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April 16, 2009 Issue # 13

Dear Jeffrey,

In the realm of building issues how important is an air barrier? For durable buildings, keeping indoor air in and outdoor air out is second in importance only to rain control. How to illustrate this importance...

See public exhibit "A" - The Superdome (Home of the New Orleans Saints in Louisiana) had the roof ripped off during Katrina. Dr. Joe speculates as to why in our featured article below: Uplifting Moments-Roof Failures

Also, thank you all for your patience with us as we undergo some changes to our website. Our seminar schedule is up and open for registration. Please see the link below the featured article for registration details.

To view a list of past newsletters, click [here](#) for our archives.

Happy reading!



Jeff Melvin
Editor, buildingscience.com e-news

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Featured Article by Joe Lstiburek, Ph.D., P.Eng., Fellow ASHRAE

Uplifting Moments - Roof Failures

Building Science Insight No. 19

Now I am a simple kind of guy. I just bet that a roof with a couple of hundred bullet holes probably leaked I wonder what all those holes did to the roof at the Superdome? Just asking.

I remind everyone that the roof of the Superdome experienced one of the more spectacular failures in enclosure history. It unzipped during Katrina like a cheap prom dress on a Saturday night in less than catastrophic wind conditions (see photograph below). Let's toy with this memorable failure a little - just hypothetically of course because there is litigation.

It is quite something when a roof blows off. To have one blow off during a national disaster with the world watching puts it into a class by itself. But the roof blow off of the Superdome is not an isolated incident. We seem to be experiencing more uplift problems with roofs lately and it begs the question why?

We seem to have forgotten how to build roofs. Back in the day compact roofs required multiple layers - and one of the most important was the air barrier. Air barriers were originally an artifact of cold climate construction and often misnamed as vapor barriers. In Canada, where there are only two seasons, this winter and last winter, architects and engineers learned about the importance of air barriers in controlling roof assembly moisture induced deterioration from interior sources. However, early on, one of the most important lessons of utilizing air barriers, was the huge improvement in uplift performance. The air barrier helped to transfer the wind load to the structural deck. And this proved to be important in all climates besides those dominated by hockey players. [article continues]

To read the entire feature article and find a downloadable PDF version, click [here](#) to visit our web page.



Photograph above: Should Have Never Happened-The Superdome roof membrane is missing after Hurricane Katrina.

ANNOUNCEMENT!

The 2009 Building Science Seminars are now open for registration!

For the list of seminars and online registration, click [here](#).

Note that we have been listening to your feedback! We have utilized the material from the Experts' Session in December 2008 to create 2 one-day seminars on special topics taught by either Dr. John or Dr. Joe.

New on buildingscience.com . . .

BSD-139: Deep Energy Retrofit of a Sears Roebuck House-A Home for the Next 100 Years

by Betsy Pettit, FAIA

"Deep" energy efficiency retrofits of all building types will be needed to address our current and future energy concerns. Betsy Pettit of Building Science Corporation examines the deep retrofit of a classic American house in this Building Science Digest. Click [here](#) to read this article.

BSI-018: Westford House

by Joseph Lstiburek, Ph.D., P.Eng., Fellow ASHRAE

Very high levels of energy performance are also possible for new homes. Joseph Lstiburek follows the historical development of a North American approach to energy efficient housing that starts with tried and tested conservation technologies. BSC's Westford prototype house from the US DOE's Building America Program is highlighted. Click [here](#) to read this article.

BSI-017: Blame It On Star Trek-Solving IAQ Problems

by Joseph Lstiburek, Ph.D., P.Eng., Fellow ASHRAE

Civilians seem to think that we have the technology to go into a space, do a test, and determine what is in the air. As simple as that sounds we can't do it. We don't have the technology. You cannot go into a space and ask a simple question such as what is in the air? The trick is to know what to ask. Click [here](#) to read this article.

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Building Science Corporation is a Boston, MA and Waterloo, Ontario based architecture and building science consulting firm with clients throughout North America.

Building Science Corporation specializes in building technology consulting. Our focus is preventing and resolving problems related to building design, construction and operation.

We are internationally recognized for our expertise in moisture dynamics, indoor air quality, and forensic (building failure) investigations. We are also on the leading edge of the design of sustainable communities and buildings.

We believe in promoting energy efficiency and environmental responsibility within the constraints of marketable and affordable building technology.

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