Subject: Building Enclosure News #6
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From: Richard Keleher <kel@rkeleher.com>
Conversation: Building Enclosure News #6

Hi all, Richard here once again...

As I know you're interested in Building Envelope issues, I'm sending you my bi-monthly newsletter. I also value your privacy and if you would prefer not to receive this newsletter, please hit reply and change the subject line to "Delete from newsletter list" As always, I'd be glad to discuss your concerns and comments on these issues.

Tip of the Month: TPO vs. PVC: Environmental Considerations
A TPO roof is a hybrid between PVC and EPDM. It has weldable seams and is available in white and light colors (for EnergyStar) like PVC, but doesn't raise the environmental concerns of PVC, which are discussed below:

Increasing evidence of long-term health and environmental damage caused by persistent organo-chlorines in the environment. These substances include dioxins, furans, and polychlorinated biphenyls (PCBs). There is convincing, though not definitive, evidence linking these toxins to increased breast cancer rates in women, lower sperm counts and reproduction-related birth defects in men, and a host of ailments affecting wildlife, particularly species high on the food chain. Much of the concern is focused on disruption of the endocrine system, because severe health effects are likely even at very low levels of exposure to the toxins. Dioxins are created when PVC is burned under less-than-ideal conditions, as in building fires or waste incineration. In many countries emissions from waste incineration is well controlled. There are those who are extremely concerned about the effects of dioxin and yet Deborah Wallace, a project leader with public service projects at the Consumers Union says, "Talking about its [PVC's] combustibility is grossly misleading."

To the credit of the chlorine and PVC industries and government regulatory bodies, however, vast improvements have been made in manufacturing processes over the past twenty years, and many of the worst environmental offenders (DDT, dieldrin, and CFCs, for example) are already gone or on their way out. The residual vinyl chloride gas in PVC products has been reduced to (perhaps) insignificant levels, compared with two decades ago. The environmental and health risks associated with PVC are greatest at the two ends of its lifetime: during manufacturing and disposal (if by incineration). A task force of the USGBC concluded recently that PVC was not enough of an environmental issue to require that it be banned from LEED projects.

Furthermore, PVC roofing has a longer track record in the US than TPO and it is favored for that reason by the more conservative roofing experts. TPO has been used successfully for several decades in Europe and over a decade and a half in the US. There was not a US standard by which to measure quality until three years ago when ASTM produced Standard D 6878 and perhaps there will be some consistency introduced into the market by this standard, although it has been said that it only requires the most minimum of quality.

Additional questions to be addressed (courtesy of Chris Leary of the Stubbins Associates):
1. Do these products: stay reflective over time, have a credible history, present a health hazard to workers?
2. Are these products: durable, made with toxic materials or with a polluting process, maintainable?
3. What is the environmental track record of these manufacturers?
4. How are these products (both construction waste and at end of life) disposed of? Can the waste be recycled? Is the waste toxic?
5. Is there and life-cycle-cost data comparing these systems?

Recommendation
The client whose primary interest is a durable, low-cost roof should select PVC. The client whose primary concern is the environment should select TPO.

Information from BuildingGreen.com and an article by Frank Ackerman of Tufts University was used in the preparation of this Tip.

Product of the Month: Winflex Membrane Flashing and Wintape Flex for Wood Frame Construction
I just chased down a an issue raised by Paul Kerman of RDK in Vancouver for a client on a current project. He said that they have experienced rot under peel-and-stick used to connect windows to wood framing, and so have switched to using Tyvek as a flashing material, except at the sill. Of course, he's from Vancouver...

Betsy Petit of the Building Science Corporation clarified the issue. She advises that the issue is more one of construction moisture in sheathing, particularly in wall assemblies. If the peel-and-stick is applied over wet sheathing, it never dries out.

Winflex membrane flashing by Bosig Inc. of Fort Lee, NJ looks like a superb product for this application. It is both water resistant and permeable to water vapor, which is very unusual. It is a breathable sheet membrane. Layering consists of PES fleece, laminated with a co-polymer. The membranes have integral self-adhesive strips of elastomeric resin and butyl placed on the underside edges of the roll.

Wintape Flex is used to connect the Winflex membrane to adjacent construction and is a ductile cold shrink tape made of cold self-adhesive
butyl rubber, coated with a highly tear proof, aluminium colored polyethylene film, expandable up to 400%.

You can seal to this system with butyl sealants. Butyl is the by far preferred material for sealing in concealed areas. And it is a complete system, with preformed corners, which speed installation and make for a more air and water-tight installation. Of course, I don't know how much it costs and I haven't been able to find any equals...

Links:
Winflex Membrane Flashing: http://www.schmid-baukunststoffe.de/bosigusa/download/winflex-ti.pdf and be patient, it is 3.4 MB
Wintape Flex: http://schmid.tkz-media.de/download/ti-wintape-flex.pdf This one is only 56k.

News of the Month:
I participated in a webcast seminar by Building Design and Construction magazine which will be broadcast on July 27th. It is an excellent program on moisture protection. In addition to me, the program features Dr, John Straube Associate Professor at University of Waterloo in Waterloo, Ontario, who is the pre-eminent building scientist in North America (with the possible exception of Joe Lstiburek). It also features Kami Farahmandpour PE, RRC, CCS, CCCA Principal and founder of Building Technology Consultants, of Arlington Heights, IL, who specializes in investigation of deterioration, water leakage issues, and construction deficiencies in building envelopes. Discussion topics include
:: WUFI (heat and moisture dynamic)
:: Dewpoint analysis
:: Vapor barriers

:: Air barriers
:: The Rain Screen Principle
:: Alternate materials barriers
:: Air leakage and energy loss

The link to the sign-up page is:

http://www.bdcnetwork.com/info/CA6350753.html

More on another subject next month!

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Richard

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