



Technical Bulletin

FROM SPEIGHT, MARSHALL & FRANCIS, P.C.

Structural Engineers

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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.

GENERAL NOTES:

MASONRY

Discussion:

As discussed in our first "Technical Bulletin" dated June 6, 1997, movements of masonry materials are inevitable and must be understood. These movements are primarily the result of temperature and moisture changes. It has been known for years that clay masonry expands when it is in contact with water or humid air. Furthermore, it is a fact that this moisture expansion is not reversible by drying at atmospheric temperatures. This is in sharp contrast to concrete masonry units which expand rapidly and to a greater degree than clay masonry when subjected to wet conditions. The difference is that the concrete masonry products will shrink approximately to their original volume (prior to wetting) when dried at atmosphere temperatures. The only way to get the brick masonry back to its original size is to bake it in an oven (Pottery Class 101).

So what does all this mean?

Right now you are probably wondering how this information applies to you! So often we consider brick and concrete masonry products as the same and detail them in a similar fashion. This can lead to numerous problems such as:

- , Wall and roof leaks
- , Masonry cracks
- , Damage to adjacent building materials



Tying of cavity walls:

One of the most common types of exterior wall construction consists of a clay masonry veneer with a cavity backed up by a concrete masonry wall. The brick and concrete masonry are tied together with continuous joint reinforcing. There are numerous types of joint reinforcing including truss, ladder, and tab. Since we now know that the movement characteristics of clay and concrete masonry are significantly different in character, it is **imperative** that the correct joint reinforcing be chosen. It must be flexible to allow each material to move without significantly impacting the other.

We highly recommend **against** the use of truss-type joint reinforcing in insulated cavity walls. The configuration of the truss diagonals will tend to restrain the differential movements between wythes and could cause the walls to crack or bow. This is because the truss configuration is so much more stiff than that of the ladder type.

Adjustable Ties:

Adjustable tie systems were developed to allow the use of a brick veneer that did not course out vertically with the backup masonry. Their use has increased tremendously over the years since they allow the construction of the backup masonry prior to construction of the brick veneer. This permits the structure to be enclosed quicker, thus reducing the construction time. In addition, using adjustable ties allows for more construction tolerance.

It is a good idea to discuss your proposed means of tying multi-wythe walls together with your Structural Engineer. Please keep in mind that the items discussed in this issue of our "Technical Bulletin" represent a small part of this topic.

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

O **SPEIGHT, MARSHALL & FRANCIS, P.C.**
2000 General Booth Boulevard, Suite 205
Virginia Beach, Virginia 23454

F (757) 427-1020
fax: (757) 427-5919



e mail: smandf@exis.net