



Welcome to the fast, clean and easy world of



TECHNICAL MANUAL

www.fyrewrap.com.au



Trafalgar is the well respected brand, synonymous with the supply of engineered solutions for the containment of fire, smoke and sound.


Trafalgar reserves the right to change specifications without notice. Given our ongoing commitment to product development and continuous improvement our products may change so please check with your supplier at the time of order.

OUR PRODUCTS ARE AVAILABLE NATIONWIDE

T: 1800 888 714 | E: sales@tfire.com.au

FyreWrap® is a registered trademark of Unifrax

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1. Trafalgar Profile

Trafalgar Products, a proud Australian family owned business, manufacture dangerous goods storage cabinets, fire rated and a full range of other specialty access panels, fire doors and frames, a range of fire door hardware and service shafts from our Sydney plant, with all materials sourced from Australian suppliers. Having partnered with Unifrax, we exclusively supply FyreWrap® (FyreWrap), the leading solution for passive fire protection for commercial ductwork.

The Trafalgar team have over 60 years of knowledge and experience within the passive fire containment and specialist building products industries. We pride ourselves in working with our customers to tailor solutions to meet even the most challenging design requirements.

Trafalgar is the leading wholly Australian owned supplier of passive fire containment products in Australia.



CONTACT OUR EXPERIENCED TEAM

Trafalgar's highly skilled sales force, supported by our extremely qualified engineers, is available from 7.30am to 5.00pm (AEDT) weekdays to provide assistance with your sales, service and technical enquiries.

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Trafalgar Profile

In Australia, **fire is a significant hazard** to people, property and the environment.

Fire protection of ductwork has typically been challenging for builders using conventional spray-applied, fire resistant materials.

Enter FyreWrap® (FyreWrap)

FyreWrap is the **leading solution** for **passive fire protection** for ductwork in **commercial buildings**. The product **NOW** provides up to 3 hours protection for duct work where a fire rating and FRL is required.

Trafalgar Products has partnered with Unifrax to exclusively bring to Australia **FyreWrap duct proofing systems**.



The partnership between Unifrax and Trafalgar just made sense, and now the huge success and market take up of FyreWrap is proof.

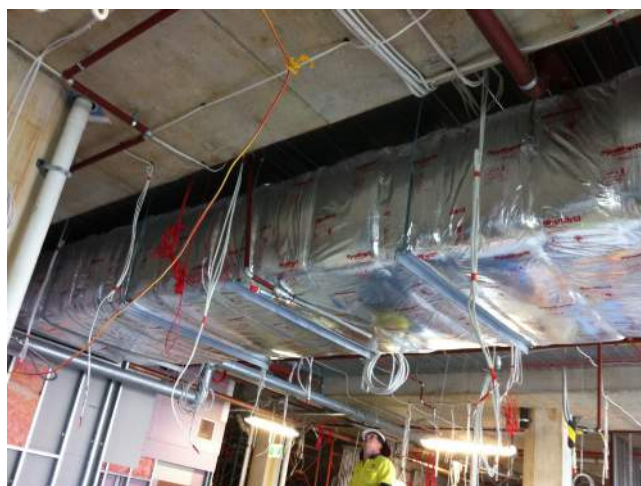
Unifrax are the manufacturers of FyreWrap materials and own the intellectual property of the Insulfrax® core material.

Unifrax is a global supplier of temperature and insulation products providing innovative heat management and fire stopping solutions for a broad range of industries.

Unifrax commenced in 1942 and has continued to develop innovative fibre products that utilise a unique, patented chemistry to solve a variety of demanding, high temperature application problems.

Trafalgar are experts in passive fire protection and system development for the local Australian building regulatory framework with a long history of servicing Australia and has a great name and route to market in the commercial construction arena.

So together, the best systems could be developed and offered to provide cost effective and **state of the art passive fire protection**.



2. What is FyreWrap?

FyreWrap is a foil-faced, fire protection wrap/blanket designed to provide fire rating to ducts, kitchen exhausts, smoke spill systems, penetration seals and structural steel elements. FyreWrap is **fire tested and approved** for up to three hours in accordance with **AS 1530.4-2005**.

FyreWrap's core material incorporates the highly engineered, lightweight and high temperature thermal insulation material Insulfrax®. Insulfrax® is a high-temperature insulation made from calcia, magnesia and silica chemistry, designed to enhance bio solubility.

FyreWrap's aluminium foil, fiberglass-reinforced scrim completely encapsulates the core provides additional handling strength, protection from tearing and most importantly provides a high resistance to mould growth. Importantly, it also allows ease of identification of FyreWrap in the field by building certifiers and engineers.

FyreWrap has undergone extensive testing to ensure it meets the highest quality in terms of environmental impact and health. The material is a completely bio-soluble solution and FyreWrap has been Greenguard listed for microbial (mould growth) resistance.

Trafalgar Products has developed a range of systems for a number of different applications with FyreWrap for a variety of services such as duct access panels, dampers, service penetration upgrades and difficult to reach areas on site. The light weight construction of FyreWrap means that hanging rods do not necessarily need to be protected.

No other solution ticks the boxes FyreWrap does.

Key benefits to installers, sub-contractors, primary contractors, architects, engineers and certifiers are:

- **Other trades are able to work in areas requiring fire rated duct treatment**
- **Lightweight – up to 5 times lighter than traditional fire spray**
- **Aesthetically pleasing**
- **Clean and easy installation – not a “wet” trade**
- **Off-site installation is possible, assisting in effective project co-ordination**
- **No masking required**
- **Quick and efficient construction**
- **Simple repair – tape up or replace section**
- **Tested for mould-resistance**
- **Clear identification for fire certifying and auditing purposes**
- **Vibration tolerant**

APPLICATIONS

FyreWrap is diverse in its application ability which includes ducts, kitchen exhausts, penetration seals and critical services. With FyreWrap's extensive library of certifications and approvals, this makes FyreWrap perfect for applications in:

- Hospitals
- Commercial buildings
- Residential properties
- Commercial accommodation
- Aged care accommodation
- Sporting event and function centres
- Commercial and industrial kitchens
- Education facilities
- Detention complexes
- External applications*
(*Requires extra lining. Please contact the Trafalgar Engineering Team for further information)



Fast. Clean. Easy.



Installation Advantages & Comparisons

FyreWrap is the safest and most environmentally friendly method of fire rating ductwork and other services in Australia. In addition to these qualities a range of other benefits come with the use of FyreWrap. FyreWrap is the premium choice, far ahead of its counterparts including conventional fire spray.

The Choice is clear.

Messy, expensive and unhealthy fire spray vs **fast, clean and easy** Fyrewrap.

The table below identifies some of the attributes and conveniences of using FyreWrap vs traditional fire spray.

Attribute	FyreWrap	Conventional Fire Spray
Installation process	Easy	Equipment set up, correct temp/site conditions, ventilation, clean substrate needed, slippery area.
Water source needed on site	No	Yes
Work close/disruptions to nearby trades	No impact	Significant impact.
Dust generation/waste in drains	No	Yes
Impact on surrounding community	No	Yes
Installation time	Fast	Waiting time between layers. Mesh installation.
Overspray/masking (plastic protection)	No	Yes. Significant.
Weight of system	Up to 5 times lighter	Heavy
Certification - quality control	Easy	Difficult to determine correct thickness and mixture.
Off-site installation	Yes. Beneficial for small site/limited access.	Not practical. Too heavy.
Ease of repair	Repair with tape or replace section.	Requires setting up spray machine in occupied building (wet and dirty).
Vibration/seismic tolerance	Yes	Highly prone to cracking.
Mould growth	Tested. No mould growth.	No testing for mould growth.
EASE OF IDENTIFICATION AS1851 - Maintenance of Fire Systems	Clear identification and easy repair	Difficult to identify proprietary spray and mixing products.



3. Technical Details & Other Benefits

Trafalgar FyreWrap Elite 1.5 Physical & Thermal Properties	
Thickness	38mm
Width	610mm / 1220mm
Roll Length	7620mm
Surface Area of Single Roll	4.65m ² / 9.30m ²
Material Density	98kg/m ²
Roll Weight (Net)	17kg / 34kg
Microbial Resistance	GREENGUARD Certified as highly resistant to mould growth
Bio-soluble	Yes
Green Building Council/LEED accreditation	Approved
Contains Volatile Organic Compounds (VOC)	No
R-Value (Thermal Resistance)	1.2m ² .K/W
Acoustic Rating	31 dB



Green Advantage

FyreWrap is the ultimate green product. Approved by the **Green Building Council** and **LEED** (Leadership in Energy and Environment Design), FyreWrap has received third-party verification by *the world's best practice in energy conservation, green asset management and ensuring safe and healthy building for occupants and workers.*

Local VOC testing has also been undertaken confirming **FyreWrap contains low VOCs** (volatile organic compounds). No ODP Products are used in the composition or manufacturing of the product and no chemical blowing agents are used in the production of FyreWrap.



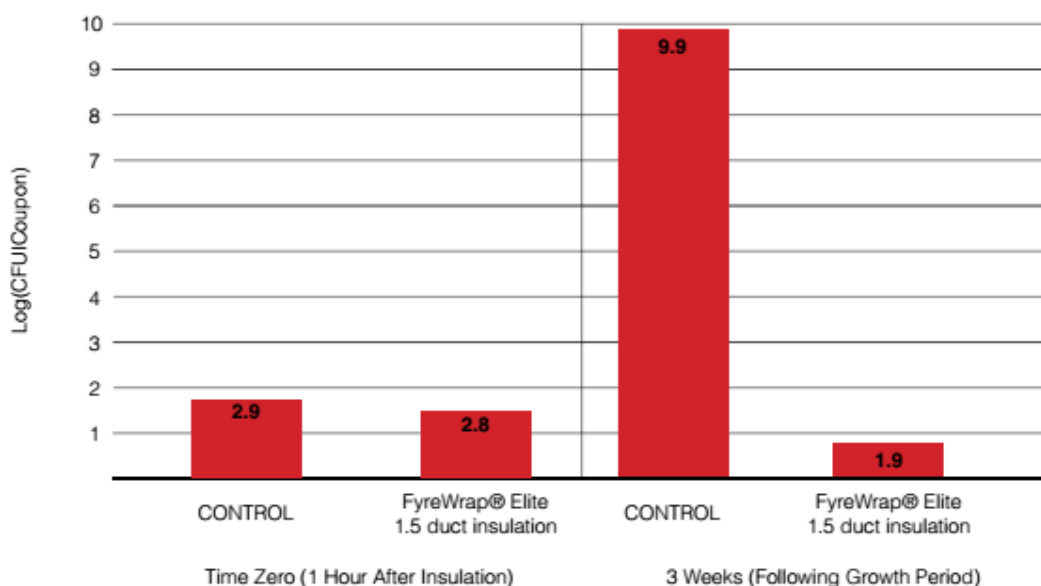
Health & Safety

The bio-persistence of the fibres in the core FyreWrap product was identified after short-term exposure by inhalation in a study (No. 02G97008) by the European Ceramic Fibres Industry Association. As a result **FyreWrap was deemed bio-soluble**, and is **completely safe** for installers and anyone handling or coming into contact with the product.

FyreWrap has also had microbial resistance testing completed by **Green Guard** and **Air Quality Services**. FyreWrap was supplied, without any pre-conditioning, and relevant material samples were inoculated with spores of *Penicillium brevicompactum* and transferred to a static control environment chamber maintained at 95% humidity and 25°C.

This makes **FyreWrap resistant to mould colonisation**, and **perfect** for environments such as hospitals, nursing homes and restaurant kitchens in which any type of mould grouping or activity could have severe consequences. The below chart demonstrates FyreWrap's resistance to mould growth.

Mircobial Growth Trends At 95% Humidity



R Value

For certain duct types such as ventilation air ducts, the material covering the duct must also provide thermal insulation for the duct system during normal operating conditions. The thermal insulation system works to maintain the temperature of the air stream under a range of environmental conditions in the building and help prevent condensation.

Mechanical Engineers design thermal insulation duct covering systems based upon its ability to resist the flow of heat through the material. The insulation value of a material is also called its R Value. R Value represents the insulating capability of a material at ambient temperatures and is a function of its thickness.

One layer of 38mm thick **FyreWrap has an R Value of approximately 1.2** and this can be linearly increased if two layers of FyreWrap are used. This allows a superior R Value and eliminates (or reduces) the need for standard thermal insulation material being used in conjunction with low R Value systems such as fire spray.

Other Benefits

FyreWrap is a robust solution for the continued fire protection even during the operational phase.

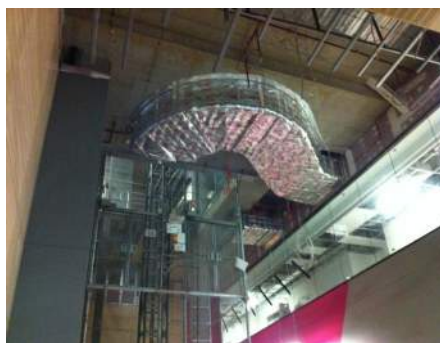
With a lot of services, high frequency vibrations are experienced throughout the operating life. Exposure of these cyclic movements on fire sprays can generate cracking and spalling of the fire protective layer. Due to its installation geometry and flexibility, **FyreWrap has better tolerance to such cyclic movements**.

FyreWrap's quality control and **system identification** is undertaken in a very efficient manner as the product markings and system geometry not only provide an aesthetically pleasing result, but are readily **visible to the site inspector**. Fire spray systems have the inherent limitations of difficulty in determining the correct spray thickness and mix ratio used, and delivers an unattractive finished product.

FyreWrap also provides **good acoustic performance as one layer can achieve Rw 31**. This may reduce the need for additional layers of sound proofing material to be wrapped around the duct and other services.



Fast. Clean. Easy.



Some typical FyreWrap applications in Australia

4. FyreWrap for Ducts

4.1 FyreWrap Applications

Installation Overview

FyreWrap Elite 1.5 duct wrap is directly applied to the surface of the metal duct in a single layer. In crowded and cluttered environments, FyreWrap Elite 1.5 duct wrap may be installed with zero clearances between the wrap surface and surrounding combustibles at any location of the duct wrap - at material overlaps or otherwise.

To minimise waste, FyreWrap Elite 1.5 duct wrap should be measured accurately and applied tautly prior to installation and fixture.

Where FyreWrap Elite insulated ducts pass through fire-rated walls and floors, the penetration opening shall be fire-stopped appropriately as detailed in the 'Fire-rated floor and wall penetrations' section.

FYREWRAP REQUIREMENTS			
FyreWrap	Number of Layers	Fire Exposure	Fire Rating (FRL)
FyreWrap Elite 1.5	1	Internal Fire	120/120/120
FyreWrap Elite 1.5	1	External Fire	120/120/120
FyreWrap Elite 1.5	2	Internal Fire	180/180/180
FyreWrap Elite 1.5	2	External Fire	180/180/180

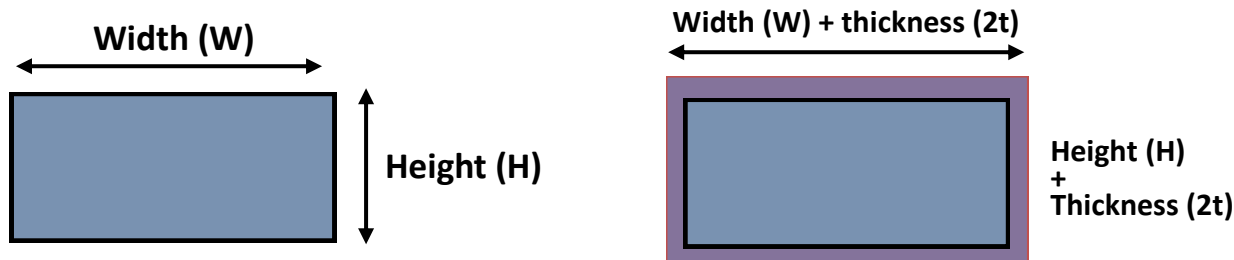
The above table applies to ALL metal ducts constructed to AS 4254 including:

- Kitchen exhaust ducts
- General ventilation ducts
- Smoke spill ducts
- Car park exhaust ducts
- Chemical/fume exhaust ducts
- Zone pressurisation ducts

4.2 Installation Procedure



1. Measure the outside dimensions of the duct and add the thickness of the FyreWrap to each of the four sides and an additional 25mm for every corner. Add an additional 75mm for the longitudinal overlap. In most cases this will result in an extra 330mm being added to the perimeter of the duct.



$$\text{Length to Cut in mm: } L = 2 \times (W+2t) + 2 \times (H+2t) + 75 + 100$$

VOLUME CALCULATOR

The FyreWrap volume calculator prepared by Trafalgar is available on Android and iPhone's. The free FyreWrap app allows you to calculate your FyreWrap volumes on the go. It also gives access to directly contacting Trafalgar for quotes, further technical information and even talk to an engineer. **Download it today!!**



2. Once the total length of FyreWrap is calculated using Step 1, the FyreWrap is rolled out tautly and the required length is measured and then cut.



3. Immediately after the FyreWrap is cut, all exposed edges must be sealed with an approved aluminium foil.
4. Wrap the FyreWrap blanket around the perimeter of the duct with a 75mm overlap where the blanket meets itself (longitudinal overlap). A temporary hold using a filament tape is recommended for each length of FyreWrap prior to the installation of the permanent fixing method.
5. Place the next length of FyreWrap with a 75mm overlap adjacent to the previous wrapped length of FyreWrap (circumferential joint).



6. a) For ducts **less than 600mm x 600mm**, a 12mm wide and 0.4 thick **steel banding** is used to permanently support the FyreWrap around the duct. The steel banding is placed 40mm from the edge of the FyreWrap blanket, over the overlaps and one additional band between the overlaps at 265mm centres.

b) For ducts **greater than 600mm x 600mm but less than 1200mm x 1200mm**, the banding system described in 6a) is used in conjunction with either pre-welded pins or cup head style **pins along the bottom of the duct**. Self adhesive pins must not be used. Pins should be installed at 200mm centres.

c) For ducts **greater than 1200mm x 1200mm**, either pre-welded pins or cup head style **pins over all four sides of the duct** must be used. Self adhesive pins must not be used. Pins should be installed at 200mm centres.

Steel Banding



Pre-welded Pins



Cup Head Pins



4.3 System Specifications

FyreWrap, is not only a flexible product literally, but also when it comes to the installation. It allows for various fixing methods (size dependant see below), to cater for all types of contractors and installers.

Trafalgar’s vast experience in the commercial air conditioning industry has also been the catalyst for developing a huge array of systems to cater for almost all site applications making it a problem solver for all engineers, certifiers and installers.

This section will give the minimum guidelines for FyreWrap installation as well as the further system detail drawings to ensure your installation meets full “deem-to-satisfy” certification.



GUIDELINES	
Coverage	FyreWrap duct wrap must completely cover the duct and there must not be any exposed sections or gaps.
Overlap	A 75mm (3”) minimum overlap must be used on all joints. Only the three specified methods (telescope, checkerboard and butt splice methods) of overlap may be used when adjoining FyreWrap duct wraps.
Cut edges	Cut edges must be completely sealed with the specified pressure-sensitive aluminium foil tape.
Temporary tapes	FyreWrap duct wraps may be temporarily held in place with filament tape before correct fixing methods are applied.
Steel bands	Only specified and/or Trafalgar approved steel bands may be used.
Pins	Only specified and/or Trafalgar approved pre-welded pins or cup-head type of pins may be used.



FIXING METHOD			
Duct section (mm)	Steel banding only	Steel banding and pins (pins on bottom only)	Pins only (all sides of duct)
≤ 600 x 600	●	●	●
≤ 1200 x 1200		●	●
≥ 1200 x 1200			●

STEEL BANDING ONLY

Temporarily secure FyreWrap Elite 1.5 duct wrap with filament tape before securing permanently with steel bands. Place carbon steel or stainless steel bands over material joints and 40mm from sealed edges. Additional bands shall be placed between overlaps at 265mm centres. Tighten bands adequately with steel crimp clips, as to restrict movement of FyreWrap Elite 1.5 duct wrap. Excessive tightening of bands may cut or damage fibreglass-reinforced aluminium foil and/or duct.

STEEL BANDING AND PINS (pins on bottom only)

In this application, pins are to be welded on the undersides of horizontal runs or backsides (side of duct having largest dimension) for vertical runs. Steel pins are either pre-welded onto duct prior to application of FyreWrap Elite 1.5 (duct wrap to be impaled onto pins) OR, cup-head style pins are welded directly through temporarily secured duct wrap. In the event that pins are pre-welded, round and square galvanised steel speed clips (washers) are to be used. Self adhesive pins must not be used. Pins are to be spaced in a grid of maximum centres and exposed ends are to be cut off or turned down to eliminate safety issues. In conjunction with pins, steel or stainless steel bands are to be installed as previously detailed. This method can be used for all sectional sizes of duct not exceeding 1200 x 1200mm.

PINS ONLY

This method of using pins only can be applied to all sizes of duct. Steel pins are either pre-welded onto duct prior to application of FyreWrap Elite 1.5 (duct wrap to be impaled onto pins) OR, cup-head style pins are welded directly through temporarily secured duct wrap. In the event that pins are pre-welded, round and square galvanised steel speed clips (washers) are to be used. Self adhesive pins must not be used. Pins are to be spaced in a grid of maximum centres and exposed ends are to be cut off or turned down to eliminate safety issues.

ACCESSORIES AND EQUIPMENT

See table below for guidelines and allowable properties of all accessories required in the installation process.

SPECIALTY EQUIPMENT

Pin welding equipment commonly used in the heating, ventilation and air conditioning industry (HVAC) must be used when installing FyreWrap Elite with pre-welded pins or cup-head style pins. Please check with your site or head contractor if hot works permit is required.

SUPPORT FRAMEWORK

Special considerations must be made for the additional weight that the FyreWrap Elite 1.5 duct wrap material will bear on the duct support systems.

Steel supports and components are not required to be fire-rated in this application should they meet the requirements specified in this Manual.

Component	Type	Minimum Size	Centres (max)
Bands	Steel	12mm (½") wide x 0.4mm (0.015") thick	40mm from edges over the overlap and one additional band between overlaps
Bands	Stainless Steel	12mm (½") wide x 0.4mm (0.015") thick	40mm from edges over the overlap and one additional band between overlaps
Band crimps	Steel	25mm long	-
Pre-welded pins	Steel	Dia. 2.7mm (0.105") x length to suit	Grid of 200mm centres
Speed clips (square)	Galvanised steel	60mm (2.5")	-
Speed clips (round)	Galvanised steel	Dia. 36mm (1.5")	-
Cup-head pins	Steel	Dia.2.7mm (0.105") x length to suit	Grid of 200mm centres
Aluminium foil tape	Reinforced	-	-



Overlap Details

Fyrewrap Overlap Specification		
Layers	Configuration	Description
1 Layer of Fyrewrap	<p>Telescopic Overlap (most common)</p>	<p>This method involves wrapping the next segment of Fyrewrap over the edge of the previous segment with a 75mm overlap.</p>
	<p>Checkerboard Overlap</p>	<p>This method involves both edges of one segment overlapping their respective adjacent segments. The overlap joints in alternate layers of duct wrap will resemble a checkerboard pattern once complete. This method is ideal when repairs are to be made to segments.</p>
2 Layers of Fyrewrap	<p>Butt-joint with Cover Strip</p>	<p>This method involves two adjacent duct wrap segments butt-jointed at their edges and a 150 mm wide cover strip centred at the butt-joint. This allows for a 75mm overlap over each edge segment. Cover strips are to be fabricated from same Fyrewrap Elite® material.</p>
	<p>Double Layer Telescopic Overlap</p>	<p>This method involves wrapping both layers of Fyrewrap in the Telescopic Overlap method as above. Ensure there is a 75mm overlap for both layers.</p>
2 Layers of Fyrewrap	<p>Butt-joint with Telescopic Top Layer</p>	<p>This method involves the first layer to be butt-joined at its edges and the second layer to be wrapped over the first layer in the Telescopic Overlap method with a 75mm overlap.</p>
	<p>Butt-joint with Cover Strip</p>	<p>This method involves both layers of Fyrewrap to be butt-joined at their edges. The layers are to be staggered as to ensure a minimum 75mm overlap over each butt-joint of the first layer. The butt-joints on the second layer are to be covered with a 150 mm wide cover strip. Cover strips are to be fabricated from same Fyrewrap Elite® material.</p>

Typical Hanger/Trapeze Detail

Due to FyreWrap being an extremely light weight product, one of the huge benefits of using it, is that the rod hangers and trapeze are not required to be wrapped in FyreWrap.

Trafalgar's BRANZ FAR2567 report, confirms and outlines that, providing the stress in the steel is less than 10MPa, no fire protection is required.

The table below outlines typical duct sizes, thickness and trapeze spacings together with minimum support requirements to adhere to this rule.

Please contact a Trafalgar Engineer should you need a copy of this report or your duct arrangements differ at all from the table below.

Specifications for fabrication of ducting and duct suspension systems for Fyrewrap						
Rectangular/Square Ducts			Unprotected Suspension System Specification			
Duct Height [mm]	Duct Width [mm]	Minimum Material Thickness [mm]	Max. Trapeze Spacing [mm]	Mild steel trapeze angle [mm]	Minimum Threaded Rod Diameter [mm]	Internal Tie Rod (at same centres as trapeze)
1200	1200	1.0*	1520	40 x 40 x 3	10**	N/A
1600	1600	1.0*	1200	50 x 50 x 5	10**	N/A
			1520	50 x 50 x 6	12**	
600	2800	1.0*	1200	50 x 50 x 5	10**	N/A
			1520	50 x 50 x 6	12**	
2400	2400	1.0*	1200	50 x 50 x 5	12**	1 ***
3200	3200	1.0*	1200	65 x 65 x 6	12**	2 ***
3600	4800	1.0*	1200	65 x 65 x 6	16**	

Circular Duct		Unprotected Suspension System Specification			
Duct Diameter [mm]	Minimum Material Thickness [mm]	Max. Trapeze Spacing [mm]	Mild steel trapeze angle [mm]	Minimum Threaded Rod Diameter [mm]	Internal Tie Rod
1200	1.0*	1200	40 x 40 x 3	10**	N/A

Notes

This specification is to be read in conjunction with the relevant detailed drawings.

Fixings and angles specified are the minimum requirements.

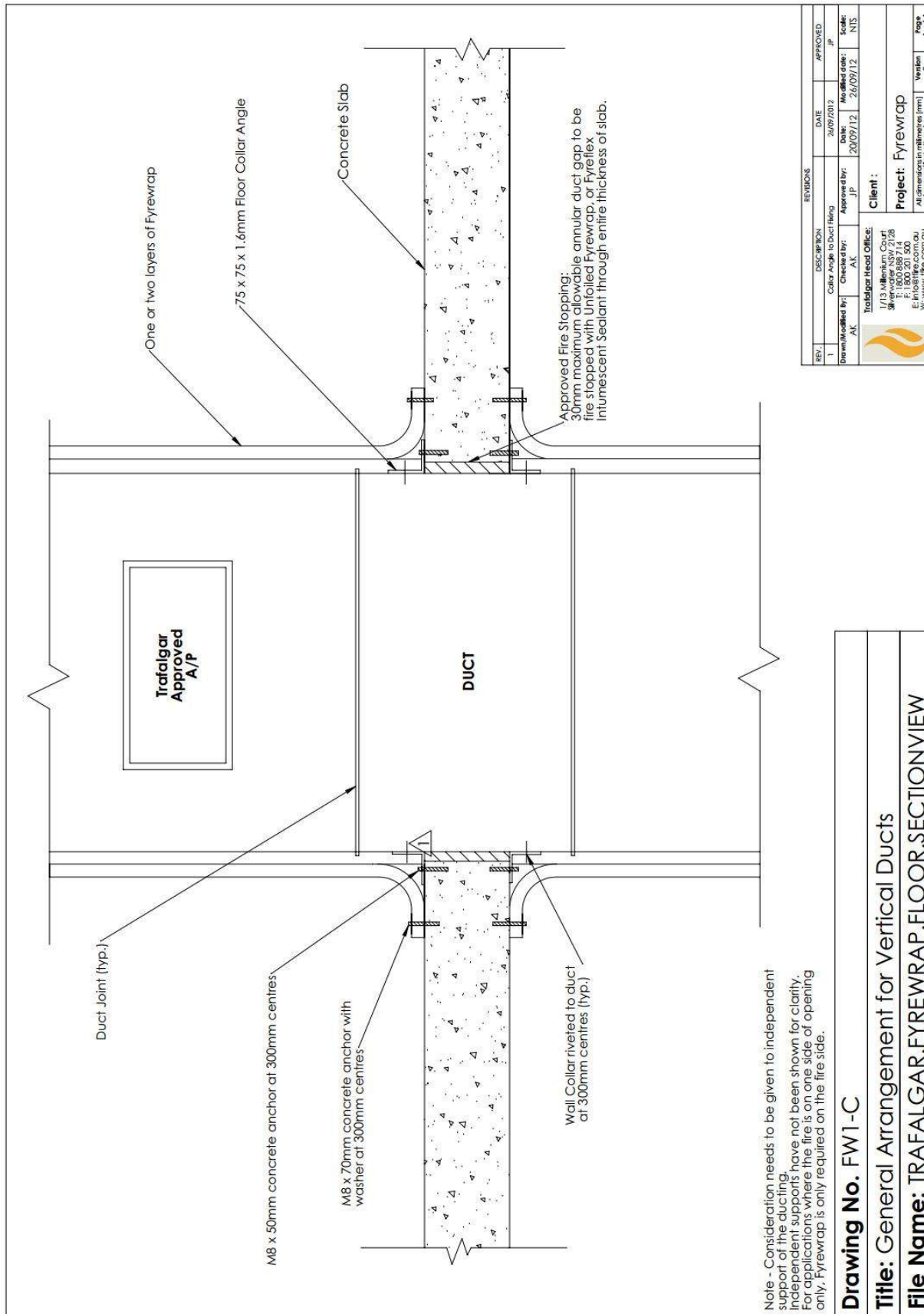
*Ducts shall be constructed in accordance with requirements of AS4254.

**Threaded rod diameters must not exceed the allowable stress level of 10MPa or 10N/mm², in accordance to Trafalgar's BRANZ FAR 2567 Report.

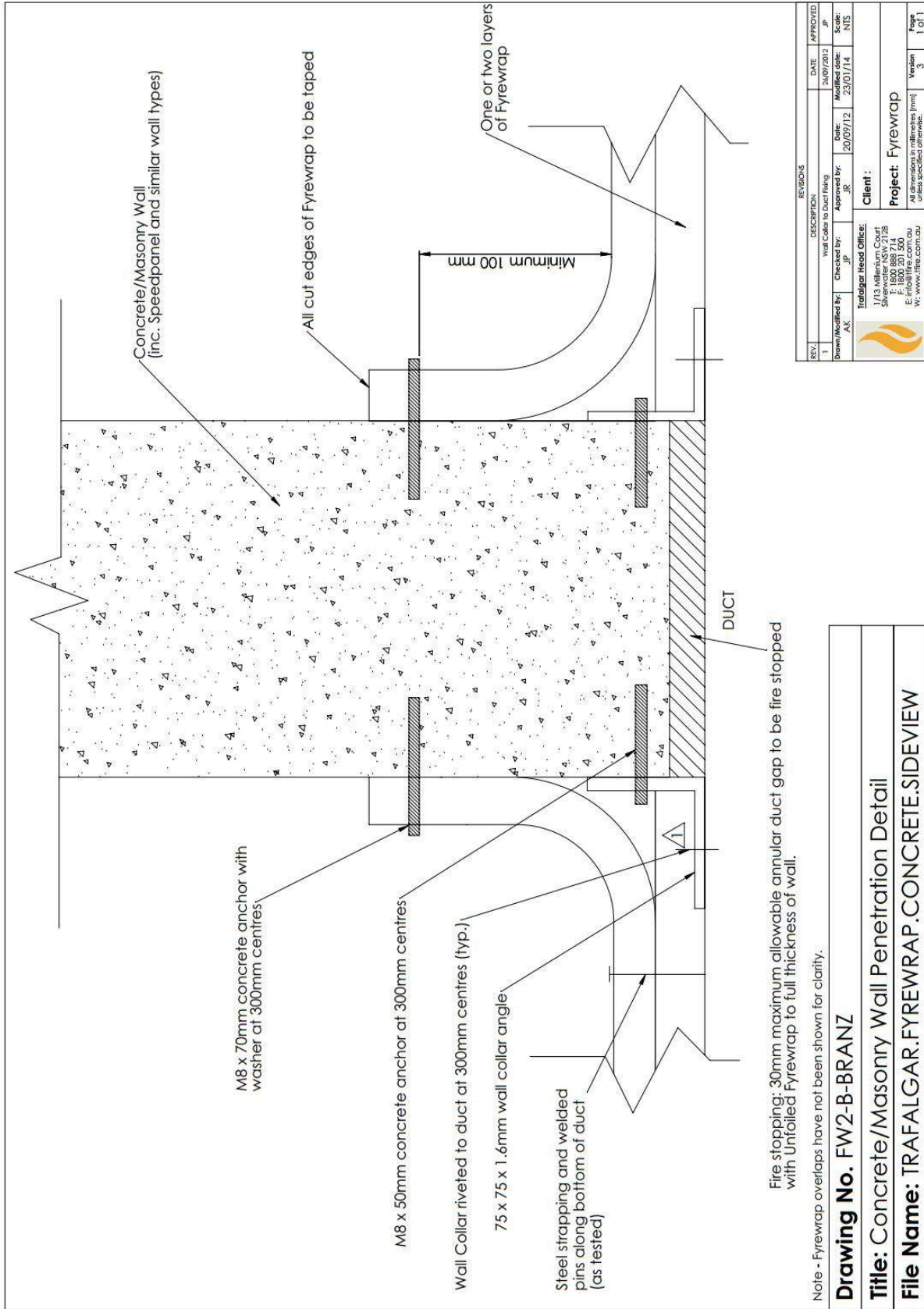
***Addition of internal tie rods required for each 1600mm width of duct to a maximum width of 4800mm.

Penetration Detail

General Arrangement for Vertical Ducts Penetration Detail



Concrete/Masonry Wall Penetration Detail



REV.	DESCRIPTION	DATE	APPROVED
1	Wall Collar to duct fitting	20/09/12	J.P.
	Drawn/Modified by: J.P.	Checked by: J.R.	Approved by: J.R.
		Date: 23/01/14	Marked: NTS

Revisions:

Client: Fyrewrap

Project: Fyrewrap

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 W: www.fyre.com.au

As specified in references [mm] unless specified otherwise.

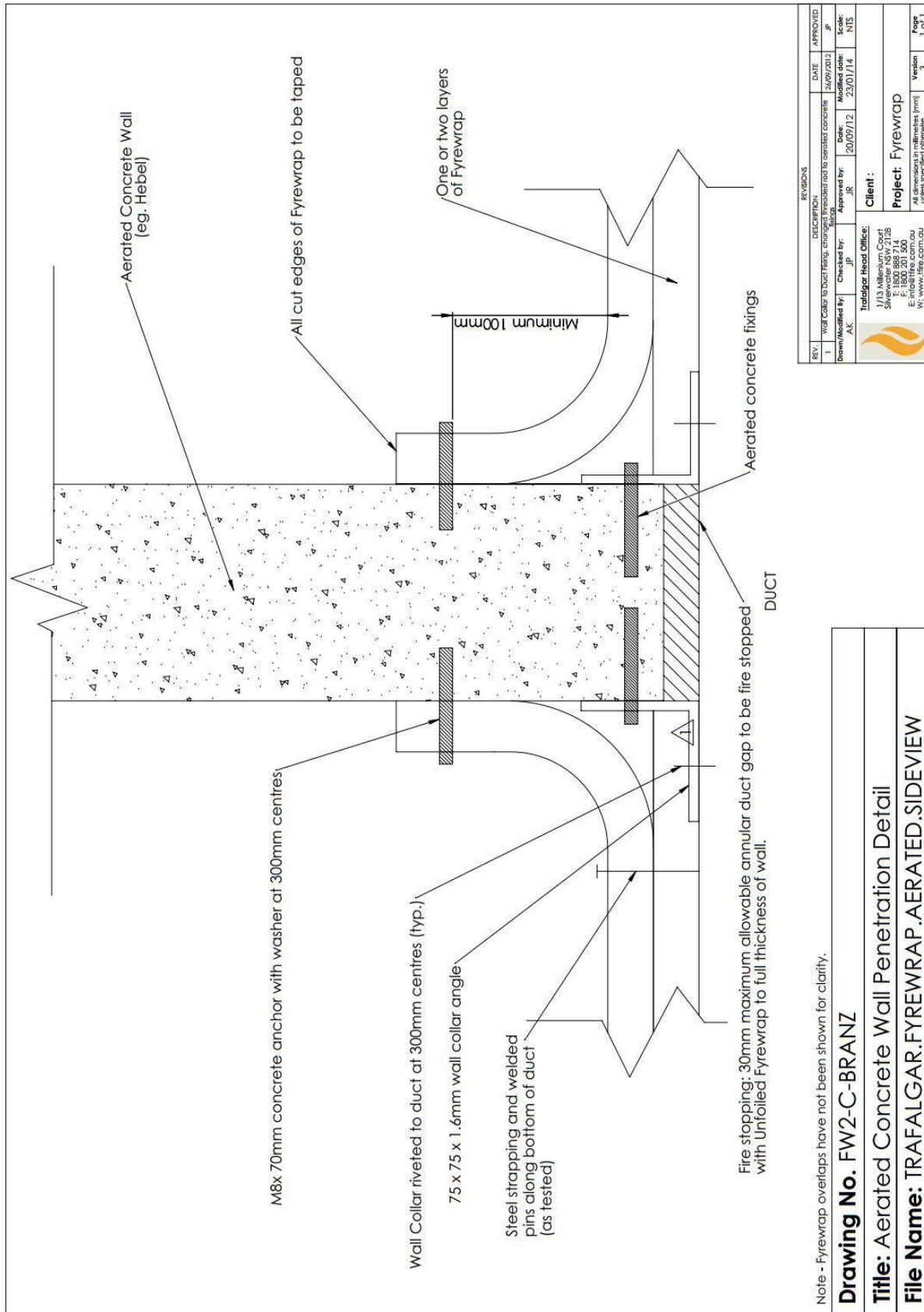
Version: 3
 Page: 1 of 1

Drawing No. FW2-B-BRANZ

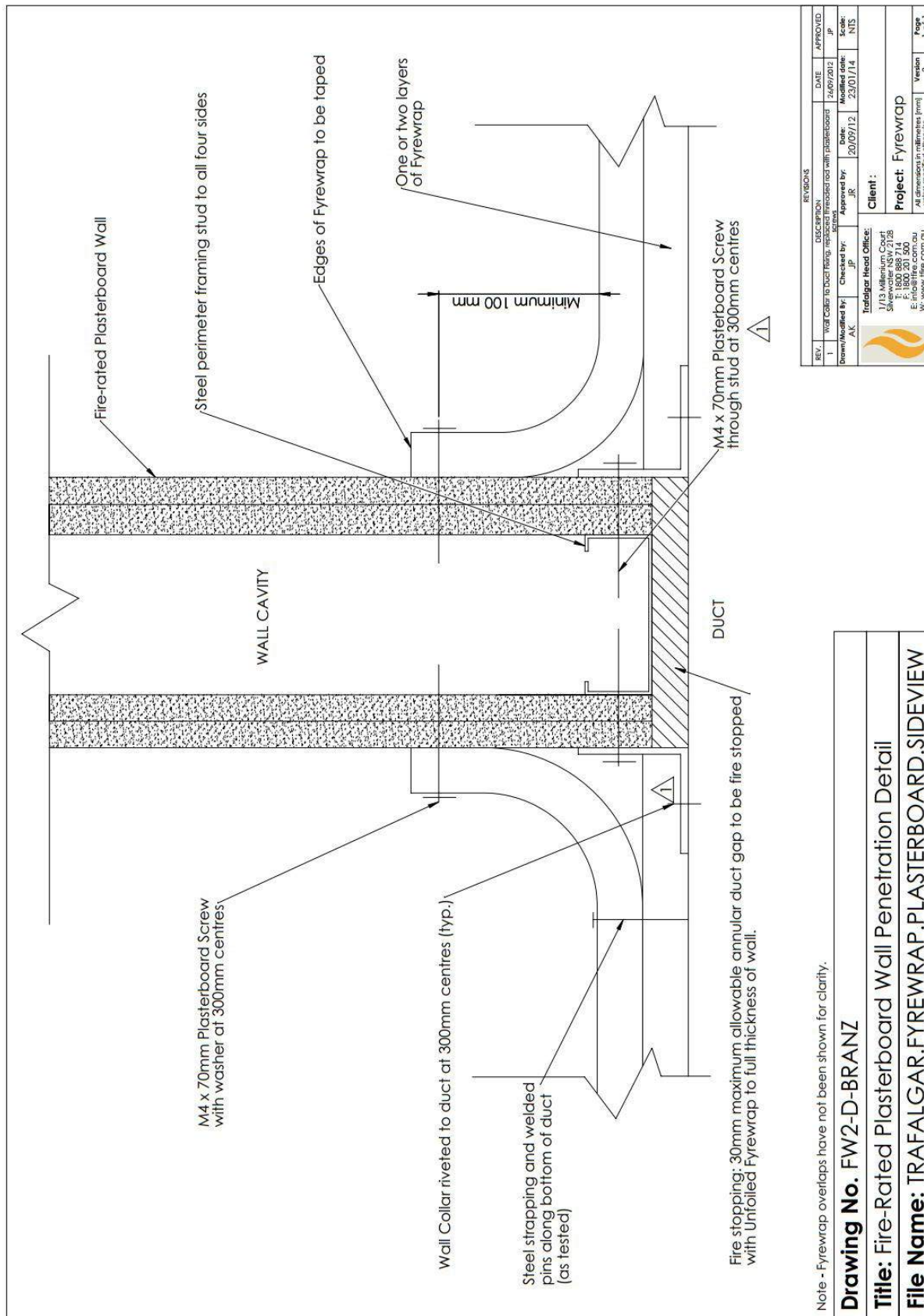
Title: Concrete/Masonry Wall Penetration Detail

File Name: TRAFALGAR.FYREWAP.CONCRETE.SIDEVIEW

Aerated Concrete Wall Penetration Detail



Fire-Rated Plasterboard Wall Penetration Detail



REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	Wall collar to duct being replaced with plasterboard	24/07/2012	JP
Drawn/Modified by:	Checked by:	Date:	Scale:
AK	JP	20/07/12	NIS
Approved by:	Date:	Modified date:	NIS
JR	23/01/14		
Client: FyreWRAP			
Project: FyreWRAP			
All dimensions in millimetres (mm) unless specified otherwise.			
Version 3			Page 1 of 1

Note - Fyrewrap overlaps have not been shown for clarity.

Drawing No. FW2-D-BRANZ

Title: Fire-Rated Plasterboard Wall Penetration Detail

File Name: TRAFALGAR.FYREWAP.PLASTERBOARD.SIDEVIEW

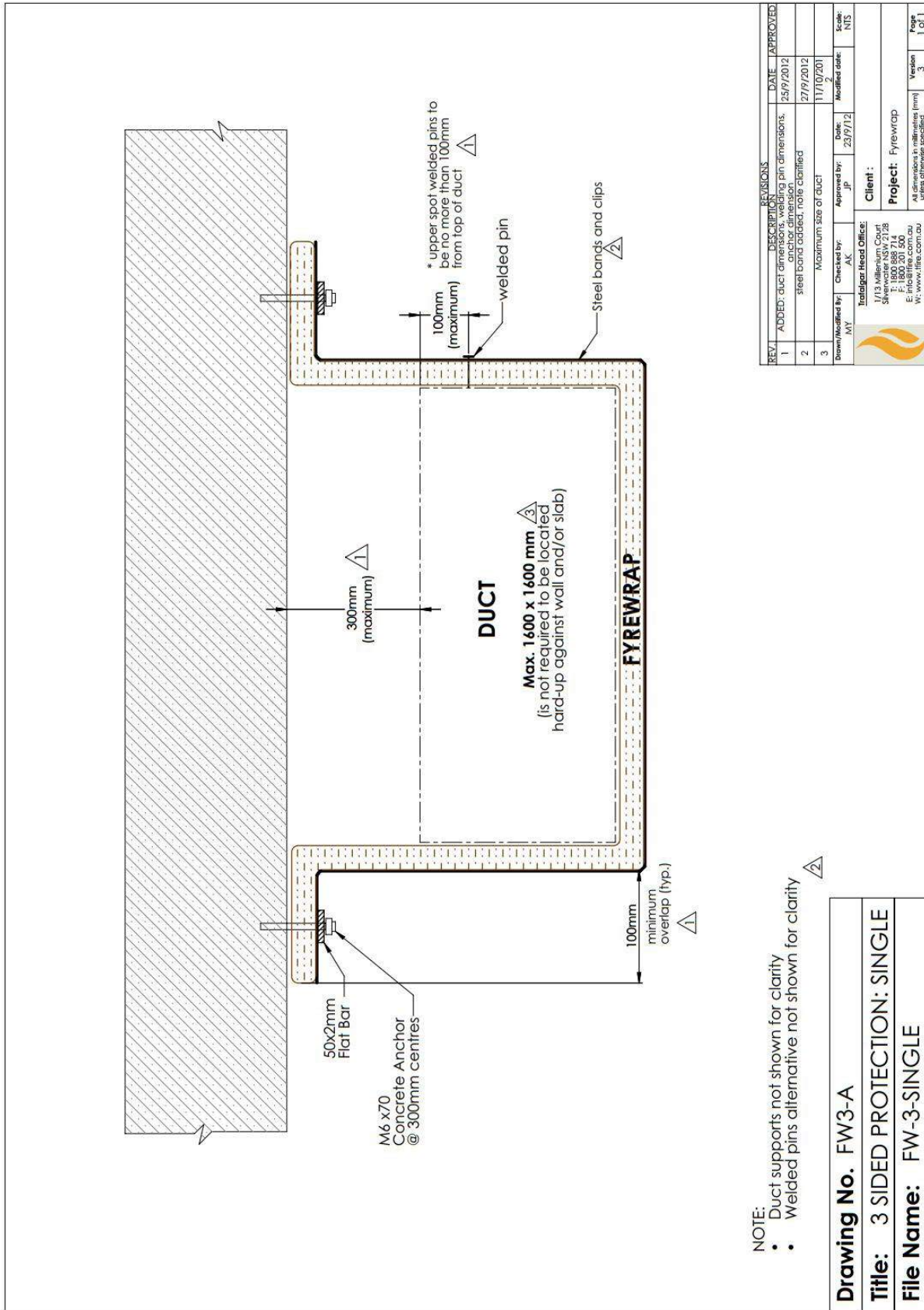
Penetration Specification Summary

Specification for wall types and fire stopping of penetrations for Fyrewrap						
Wall Specification		Fire Stopping		Fyrewrap Return at Fire Barrier Junction		
Wall Type	Wall Collar Angle	Wall Collar Fixing	Maximum annular duct gap size [mm]	Fire stopping material	Return Dimension [mm]	
Masonry or Concrete	75 x 75 x 1.6	M8 x 50 mm Concrete Anchors at 300 mm centres	30	Option 1 - Fill gap with unfoiled Fyrewrap, or Option 2 - Fill gap entirely with Fyreflex intumescent fire rated sealant for full thickness of the wall.	100	M8 x 70 mm concrete anchor with suitable washer at 300 mm centres
Aerated Concrete (eg. Hebel)		Suitable Aerated Concrete Fixing at 300 mm centres				
Fire-rated Plasterboard	M4 x 70 Plasterboard Screws through Stud at 300 mm centres at 300 mm centres					

Specification for floors and fire stopping of penetrations for Fyrewrap						
Wall Specification		Fire Stopping		Fyrewrap Return at Fire Barrier Junction		
Floor Type	Floor Collar Angle	Floor Collar Fixing	Maximum annular duct gap size [mm]	Fire stopping material	Return Dimension [mm]	
Concrete	75 x 75 x 1.6	M8 x 50 mm Concrete Anchors at 300 mm centres	30	Option 1 - Fill gap with unfoiled Fyrewrap, or Option 2 - Fill gap entirely with Fyreflex intumescent fire rated sealant for full thickness of the slab.	100	M8 x 70 mm concrete anchor with suitable washer at 300 mm centres

2 and 3 Sided Encasement Detail

3 Sided Protection: Single

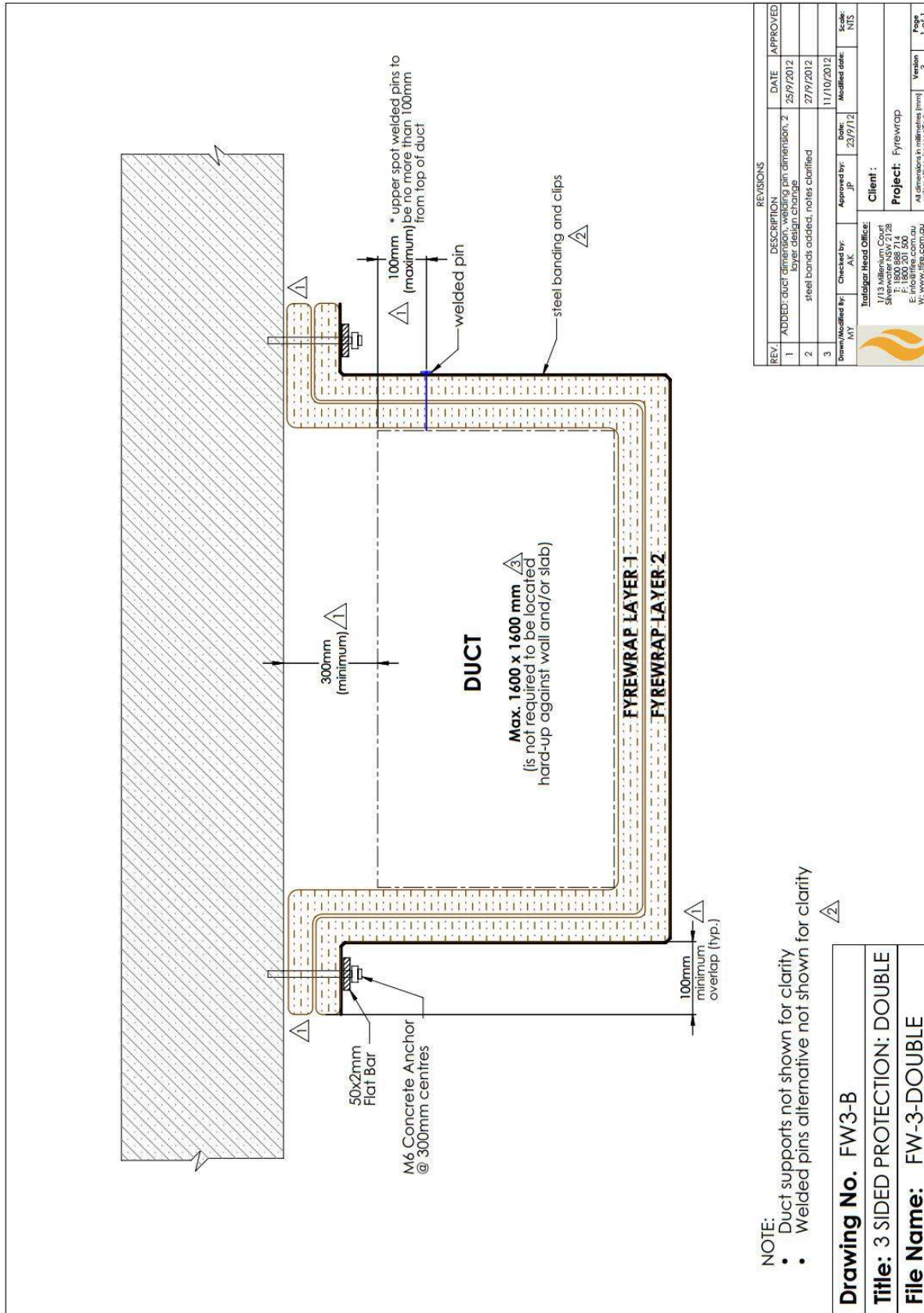


NOTE:

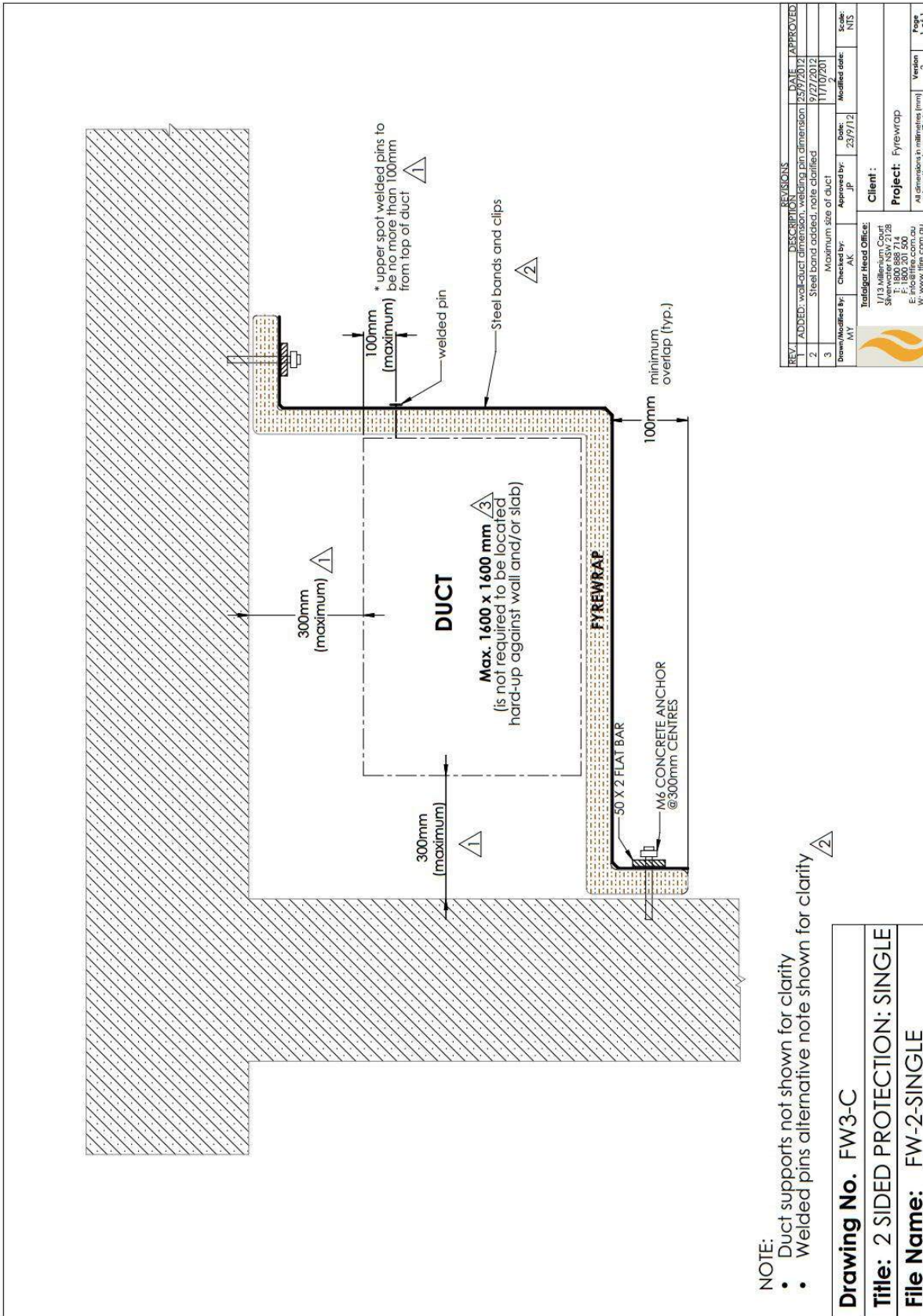
- Duct supports not shown for clarity
- Welded pins alternative not shown for clarity

Drawing No. FW-3-A
Title: 3 SIDED PROTECTION: SINGLE
File Name: FW-3-SINGLE

3 Sided Protection: Double



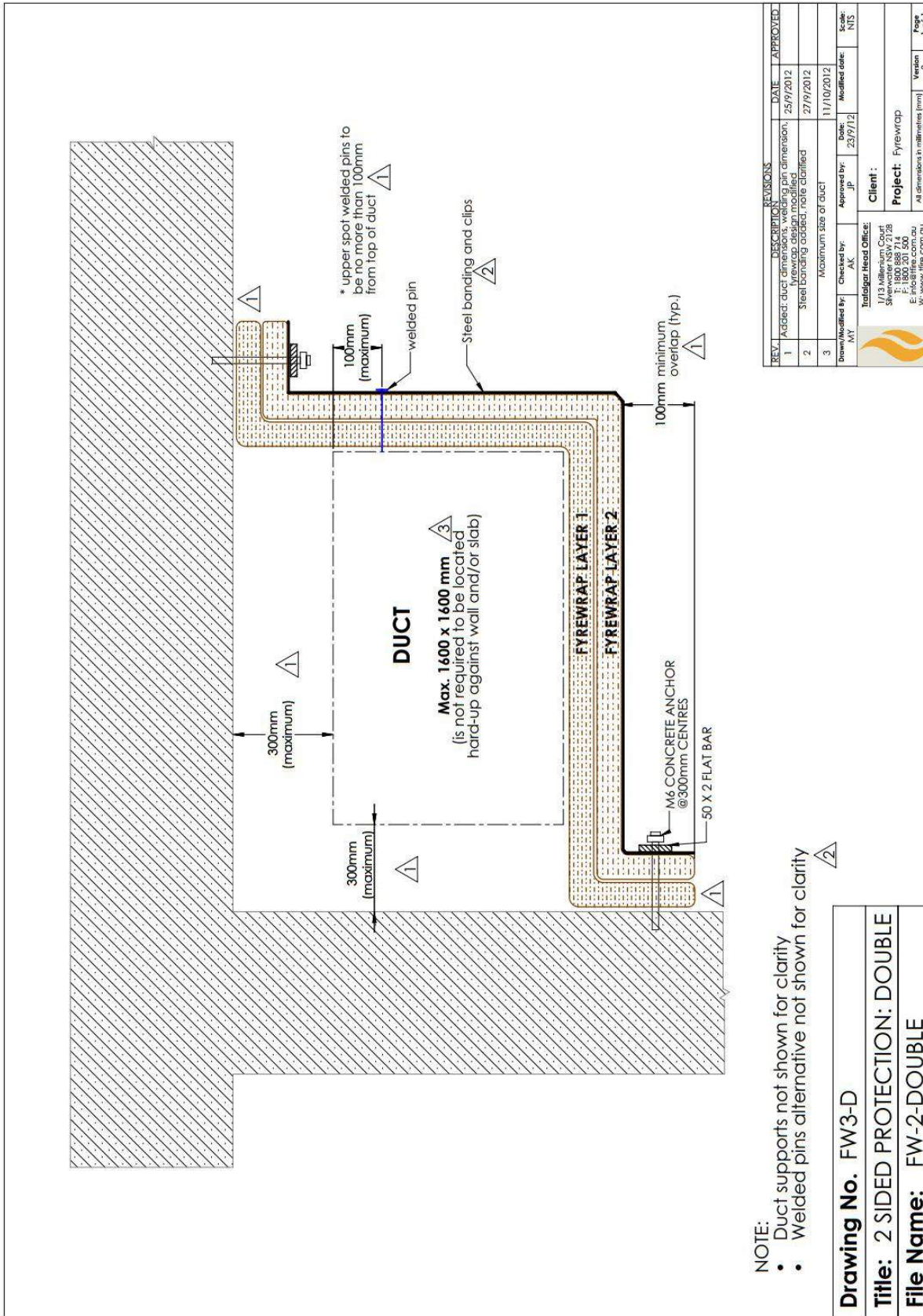
2 Sided Protection: Single



- NOTE:**
- Duct supports not shown for clarity
 - Welded pins alternative note shown for clarity

Drawing No. FW3-C
Title: 2 SIDED PROTECTION: SINGLE
File Name: FW-2-SINGLE

2 Sided Protection: Double



NOTE:

- Duct supports not shown for clarity
- Welded pins alternative not shown for clarity

Drawing No. FW3-D

Title: 2 SIDED PROTECTION: DOUBLE

File Name: FW-2-DOUBLE

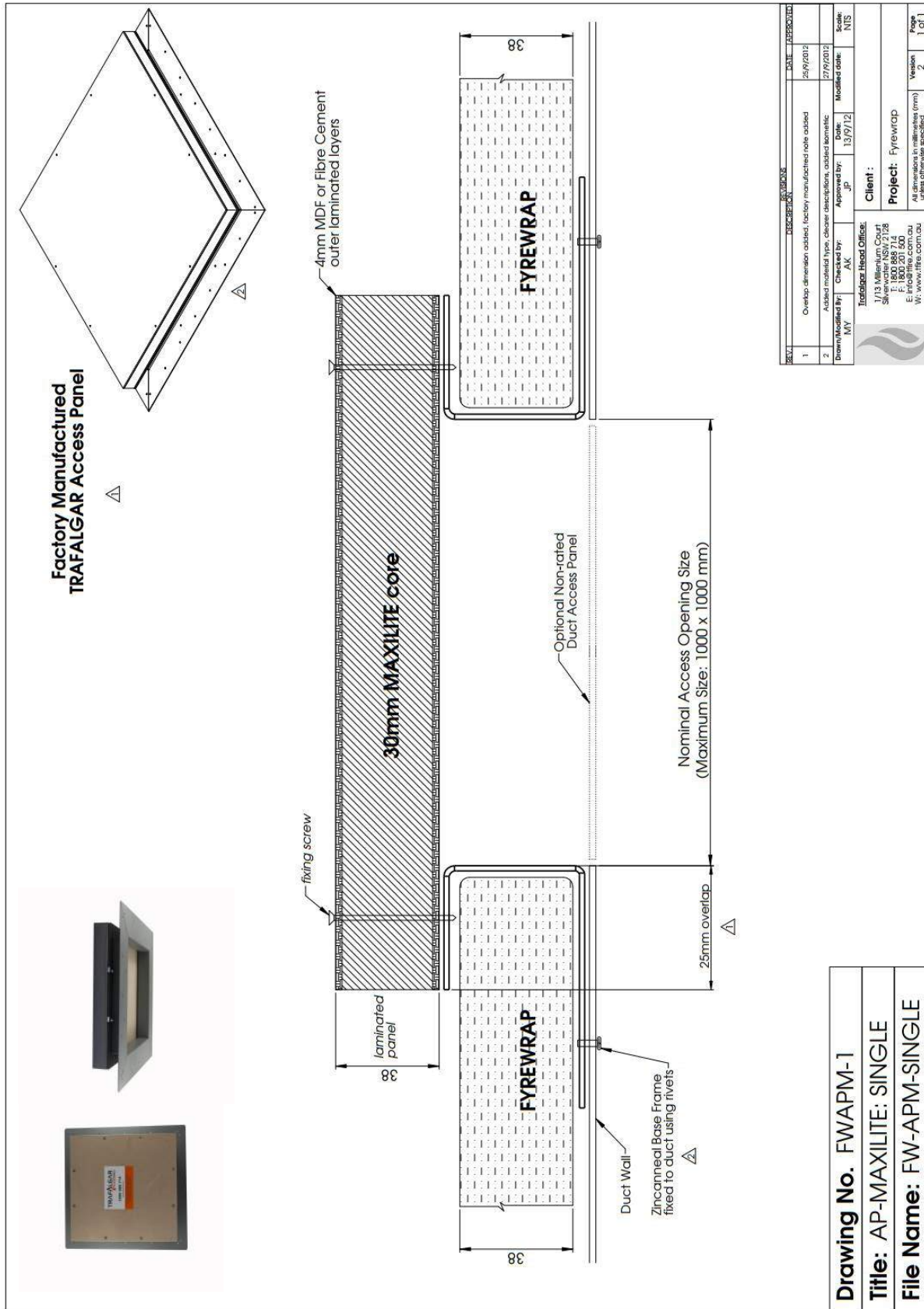
REV	DESCRIPTION	DATE	APPROVED
1	Adduct duct dimensions, welding pin dimension, fyrewrap design modified	25/9/2012	
2	Steel banding added, note clarified	27/9/2012	
3	Maximum size of duct	11/10/2012	

Drawn/Modified By:	Checked By:	Approved By:	Date:	Modified date:	Scale:
MY	AK	JP	23/9/12		NIS

Trafalgar Head Office:		Client:	
1/13 Millennium Court	Sherrinwater NSW 2128	Project: Fyrewrap	
E: info@fyre.com.au	F: 1800 201 500	All dimensions in millimetres (mm)	
W: www.fyre.com.au		Version 3	
		Page 1 of 1	

Access Panel Detail

AP-Maxilite: Single



REV	DESCRIPTION	DATE	BY
1	Overlap dimension added, factory manufactured note added	28/9/2012	
2	Added material type, colour, description, cabinet identifier	27/9/2012	

Drawn/Modified By:	Checked By:	Approved By:	Modelled date:	Scale:
MV	AK	JP	13/9/12	NIS

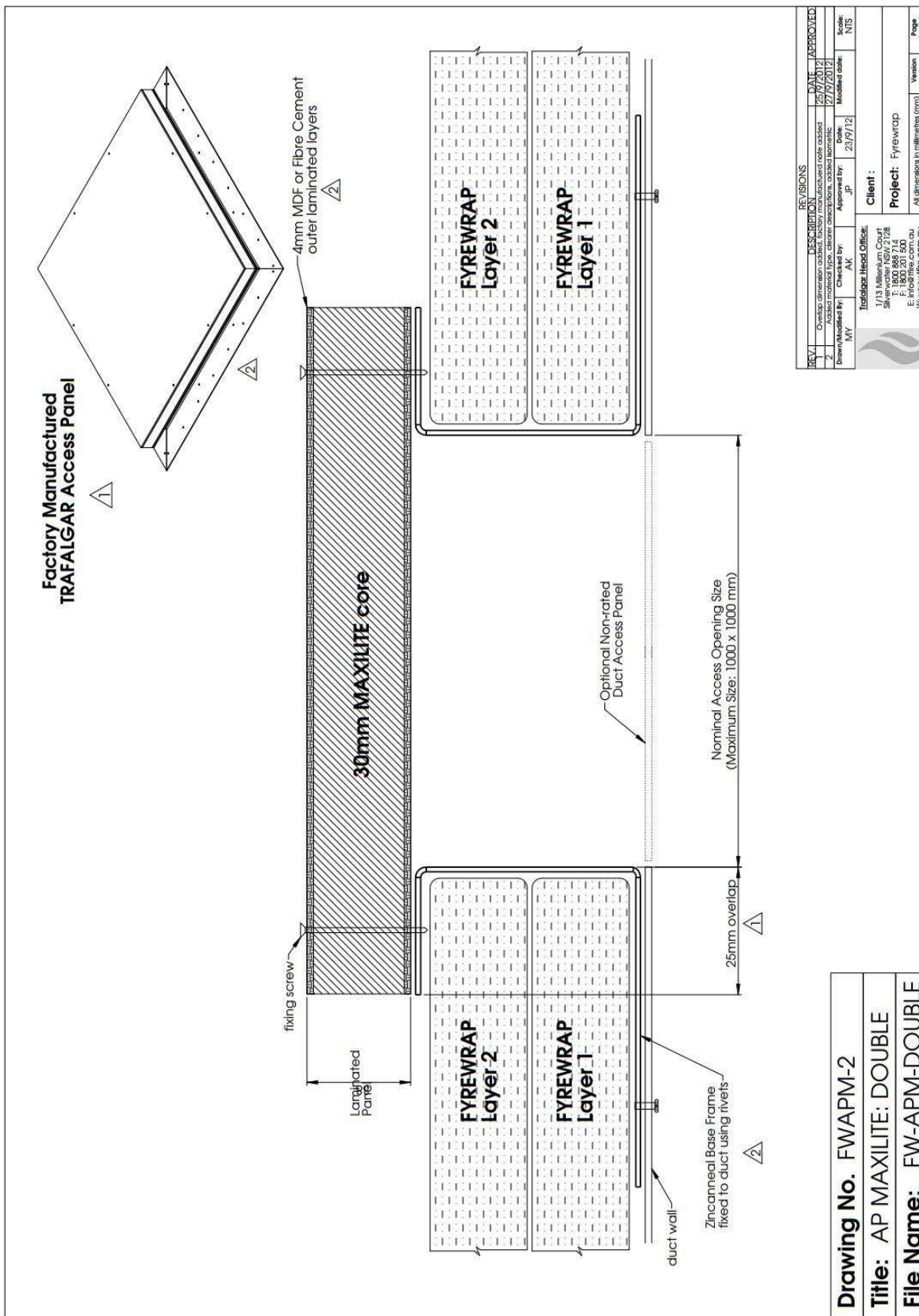
Trafalgar Head Office:	
3/13 Millers Point	
Sydney NSW 2000	
T: 1800 888 714	
E: info@fyrewrap.com.au	
W: www.fyrewrap.com.au	

Client:	Fyrewrap
Project:	Fyrewrap

As dimensions in millimetres (mm)	Version	Page
	2	1 of 1

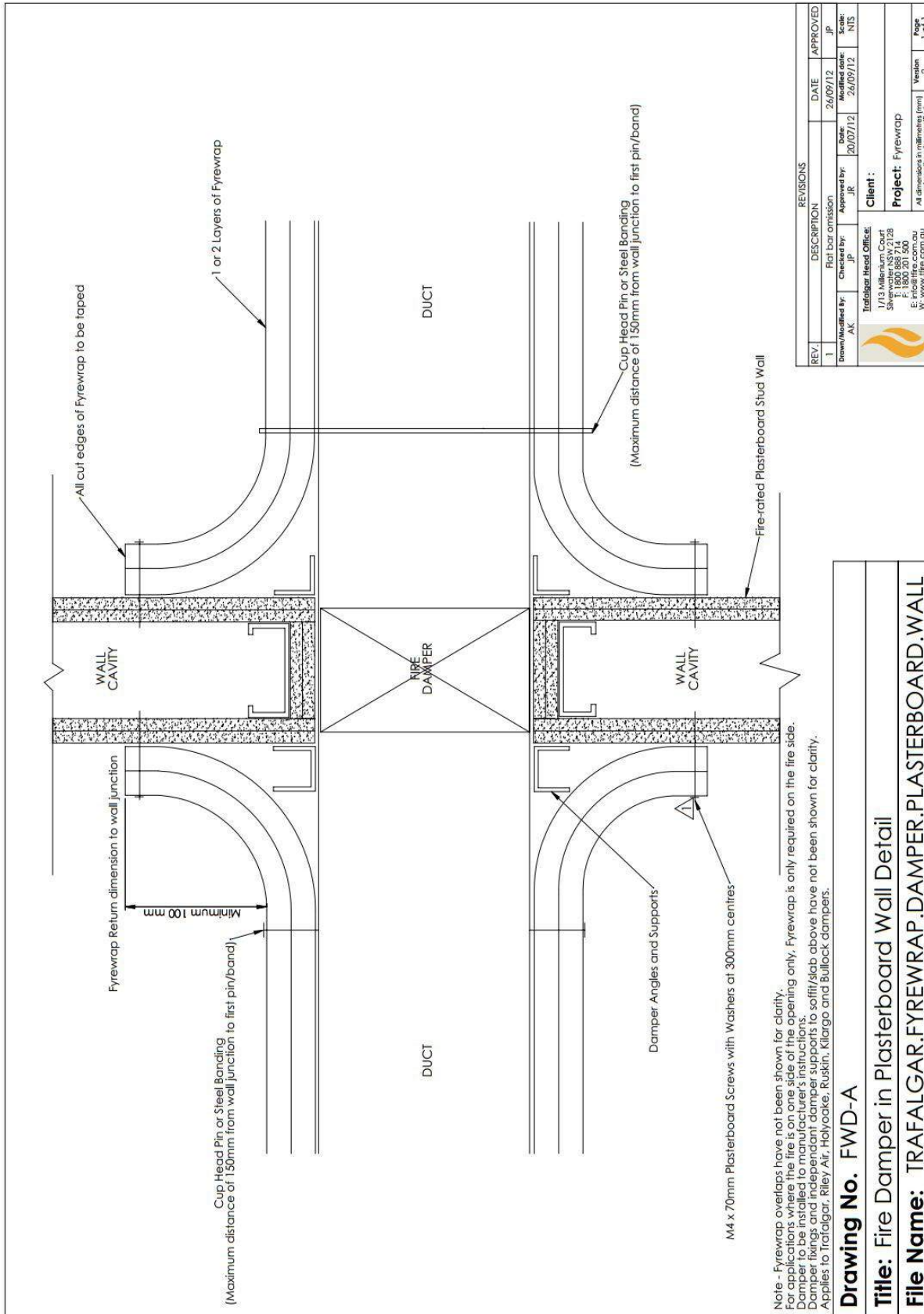
Drawing No. FWAPM-1
Title: AP-MAXILITE: SINGLE
File Name: FW-APM-SINGLE

AP-Maxilite: Double

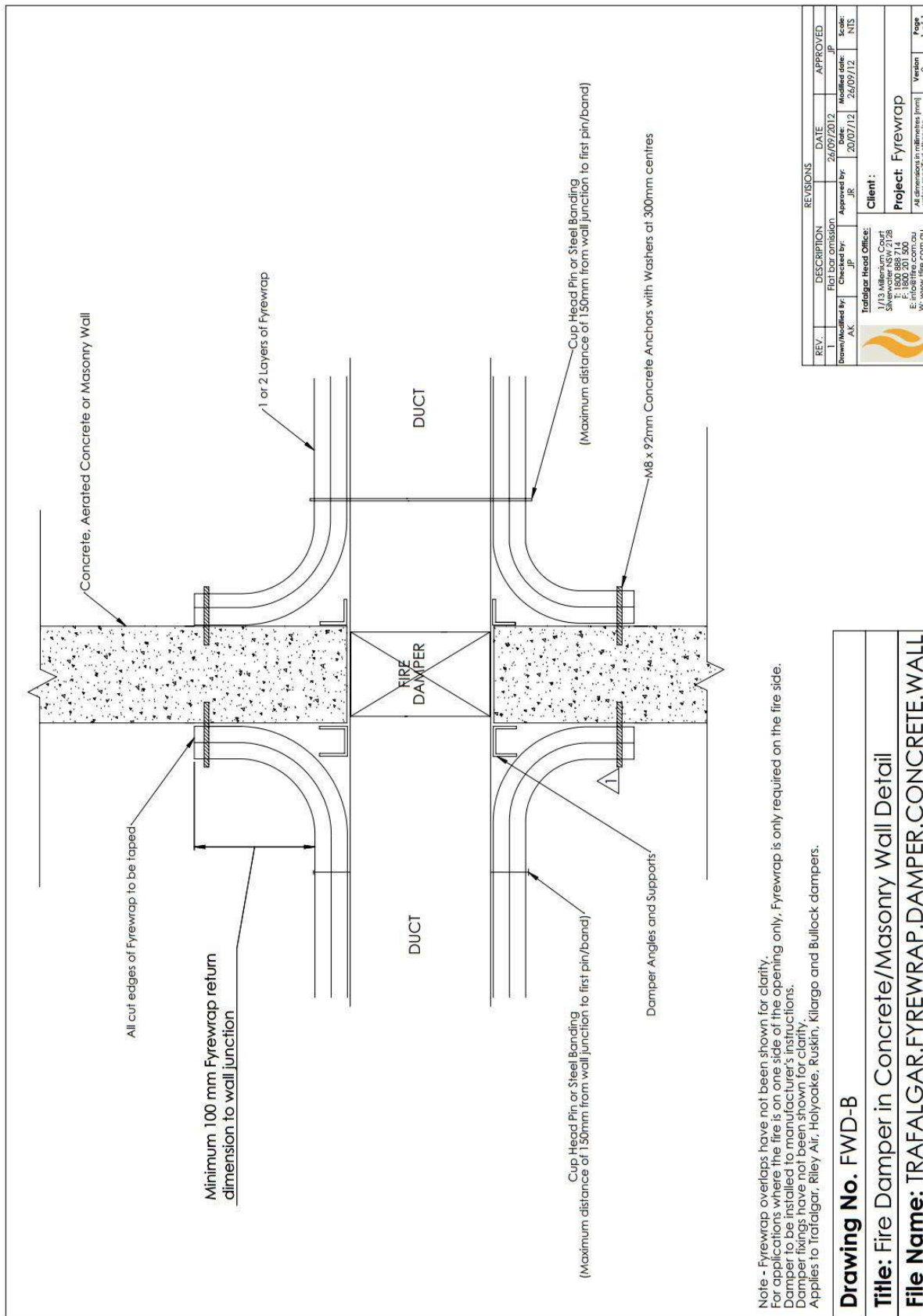


Fire Damper Detail

Fire Damper in Plasterboard Wall Detail



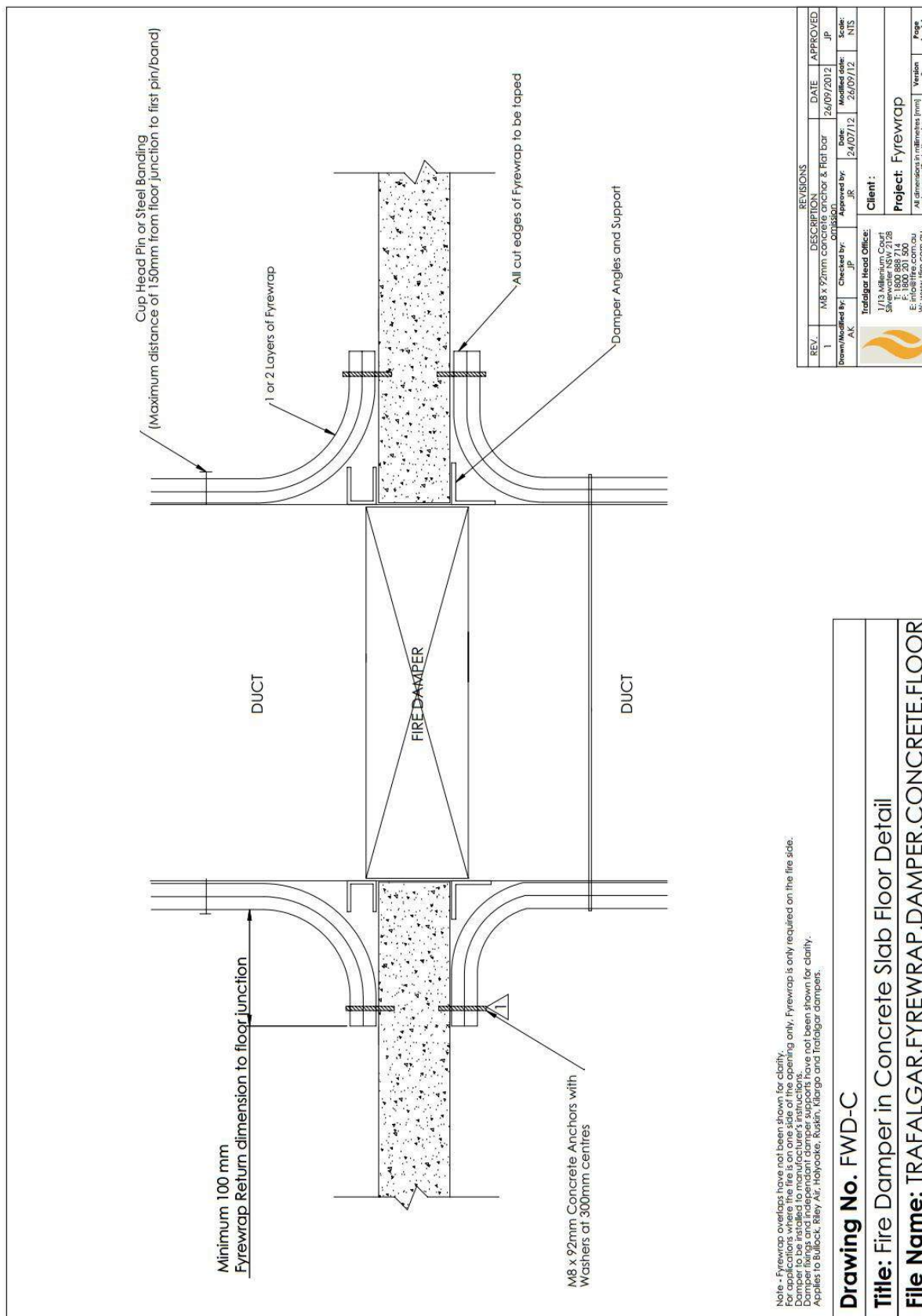
Fire Damper in Concrete/Masonry Wall Detail



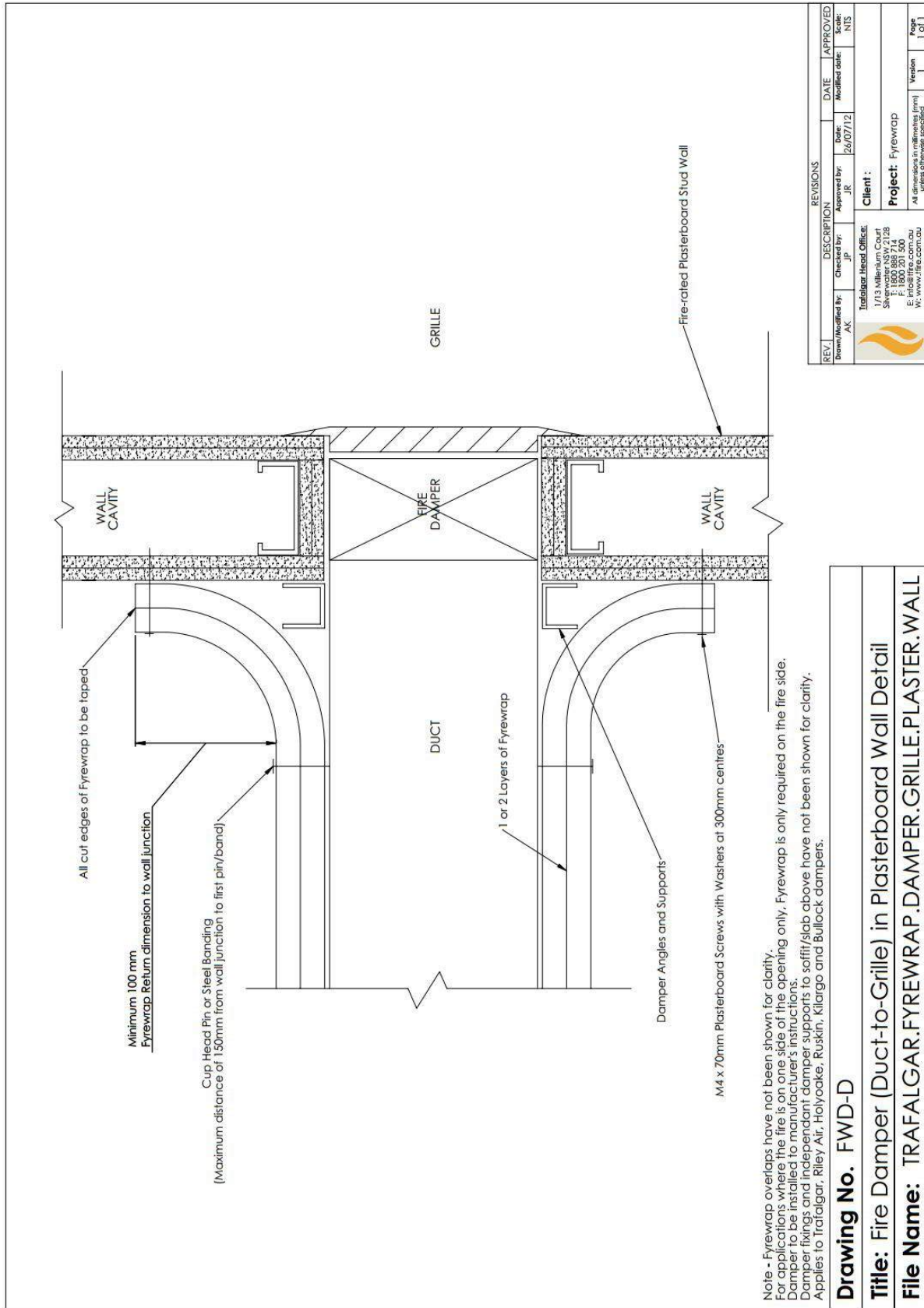
REV.	DESCRIPTION	DATE	APPROVED
1	Flat bar omission	26/07/2012	JP
Drawn/Checked by: A.K. JP		Approved by: J.R.	Multiplicator: NIS
Trafalgar Head Office:		20/07/12	26/09/12
1/13 Millstream Court		Client: Fyrewrap	
SA T: 1800 888 714		Project: Fyrewrap	
E: info@fyrewrap.com.au		Version: 2	
W: www.fyre.com.au		Page: 1 of 1	

Drawing No. FWD-B
Title: Fire Damper in Concrete/Masonry Wall Detail
File Name: TRAFALGAR.FYREWAP.DAMPER.CONCRETE.WALL

Fire Damper in Concrete Slab Floor Detail



Fire Damper (Duct-to-Grille) in Plasterboard Wall Detail



Note - Fyrewrap overlaps have not been shown for clarity. For applications where the fire is on one side of the opening only, Fyrewrap is only required on the fire side. Damper to be installed to manufacturer's instructions. Damper fixings and independent damper supports to soffit/slab above have not been shown for clarity. Applies to Trafalgar, Riley Air, Holyoake, Ruskin, Kilargo and Bullock dampers.

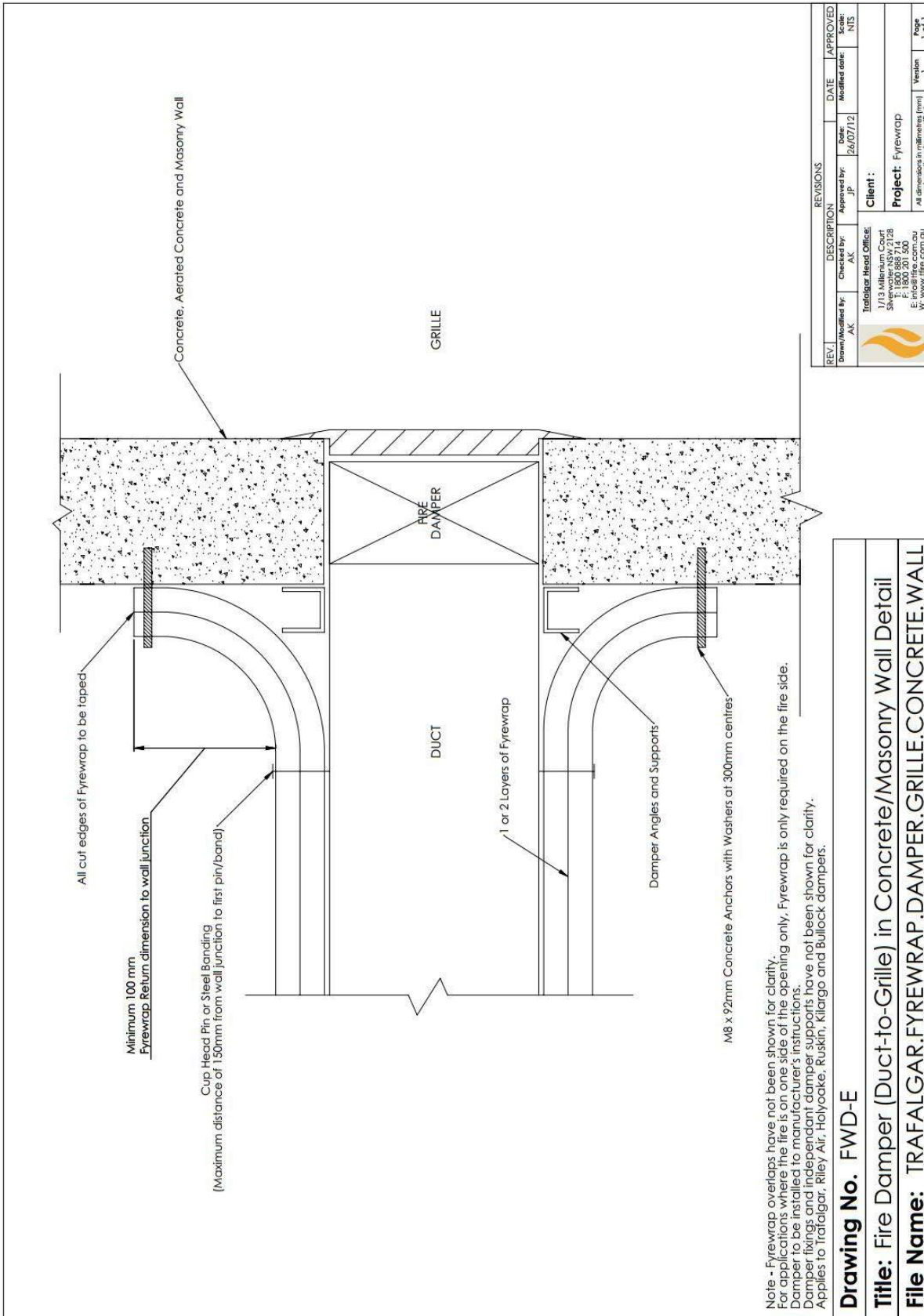
Drawing No. FWD-D

Title: Fire Damper (Duct-to-Grille) in Plasterboard Wall Detail

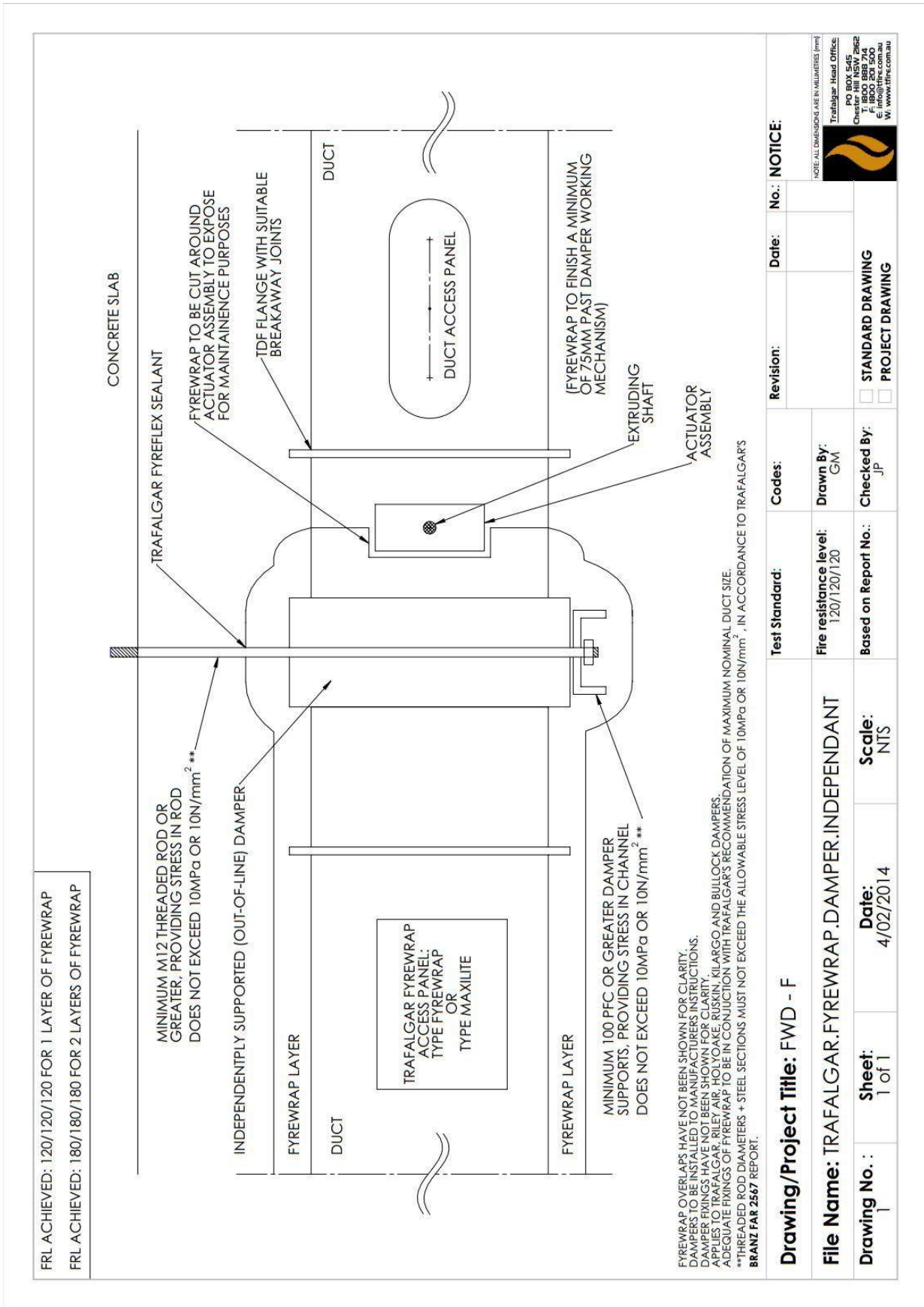
File Name: TRAFALGAR.FYREWAP.DAMPER.GRILLE.PLASTER.WALL

REV.	DESCRIPTION	REVISIONS	DATE	APPROVED
Drawn/Checked by: AK	Checked by: JP	Approved by: JP	Date: 26/07/12	Maker date: N/A
Trafalgar Head Office: 17/13 Millennium Court Stn 1, 1800 888 714 E: sales@fyrewrap.com.au W: www.fyrewrap.com.au		Client: Project: Fyrewrap		Version: 1 of 1

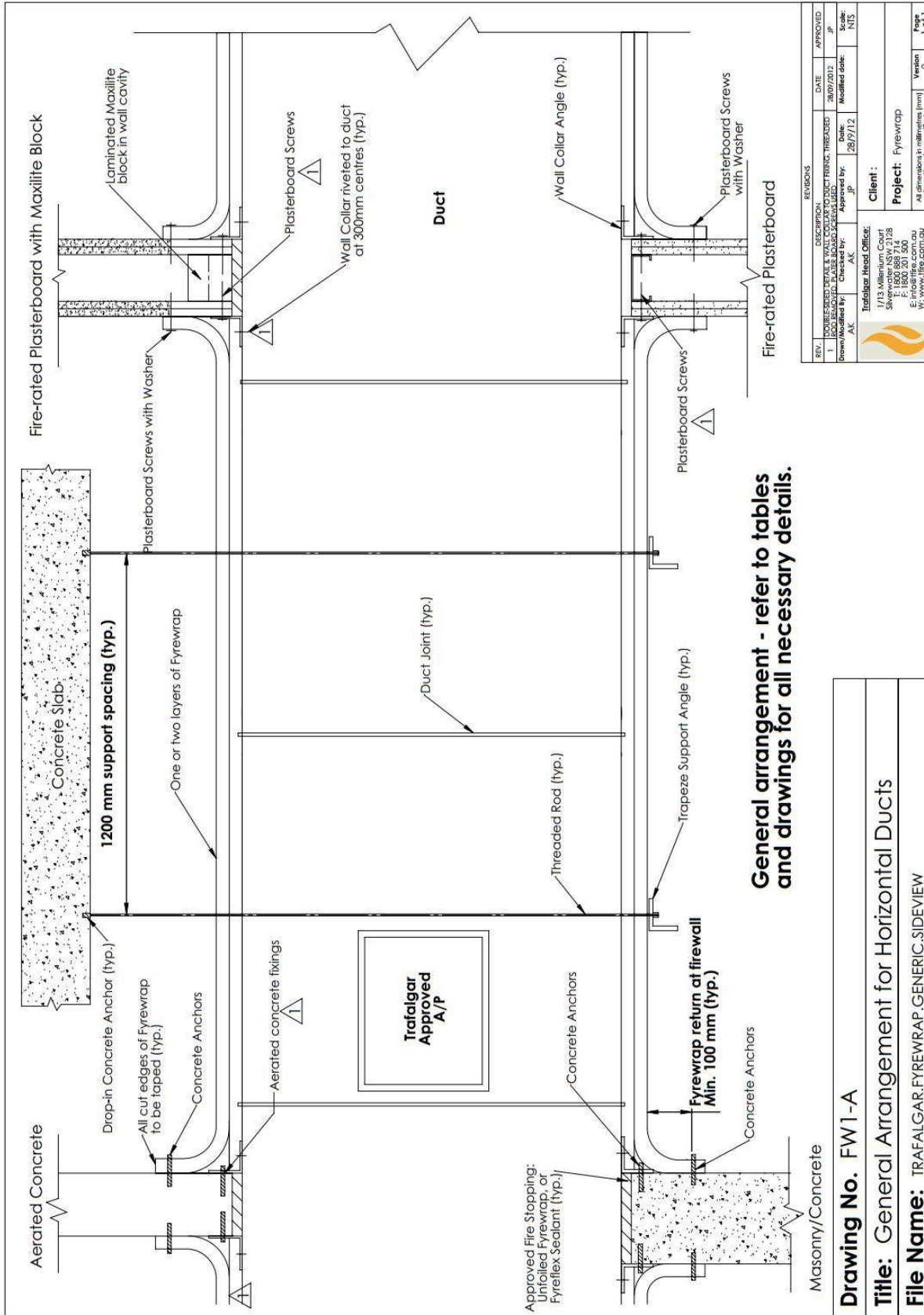
Fire Damper (Duct-to-Grille) in Concrete/Masonry Wall Detail



Independently Supported Damper



General Arrangement Summary for Horizontal Ducts



REV.	DESCRIPTION	DATE	APPROVED
1	ISSUED FOR CONSTRUCTION	28/07/12	J.P.
2	ISSUED FOR CONSTRUCTION	28/07/12	J.P.

Drawn by:	Checked by:	Date:	Scale:
J.P.	J.P.	28/7/12	NTS

Trafalgar Head Office:	
1/13 Millers Court	Client:
Shrewsbury NSW 2128	Project: Fyrewrap
E: 1800 888 714	At client's installation (mm)
E: info@fire.com.au	Version
W: www.fire.com.au	2
	Page
	1 of 1

Drawing No. FW1-A

Title: General Arrangement for Horizontal Ducts

File Name: TRAFALGAR.FYREWAP.GENERIC.SIDEVIEW

5. FyreWrap for Penetrations

INTRODUCTION

Fire separation using fire rated barriers is a long established practice to help contain fire from one part of a building to another part or from one building to another building. The National Construction Code (incorporating the Building Code of Australia or BCA), determines the location and the required fire rating, or FRL, for the walls, floors, ceiling or shaft that are required for fire separation.

The concept of fire rated barriers is complicated by the fact that services are required to pass through these fire rated barriers and hence openings are formed to allow this to happen.

Trafalgar now has a tested system that meets the requirements for fire stopping or fire sealing of these openings in fire rated barriers through which services pass and, in particular maintain the insulation rating to keep the temperature rise below required limits on the non-fire side (or protected side) of a fire rated barrier.

HEAT CONDUCTION ALONG METALLIC SERVICES

Heat transfer via conduction, is one of the common ways in which a fire may spread through openings in fire rated barriers.

Fire temperature rises very quickly and if you have 1000°C on one side of a fire wall with a metallic building service such as a cable tray, metal pipe or even a large bundle of cables passing through it, the heat will conduct along the service. If the heat conduction gets to a certain temperature combustible materials on the services or adjacent to the services on the other side of the fire wall, may ignite and cause the fire to spread past the fire wall.

It is a requirement to stop this heat conduction, just like we stop direct flame transfer, radiant heat transfer and other means by which a fire can spread through an opening in a fire barrier.

This is achieved by having a fire tested and proven fire stopping system in such an application.

LEGISLATIVE REQUIREMENTS

The regulatory requirements for fire ratings are given in the Building Code of Australia, Volume One (for Class 2 to 9 buildings), which is part of a group of publications contained within the National Construction Code (NCC).

For protection of openings in fire rated barriers, BCA deals with this in Clause C3.15, entitled “Openings for service installations”.

C3.15 requires fire tested systems complete with insulation ratings.

There is one exception only which is a bit impractical to achieve and this applies to metal pipes, excluding any pipes seals etc. In this situation no combustible building elements can be within 100mm of the metal pipe and combustible material is not allowed to be located within the 100mm of the metal pipe. This separation needs to be for 2 metres from the fire rated penetration.

TRAFALGAR FIRE STOPPING SYSTEMS

Trafalgar has a wealth of fire testing and assessment approvals for services penetrating fire barriers. There are hundreds of variations to systems as there are different factors that need to be addressed including:

- The FRL or fire rating
- The fire barrier type – wall, floor, ceiling or shaft
- The construction of the barrier – masonry, concrete, aerated concrete (Hebel), fire rated plasterboard etc.
- The service type penetrating the fire barrier – plastic or metal pipes, cables, cable trays, conduits etc.
- The quantity and proximity of services within the one opening

TRAFALGAR'S NEW FYREWRAP FULLY INSULATED SYSTEMS

Trafalgar now offers a system to maintain the insulation for all service types penetrating all fire barriers. This has been made possible by the exceptional fire and thermal characteristics of FyreWrap.

For all previously fire tested fire stopping systems, we can now upgrade the FRL to achieve the full insulation rating and a comprehensive and fully compliant FRL. If a system that previously achieved an FRL of -/120/11, for example, it can now achieve an FRL of -/120/120 with FyreWrap.

The inclusion of the FyreWrap, which is quick and easy to install, should be included on all penetrations incorporating metallic building services such as cable trays (including large bundles of cables) and metal pipes but can also be used to upgrade existing penetrations which are correctly fire stopped but are non-compliant for insulation due to the penetrating metallic services.

SPECIFICATIONS FOR USING FYREWRAP FOR FULLY INSULATED SYSTEMS

Please contact Trafalgar's Engineering Team for your specific application but below are some generic details.

- Material – 38mm thick Fyrewrap material which comes in 610mm and 1220mm wide rolls.
- Length required – the metallic services are wrapped for a minimum of 450mm from the fire barrier on one or both sides depending on the orientation of the fire barrier – refer to the Notes below.

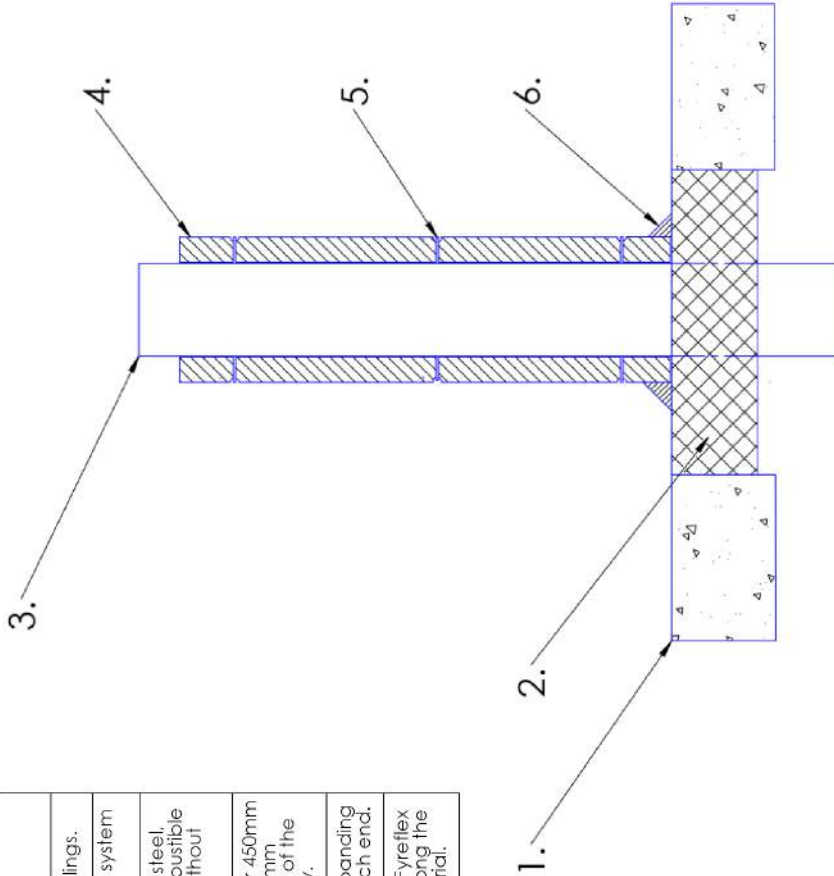
Note 1 – For vertical fire barriers such as walls and shafts FyreWrap is required on both sides of the fire wall.

Note 2 – For horizontal fire barriers such as floor slabs and ceilings, FyreWrap is only required on the top of the fire barrier.

- Wrapping the FyreWrap – The FyreWrap should butt up to the fire barrier or fire stopping material and be wrapped totally around the services including a 75mm overlap where there are any longitudinal or other joins in the FyreWrap.
- Fixing – The FyreWrap is fixed over the metallic services using metal straps – a minimum of three (3) for every 450mm long piece of FyreWrap, two (2) located within 50mm of each end and one (1) centrally located.

Generic Horizontal Separating Element


Item Number	Item	Specifications
1	Separating Element	Horizontal floor slabs and fire rated ceilings.
2	Firestopping System	Trafalgar products specified in individual system drawings
3	Service	Ductile and metallic services including steel, copper and brass pipes, pipes with combustible insulation materials, cables with and without cable trays, bus bars etc.
4	Fyrewrap	Trafalgar Fyrewrap at least 38mm thick for 450mm or longer along the service with a 75mm longitudinal overlap, applied to the top of the horizontal separating element only.
5	Fyrewrap fixing detail	12mm wide x 0.4mm nominal thick steel banding at mid point and 50mm nominal from each end.
6	Sealant	25mm x 25mm nominal fillet of Trafalgar Fyreflex sealant to entire perimeter extending along the Fyrewrap and the firestopping material.



Notes:
 (1) Fire stop the penetration as per Trafalgar tested systems.
 (2) For multiple services it is acceptable to wrap around all the services rather than wrap them individually.
 (3) For FRL of -/240/240, 2 layers of Fyrewrap are required.

Drawing Name: Generic Horizontal Separating Element		Test Standard: AS 1530.4 AS 4072.1	Codes:	Revision:	Date:	No.:	NOTICE:
Project Title: Specifications for Fyrewrap fully insulated service penetrations		Fire resistance level: -/120/120	Drawn By: GM				
Drawing No.: 1	Sheet: 1 of 2	Date: 1/05/2014	Based on Report No.:	Checked By: CT	<input type="checkbox"/> STANDARD DRAWING <input type="checkbox"/> PROJECT DRAWING		

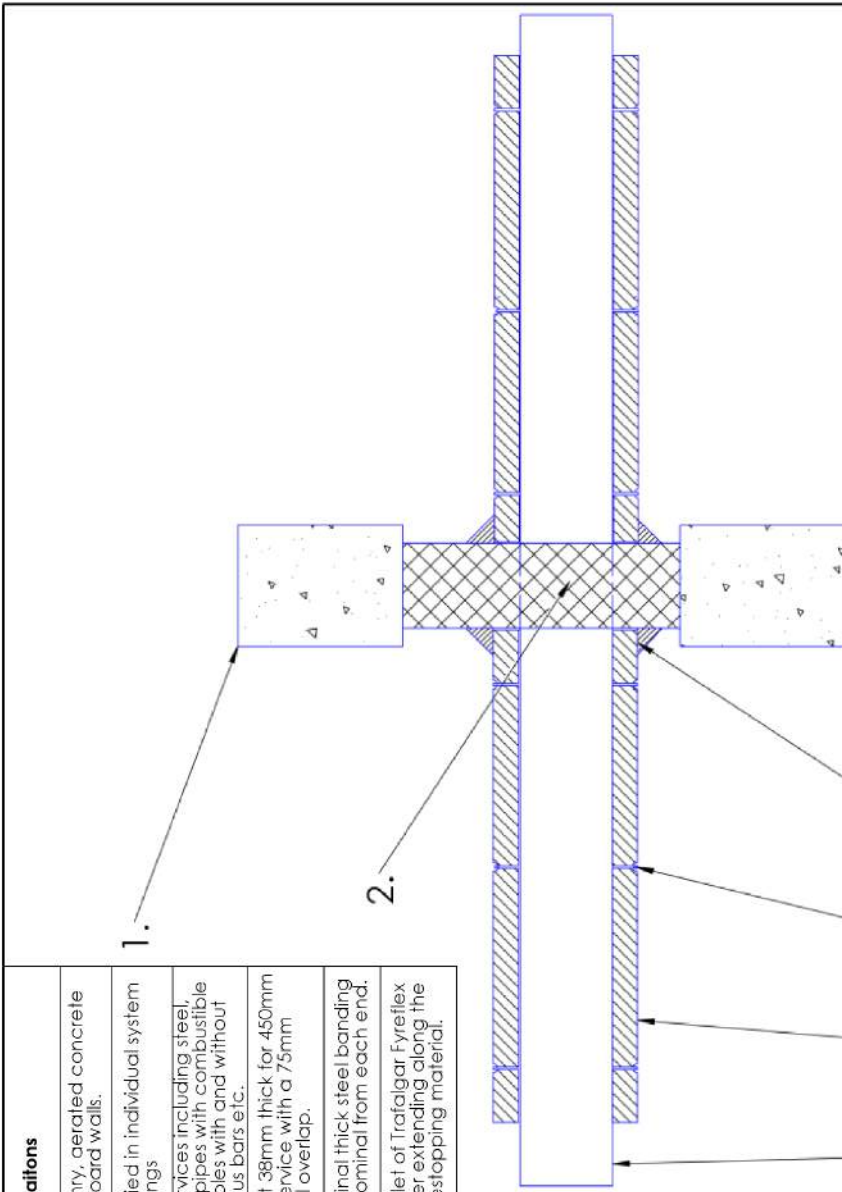
NOTE: ALL DIMENSIONS ARE IN MILLIMETRES (MM)



Trafalgar Head Office
 GPO BOX 5-45
 CHERRYBROOK NSW 2170
 T: 1800 888 714
 F: 1800 201 500
 W: www.tfire.com.au

Generic Vertical Separating Element

Item Number	Item	Specifications
1	Separating Element	Vertical fire rated masonry, aerated concrete and plasterboard walls.
2	Firestopping System	Trafalgar products specified in individual system drawings
3	Service	Ductile and metallic services including steel, copper and brass pipes, pipes with combustible insulation materials, cables with and without cable trays, bus bars etc.
4	Fyrewrap	Trafalgar Fyrewrap at least 38mm thick for 450mm or longer along the service with a 75mm longitudinal overlap.
5	Fyrewrap fixing detail	12mm wide x 0.4mm nominal thick steel banding at mid point and 50mm nominal from each end.
6	Sealant	25mm x 25mm nominal fillet of Trafalgar Fyreflex sealant to entire perimeter extending along the Fyrewrap and the firestopping material.



Notes:

- Fire stop the penetration as per Trafalgar tested systems.
- For multiple services it is acceptable to wrap around all the services rather than wrap them individually.
- For FRL of -/240/240, 2 layers of Fyrewrap are required.

Test Standard: AS 1530.4 AS 4072.1	Revision:	Date:	No.:
Fire resistance level: -/120/120	Codes:	Drawn By: GM	NOTICE:
Based on Report No.:	Checked By: CI	<input type="checkbox"/> STANDARD DRAWING <input type="checkbox"/> PROJECT DRAWING	

Drawing Name: Generic Vertical Separating Element	
Project Title: Specifications for Fyrewrap fully insulated service penetrations	
Drawing No.: 2	Sheet: 2 of 2
Date: 1/05/2014	Scale: NTS

6. Technical Support & Training

The Trafalgar Products team is well trained in FyreWrap and its various applications. Trafalgar can undertake installer training throughout Australia to ensure all the approved FyreWrap systems are installed correctly on site.

Trafalgar's team can also support specifiers and building surveyors to confirm that the correct documentation is provided for your project. We can assist with specifications and technical drawings guaranteeing this innovative fire protection product is used in the approved application.



Visit us at www.fyrewrap.com.au for more information

Technical advice is available 24 hours a day 7 days a week

At www.fyrewrap.com.au you will find:

A comprehensive gallery of site application photos

FAQ's for installers, specifiers and certifiers

Full Technical Manual

Complete Installation Guide

Latest industry news

And much, much more



Visit us at www.fyrewrap.com.au for more information



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