

More Energy Efficient School & Library Designs for New Construction

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Existing facilities, depending on when they were built, have somewhat limited and expensive solutions to the upgrading of existing insulation barriers against severe weather conditions. On the other hand, new buildings and new additions can be constructed with 21st Century “user and taxpayer friendly” standards which are dramatically more energy and cost efficient.

We should be maximizing our energy efficiency to reduce our limited operating budgets considering the escalating costs for energy. To combat inefficiency in design, we must ask questions of design teams before jobs are bid and buildings built. Compounding this issue, in addition to the design of the structure, is the annual cost of the energy itself. Rates for electricity and natural gas have doubled and in some cases tripled over the past months. Although we have little control over these economic forces, the investment now in constructing more energy efficient school buildings pays substantial dividends long after the bonds are retired.

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As Reported in the [Chicago Tribune](#) :

SCHOOLS FEEL STING OF HIGH ENERGY COSTS

...Because it is the largest school district in the state, the Chicago system will pay the most this winter. To heat its 601 schools, the district budgeted \$13 million for natural gas this winter.the entire year’s allocation likely will be spent by the end of February.

...After budgeting \$550,000 last school year for heat. District 200 cut its gas budget to \$450,000 this year. But the rate it pays for natural gas has more than doubled

...Wheaton and 55 other school and park districts in northern Illinois bought natural gas for 27 cents per therm last year. In November, the rate jumped to 56 cents per therm.

Why are we not building better insulated schools today? I believe that there are several key reasons:

1. Insulation is “hidden” inside the walls thus being out of sight and out of mind of the users, school board members and school administrators.
2. The architects and contractors are using the same system that they have used in the past with no improvements over the last 20 years when energy costs were much cheaper.
3. School boards and school administrators want proposed new buildings constructed for the same dollar per sq. ft. costs that were spent in the past. With increased pressure on designers and contractors to come up with cost savings, short-sighted school boards and administrators can be their own and the taxpayers worst enemies by not considering future energy costs.
4. Construction managers and general contractors “value engineer” projects. Many of them chop as much as 8% off original design expenditures. They however don’t have to pay the future energy bills. Rather than being solely interested in initial construction costs, construction managers and general contractors should help to educate school officials into considering future maintenance costs. When was the last time that formal suggestions for “energy add-ons” to reduce future

energy costs were made to the appropriate decision-makers responsible for these new building constructions? “Value engineering” should be a two way street for deductions and additions for long term energy savings.

5. Under the “speed of construction” umbrella many projects have developed “scope” drawings for bidding purposes. If we continue to use vague, energy inefficient scope drawings for the lowest price then we will continue to build energy inefficient buildings. I suggest that the drawings for exterior wall section be highly detailed, with specific types and thicknesses of rigid insulation to be used.

A mason contractor that I talked to about this issue agreed that there would not normally be any extra labor charge to install one insulation over another. The only added cost would be for the “thicker” rigid insulation. A \$1.00 per sq. ft. additional insulation cost, increases the masonry’s exterior wall cost by 3.5% and can yield a reduced heating and cooling costs by as much as 53% through it’s walls for the life of the building. Consider also putting more and thicker insulation into the roof systems, energy efficient windows, double door entrances, set-back thermostats, energy efficient motors and more energy efficient electrical and mechanical systems and the long-term savings become even more impressive.

Ask probing questions before any contracts are signed or let for bid. Hopefully this will be a lesson for you to build smarter more energy efficient buildings so you will not suffer some of the same financial problems as described in a Chicago Tribune article (inset article).

SUGGESTED MASONRY WALL SECTION FOR YOUR NEXT ENERGY EFFICIENT SCHOOL OR HOSPITAL

