TECH NOTES

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INSULATING SOLUTIONS: THERMAX TILT WALL FIT OUT

Tilt wall provides a cost-effective construction method for large warehouse and manufacturing operations. With the growth of this method of construction has come the need for insulation packages to meet code and accommodate the building use. It has also produced the need for tenant fit out options as new projects are leased and as existing projects are turned over.

Dow THERMAX solutions provide an effective, attractive and lasting option for these applications.

Issues that must be considered for these applications include:

- Moisture Control—a large exposed concrete wall is a thermal mass that captures heat or cold. When the interior space is insulated it is critical that air flow behind or around the insulation package is controlled to prevent condensation. That air flow brings with it some level of humidity and can condense when it hits the concrete behind the insulation. The humidity level is dependent on operations and heating method. Gas fired heating units and manufacturing operations that produce moisture can elevate humidity levels to 50% and above. Direct fired gas heating typically has very little exhaust air. A product of combustion is water vapor. For a heat loss of 1 million BTUs per hour, the heating system puts more than 2000 pounds of water vapor into the building every 24 hour period!
- Aesthetics—over time fiberglass gets pretty "ratty" looking and it cannot be cleaned if needed. Walk into any metal building structure that is insulated and this will be abundantly clear! Thermax provides a very clean looking finished product that can be power washed.

Moisture condensation can accumulate in fiberglass over time. First becoming visible as simple water stains.

As the moisture accumulates over time it causes the fiberglass to sag, then fall out of place as the weight becomes too great. Since the fiberglass has a vapor retarder facing, the moisture cannot escape. As it accumulates it decreases thermal performance.

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When installing fiberglass insulation against concrete walls, sealing of the insulation is critical to long-term performance and moisture control: “Maintaining the integrity of the vapor retarder is critical for effective moisture/humidity control. Repair any punctures or tears in the facing by taping with a pressure sensitive foil tape.” Owens Corning literature.

A close look at this photo will show you how difficult this is. Note the tape application. It does not totally seal the fiberglass seam and is a prime candidate to create condensation over time. What do you think will happen to the tape over time? Correct. It will eventually come off, exposing the fiberglass joints to air flow, moisture and thermal loss.

- Permanent insulation solution/future tenant flexibility—the envelope should be fully insulated, followed by steel stud installation. If the steel studs are installed along exterior facing walls first, they can only be filled with fiberglass to insulate the structure. When leaseholder changes over time or interior fit out occurs due to changing needs, the studs and insulation are all thrown out. By placing Thermax on the wall first you gain permanent insulation solution in those areas, a far superior insulation package (that R-19 fiberglass between the studs only nets R-7.1!) and a free and clear cavity space, available for utilities without disturbing the insulation.

The Thermax system uses a male/female track system for installation. For most applications, the track system is sufficient and provides an attractive finish. When there is greater concern for humidity levels, there are several installation techniques that are suggested. In some cases double layer insulation, staggered joints, in others, simply add a bead of sealant to the wings of the male clip as it is installed.

Thermax applied to the lower areas with fiberglass metal building insulation above. The initial difference is pretty dramatic. Imagine the fiberglass over time.

A complete Thermax installation provides a great finished product look for your project and avoids the long-term issues associated with fiberglass.

The photo on the left shows fiberglass installed above the studs, the studs are then installed against the concrete and will be filled with fiberglass. The suggested way to build this wall is to apply Thermax Sheathing with simple foil facer in areas where it will not be visible. Run that from the floor to the ceiling to provide a continuous and effective insulation package, then install the studs. The studs can be downsized since they do not need to accommodate insulation AND the insulation package is now a permanent part of the structure, enabling future wall configuration changes.

- Building Forensic experts view on fiberglass:

  In his October 2005 article, Black Rain, in RSI Magazine, contributing Editor William A. Lotz, P.E. states:

  "Even when the facer joints are taped or sealed with adhesive, the vapor barrier becomes like Swiss cheese after the electrician, sprinkler or HVAC contractor cuts the facer for hangers, etc. . . When the dripping starts, the owner calls the architect, engineer or contractor to fix the problem."

  "Glass fiber is the ubiquitous insulation in many building applications, but is not the best insulation when high (over 30%) relative humidity can be expected." Bottom line—DON'T USE FIBERGLASS! Short term savings will likely cost you dearly down the road.

- The solution—Dow Thermax Light Duty, Heavy Duty and Heavy Duty Plus family of rigid insulation products. They certainly provide a superior finish for your projects, with significantly higher R-value per inch thickness (Thermax provides a high 6.5 vs. 4.3 or less for fiberglass!), easily installed to eliminate air flow and condensation issues and will not absorb moisture and sag over time like fiberglass.