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THE ICYNENE® ADVANTAGE

APPLICATION CASE STUDY:
Crawlspace Insulation Renovation

Synopsis:

- ✓ ICYNENE LD-C-50™† lowered heating energy consumption by 29%
- ✓ ICYNENE LD-C-50™ allowed for the elimination of extra heating equipment
- ✓ ICYNENE LD-C-50™ was a major element in the mold remediation program
- ✓ ICYNENE LD-C-50™ provided a more comfortable living space for tenants

The Challenge:

The Village at Fox Point is a 56 building, 450 unit housing project originally constructed in 1949. The buildings and individual units were heated until the 1980's by steam generated from a central plant and distributed through underground pipes. During this time period, sufficient heat escaped from the steam pipes located in the crawlspaces to prevent the plumbing pipes from freezing during the winter months. When steam was eliminated in the late 1980's and individual heat and cooling units installed, plumbing pipes located in the crawlspace began to freeze and break during the winter months. To correct the situation, heaters were installed in the crawlspaces and operated during the cold months.

Over time, The Village at Fox Point fell into disrepair and became a problem within the Wilmington Delaware community. In 1995, the property was purchased by owners who planned to renovate the complex and create mid priced rental units.
Once the first renovated units became occupied, the new tenants began to complain about "sick building issues", cold drafts and high heating bills, and began to move out. An inspection of the crawlspaces found that there was no insulation. Of further concern in the crawlspaces was the discovery of mold on the underside of the floorboards.

A program to insulate the crawlspaces with fiberglass was implemented but was quickly found to be impractical and incapable of creating an effective air barrier. The fiberglass insulation program did not correct the tenant complaints of cold drafty floors, high heating bills, or poor indoor air quality that originated from the moldy crawlspace area.

The new owners of the property began searching for an insulation and air barrier solution that would address the issues raised by the tenants, eliminate the need for and costs associated with the winter crawlspace heaters and address the mold situation within the crawlspaces of the buildings.

1) Mold problem underneath the floor prior to removal and installation of Icynene

2) Various types of mold and mildew underneath the floors prior to removal and installation of Icynene

The Solution

In 2000, Mr. John Husband and Thermal Seal Experts undertook the task of insulating and air sealing the crawlspaces of various units within the complex with Icynene. The program entailed;

- Installing 3 inches of Icynene insulation directly onto to the underside of the floorboards. This insulation, with its air barrier properties, blocked the cooler air of the crawlspace from coming into contact with the warmer floorboards, thus preventing condensation and the resulting mold while providing the tenants with comfortable floor temperatures. Icynene also encapsulated any dormant mold spores, depriving them of the air and moisture required for sustenance.

- Installing 3 inches of Icynene insulation directly onto the concrete walls of the crawlspace and covering the area to 3 feet below the ground line. This procedure eliminated any conductive heat transfer in the space and prevented air leakage from the above grade exterior.

The Results

In the buildings that had Icynene installed, the crawlspace heaters were turned off and the temperature remained well above freezing even during the coldest December nights (temperature testing and monitoring conducted by Furlow Associates). There were no frozen plumbing pipes. Eliminating the crawlspace heaters will save the owners $700,000 over 10 years in equipment, maintenance and operating costs. (*Data provided by Furlow Associates and Mr. Bill Bennett, Maintenance Supervisor – Village at Fox Point*)

After 3 inches of Icynene was applied underneath the floors and on the walls of the crawlspaces

The gaps/cracks were sealed with Icynene to prevent air leakage from the above grade exterior.

Tenants noticed an immediate improvement in floor temperature and elimination of cold drafts. They also noticed an immediate improvement in their indoor air quality as the musty odors of the crawlspace were blocked from entering the living space located above.

The occupant at 1249 Kynlyn Drive reduced his gas consumption in December 2000 versus December 1999 by 15% due to the installation of Icynene in his crawlspace. This decrease was achieved even though December 2000 had an average temperature **25% colder** than December 1999. Without Icynene, in

the crawlspace, the projected gas consumption for December 2000 would have been 14% higher than December 1999. In equalizing the temperature to the December 1999 level, Icynene in the crawlspace would have reduced the gas consumption of 1249 Kynlyn Drive by 29%.

Air leakage through the building envelope had been identified as a major contributor to energy inefficiency. Insulating and air sealing the crawlspaces of one tested building within The Village at Fox Point with Icynene reduced the air leakage of the entire structure by 56%. (*Testing conducted by Energy Services Group*)

Based on the success of Icynene in addressing the concerns of the tenants and owners, Thermal Seal Experts were requested to renovate the remaining buildings within the complex.

The Icynene Insulation Renovation:

- ✓ Reduced gas consumption & saved money – a 29% reduction in gas consumption
- ✓ Allowed for the elimination of extra heating equipment costs totalling $700,000
- ✓ Was a key element in the mold remediation program
- ✓ Improved the indoor air quality for tenants by providing an air barrier between the musty air of the crawlspace and the living space located above.
- ✓ Provided tenants with a more comfortable living environment, thereby assisting in the reduction of tenant turnover.

Icynene Insulation

Icynene foam insulation products are sprayed into/onto walls, crawlspaces, underside of roofs, attics and ceilings by Icynene Licensed Dealers. They expand in seconds to create superior insulating and air-sealing results. Every crevice, crack, electrical box, duct and exterior penetration is effortlessly sealed to reduce energy-robbing random air leakage. Icynene products adhere to the construction material and remain flexible so that the integrity of the building envelope seal remains intact over time.

Icynene is ideal for residential, commercial, industrial and institutional indoor applications. The products are:

Healthier: Icynene spray foam products are CHPS (Collaborative for High Performance Schools) EQ 2.2 Section 01350 Compliant, meeting nationally recognized requirements as Low-Emitting Materials (LEM) and Environmentally Preferable Products (EPP). Icynene spray foam products are 100% water-blown and contain no HFCs or PBDEs. Icynene seals out dust, pollen and other allergens from entering the structure. As air barriers, Icynene products minimize the potential for airborne moisture build-up and related problems such as mold and mildew.

Quieter: By air-sealing the building envelope, Icynene effectively minimizes airborne sounds. Icynene is perfect for reducing unwanted noises from home theaters, plumbing runs and playrooms.

More Energy Efficient: Icynene delivers up to 50% more energy savings versus traditional insulation.

Information about Icynene insulation can be obtained by calling Icynene Inc. (800-758-7325), visiting the website Icynene.com, or contacting your local Icynene Licensed Dealer.

† The Icynene product installed and addressed in this project example is Icynene's classic formula, ICYNENE LD-C-50™.

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Visit our website: Icynene.com
or call
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