



A guide to specifying,
installing and using
Expansion Joint Covers



Construction Specialties™

About the Authors

Founded in the United States, C/S has been a global manufacturer and supplier of a range of specialist building products for over 60 years.

Operating through 22 offices world wide, with key manufacturing locations or sales offices in most countries. Employing more than 2,000 people around the world C/S have the skills and the knowledge to help you with your building.



We have more than 40 years experience in the design, manufacture, specification and installation of Expansion Joint Covers and offer the most comprehensive range in the world.

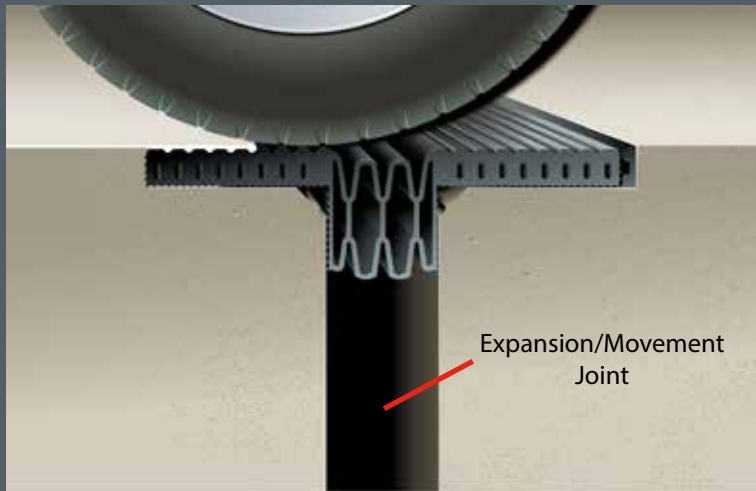
With years of building protection experience under our collective belts, we've distilled our knowledge and experience into this compact guide to specifying, installing and using Expansion Joint Covers.

So lets get started...

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What is an Expansion Joint?



An Expansion Joint or Movement Joint is a structural gap designed to accommodate the movement of a building in a controlled manner, preventing damage to the internal and external finishes.

Expansion joints run right through the structure of the building, from top to bottom and front to back and often become wider as you go higher up in the building, as movement becomes more prevalent.

What is an Expansion Joint Cover?

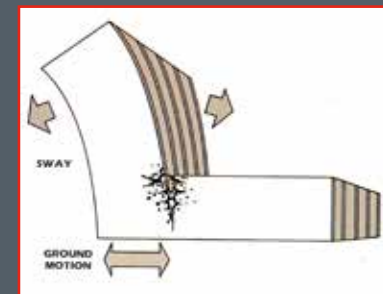
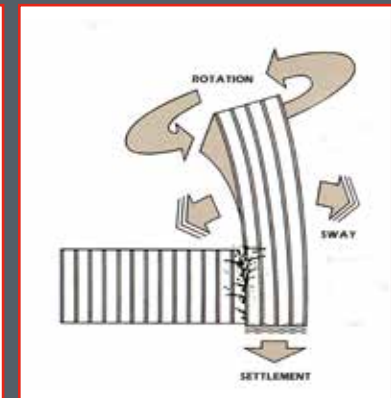
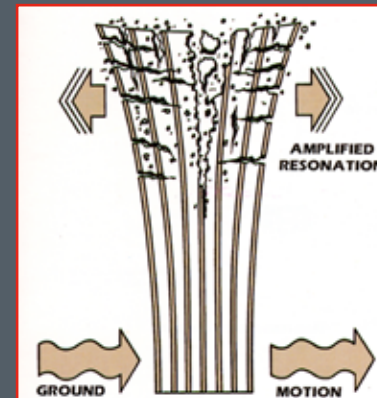
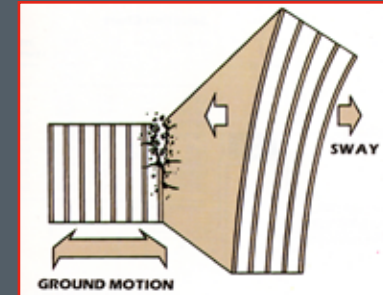
An Expansion Joint Cover or Movement Joint Cover provides a covered transition across the expansion or movement joint opening, remaining unaffected by the relative movement of the two surfaces either side of the joint.



What is Building Movement?

Building movement can be caused by the following aspects:

- **Thermal Expansion or Contraction**
Movement caused by the structure expanding and contracting with temperature changes, or shrinking as it dries out
- **Building settlement**
Movement caused by the dead and live loads of the structure on the supporting foundations
- **Wind Sway**
Movement caused by the effect of strong winds on the structure, which is more pronounced on tall buildings
- **Seismic Activity**
Multi-directional movement caused by seismic events, can be significant depending on the magnitude of the seismic activity.

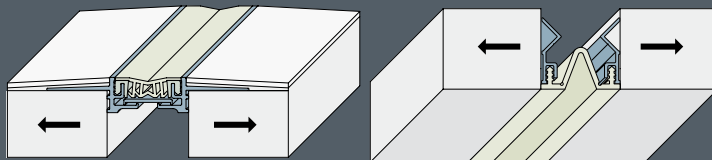


Taking into account the type of movement you can expect within your building, you need to choose the correct Expansion Joint Cover.

Expansion Joint Cover Movement

An expansion joint cover has to be able to accommodate multi directional movement. The diagrams on the below depict what that movement looks like for both a Floor/Ceiling Joint Cover and a Wall Joint Cover.

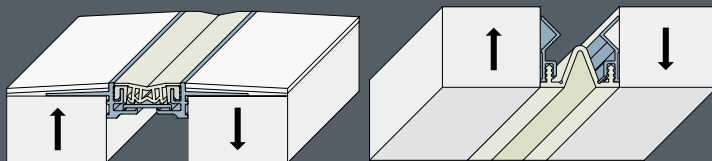
OPENING / CLOSING MOVEMENT



Floor/Ceiling Cover

Wall Cover

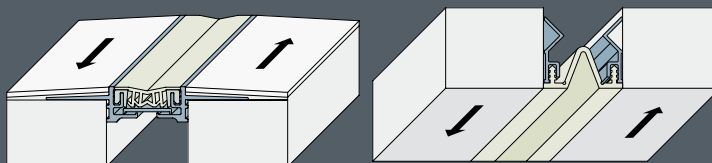
CHANGE OF PLANE EITHER SIDE OF JOINT



Floor/Ceiling Cover

Wall Cover

MOVEMENT ALONG JOINT LENGTH



Floor/Ceiling Cover

Wall Cover



4 Steps To Selecting The Right Cover

Selecting the right cover for your application may not be as easy as you think and can cause major problems if not done properly. A lot of thought has to be put into the selection process, as the majority of product failures are caused by improper sizing of the joint and therefore an incorrect product selection. On the next couple of pages we will give you a brief summary of our four step process to sizing the joints properly and what to consider when selecting the joint cover.

We encourage you to contact us if you have any questions or concerns with the process, we have been working with Expansion Joint Covers for more than 40 years, so we know what we are talking about.

THE 4 STEP PROCESS:

Step 1: Understand the movement requirements

Step 2: Sizing the joints properly

Step 3: Consider joint locations and application requirements

Step 4: Identify adjacent surface finishes



Step 1: Understand the movement requirements

The most important part of selecting the proper expansion joint cover is to understand the movement requirements. Confusion can be caused as manufacturers convey movement in different ways.

One manufacturer might specify the movement for the joint cover as “each direction” and list the requirement as a 100mm joint that allows for 50mm movement. This means that the 100mm joint will open to 150mm and close to 50mm (50mm in “each direction”)

Another manufacturer might list the movement joint cover as “total movement” and specify a 100mm joint as allowing for 100mm movement. This also means that the 100mm joint will open to 150mm and close to 50mm (50mm each way for a 100mm “total movement”).

Each manufacturer means the same thing, but each is describing the allowable movement in totally different ways.



Step 1 continued...

In order to understand the movement correctly we need to deal with such terms as nominal, minimum and maximum:

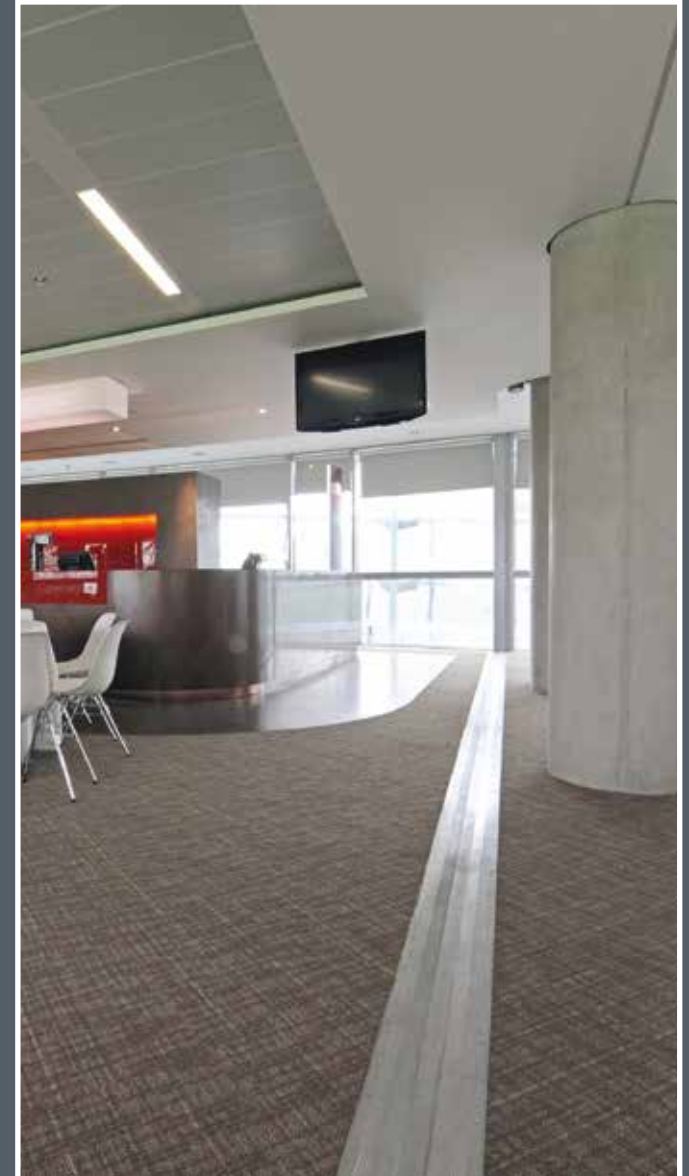
- **Nominal width** is the size of the joint before any movement takes place
- **Minimum** is the width of the joint when it has reached its maximum closing potential
- **Maximum** is the width of the joint when it has reached its maximum opening potential

We recommend that when the engineer tells you the joint width, you ask them for the minimum and maximum dimensions at full movement.

The structural engineer will indicate the location of the joints and the joint width needed for movement. Our experience tells us that the width provided by the engineer is typically the movement needed and is not necessarily the joint width required for the covers and/or fire barrier systems so it is worth checking exactly what they mean.

For example:

If the engineer states that a 50mm joint is required, they might expect it to open to 100mm and close to 0mm. If they tell you that you need a 300mm joint, they might expect it to open 600mm and close to 0mm.



Step 2: Sizing the joints properly

Once the movement requirements are understood, the joints can be sized properly to accommodate the expansion joint covers.

Most joint covers have components that take up space in the joint opening, and rated floor and wall conditions will require a fire barrier. These materials will not allow a joint to close to 0mm without damaging the system or surrounding construction. So it is very important that you work together with the manufacturer to size the joint accordingly, to meet the movement requirements and accommodate the desired joint cover systems.

For example:

If you selected our GTR as the style of cover you want to use for a floor joint, and the engineer has told you that you need a 50mm joint that has a 0mm minimum and a 100mm maximum at full movement. GTR-200 might be your first thought for the 50mm joint. But if you refer to the movement criteria, you will see that the GTR-200 does not meet the movement requirements. The joint must actually be increased to 100mm wide (using GTR-400) to meet the movement requirements set forth by the engineer.

PLEASE NOTE: *It is important to let the engineer know if you have increased the joint size to allow for the covers, to ensure that the structural and architectural drawings match.*

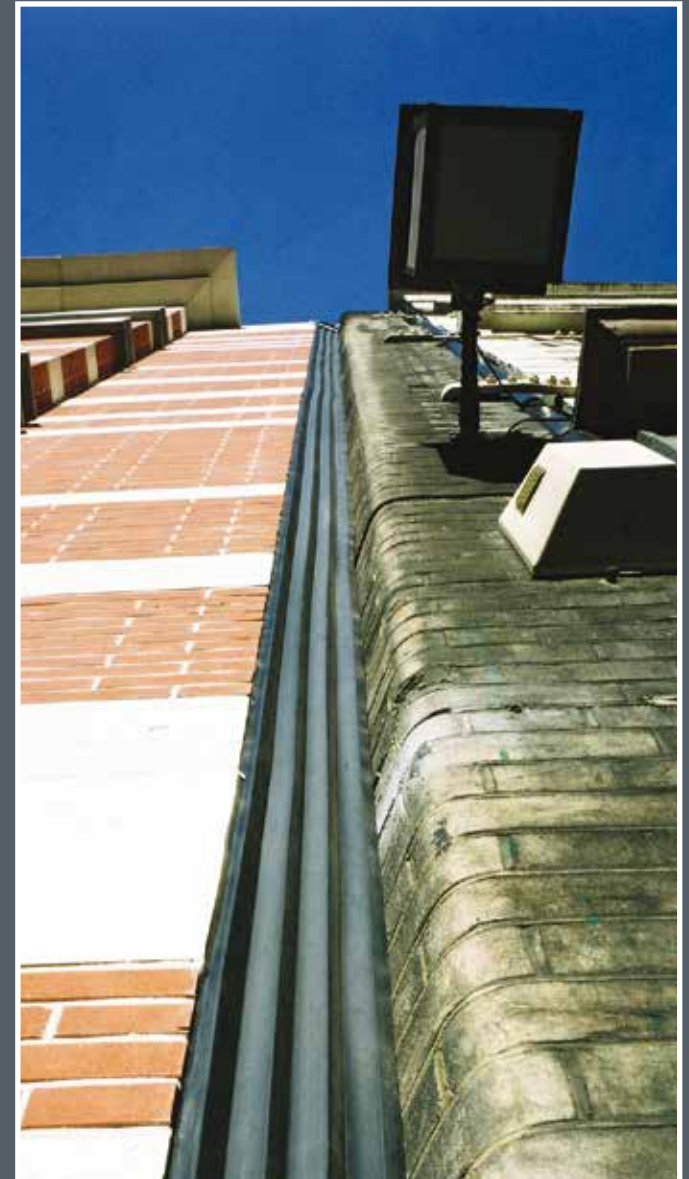


Step 2 continued...

As you continue up the building, it's not uncommon for joint sizes to increase on each floor (with the roof having the largest joints). Changing sizes on the interior joints is acceptable, but it may be recommended to group certain floors together in order to reduce the number of different sized joints.

Exterior joints should always be the same size from the roof to the ground. Any joint size changes on the exterior results in unsightly transitions and difficulties in maintaining weather protection.

Expansion joints must pass through the structure from top to bottom and front to back. If the joint appears to end abruptly within a building, be sure to consult the engineer for clarification to make sure it isn't a mistake.



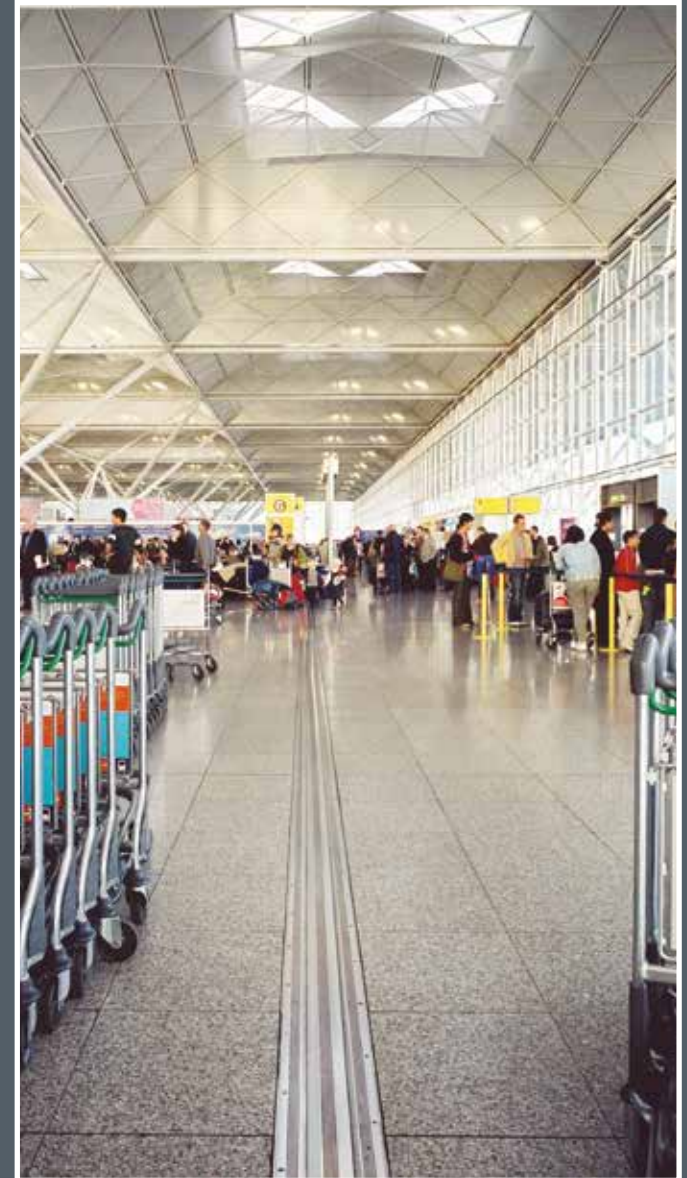
Step 3: Consider joint locations & application requirements

When selecting cover systems, it is important to consider their location. For instance, will the joint cover be located in a hidden area or in a highly visible area (such as a lobby), where aesthetics are more important?

Usage and location are also important. Will the joint cover be exposed to heavy rolling loads or will it only be exposed to foot traffic? Is hygiene a factor? Could the collection of dirt in the cover system create problems?

It is critical to select the appropriate cover type for the intended application. For instance, “heavy duty” covers for heavier rolling loads, flush gasketed covers for “hygienic” or healthcare applications, and covers designed for wet areas.

Generally, the floor cover application is the element most affected by usage and application. It is recommended that the selection process begin with the floor cover and progress from there.



Step 4: Identify adjacent surface finishes

Form and function have often been in conflict with the design and use of expansion joint cover systems. Improvements in function have often come at the expense of aesthetics, and vice versa.

Traditionally trying to conceal expansion joint covers with surface finish in-lays often led to thicker joint cover assemblies. These thicker assemblies resulted in obstacles for wheeled equipment.

As technology and joint cover design has improved, it is now possible to conceal wider cover plates without affecting their functionality. Today, a wide variety of joint cover systems are available to meet form and function requirements, incorporating anything from vinyl floors to solid stone floor tiles.

When selecting expansion joint cover systems, consideration should be given to the adjacent floor and wall finishes. Most finishes can be integrated into the cover assembly for maximum harmony with the surrounding design elements, minimising the visual impact of the joint covers.

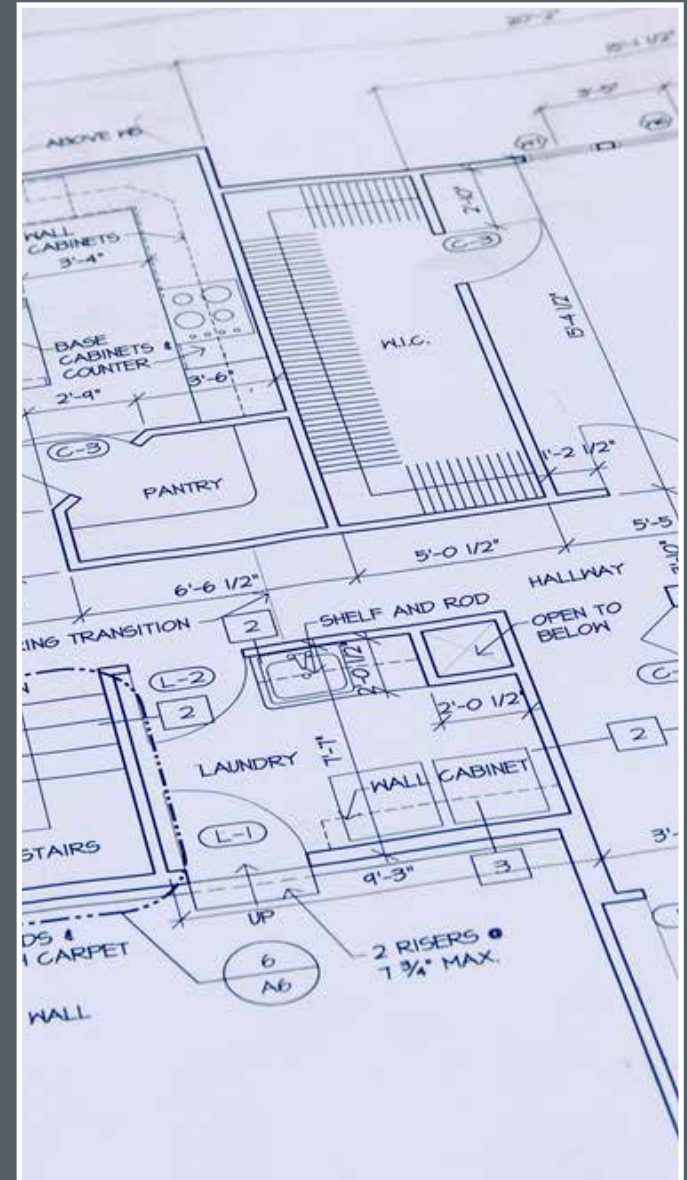


Specification

Having been through our 4 step process, you should be in a position to be able to specify the correct expansion joint cover for your project. The check list below should help you make sure you have all the information you need:

- Expansion/Movement Joint Width
- Anticipated Movement
- Building Usage/Loading Requirements
- Aesthetics
- Recess or surface mounted cover
- Fire barrier?
- Moisture barrier?
- Acoustic barrier?

Now you just need to choose your supplier...



Choosing your supplier

After you have done all the hardwork deciding what sized expansion joint cover you need and what movement it needs to provide, you need to find a supplier that can provide a product to meet your needs.

It's important that your supplier brings experience to the table, even if this isn't your first encounter with Expansion Joint Covers. It's handy to have someone on the team who can provide you with the know-how to complete the job on time and on budget with minimal disruptions, someone who can provide the necessary information and support to get the job done.

You need a supplier with a large range of products that can cater to your needs. Whether it's a massive seismic joint cover or a small surface mounted joint cover, you need to be sure that your supplier can provide you with the exact product required. Keep hold of the Specification check list on the previous page - if you've gone to the trouble of finding all that information, use it to your advantage! It'll make it a lot easier to ensure you get exactly what you need.

At C/S we are proud to say we offer:

- more than 40 years experience with Expansion Joint Covers
- the most comprehensive range of covers in the world
- support at every stage of the selection process right through to the technicalities of installation



Found our ebook useful?

We have more great content on our website:
www.c-sgroup.com.au

If you have any questions or comments we'd love to hear from you,
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