

# Joins

Basic Introduction to Building Joins, Firestop Sprays and Expansion  
Joins



**FCIA Virtual 'DIIM' Firestop & Effective  
Compartmentation in Existing Buildings  
Symposium Middle East**



# Companies of CSW Industrials



- **Expansion Joint Systems**
- Fire & Sound Barriers
- Stair Nosings
- Trench & Access Covers
- Entrance Mats & Grids
- Photoluminescent Egress Systems



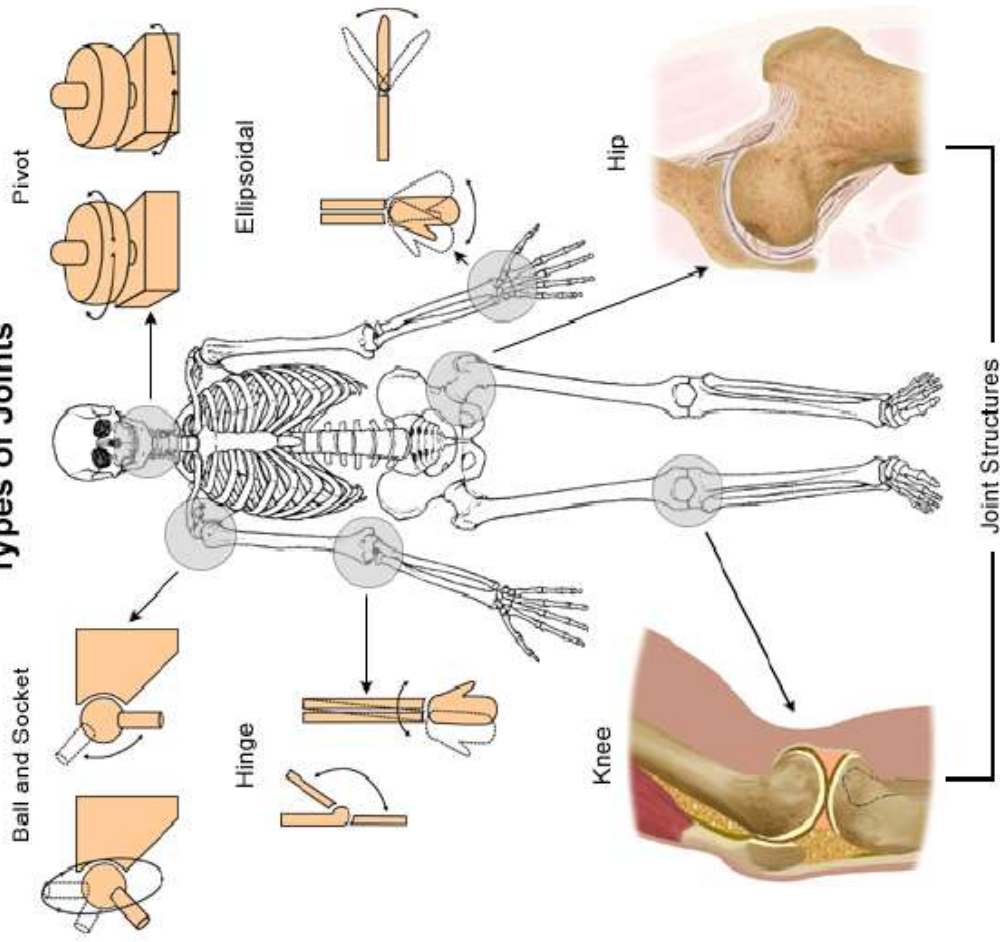
- Aluminum railings
- Glass railings
- Stainless steel railings
- Steel railings
- HVAC
- Plumbing
- Electrical
- Firestopping



- Smoke Curtains:
- Elevator
- Vertical
- Horizontal
- Perimeter
- Draft



# Types of Joints



# Understanding the importance of Joints

While we may not notice visually, buildings are in constant motion.

Wind causes the building to sway, temperature causes expansion and contraction in building surfaces, and moisture causes expansion of building materials.

Additionally seismic events can cause differential movement in both structure and finishes of a building.

Designing for building movement is a fundamental part of detailing a structure. This is primarily achieved by the use of joints to relieve or accommodate the movement required.

***A building joint is essentially, a separation of the building elements that allows for independent horizontal movement, while being rigid against rotational and vertical movement and protects the structure and finishes from damage***

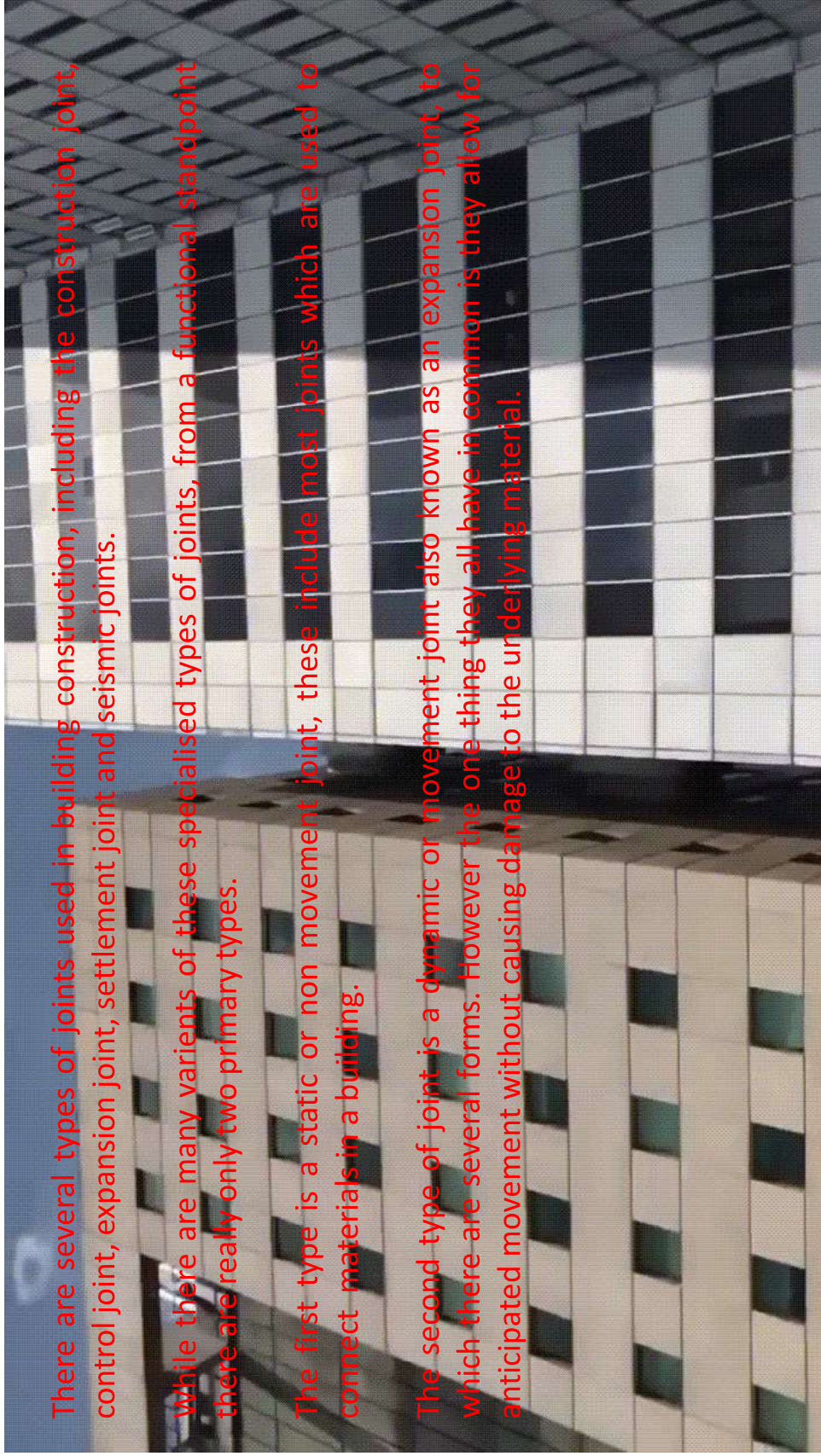
# Understanding the type of Joints

There are several types of joints used in building construction, including the construction joint, control joint, expansion joint, settlement joint and seismic joints.

While there are many variants of these specialised types of joints, from a functional standpoint there are really only two primary types.

The first type is a static or non movement joint, these include most joints which are used to connect materials in a building.

The second type of joint is a dynamic or movement joint also known as an expansion joint, to which there are several forms. However the one thing they all have in common is they allow for anticipated movement without causing damage to the underlying material.

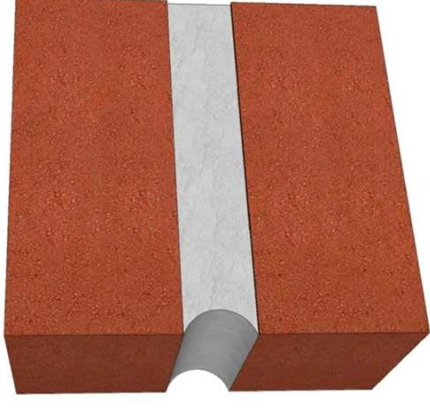


# Static or Non Movement Joints

Static joints are considered non-moving joints which accommodate shrinkage and relieve internal stress during curing.

These types of joints can be filled with compatible joint filler.

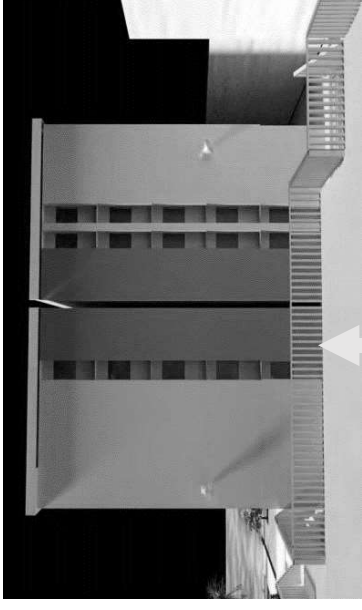
Where the joint has a specific requirement such as fire resistance, acoustic performance, water and/or air permeability/resistant then specialist product should be used to fulfil the required design criteria.



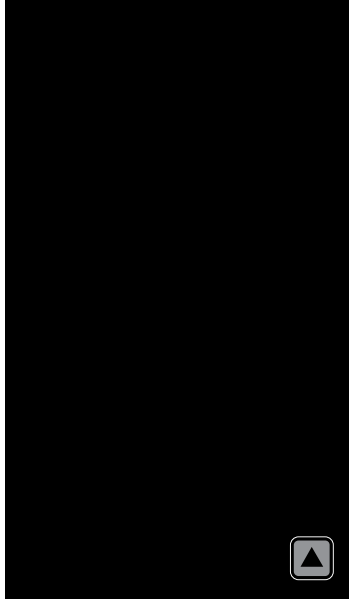
# Dynamic or Movement joints

A movement joint, also known as an expansion joint, is a dynamic component that is designed to relieve or absorb movement and allows the building components on either side to expand or contract, while the joint effectively shrinks or expands preventing damage to the underlying structure.

By contrast, an expansion joint (or movement joint) is sized and formed at a width prescribed by the building design team and sealed and bridged later by an expansion joint system.



Expansion joints separate structure completely

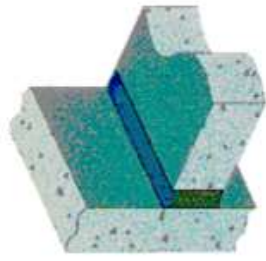




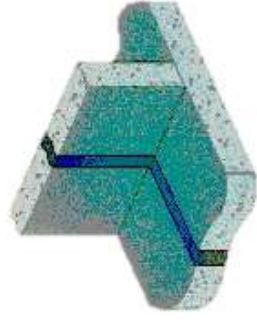


# Basic joint design

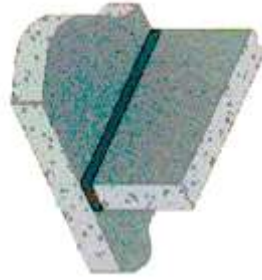
## Type and Orientation:



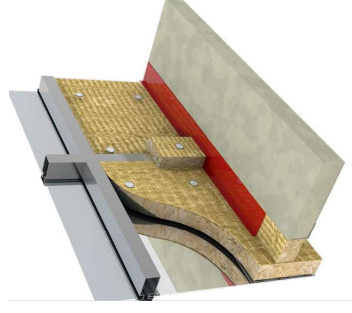
Floor to Wall (FW)



Floor to Floor (FF)  
Wall to Wall (WW)



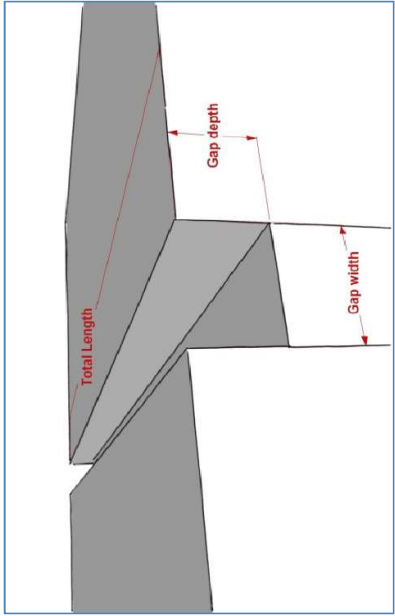
Wall to Floor or Head of Wall  
(HOW)



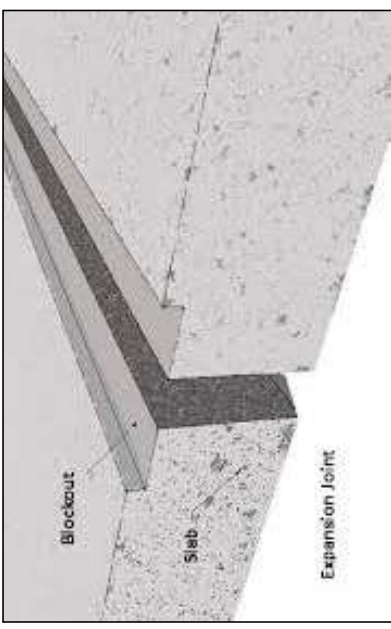
Perimeter Joint (CW)

# Basic joint design

## Joint Size:



Typical joint dimensions



Typical Blockout dimensions

# Basic joint design

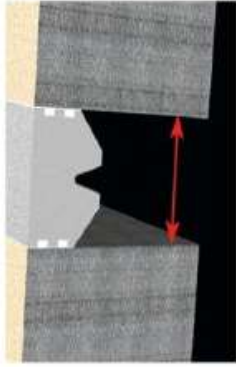
## Movement Terminology:

### Movement

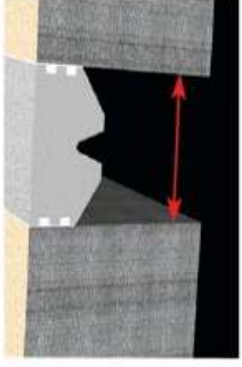
Distance (and acceleration) between maximum and minimum joint widths

Expressed as numerical value (+/- 5 inch) or a percentage of nominal width (+/- 50%)

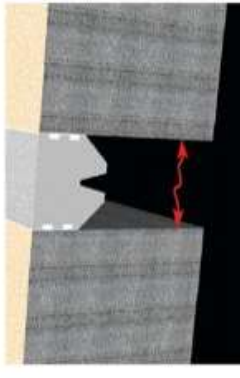
**Nominal = 10 inches**



**Maximum = 15 inches  
+5 inches or +50%**



**Minimum = 5 inches  
-5 inches or -50%**



# Additional joint requirements



Fire Resistance



Air/Water Resistance

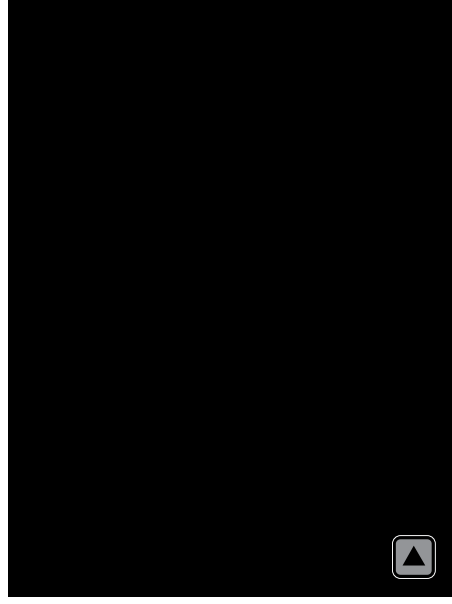
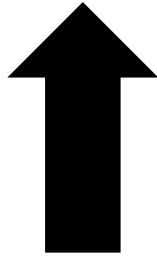
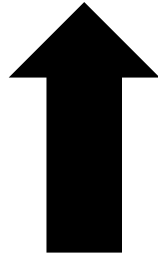


Load Performance



Sound Transmission

# Product Selection



# Product Selection



Polyethylene Backer Rod (PE)



Glass wool



Stone or Mineral wool

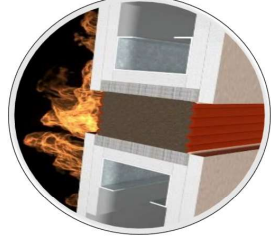
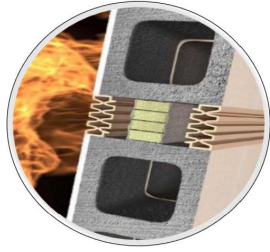
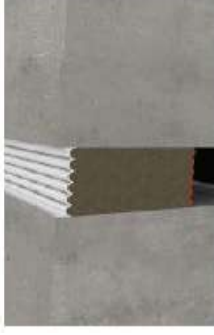
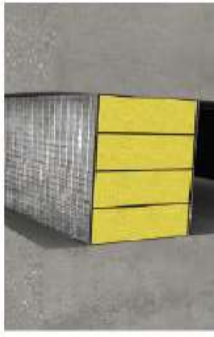
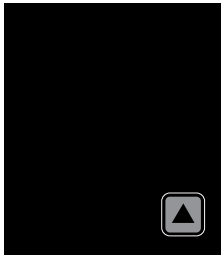
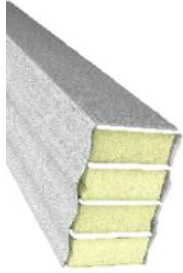


Ceramic

Backing Material	Effect on system	Comment
No prescribed backing material	Zero effect	Can be replaced with P:E Rods, Glass Wool, Stone Wool, Stone Wool or Ceramic Wool
Polyethylene / Polyurethane Rods	Negative effect on performance on installation	Can be replaced with PU Foam, Glass, Stone or Ceramic Wool
Glass Wool	A equal or positive effect	Can be replaced with Stone or Ceramic Wool
Stone Wool	A equal or positive effect	Can be replaced with Ceramic Wool
Ceramic Wool (including ceramic alternatives)	Equal effect	Can only be replaced with an alternative material with an equivalent properties, such as density, thermal conductivity, melting point, shrinking, reaction to fire classification – Example Alkaline Earth Silicate Fibres
Increase in backing material thickness	Positive	Only acceptable for class A1 & A2 materials
Decrease in backing material thickness	Negative	Not acceptable

**ALWAYS CHECK THE LISTED OR TEST SYSTEM FOR APPROPRIATE BACKING MATERIAL**

# Product Selection



# Product Selection

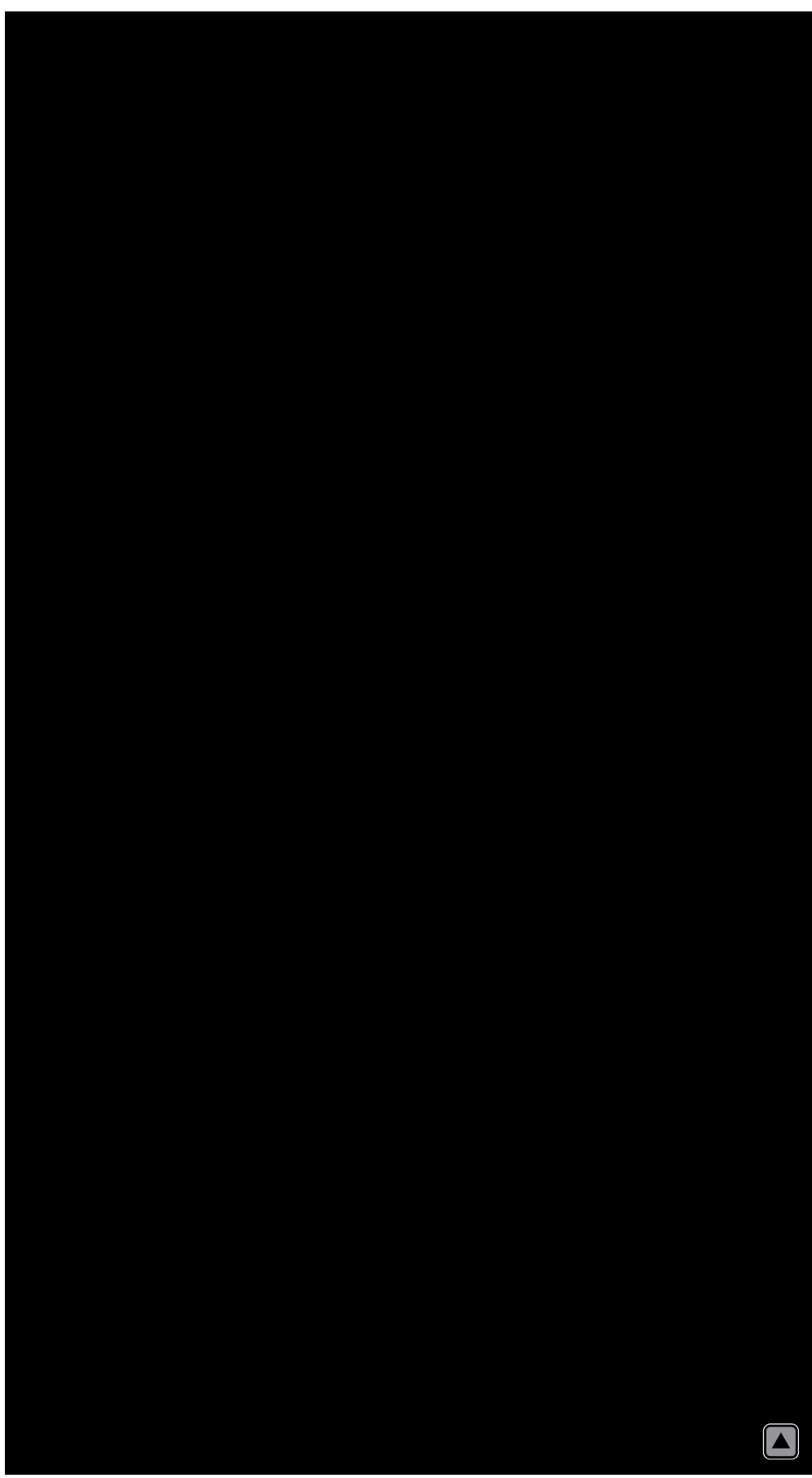
## Expansion Joint Covers

- Cover the building gaps in floors, walls, ceilings, roofs, exterior walls, open-air areas and parking
- Continue the building functionality and design elements
  - Aesthetics
  - Conform to adjacent materials (concrete, gypsum, etc.)
  - Load capacity (support traffic)
  - Fire rating (life-safety elements)
  - Sound dampening
  - Waterproofing (withstand elements)
- Allow movement to occur without damage or danger





How an expansion joint works



# Product Selection

Additional requirements of EJC's

## Standard for Edge Height:

ADA Chapter 303 refers to changes in levels

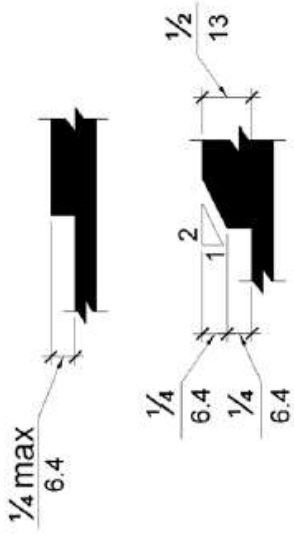
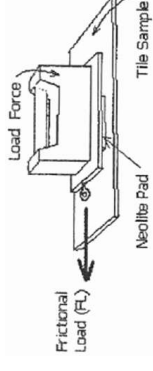


Photo credit: 2010 ADA Standards



## Slip Resistance:

ADA Chapter 302.1 refers to slip resistance



# Aesthetics of Expansion Joints

## Metals & Finishes:



Aluminum



Bronze Brass

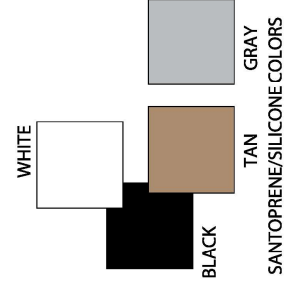


Stainless Steel

Mill Finish Aluminum, Bronze, 2B Finish Stainless Steel, Brushed #4 Satin, Polished #8 Mirror, Bead Blasted, Abrasive, Wing Walk

## Flexible components:

- Santoprene
- Neoprene
- PVC
- EPDM
- Silicon extruded or RTV



## Dow Corning® 790 Silicone Building Sealant Sealant Color Selection Guide

• Please check the availability of the different colors.  
• Custom colors are available on request.  
• Please refer to product literature for applications and technical information.  
• The colors shown are a color approximation of the actual sealant colors. However, for best results, please refer to product literature for color coding and matching.



Questions?

