



Technical Bulletin

FROM SPEIGHT, MARSHALL & FRANCIS, P.C.

Structural Engineers

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Welcome to our
"Technical Bulletin!"

On a regular basis, we plan to distribute these informational leaflets about crucial - but often ambiguous - structural engineering topics. With the knowledge of our featured subjects, our goal is to help our clients improve their profitability while reducing their liability. We suggest distributing a copy of our technical bulletins throughout your office and keeping them on hand for quick reference.

CONCRETE MASONRY CONTROL JOINTS

Introduction:

Cracking in building materials is a result of restrained movements that originate within the materials used, temperature and moisture expansion / shrinkage, and from movements of adjacent portions of the building (i.e. beams, columns, slabs, etc.). Movements of building materials are inevitable and must be addressed if cracking is to be controlled. Properly specified control joints are critical in assuring that cracking is controlled.

Definition:

A control joint is a predetermined straight controlled crack that typically occurs in a joint that is filled with caulk. It is a weakened plane through the wall that accommodates movements within the plane of the wall without damaging the wall.

Control Joints in Concrete Masonry:

Shrinkage of concrete masonry is a given. Horizontal joint reinforcing placed in the bed joints of every other concrete masonry course and reinforced bond beams help to keep shrinkage cracks closed or invisible. However, when the shrinkage is large enough, joint reinforcement and bond beams cannot effectively hold cracks together. At this point controlled joints are required. The combined use of joint reinforcement, bond beams, and control joints have proven to be quite successful over the last 30 years to greatly reduce cracking of concrete masonry walls.

Recommended Locations for Concrete Masonry Control Joints:

1. At abrupt changes in wall height.
2. At changes in wall thicknesses.
3. At corners (one side).
4. Laid out to create panels that are as square as possible. The aspect ratio (length divided by height) of a panel should be as close to 1 as possible. If it exceeds 3, then the chances of undesirable cracks occurring increases greatly.
5. At a maximum distance of 25 to 30 feet.
6. At one or both sides of doors and window openings.
7. At steel beam lintel bearings where beams are parallel to the walls.

Although control joints are generally shown and detailed on the architectural drawings, we highly recommend that your structural consultant review and comment on the control joints. The aforementioned recommendation should be considered as the minimum requirements. We feel it is imperative that the Structural Engineer actively participate in the locating of control joints. An excellent reference on masonry is Christine Beall's book titled, "Masonry Design and Detailing."

Call us! We are available to conduct group seminars for your firm on any subject you see presented in our Technical Bulletins. Use our expertise to your firm's advantage!

More on
masonry
construction

In our next bulletin...

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