



## Wet Roof Drying Verification Report on Exxon Corporate Headquarters Houston Texas

Attached is a RCI Interface Magazine article – by Warren French September 12, 2003

This article proves that the 2001 Wind Vented Roof Assemblies have the ability to dry out an existing wet lightweight concrete roof as demonstrated on **Exxon Corporate Center** – Houston, Texas.

This is a significant article for the following reasons:

**First**, because it scientifically proves 2001 Company pressure equalized roof systems dry wet roofs.

**Second**, customer **Exxon** corporate headquarters located in downtown Houston, Texas at a height of 602 feet in the air has been through many windstorms since 1997. And the loose laid 2001 Company C-EPDM membrane is performing well.

**Third**, The Warren French study is on the hardest building roof situation to affect drying of a wet light weight concrete substrate on a structural concrete deck.

- a. The top floor of the **Exxon Building** is the exclusive **Cattleman's Club Restaurant** for Exxon top executives and their guests. The restaurant is air conditioned 365 days a year which would cause the roof water vapor drive to be downward to the cold poured in place concrete roof deck.
- b. The 2001 Wind Vented System effects drying in normal buildings when warmer interior spaces cause the water vapor drive in a roof to migrate upward to the cold exterior and water vapor is vented from the roof through the 2001 patented Equalizer valves and controlled air exchange.
- c. When the existing BUR membrane was removed a modified base sheet was installed on the wet lightweight concrete for a temporary roof. This base sheet was not removed or permeated to facilitate drying, so the water vapor would egress up into the new 2001 Wind Vented Roof Assembly. The new 2001 roof of 2" ISO weighted with ½" gypsum boards and 60 mil EPDM was installed over the base sheet.

d. The venting of the old roof, approximate size 80' x 200', was only accomplished where the equalizer valves portholes were cut through the temporary roof to the lightweight concrete roof deck.

If a 2001 separator mat was used over the lightweight concrete surface, instead of a base sheet temporary roof, the 2001 wind vented system would have affected a rapid drying of the wet lightweight concrete.

e. The structural concrete roof deck had a vapor barrier on the deck so no moisture could dry down into the interior of the building through the concrete roof deck.

On page 10 of the article Mr. French States:

**“Comparisons and Contrasts”** – After an additional five years of *in-situ* performance, it was surprising to observe that the **maximum** moisture content measured within the lightweight insulating fill (by extrapolation of the nuclear moisture meter readings and correlation with the gravimetric analysis of confirming cores) had decreased an additional **fifteen percentage points** by weight (representing an overall reduction of 47%). This would represent a total reduction in the maximum moisture content from 43% in 1997 to 17.4% in 2003 (a reduction of about 60% overall.)”

**Understanding normal moisture content in building products:** Kiln dried lumber has 12 to 15% moisture. It is very hard to get lightweight concrete below 17% moisture in the hot humid Houston environment. Even in Arizona on a vented metal deck it is hard to get lightweight concrete to 15% moisture.

## **The Exxon Building Lightweight Concrete Roof Is Dry**

### **14 - 55 Gallon Drums of Water Removed From an 80' x 200' Roof**

**On The Exxon Roof Approximately 80' x 200':** with a tapered lightweight 8" to 4" – the 2001 Wind Vented Roof system removed 5,977 pounds of water which is approximately 750 gallons. Think of 14 55 gallon drums of water or one 55-gallon drum for a 28' x 40' space.

That is over 1 ½" of water for every square foot of saturated lightweight. That's a lot of water being sucked out of wet lightweight concrete by the 2001 Wind Vented Roof System.

For additional information call 2001 Company at 1 (800) 537-7663.