



Fire stopping for penetrations

The intent of this bulletin is to provide information and guidance for building surveyors, builders, architects/building designers and service consultants on appropriate documentation and installation of fire stopping for penetrations through building elements that are required to achieve a Fire Resistance Level.

This bulletin has been produced in response to a combination of industry concerns regarding current practices and as a result of Building and Energy's inspection findings. It clarifies that the use of **mineral fibre materials** alone in any Building Code of Australia (BCA) Deemed to Satisfy solution (DTS) to provide effective fire stopping is only appropriate if it forms part of a 'tested system', or if it meets the provisions of BCA Specification C3.15.

Approval process

Applications for building permits for Class 2 to Class 9 buildings must be accompanied by a Certificate of design compliance (CDC). In completing a CDC, the registered building surveyor makes a declaration that the proposed building will comply with the applicable building standards if it is completed in accordance with the plans and specifications detailed in the certificate.

Applicable building standards

Generally, the applicable building standards for new building work are those set out in the National Construction Code Volume One, being the BCA for Class 2 to Class 9 buildings.

The BCA is a performance based document, giving the option to follow DTS provisions or to develop Performance Solutions to comply with the Performance Requirements of the BCA.

Where following a DTS pathway, BCA Part C3.12 sets out the requirements for compliance for openings in floors and ceilings for services. BCA Part C3.12 requires services to be protected by either a shaft or in accordance with BCA Part C3.15.

BCA Part C3.15 sets out the following methods for providing fire stopping to a range of service openings:

- i. a tested system;
- ii. ventilation and air-conditioning ducts or equipment in accordance with AS1668.1; or
- iii. a system that meets all of the relevant provisions of BCA Specification C3.15.

Documentation that forms part of the CDC should either include details of an appropriate tested product that will be used, or specify a compliant product, and include sufficient details in order to assist in confirming that the correct product installation will occur. If a non-tested system is to be used the documentation must clearly demonstrate how compliance with BCA Specification C3.15 will be achieved or alternatively be detailed in a Performance Solution.

Builders are reminded that it is a requirement to construct the building work in accordance with the approved documentation referenced within a CDC and the applicable building standards. It is expected that the builder would seek clarification from the building surveyor and an appropriate expert where any ambiguity exists. Any change to specified products may require certification from the building surveyor and records updated with the permit authority.

Inspection findings

Below are some examples of common issues identified relating to unsatisfactory installations that do not meet the applicable building standards.

Required distances between services

In a DTS pathway, AS4072.1 requires a distance of 40mm between services. Building and Energy inspections found this to be an area where compliance was often not achieved. If a tested system which does allow for distances closer than 40mm can be sourced, then this can be used.

Mineral fibre installation

Building inspections have highlighted unsatisfactory design and installation including the use of mineral fibre in place of tested systems and incorrectly installed fire collars where they are being built into or not fixed to the substructure.

AS4072.1 includes examples of penetration labels which will include information listing the installing company and the tested product used. The use of these labels is considered to be an acceptable practice and would assist in achieving compliance.

Details included with the documentation referenced within the CDC are expected to clearly show how the fire collars are to be installed and also clearly state what services they are suitable for.

Tested system certificates

The Guide to the BCA Volume One, for BCA Part C3.15, partially states for tested systems that:

To comply with this Deemed to Satisfy Provision it is necessary for the appropriate authority (eg the building surveyor) to be satisfied that the proposal is identical to a tested prototype. AS1530.4 includes a number of methods of reporting the test results. These include:

- a test report
- a regulatory information report
- a test certificate

Where a tested system is selected and represented in the design documentation it is important that the proposed use, materials involved and location are consistent with, and in accordance with, the referenced test report/regulatory information report/test certificate and that installation instructions are followed during construction.

To be satisfied that the proposed system is or will be identical to the tested prototype a test report, regulatory information report or test certification is required. A test certificate alone does not contain sufficient information for the building surveyor or builder to be satisfied that the proposal is identical to the tested prototype.

By obtaining the relevant test report, regulatory information report or test certification the building surveyor or consultant will be able to establish whether the proposal meets the tested system installation criteria.

It should be noted that in some instances, where there is a need for the proposed system to vary slightly from the tested system, it may be possible to obtain an assessment from a registered testing authority to confirm the performance of the system.

Acceptable documentation

It is expected that the proposed method of required fire stopping for penetrations will be demonstrated in the design documentation referenced on the CDC. This may be represented in one or a combination of drawings, schedules, specifications and test certificate or manufacturers installation details. Failing to adequately demonstrate the requirements at design stage can lead to difficulties installing fire stopping systems during construction due to limited space, inappropriate available locations or other adjacent service installations. It also allows for the design to include access for maintenance.

The design documentation would include drawings that detail the building elements that are required to be fire resisting and the relevant fire resistance levels, specific details of the type of service penetration and the relevant protection being applied. These drawings would be approved by the building surveyor in conjunction with the relevant fire and service consultants.

An example of an acceptable practice is the inclusion of a management plan and related drawings for service penetrations. Inclusion at design and completion of building works assists in confirming location and compliance of installations. It's also valuable as a register for the end user when maintenance works are required.

Management plan for service penetrations

AS4072.1 – 2005 includes information that would be useful in preparing a management plan for fire penetrations (Fig B1).

Project name:						
Project Address:						
Page: of:						
Certification No:						
Date:						
Floor or wall designation	Installation Ref. No.	Wall (W) Floor (F) Ceiling (C)	FRL: Structural adequacy/integrity/insulation min./min./min.	Service description Service size (diameter)*x No. of or Group opening (mm x mm)	Manufacturer product and system number	Report Ref:
G	A12	W	-/60/60	500 x 200 mm opening with 100 mm diameter. Copper pipe plus assorted power cables	ABC mortar – system 651	R25
Signed:						

FIGURE B1 EXAMPLE OF A SCHEDULE OF FIRE-STOPPED PENETRATIONS AND CONTROL JOINTS

It includes examples of a Fire Penetration and Control Joint Schedule together with examples of Statements of Compliance and labelling of same (Fig B2).

(Company Name)
SERVICE PENETRATION AND CONTROL JOINT STATEMENT OF COMPLIANCE
 Statement of compliance Number 12345

Project Name:

Building Owner:

Building Address:

Installer's Name:

Installer's Address:

Installer's Phone No:

This is to certify that the service penetrations, seals and control joints identified on the attached Schedule have been inspected and labelled as required by the appropriate regulatory authorities in accordance with AS 4072.1, in respect to the evidence of compliance in Appendix B.

Certified by:

Name of Certifier:

Signature:

Date:

Penetrations and control joints covered by this statement of compliance are to be maintained in accordance with the manufacturer's instructions.

FIGURE B2 EXAMPLE OF A STATEMENT OF COMPLIANCE FOR SERVICE PENETRATION, SEAL OR CONTROL JOINT

The standard includes an example of a statement to certify compliance for the service penetrations that are covered by the Schedule.

The standard also includes examples of compliance labels which should be filled out with accurate information listing the installing company and tested products used (Fig B3).

The label should be positioned close to the service penetration, seal or control joint. Multiple labels may be used where appropriate, e.g., control joints.

SERVICE PENETRATION AND CONTROL JOINT SYSTEM
 (TO AS 4072.1)
 FRL: -/60/60

Installed by:
(Company/Name) (Phone No.)

Installation date:

Installation reference:

Manufacturer:
(Name, Address, Phone No.)

**CONTACT THE ABOVE IN THE EVENT OF DAMAGE OR
 IF REINSTATEMENT IS REQUIRED**

FIGURE B3 EXAMPLE OF A LABEL FOR SERVICE PENETRATION, SEAL OR CONTROL JOINT

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Building and Energy | Department of Mines, Industry Regulation and Safety
1300 489 099

8.30am – 4.30pm
 Level 1 Mason Bird Building
 303 Sevenoaks Street (entrance Grose Avenue)
 Cannington Western Australia 6107
 W: www.dmirs.wa.gov.au
 E: bcinfo@dmirs.wa.gov.au
 Plumbers enquiries: 6251 1377

Regional Offices

Goldfields/Esperance	(08) 9021 9494
Great Southern	(08) 9842 8366
Kimberley	(08) 9191 8400
Mid-West	(08) 9920 9800
North-West	(08) 9185 0900
South-West	(08) 9722 2888

National Relay Service: 13 36 77
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