*
This worksection includes commissioning related matters such as program.

Technical worksections
Individual worksections contain detailed commissioning requirements relating to the content of the worksection, in clauses normally entitled Commissioning or Completion.

Although 0164 *Commissioning* has provision for cross referencing other worksections, the other worksection *Templates* do not cross reference 0164 *Commissioning*. This simplifies specification preparation when 0164 *Commissioning* is not included. Add cross references as appropriate.

NATSPEC worksections that deal with commissioning or include commissioning requirements:

0127 *Commissioning – information.*
0164 *Commissioning*
0171 *General requirements*
0702 *Mechanical design and install.*
0711 *Chillers – combined.*
0716 *Chillers – centrifugal.*
0717 *Chillers – water cooled screw.*
0718 *Chillers – air cooled screw and scroll.*
0719 *Chillers – absorption.*
0721 *Packaged air conditioning.*
0723 *Evaporative air coolers.*
0765 *Medical gas systems.*
0781 *Refrigeration.*
0771 *Automatic controls.*
0791 *Mechanical commissioning.*
0802 *Hydraulic design and install*
0824 *Fuel gas*
0825 *Rainwater storage systems*
0826 *Greywater systems*
0851 *Hydrants*
0852 *Hose reels*
0863 *Sound systems*

SPECIFYING NCC REQUIREMENTS

INTRODUCTION

This TECHnote explains how the requirements of the National Construction Code Series (NCC) are incorporated in NATSPEC worksection specification *Templates*.

THE NCC

The NCC includes Volume One - Building Code of Australia (BCA) Class 2 to Class 9 Buildings, Volume Two - Building Code of Australia Class 1 and Class 10 Buildings, and Volume Three - Plumbing Code of Australia (PCA).

> *The goal of the NCC (BCA and PCA) is to enable the achievement of nationally consistent, minimum necessary standards of relevant safety (including structural safety and safety from fire), health, amenity and sustainability objectives efficiently.*

The NCC is a performance-based code. To meet NCC Performance Requirements, designers may use Deemed-to-Satisfy Solutions and/or Performance Solutions (formerly known as Alternative Solutions). NCC conformance using Performance Solutions is set out in BCA clauses A0.3, 1.0.3 and PCA A0.4.

NCC DOCUMENTS ADOPTED BY REFERENCE

The referenced documents (listed in Volume One Specification A1.3, Volume Two Table 1.4.1 and Volume Three Table A3.1) support the technical provisions of the NCC and provide a detailed means of complying with its requirements. A document which is referenced by the NCC becomes part of the building regulatory framework.

SUPERSEDED EDITIONS REFERENCED BY THE NCC

As it can take years for the updated edition of a document to be adopted in the NCC and the documents referenced within the NCC are continually updated independently, the NCC may cite superseded documents.

HOW NATSPEC MAKES REFERENCE TO THE NCC

NATSPEC includes:

- Mandatory NCC specifications and referenced standards.
- Updates to the revised NCC requirements.

NATSPEC does not include:

- Administrative requirements of local government authorities.
- NCC state or territory variations or additions.

NATSPEC references the relevant NCC requirements within the appropriate technical worksection by the following methods:

- Direct reference: e.g. Service penetration fire-stopping systems: To BCA C3.15.
- Deemed-to-Satisfy document reference: Tactile indicators: To AS 1428.4.1.

NATSPEC is based on the Deemed-to-Satisfy Provisions of the NCC. If a *Performance* (*Alternative) Solution* is used, amend the NATSPEC generic text to align with the alternative performance solution.

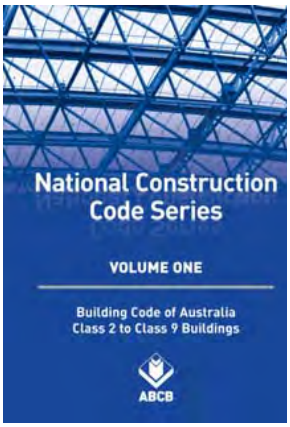
If the NCC references a superseded document, NATSPEC considers both the NCC referenced edition and the latest edition of the document. NATSPEC gives *Guidance* where a conflict exists between the NCC cited and current editions. The specifier may choose the Deemed-to-Satisfy superseded standard or the current standard as a Performance Solution.

NATSPEC REFERENCED DOCUMENTS

In *Guidance,* at the end of each worksection *Template*, NATSPEC lists all documents cited, including their number, date and title. These are grouped by their location either in the *Template* or *Guidance* text. If an NCC clause is cited within the worksection *Template* it will be included in this list.

Relevant NCC edition

The NCC takes effect on the 1st May and will be updated every 3 years. The specifier needs to comply with the relevant NCC edition at the time. Development Applications and Building Applications or Construction Certificates may rely on different NCC editions.



NCC on relevant references

A reference in a *Deemed-to-Satisfy Provision* to a document under A1.2 refers to the edition or issue, together with any amendment, listed in Specification A1.3 and only so much as is relevant in the context in which the document is quoted. BCA A1.3(a)

Similar in BCA 1.1.3(a) and PCA A1.3(a)

NCC on superseded editions

Where the BCA references a document under A1.2 which is subject to publication of a new edition or amendment not listed under Specification A1.3, the new edition or amendment need not be complied with in order to comply with the *Deemed-to-Satisfy Provisions*. BCA A1.3(d)

Similar in BCA 1.1.3(d) and PCA A1.3(d)

Relevant websites

www.abcb.gov.au

Relevant documents

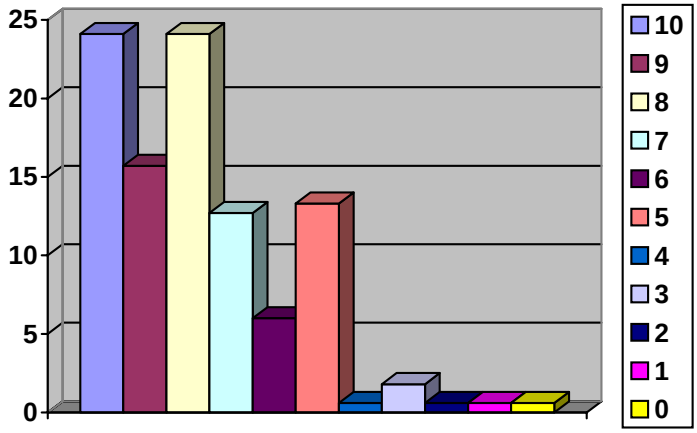
NCC - Volumes One, Two and Three

Relevant worksection

0171 General requirements

Subscriber Feedback

Many Government departments, contractors, consultants and architects are NATSPEC subscribers. When subscribers were asked how likely they would be to recommend NATSPEC on a scale of 1 to 10, over 60% responded with an 8, 9 or 10.



"I do not have any reason not to recommend NATSPEC. I would choose NATSPEC over any alternative specification system"

"I am satisfied with the current service and would happily recommend it to my colleagues"

"I already recommended NATSPEC, and am very happy with the service provided"

"It's already a great service / product"

"Keep doing what you are doing"

- NATSPEC subscribers

Bryce Mortlock

"The level of quality that can be policed in the construction stage cannot be higher than that which is spelt out in the contract. If the building contract documents permit a sow's ear then all the quality control in the world cannot demand a silk purse... True quality control starts with the documentation for a project and in the project specification in particular."

Bryce Mortlock
NATSPEC Founder
AIA Gold Medalist

"...Hence, the courts and others often look to the specification in particular to determine the message conveyed by the contract documents to those who work with them."

AIA Practice Note AN04.101 April 08

Government departments and clients prefer NATSPEC

In the majority of Australian States and Territories, NATSPEC specifications are required for building projects. Government Departments and clients prefer NATSPEC specifications so that they are assured of a baseline level of project quality. Whilst drawings and schedules only provide the form and materials, it is a properly constructed specification that outlines the quality desired. For over 35 years NATSPEC has been trusted to deliver quality results.

Consultants prefer NATSPEC

The number of regulations that change each year continues to increase. Pressures on consultant's fees and the time required to design do not allow for individual organisations to monitor all the regulatory changes. NATSPEC provides the economies of scale to keep consultants up-to-date. Consultants know that NATSPEC is comprehensive and provides a clear outline of the quality of materials and tolerance of construction required. NATSPEC specifications save litigation and support the teams desire for successful projects.

Contractors prefer NATSPEC

It is a competitive world and as the industry continues to consolidate, greater emphasis is being placed on the cost of a project. Contractors want to compete on an even footing and a NATSPEC specification means that the job will not be lost to someone who will cut the quality of construction. NATSPEC is independent and does not favour one party over another.

Project managers prefer NATSPEC

When all parties are clear on the expected outcome the project progresses quickly and without undue confrontation. NATSPEC's template specifications are written in simple plain English without duplication or contradiction so that Project Managers do not waste time clarifying project requirements.

NATSPEC the national building specification

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