Quality Technical Bulletin

Building Expansion Joint—Descriptions

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Building / Isolation / Seismic Joint

Building Expansion Joints (EJ) are a complex component in the building. They typically are fire rated, weather-proof, and/or an air barrier. They must also connect to other EJ's of different materials and manufacturers with questionable compatibility. There are many different types of EJ's that we must consider and understand. The design, connection to other materials, and purpose are just a few of the items we must consider.

The following Technical Bulletin will describe the different types of joints that are in a typical building. To help coordinate all materials and systems, set up a Pre-Installation Meeting with the Quality Department Early – it might take several meetings to complete.

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Joints are typically managed with different materials that need to connect to other materials.
Different types of systems that need to manage these joints are:
Weather, Air Barrier, Vapor Retarder, Waterproofing, Roofing, Fire, smoke, etc.

Control / Contraction

1. **Control / Contraction Joints** – *Are designed to control or try to control where stress occurs within a system or material. This is typically used for shrinkage cracking*.
    a. Spacing of joint is *coefficient of shrinkage* x *Temperature Differential* x *Length*
    b. Typically located at
        i. liner locations with the above equation
        ii. Re-entrant corners
    c. Typically the surface is cut to make the material weak and try and locate the crack at the weak location.
    d. Could be designed to be tied together with continuous reinforcement.
    e. The movement is typically linear.

Live Load Deflection

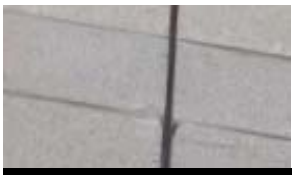
2. **Expansion Joints** – Are designed to accommodate the expansion of a system or materials and relieve stress.
    a. Spacing of joint is *coefficient of expansion* x *Temperature Differential* x *Length*
    b. Typically located at
        i. liner locations with the above equation
        ii. Changes in direction
    c. Typically create a full depth joint, creating a discontinuity of materials.
    d. Movement because of nature's effect on materials, such as:
        i. Wind
        ii. Temperature
        iii. Effects of the Sun
        iv. Moisture content
    e. The movement is typically linear.

Construction Joint

3. **Movement Joint** – Are designed to manage control & expansion of materials and movement due to nature.
    a. Materials shrink and expand.
    b. Movement because of nature's effect on materials, such as:
        i. Wind
        ii. Temperature
        iii. Effects of the Sun
        iv. Moisture content

Slab Edge Construction Joint

4. **Isolation Joints / Building Expansion Joints**– Designed to control the differential movement of two separate buildings or components of the building.
    a. The movement is typically up/down, left/right, or both at the same time – Determined by an Engineer
    b. Controls differential movement of building structure or components.
    c. Controls different masses of adjacent buildings.
5. **Construction Joints** – This is a joint in construction, typically where construction stops and starts.
    a. This is not a movement joint unless designed to be on a movement joint.
6. **Seismic Joints** – Designed to accept seismic movement without damage to the adjacent structures .
    a. The movement is typically up/down & left/right at the same time.
7. **Pour/Closure/Shrinkage Strips** – Typically a leave-out in the slab or structure, typically long structures, which allows for the initial movement/shrinkage of the building materials and later filled in (30-60 days) to close the gap.
8. **Live Load Deflection** – Designed to accept live load deflection and wind uplift.
    a. The movement is typically up/down.



Masonry Control Joint

The design of all of these joints should be by the EOR.

Movement Joint

The joint (minimum joint size) size must be able to accommodate *movement + the joint material*. The joint material could vary between 15% to 50% movement ability.

For example: *(2" Movement + (2"/50% material movement ability))* = ***4" overall joint width needed.***

Always have an Expansion Joint Pre-Installation Meeting with the Manufacturer. ***It is not uncommon to have multiple pre-installation meetings for Expansion Joints.***
Include: Quality Department, Architect, EJ manufacturer(s), EJ installer, Adjacent Material trades, Substrate finish material(s) trades, Air Barrier, Waterproofing, and Roofing trades (if applicable).

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