



Masonry Advisory Council

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To: Architects, Engineers, Builder Developers / Contractors
From: Charles Ostrander, P.E. Executive Director of the Illinois Masonry Institute
RE: Ramblings and "Everything Changes with time."

LIFE IS A CONTINUING EDUCATION EXPERIENCE

Architectural and Contracting Firms are in a constant state of flux, from their staffing requirements and their job backlog, to their ongoing projects. The presence of an architectural staff that was knowledgeable 15 years ago doesn't guarantee expertise and success today. I recently gave a seminar to a well known architectural firm noted for their content and precise masonry design details. They asked for a refresher course on some basic masonry details and good design procedures/practices as a reminder and for their new practitioners. When I gave the seminar, the 20 people in attendance were all young, bright, intelligent faces, a couple years older than my oldest son. I can see why the noted, architectural design, "graying" gentlemen that I had known for the past 30 years wanted me to present this presentation to their staff. With a changing work force, one must keep on top of design innovations, code changes, and good practice details for all building materials.

"REAL" R-VALUES OR MISCALCULATED R-VALUES

I received a similar call from a large firm, who in the name of economy and energy efficiency was considering using brick over steel studs for an upcoming very large school project. They were particularly interested in building a highly efficient exterior envelope system, which could qualify them for a LEEDS Program, and earn them additional credits or financial assistance from the State of Illinois. I brought up to the young designer/project manager, that his presently proposed brick-veneer-steel stud system caused an R-value reduction of approximately 60%. I gave an example of how an R-19 batt, with 6 inch steel studs, would have in effect, an R value of about 7.1. The young architect was in shock and disbelief. I told him about Design Alert #10, which was published in 1987, and faxed him general information from the ASHRAE Table C-2 entitled "WALL SECTIONS OF METAL STOPS; PARALLEL PATH CORRECTION FACTORS." After reviewing the information, he still had great doubt as to its truthfulness. My last line of encouragement to him was, if he had any further doubts on this subject to please contact his mechanical engineer and ask if these things aren't still in the standard and should be taken into consideration. After a phone call three days later to find out if he had talked to his mechanical engineer, the young man sheepishly, but honestly, told me that I was correct and that the mechanical engineer had confirmed what I had told him. He stated that the firm was now redesigning the structure to use a brick with block backup with 2.5"-3" of rigid insulation in the cavity to meet his client's future energy needs. This also didn't take into account some of the other advantages the school board received from this new design.

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AN OLD PROBLEM WITH A NEW “MOLDY” TWIST

Back in the mid-80's when water was present in many of the poorly designed and/or poorly built brick-veneer-steel stud systems ---water was the main source of concern for clients. Not any more. Problems today have not only magnified the presence of the water problem, but mold is the major concern when water is present in many of these particular projects. The water present in brick-veneer-steel stud systems comes from the exterior of the buildings, from construction potential problems and from condensation and induced humidity in the stud portion of the walls, when batt insulation is used between the studs. I recently called a major batt insulation manufacturer and tried to obtain information on how moisture affects their product's R value. I was informed by the technician on the phone that their particular product (batt insulation, in general), does not absorb moisture and they had no data as to what its thermal performance properties were in the presence of moisture. They only recommended that their product be installed solely in a dry condition and be protected from water as the building is being built, because it should be kept dry. Taking the technical person at her word; I did a sample test, with some batt insulation and a bucket of water. I will confirm to you, that the technician was probably right when she said that batt insulation does not absorb moisture. It may not absorb moisture, but it holds it real good. The technical phrase would be “encapsulating.” There is a lot of water in between the fiberglass fibers of the batt insulation. The material itself may technically not absorb moisture, but in-between, the material holds water very well! Few insulations are as greatly effected by the presence of moisture as batt insulation! When batt insulation is maintained dry and fluffy, it's a good material and has a very good R-value, but with as little as one or two percent moisture content, its R-value drops by as much as 60%. *When you are building commercial projects with guaranteed R-values, be aware that if your batt insulation gets wet in the construction phase or through-out the life of the building, you have a much greater chance of mold and mildew developing. I've included an updated version of Design Alert #10, Revised 2003. If we can be of further assistance to you, now or in the future, please don't hesitate to give us a call.

Forewarned is Forearmed!

This 1 story local health care facility, built in the late 1970's had “water penetration problems” when it was repaired in the 1980's. Nowadays, it would have also necessitated a mold abatement program.



Notice the mold growing on the drywall near the floor.



After the brick was removed one can see the corrosion of the steel studs, a black mold growing on the exterior paper of the drywall and saturated batt insulation at the base of the wall.