

-----  
ADDRESS . . : 87315 \*UNASSIGNED SUBDIV: PHELMA B ROGERS & WILLIAM H  
CONTRACTOR : PHONE :  
OWNER . . : HADDOCK BRIAN & DANIELLE PHONE : (919) 577-0071  
PARCEL . . : 05-0633- - -0036- -06-  
APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
ON RT BEFORE BOB & NANS STORE.JD  
-----

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK  
FLOOD ZONE . . . . : FLOOD ZONE X  
-----

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07 <u>10-11-07</u>	TI <u>APBS</u>	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046

----- COMMENTS AND NOTES -----  
-----

ADDRESS . . : 87315 \*UNASSIGNED  
CONTRACTOR :  
OWNER . . : HADDOCK BRIAN & DANIELLE  
PARCEL . . : 05-0633- - -0036- -06-  
APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
ON RT BEFORE BOB & NANS STORE.JD

SUBDIV: PHELMA B ROGERS & WILLIAM H  
PHONE :  
PHONE : (919) 577-0071

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK

FLOOD ZONE . . . . : FLOOD ZONE X  
# BEDROOMS . . . . . : 3.00 PROPOSED USE . . . . . : SFD  
SEPTIC - EXISTING? . . . . : NEW

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07	BS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
	10/11/07	AP	
B103 01	10/18/07	T	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846

*10-18-07 APB*

COMMENTS AND NOTES

ADDRESS . . : 87315 \*UNASSIGNED  
CONTRACTOR :  
OWNER . . : HADDOCK BRIAN & DANIELLE  
PARCEL . . : 05-0633- - -0036- -06-  
APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
ON RT BEFORE BOB & NANS STORE.JD

SUBDIV: PHELMA B ROGERS & WILLIAM H  
PHONE :  
PHONE : (919) 577-0071

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK  
FLOOD ZONE . . . . : FLOOD ZONE X

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07 10/11/07	BS AP	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
B103 01	10/18/07 10/18/07	BS AP	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846
B105 01	10/23/07 <i>10-23-07</i>	TI <i>APBS</i>	R*OPEN FLOOR VRU #: 001508381

COMMENTS AND NOTES



ADDRESS : 4094 CHRISTIAN LIGHT RD  
CONTRACTOR :  
OWNER : HADDOCK BRIAN & DANIELLE  
PARCEL : 05-0633- - -0036- -06-  
APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
ON RT BEFORE BOB & NANS STORE.JD

SUBDIV: PHELMA B ROGERS & WILLIAM H  
PHONE :  
PHONE : (919) 577-0071

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK  
FLOOD ZONE . . . : FLOOD ZONE X

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07 10/11/07	BS AP	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
B103 01	10/18/07 10/18/07	BS AP	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846
B105 01	10/23/07 10/23/07	BS AP	R*OPEN FLOOR VRU #: 001508381
A814 01	10/24/07 10/22/07	TI AP	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001507505 4094 Christian Light Rd
E207 01	10/31/07 10/31/07	BS AP	R*ELEC TEMP SERVICE POLE VRU #: 001512441
R427 01	11/27/07	TI	FOUR TRADE ROUGH IN >2500 VRU #: 001525658

*PA-MR*

COMMENTS AND NOTES

*Fire caulk elect + Plumb  
bolt-garage beam or provide Product Guide  
Jacuzzi leaks - other tub leaks  
No water test on DWV + no Press.  
Rodent Proof under tubs  
cricket needed at Fireplace 1001-17*

ADDRESS : 4094 CHRISTIAN LIGHT RD  
CONTRACTOR :  
OWNER : HADDOCK BRIAN & DANIELLE  
PARCEL : 05-0633- - -0036- -06-  
APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
ON RT BEFORE BOB & NANS STORE.JD

SUBDIV: PHELMA B ROGERS & WILLIAM H  
PHONE :  
PHONE : (919) 577-0071

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK

FLOOD ZONE : FLOOD ZONE X  
# BEDROOMS : 3.00 PROPOSED USE : SFD  
SEPTIC - EXISTING? : NEW

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07 10/11/07	BS AP	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
B103 01	10/18/07 10/18/07	BS AP	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846
B105 01	10/23/07 10/23/07	BS AP	R*OPEN FLOOR VRU #: 001508381
A814 01	10/24/07 10/22/07	TI AP	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001507505 4094 Christian Light Rd
E207 01	10/31/07 10/31/07	BS AP	R*ELEC TEMP SERVICE POLE VRU #: 001512441
R427 01	11/27/07 11/27/07	MR DA	FOUR TRADE ROUGH IN >2500 VRU #: 001525658 <ol style="list-style-type: none"> <li>1. firecaulk all holes , elect, plumb or mech. At top plate and bottom 2. bolt garage beam per specs or provide product guide to explain</li> <li>2. jaccuzzi leaks at fittings</li> <li>4. other tuub leaks at drain area</li> <li>5. no water in test pipe for DWV</li> <li>6. no water pressure</li> <li>7. no baffles in place</li> <li>8. rodent proof below all tubs</li> <li>9. cricket needed at fireplace roof (r1001.17)</li> <li>10. wall framing at north attic gable wall does not have a top plate and exceeds height for 2x4 framing</li> <li>11. openings at doors exceeding 4'9" need two jack studs</li> <li>12. ductwork in garagemust be metal</li> </ol>
R427 02	11/30/07 <i>11-30-07</i>	TI <i>ARBS</i>	FOUR TRADE ROUGH IN >2500 VRU #: 001528065

COMMENTS AND NOTES

*Rich Brown Form work  
919-524-6826*

**FOAM WORX**  
**INSULATORS LLC**  
*Creating A Healthier, Quieter Space*

Building Inspections Department  
Harnett County, NC  
108 E. Front St.  
Lillington, NC 27546

**To: Brad Sutton**

Re: Spray Foam Insulation at 4094 Christian Light Rd.

I am writing about the house being constructed at 4094 Christian Light Rd. by Brian Haddock. Foam Worx Insulators (an Insulating, Inc company) has been contracted to install spray foam insulation at the address listed above. Foam Worx Insulators, LLC sprays The Icynene Insulation System® to nominal depths of 5 ½ inches in ceilings, floors, roof decks, cathedrals, slopes and overhangs, as well as 3 inches nominal in exterior walls, per the attached letter from Icynene Engineering. I have included both the mentioned letter from Icynene, as well as the supporting document, titled "The Economic Thickness of Insulation" with this fax. I have also included in this package: Product Specifications for Icynene, ICC-ES report number NER-420, the engineering detail for the roof insulation and a copy of the lifetime warranty. Finally, I am also including the memorandums from GAF Materials/Elk Roofing which guarantee that the warranty will remain in place on their shingles when the underside of the roof deck is sprayed with open cell foam insulation.

I am sending this information in advance of our installation of the spray foam insulation, so that you will not be left in the dark about the fitness of this particular product for the job at the time of inspection, and so that you can read up on the product and get any questions answered before the inspection time comes. I would also like to meet you on site today when you are inspecting, if that's possible, so that I can go over some of the items that we require for spraying, which are not generally required by other types of insulation, and make sure that we do not run across a conflict.

Please let me know if I can do anything else.

Sincerely,



Rich Brown  
Team Leader  
Foam Worx Insulators, LLC  
1212 Home Ct.  
Raleigh, NC 27603

Phone: 919-524-6826  
Nextel: 150\*26\*31863  
Fax: 919-256-9601



6747 Campobello Rd., Mississauga, Ontario, L5N 2L7, Canada  
Tel: 905-363-4040 • Toll Free: 800-758-7325 • Fax: 905-363-0102

October 24, 2007

Foam Worx Insulators, LLC.  
1212 Home Court  
Raleigh NC, 27603

Attn: Mr. Rich Brown, Sales Team Leader

**Re: Thermal Performance of Icynene®**

The International Energy Conservation Code, (Chapter 4), allows for the use of the performance approach in approving insulation thickness. Compliance with this chapter requires an analysis of the annual energy usage.

The Icynene Engineering Department has performed numerous energy analyses for new construction and retrofit projects. Icynene uses REM/Design software developed by Architectural Energy Corporation from Boulder, CO. Attached is their letter regarding the code compliance capability of the software.

Icynene® is a thermal insulation and an air barrier material. It provides improved energy performance as a result of convective heat flow control. The air seal advantage of Icynene® provides improved energy performance over much higher R-value insulations that are air permeable.

When The Icynene Insulation System® is installed in accordance with the manufacturer's installation instructions to thickness of 3" in walls and 5" in roof/ceiling application it will provide energy performance equal to or better than R-19 and R-30, respectively, with mineral fiber insulation.

If you require further information please do not hesitate to contact the writer.

Yours truly,

Viktor M. Ginic, P. Eng.  
Building Science Engineer  
vginic@icynene.com

**The Icynene Insulation System®**



# The Economic Thickness of Thermal Insulation

The conventional method of evaluating the performance of insulation is to measure the R-value, the conductive heat flow resistance of the material.

The measurement of conductive heat flow resistance is made using the heat flow meter apparatus. This test procedure (ASTM C-518) measures the thermal conductivity of insulation material. In this test, one side of the specimen is heated to a specific temperature and after steady state heat flow has been reached, the temperature on the opposite side is measured. Through this temperature measurement the R-value is calculated. The outside surface of the test apparatus and the specimen is sealed and insulated to minimize the heat loss through the edge and eliminate the effects of any convection or radiant heat flow. This measurement solely defines the conductive heat flow resistance of the insulation material, the R-value.

Once the R-value of an insulation material is determined, the heat flow through it can be calculated using Fourier's steady-state heat flow equation.

$$Q = \frac{A \times \Delta T}{R}$$

Where:

Q = Rate of heat flow, BTU/hr

A = Area, ft<sup>2</sup>

ΔT = Temperature differential, °F

R = Resistance to heat flow, hr.ft<sup>2</sup> °F/BTU

This equation is used to calculate the benefit of increasing the thickness of any type of insulation as long as there is no air movement (convective heat transfer) through the insulation.

As an example, consider 1000 ft<sup>2</sup> of insulated area with a temperature differential of 40°F. Let us include the outside air film at R-0.2 and the inside air film at R-0.7. The total R-value before the application of any insulation is 0.9. Increasing the insulation thickness by 1" increments at R-3.6/inch provides the following heat flow rates as shown in Figure 1.1 & 1.2.

Diminishing Heat Flow with Increasing Insulation Thickness

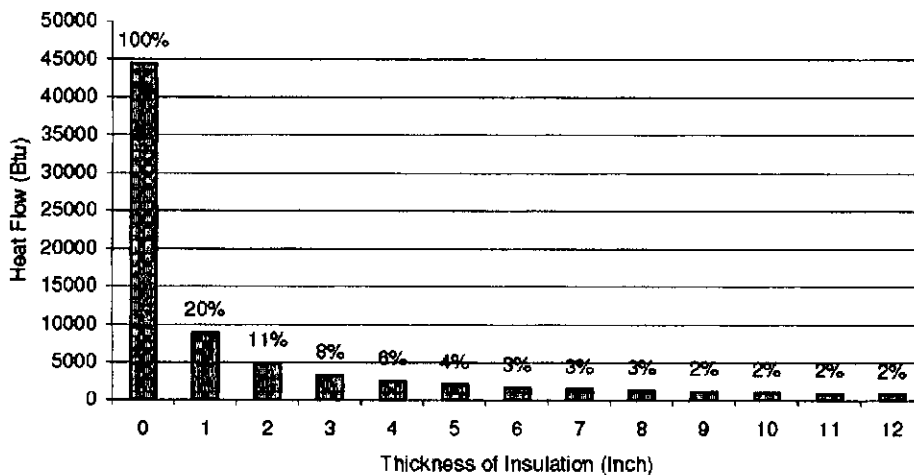


Figure 1.1: Percentage of total heat flow

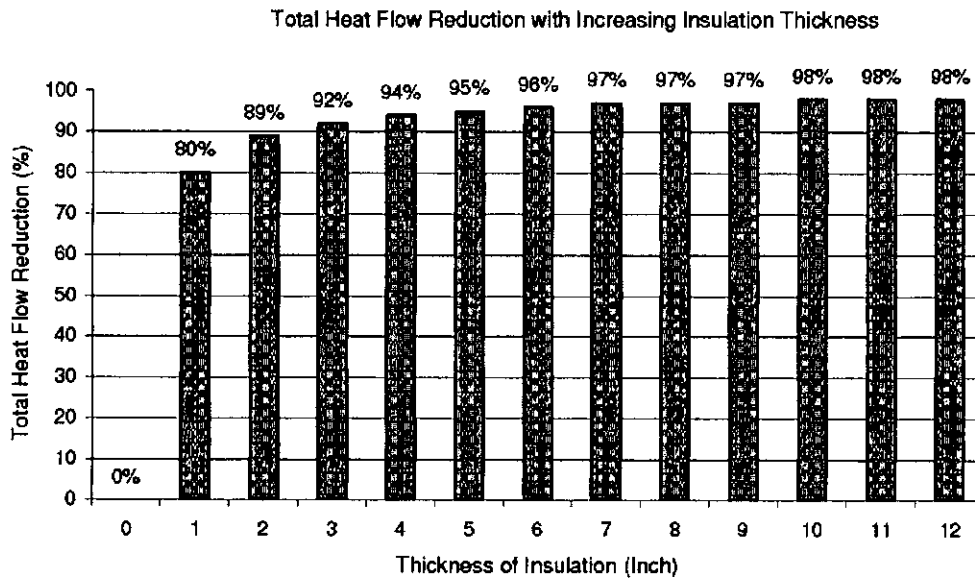


Figure 1.2: Percentage of total heat flow reduction

In Figure 1.1, we can see that the first 1" of insulation reduces the heat flow to 20% of the total and at 5" of thickness, the heat flow is reduced further, down to 5% of the total. In looking at Figure 1.2, we see that increasing the insulation thickness from 6" to 12" only provides an additional heat flow reduction of 2%. Doubling the insulation thickness (R-value); doubling the cost; only provides a modest 2% increase in heat flow reduction. Based on this observation, it is very difficult to justify the additional cost of adding insulation thickness beyond 5".

The Icynene Insulation System<sup>®</sup> fills any shaped cavity and adheres to almost all materials, thereby, forming an insulation layer with very low air permeance. Air flow is eliminated and for this reason, conductive heat loss can be used as a sole criterion for establishing insulation thickness with Icynene.

As shown in Figure 1.2, insulation material with R-value of 3.6 per inch blocks out 95% of conductive heat flow within the first 5 inches of the material. Thickness beyond this point would bring more reduction in heat flow but it would not be economically justified since the returns on additional R-value have greatly diminished.

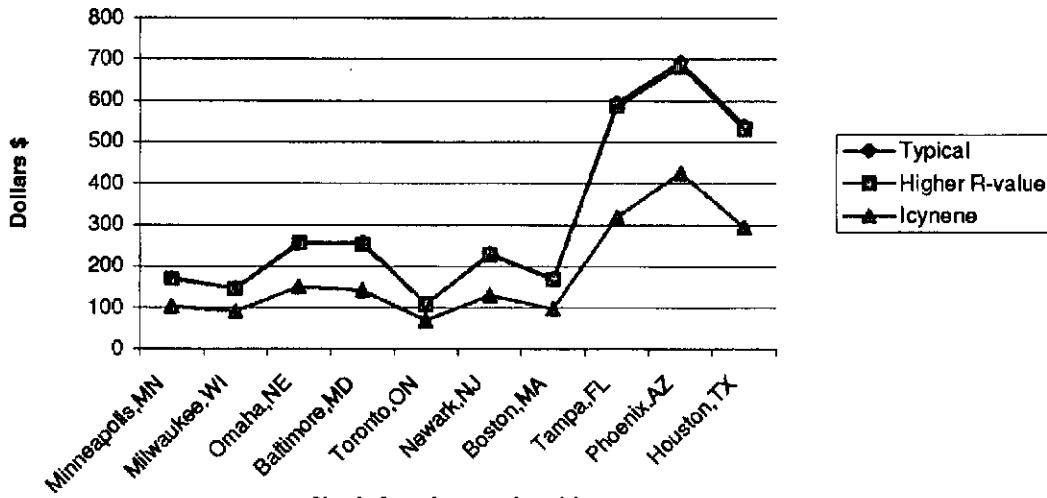
## REDUCE AIR INFILTRATION - REDUCE ENERGY USE REDUCE EQUIPMENT SIZE

In the case of insulation material with significant air permeance, conductive heat loss should not be the only criterion used for establishing insulation thickness. Convective heat loss must be considered as well, particularly when a substantial latent load is involved.

Oak Ridge National Laboratory (ORNL) conducted an experiment<sup>1</sup> to determine the efficiency of a roof assembly insulated with low density, loose-fill fiberglass insulation and discovered that up to 50% of the heat loss occurred as a result of convection; air circulation through the insulation. This result showed that the air-permeable insulation had lost its anticipated thermal performance level by half and that convective heat transfer had a significant negative impact on insulation performance.

<sup>1</sup> ORNL's Building Envelope Center: Fighting the Other Cold War  
URL: <http://www.ornl.gov/ORNLReview/rev26-2/text/usemain.html>

### Energy Cost for Cooling

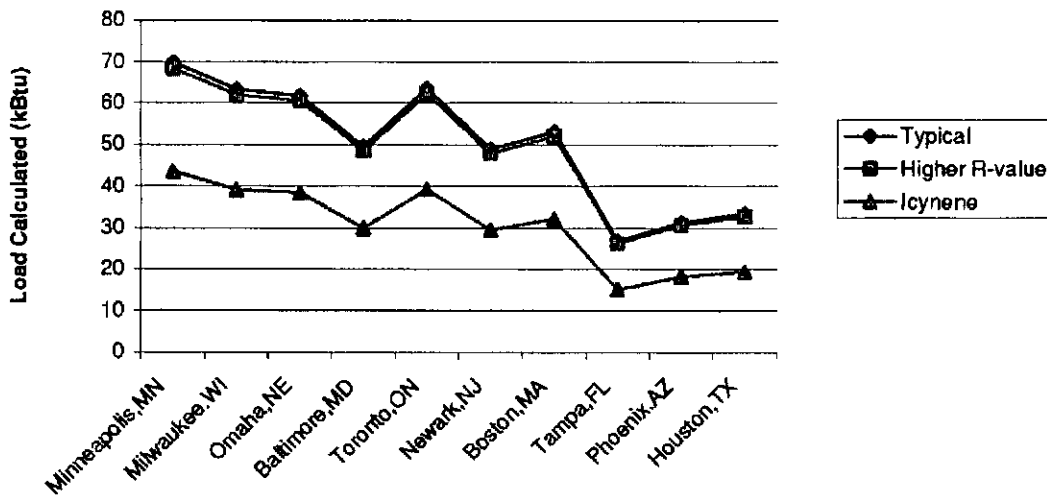


North American major cities

Figure 2.2

As far as sizing heating and cooling equipment is concerned, Icynene provides a significant reduction in both heating & cooling load due to its air sealing property. Figures 2.3 & 2.4 show the equipment size required in these houses for heating and cooling. The graphs show that there is a significant reduction in required capacity for both heating and cooling relative to "Typical" and "Higher R-Value" systems. Often with Icynene, size reduction for heating equipment can reach up to 50% and for cooling, it can be up to 40%.

### Calculated Load for Heating



North American major cities

Figure 2.3

### Calculated Load for Cooling

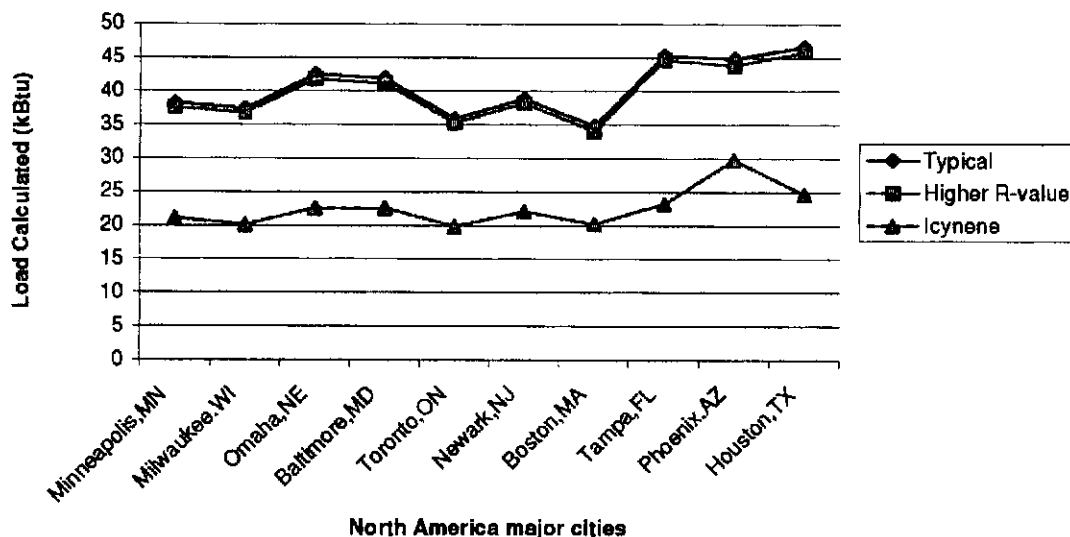
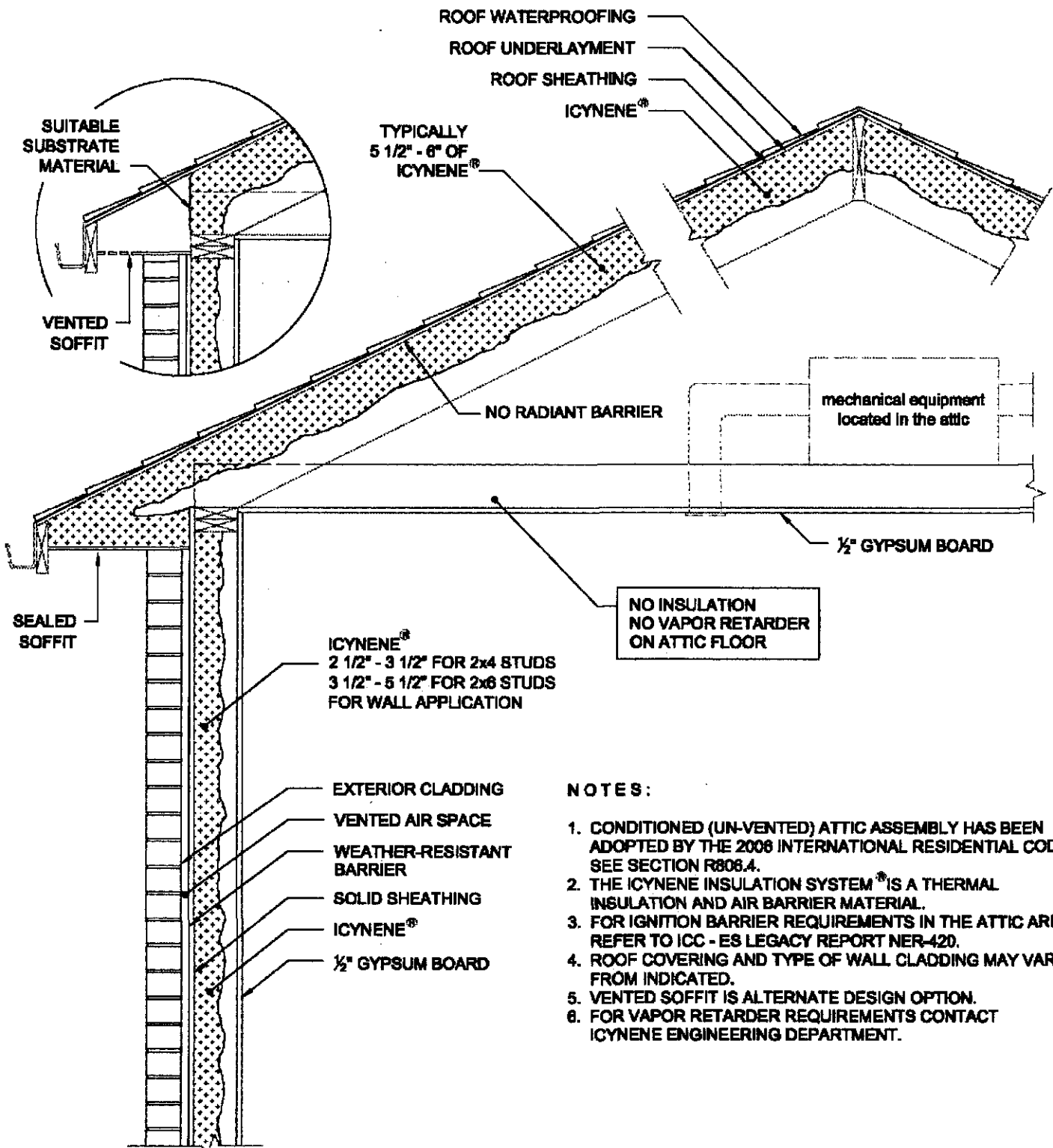


Figure 2.4

Icynene's air seal capability virtually eliminates convective heat transfer within the insulation and reduces unwanted air leakage through the building envelope. This feature improves the efficiency of the building envelope thereby reducing the heating and cooling costs and reducing the size of HVAC equipment as outlined in figures 2.1 through 2.4. As a result lower operating costs are realized and the cost of the operating equipment is reduced.

Often, air permeable insulation at twice the R-value gets used and still comes short of the desired energy savings as shown in Figures 2.1 and 2.2.

The on-site spray applied application of Icynene provides an excellent air seal that ensures a low air infiltration rate for the building envelope. This quality improves energy efficiency of the building as demonstrated through the graphs above and in addition, the overall performance of the building resulting in better sound attenuation, healthier indoor environment and enhanced thermal comfort.



- NOTES:**
1. CONDITIONED (UN-VENTED) ATTIC ASSEMBLY HAS BEEN ADOPTED BY THE 2006 INTERNATIONAL RESIDENTIAL CODE, SEE SECTION R808.4.
  2. THE ICYNENE INSULATION SYSTEM® IS A THERMAL INSULATION AND AIR BARRIER MATERIAL.
  3. FOR IGNITION BARRIER REQUIREMENTS IN THE ATTIC AREA REFER TO ICC - ES LEGACY REPORT NER-420.
  4. ROOF COVERING AND TYPE OF WALL CLADDING MAY VARY FROM INDICATED.
  5. VENTED SOFFIT IS ALTERNATE DESIGN OPTION.
  6. FOR VAPOR RETARDER REQUIREMENTS CONTACT ICYNENE ENGINEERING DEPARTMENT.

**ICYNENE**  
 1-800-758-7325  
 www.icynene.com

**CONDITIONED (UNVENTED)  
 ATTIC ASSEMBLY**

DETAIL - 1  
 NOV 2006  
 ICY\_ENG\_01

The importance of reducing air infiltration can be easily demonstrated by analyzing the energy consumption for heating and cooling houses that have different R-values and air infiltration rates. The following evaluation was generated using the REM/Design energy analysis software. This evaluation deals with three identical houses, located in different North American cities with three different levels of insulation and air-infiltration. The house design is fully detached, has approximately 3,500 sq.ft. conditioned area with two stories and a fully conditioned basement.

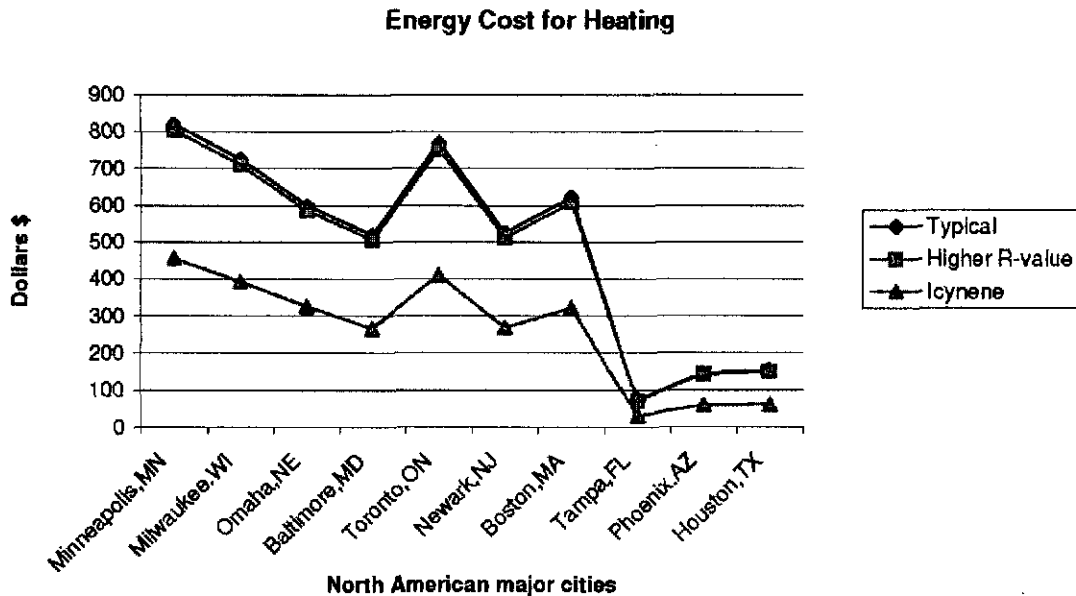
The first is a **Typical** house with an air permeable insulation installed at R-19 in the walls & R-30 in the ceiling according to the general building code requirements and an air infiltration rate of 0.6 ACH at natural pressure.

The second house has the same insulation material with a **Higher R-value**, R-43 in the ceiling & R-19 in the walls and an air infiltration rate is kept at 0.6 ACH at natural pressure.

The third is an **Icynene** house with R-11 in the walls, R- 18 in the ceiling and an air infiltration of 0.1ACH at natural pressure.

Heating and cooling costs and the required heating and cooling equipment capacities for each house are plotted on the following graphs. The utility rates are set at \$0.08 per kWh for electricity and \$0.50 per Therm for natural gas.

Figure 2.1 shows the energy costs for heating in several different cities throughout North America. The heating costs are compared for the three different insulation systems. It can be seen that savings on heating cost reached up to 40%~50% with Icynene<sup>®</sup> when compared to the **“Typical”** and **“Higher R-Value”** insulation system. Also, the graph indicates that the colder the climate, the greater the heating cost savings are with Icynene.



**Figure 2.1**

Figure 2.2 shows savings on cooling costs with Icynene. They provide savings of 25%~40% over the **“Typical”** and **“Higher R-Value”** insulation system. The cities in a hot & humid climate show greater savings due to the higher cooling demand and latent load.

**PRODUCT SPECIFICATION**



**ICYNENE<sup>INC</sup>**

**1. PRODUCT NAME**

ICynene® and The ICynene Insulation System® are registered trademarks for polycynene insulation manufactured by ICynene Inc. ICynene® spray formula is a 1/2 lb density free rise, open celled material.

**2. MANUFACTURER**

ICynene® is made on site from liquid components manufactured by ICynene Inc. Installation and on-site manufacturing is supplied by independent ICynene Licensed Dealers.

**3. PRODUCT DESCRIPTION**

ICynene® insulates and air seals at the same time. Its performance is less installation sensitive than factory manufactured insulation materials. It is an effective "breathing" air barrier that can adjust with the building to maintain a seal against energy-robbing air leakage for the life of the building. Convective air movement inside cavities is virtually eliminated, providing more uniform temperatures throughout the building. The result is superior quality construction, with higher comfort levels and lower heating and cooling costs. Energy savings vary depending on building design, location, etc.

ICynene® is applied by spraying liquid components onto an open wall, crawl space or ceiling surface. There they expand 100:1 in just seconds to provide a flexible foam blanket of millions of tiny air cells, filling building cavities and sealing cracks and crevices in the process. It adheres to virtually all surfaces, sealing out air infiltration. Excess material is easily trimmed off, leaving a surface ready for drywall or other finish.

**4. TECHNICAL DATA**

(Based on Core Samples)

**Thermal Performance**

Thermal resistance R/in. (R<sub>s</sub>/25mm)  
 ASTM C518: R3.6 hr. ft<sup>2</sup> °F/BTU  
 Rsi 0.62 m<sup>2</sup> °C/W

Average insulation contribution in stud wall:  
 2" x 4" = R13      2" x 6" = R20

The ICynene Insulation System® provides more effective performance than the equivalent R-value of air permeable insulation materials. ICynene® is not subject to loss of R-value due to aging, windy conditions, settling, convection or air infiltration; nor is it likely to be affected by moisture related conditions. A FACT SHEET with R-value data is available upon request.

**Air Permeance/Air Barrier /Air Seal**

The ICynene Insulation System® fills any shaped cavity and adheres to all materials, creating assemblies with very low air permeance. No additional interior or exterior air infiltration protection is necessary.

Air permeability of core foam:  
 ASTM E283 data  
 0.0049 L/S-m<sup>2</sup> @75 Pa for 5.25"  
 0.0080 L/S-m<sup>2</sup> @75 Pa for 3.25"

In all buildings, adequate mechanical ventilation/air supply should be provided for optimum IAQ (Indoor Air Quality). See ASHRAE Guidelines.

**Water Vapor Permeance**

ICynene® is water vapor permeable and allows structural moisture to diffuse and dissipate. It will not entrap moisture in materials to which it is applied.

Water vapor transmission properties:  
 ASTM E96 data

16 perms 941 ng/(Pa·s·m<sup>2</sup>) @ 3" (76mm) thick  
 10 perms 565 ng/(Pa·s·m<sup>2</sup>) @ 5" (127mm) thick

Because of its low air permeance, ICynene® is not infiltrated by moisture-laden air. Computer modeling of moisture movement in walls using a program (MOIST) developed by Doug Burch of the National Institute of Standards and Technology (NIST) suggested that a 1.0 perm rating was not required when ICynene® insulation was used, except in climates as cold or colder than Madison, Wisconsin (7500 Heating degree days). This conclusion was in general agreement with other computer modeling of moisture movement in building envelopes performed in Canada. In those situations that warrant a vapor barrier, the use of

low vapor permeable paint on the interior drywall is adequate.

**Water Absorption Properties**

ICynene® is hydrophobic and does not exhibit capillary properties. It does not wick and is water repellent. Water can be forced into the foam under pressure because it is open celled. Water will drain by gravity rather than travel horizontally or vertically through the foam. Upon drying, thermal performance is fully restored.

**Acoustical Properties**

Performance in a 2"x4" wood stud wall:

STC Sound Transmission Class - 37  
 Hz Freq. 125 250 500 1000 2000 4000  
 ASTM E90 19 30 31 42 38 46

NRC Noise Reduction Coefficient - 70  
 Hz Freq. 125 250 500 1000 2000 4000  
 ASTM C423 II .43 .89 .72 .71 .67

Actual performance is superior than reported test results because of ICynene®'s ability to control air leakage.

**Burn Characteristics**

ICynene® will be consumed by flame, but will not sustain flame upon removal of the flame source. It leaves a charcoal residue. It will not melt or drip. It should be applied in accordance with applicable building codes.

U.S.A. Specifications	
Surface Burning Characteristics of ICynene® ASTM E84	
Flame Spread	<20
Smoke Development	<400
Fuel Contribution	0
Oxygen Index ASTM D2863	23%
N.Y. State Fire gas toxicity	LC <sub>50</sub> -12

CANADA Specifications	
Corner Wall Test CAN4-SIO2 FSC3	
Flame Spread	510-530
Smoke Development	95-150

## Electrical Wiring

Icynene® has been evaluated with both 14/3 and 12/2 residential wiring (max. 122°F/50°C). It is chemically compatible with all electrical wiring coverings.

Note: For any insulation of knob and tube wiring, please reference local electrical code.

## Corrosion

Icynene® did not cause corrosion when evaluated in contact with steel under 85% relative humidity conditions.

## Bacterial or Fungal Growth and Food Value

Independent testing conducted by Texas Tech University has confirmed that Icynene® is not a source of food for mold; and as an air barrier, Icynene® reduces the airborne introduction of moisture, food, and mold spores into the building envelope. It has no food value for insects or rodents.

## Environmental / Health / Safety

Icynene® contains no formaldehyde or volatile organic compounds. It has been thoroughly evaluated for in-situ emissions by industry and government experts. VOC emissions are below 1/100 of the safe concentration level within hours following the application of Icynene®. A 24 HR waiting period is recommended for highly sensitive people prior to occupancy.

Not intended for exterior use. Not to be installed within 2" (50 mm) of heat emitting devices, where the temperature is in excess of 200°F(93°C).

## 5. INSTALLATIONS

The Icynene Insulation System® is installed by a network of Licensed Dealers, trained in the installation of Icynene®. Installation is generally independent of environmental conditions. It can be installed in hot, humid or freezing conditions. Surface preparation is generally not necessary. Within minutes, the foaming process is complete.

## 6. AVAILABILITY

Check regional yellow pages or contact Icynene Inc. at 800-758-7325 or our website at [www.icynene.com](http://www.icynene.com).

## 7. WARRANTY

WHEN INSTALLED PROPERLY IN ACCORDANCE WITH INSTRUCTIONS, THE COMPANY WARRANTS THAT THE PROPERTIES OF THE PRODUCT MEET PRODUCT SPECIFICATIONS AS OUTLINED IN THIS PRODUCT SPECIFICATION SHEET.

## 8. TECHNICAL

Icynene Licensed Dealers and Icynene Inc. provide support on both technical and regulatory issues. Architectural specifications in CSI 3-Part format are available upon request.

## 9. RELATED REFERENCES

All physical properties were determined through testing by accredited third party agencies. Icynene Inc. reserves the right to change specifications in its effort to enhance quality features. Please confirm that technical data literature is current.

## 10. PACKAGING AND STORAGE

Packaging - 55 U.S. gallon open top steel drums  
Component 'A' - 550 lb. per drum  
Base Seal® - Polyisocyanate MDI  
Component 'B' - 500 lb. per drum  
Gold Seal® - Resin

### Storage

Component A should be protected from freezing.

Component B can be frozen but must be protected from overheating (120°F/49°C) and prolonged storage above 100°F/38°C. Component B separates during storage and should be mixed thoroughly prior to use.

## 11. INSTALLATION SPECIFICATIONS

Refer to the Icynene Installer's Manual for expanded information.



**ICYNENE**<sub>INC.</sub>

**The Icynene Insulation System®**

**Healthier, Quieter, More Energy Efficient®**

Telephone: 905.363.4040  
Toll Free: 800.758.7325  
Facsimile: 905.363.0102  
Website: [www.icynene.com](http://www.icynene.com)  
E-mail: [inquiry@icynene.com](mailto:inquiry@icynene.com)





ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 800 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 569-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2306

Legacy Report on the 2000 International Building Code® with 2002 Accumulative Supplement, the 2000 International Residential Code® for One- and Two-Family Dwellings with 2002 Accumulative Supplement, the BOCA® National Building Code/1999, the 1999 Standard Building Code®, the 1997 Uniform Building Code™, and the International One and Two Family Dwelling Code® 1998.

ICYNENE INC.
6747 CAMPOBELLO ROAD
MISSISSAUGA, ONTARIO,
CANADA L5N 2L7
800.768.7325
www.icynene.com

Division 07 – Thermal and Moisture Protection
Section 07210 – Building Insulation

1.0 SUBJECT

The Icynene Insulation System®

2.0 PROPERTY FOR WHICH EVALUATION IS SOUGHT

- 2.1 Surface Burning Characteristics
2.2 Thermal Resistance
2.3 Fire Resistance Rated Wall Assemblies, see Section 4.4
2.4 Attic and Crawl Space Installation, see Section 4.3

3.0 DESCRIPTION

3.1 General

The Icynene Insulation System® is a low-density, plastic foam that has an open-cell structure. The material is a two component system, spray-in-place vapor permeable product used to insulate the building envelope and air-seal areas such as plumbing and wiring penetrations, rim joists areas, window frames, overhangs, porch and garage ceilings and exterior walls. Upon completion of expansion, the open cells contain only air. The chemical reaction that occurs while Icynene Insulation System® is being applied takes place in seconds, with less than five minute curing time needed. After curing, the air-seal remains flexible.

3.2 Surface Burning Characteristics

When tested in accordance with ASTM E 84, The Icynene Insulation System® has been shown to have a flame-spread index (FSI) of less than 25 and a smoke-development index (SDI) of less than 450, when installed at a maximum thickness of 5.5 inches (140 mm) and a nominal density of 0.5 pcf +/- 10% (8 kg/m3).

3.3 Thermal Resistance

The Icynene Insulation System® has a thermal resistance of 5.7 °F.ft2.hr/Btu when tested at a thickness of 1.6 inches (41 mm) in accordance with ASTM C 518 at a mean test temperature of 75 °F (24 °C).

4.0 INSTALLATION

4.1 General

The Icynene Inc. The Icynene Insulation System® Installers Manual, Copyright© 2000 and this report shall be strictly adhered to and a copy of these instructions and this evaluation report shall be available at all times on the job site during installation.

The instructions within this report govern if there are any conflicts between the manufacturer's instructions and this report.

4.2 Application

4.2.1 General: The Icynene Insulation System® is applied using spray equipment specified by the manufacturer at the construction site on vertical and horizontal substrates, and the underside of horizontal surfaces to fill gaps and cracks in building materials to create an air seal and to provide an insulating barrier. The Icynene Insulation System® shall not be used in areas which have a maximum service

ICC-ES legacy reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



temperature greater than 180° F (82° C). The foam shall not be used in electrical outlet or junction boxes or in contact with rain or water. The Icynene Insulation System® shall be protected from the weather after application.

**4.2.2 Maximum Thickness:** The Icynene Insulation System® shall not have a thickness exceeding 5.5 inches (140 mm) and shall have a nominal density of 0.5 pcf +/- 10% (8 kg/m<sup>3</sup>). A nominal thickness of 6 inches (152 mm) is permitted in attics and crawl spaces described in section 4.3 below.

**4.2.3 Licensed Dealers:** The Icynene Insulation System® shall only be installed by licensed dealers. Licensed Dealers have been previously certified by Icynene Inc. to install the Icynene Insulation System®. The installer shall provide the building official with a letter noting the installation was in accordance with the manufacturer's instruction and this evaluation report along with the date, address of installer, company's name, installer's name and certification number.

#### 4.3 Thermal Barrier

The Icynene Insulation System® shall be separated from the interior of the building by an approved thermal barrier of 0.5 inch (12.7 mm) gypsum wallboard or equivalent 15 minute thermal barrier complying with the applicable Code, except within an attic or crawl space see section 4.3.1 through 4.3.5 below:

**4.3.1 Assembly No. 1, Attics and Crawl Spaces:** The Icynene Insulation System® installed within attics or crawl spaces on the underside of the top of the space is permitted to be installed exposed in an attic or crawl space without a thermal barrier or ignition barrier under the following conditions:

- 4.3.1.1** Entry to the attic or crawl space is limited to service of utilities;
- 4.3.1.2** There are no interconnected basement or attic areas;
- 4.3.1.3** Air in the attic or crawl space is not circulated to other parts of the building;
- 4.3.1.4** Ventilation of the attic or crawl space is provided in accordance with the applicable Code.
- 4.3.1.5** The insulation shall be limited to a maximum nominal thickness of 6 inches (152 mm) and is installed on the underside of the top of the space, roof deck and ceiling joists and floor deck and floor joists and shall not be installed on vertical surfaces.

**4.3.2 Assembly No. 2, Attics and Crawl Spaces:** The Icynene Insulation System® installed within attics or crawl spaces on the underside of the top space and on vertical wall surfaces and the insulation is covered with FireFree 88

is permitted to be installed exposed in an attic or crawl space without a thermal barrier or ignition barrier under the following conditions:

- 4.3.2.1** Entry to the attic or crawl space is limited to service of utilities;
- 4.3.2.2** There are no interconnected basement or attic areas;
- 4.3.2.3** Air in the attic or crawl space is not circulated to other parts of the building;
- 4.3.2.4** Ventilation of the attic or crawl space is provided in accordance with the applicable Code.
- 4.3.2.5** The insulation shall be limited to a maximum nominal thickness of 6 inches (152 mm) and is installed on the underside of the top space and on vertical wall surfaces and the insulation is covered with FireFree 88 at an application rate of 1 gallon per 100 ft<sup>2</sup>.

**4.3.3 Assembly No. 3, Attics and Crawl Spaces:** The Icynene Insulation System® is permitted to be installed within attics or crawl spaces, on the underside of the top of the space and on vertical wall surfaces with the insulation on the walls protected by an ignition barrier (see 4.3.5 below) and the insulation of the top space not covered, under the following conditions:

- 4.3.3.1** Entry to the attic or crawl space is limited to service of utilities;
- 4.3.3.2** There are no interconnected basement or attic areas;
- 4.3.3.3** Air in the attic or crawl space is not circulated to other parts of the building;
- 4.3.3.4** Ventilation of the attic or crawl space is provided in accordance with the applicable Code.
- 4.3.3.5** The insulation shall be limited to a maximum nominal thickness of 6 inches (152 mm).

**4.3.4 Assembly No. 4, Attics and Crawl Spaces:** The Icynene Insulation System® is permitted to be installed within attics or crawl spaces, on vertical wall surfaces with the insulation on the walls protected by Fire Free 88, and the top of the space is not insulated, under the following conditions:

- 4.3.4.1** Entry to the attic or crawl space is limited to service of utilities;
- 4.3.4.2** There are no interconnected basement or attic areas;
- 4.3.4.3** Air in the attic or crawl space is not circulated to other parts of the building;
- 4.3.4.4** Ventilation of the attic or crawl space is provided in accordance with the applicable Code.
- 4.3.4.5** The insulation shall be limited to a maximum nominal thickness of 6 inches (152 mm) and is covered with FireFree 88 at an application rate of 1 gallon per 100 ft<sup>2</sup>.

**4.3.5 Assembly No. 5, Attics and Crawl Spaces:**

The Icynene Insulation System® installed within attics or crawl space where entry is made only for service of utilities an ignition barrier consisting of either a 1.5-inch-thick (38 mm) mineral fiber insulation, 0.25-inch-thick (6.4 mm) wood structural panel, particle board or hardboard, 0.375-inch-thick (9.5 mm) gypsum wallboard, corrosion-resistant steel having a base metal thickness of 0.016-inch (0.4 mm) or other approved material is installed in a manner that the foam plastic insulation is not exposed. The protection covering shall be consistent with the requirements for the type of construction required by the applicable Code.

**4.4 Fire-Resistance Rated Wall Assemblies****4.4.1 One Hour Fire Resistance Rated Load Bearing Wood Stud Wall Assembly:**

Minimum 2x4 No. 2 Southern Pine (G = 0.55) spaced 16 inches (406.4 mm) on center with a base layer of ½ inch (12.7 mm) Wood fiber sound board on each face attached with 6d Box nails, 2 inches (50.8 mm) long spaced 24 inches (609.6 mm) o.c. along studs, second layer of 5/8 inch (15.88 mm) Type X Gypsum Wallboard on each face attached with 8d Box nails, 2-1/2 inches (63.5 mm) long spaced 7 inches (177.8 mm) o.c. along studs. The stud cavity is filled with 2 inches (50.8 mm) nominal thickness of Icynene Insulation. Allowable load of 1,805 pounds (8122.5 N) per stud, 78% design.

**4.4.2 One Hour Fire Resistance Rated Load Bearing Wood Stud Wall Assembly:**

Minimum 2x4 No. 2 Southern Pine (G = 0.55) spaced 16 inches (406.4 mm) on center with two layer of ½ inch (12.7 mm) Type X Gypsum Wallboard on each face attached with 8d Box nails, 2-1/2 inches (63.5 mm) long spaced 7 inches (177.8 mm) o.c. along studs for face layer and 6d Cement Coated Box Nails, 2 inches (50.8 mm) long spaced 24 inches (609.6 mm) o.c. along studs, base layer. The stud cavity is filled with 2 inches (50.8 mm) nominal thickness of Icynene Insulation. Allowable load of 1,805 pounds (8122.5 N) per stud, 78% design.

**4.4.3 One Hour Fire Resistance Rated Floor/Ceiling Assembly:**

Minimum 2x10 No. 2 Douglas Fire wood joists spaced 24 inches (609.6 mm) on center, Bridging minimum 1x3 Spruce. Floor decking is minimum ½ inch (12.7 mm) thick exterior grade plywood installed perpendicular to joists and fastened with 2 inch ring shank nails 6 inches (152.4 mm) at the joints and 12 inches (304.8 mm) on center at the intermediate joists. Plywood joints shall occur over joists. Icynene Insulation is applied to the underside of the plywood deck and to sides of joists to a depth of 5 inches

(127 mm). Two layers of minimum 5/8 inch thick type FSW gypsum wallboard is attached perpendicular to the joists on the ceiling side of the assembly. The first layer is attached with 1-1/4 inch (31.75 mm) Type W drywall screws, spaced 24 inches (609.6 mm) on center. The second layer is applied perpendicular to the joists, offset 24 inches (609.6 mm) from the base layer. The second layer is attached with 2 inch (50.8 mm) Type S drywall screws spaced 12 inches (304.8 mm) on center. Additional fasteners are installed along the butt joints of the second layer, securing the two layers together. The fasteners are 1-1/2 inch (38.1 mm) Type G drywall screws and were placed 2 inches (50.8 mm) back from each end of the butt joint and spaced 12 inches (304.8 mm) on center. The wallboard joints on the exposed side were treated with paper tape embedded in joint compound and topped with an added coat of compound. The fastener heads were coated with joint compound.

**5.0 IDENTIFICATION**

All packages and containers of The Icynene Insulation System® covered by this report shall be labeled with the manufacturer's name/and or trademark, address, the product name, the flames-spread index, the smoke-development index, the shelf life expiration date, the label of the quality control agency, Intertek Testing Services, NER-QA219 and this National Evaluation Service evaluation report number, NER-420.

**6.0 EVIDENCE SUBMITTED**

- 6.1** Manufacturer's descriptive literature, specifications, and installation instructions.
- 6.1.1** Icynene Inc. The Icynene Insulation System® Installer Manual, Copyright© 2000.
- 6.1.2** Product Specification Icynene - Pour Formula, 11/2/PSB.
- 6.1.3** Product Specification Icynene - Spray Formula, 11/2/PSA.
- 6.2** Test reports on surface burning characteristics under ASTM E 84, Warnock Hersey Professional Service Ltd., Report No. 7171, File NO. 03329-50296-C7-717700, July 1988, signed by Bob Davison, C.E.T Letter report on 5-1/2 inch thickness, February 21, 1989, signed by Bob Davison, C.E.T.
- 6.3** Test report on the Icynene Insulation System® for SwRI Procedure 99-02, Crawl Space Exposure Evaluation, Omega Point Laboratories, Inc., Project Nos. 16600-111778, -111779, -111780, 111781, -111861, -111862, August 1, 2002, signed by Majid Mehrafza and William E. Fitch, P.E.
- 6.4** Engineering evaluation, Assessment of SwRI Procedure 99-02 Test Results, Koffel

Associates, Inc., KAI 02190-004, August 16, 2002, signed by Eric N. Mayl, P.E. and William E. Koffel, P.E.

- 6.5** Test report on Icynene Insulation System for determination of thermal insulating characteristics under ASTM D 518, National Research Council of Canada, Report No. CR 5506-6, February 22, 1998.
- 6.6** Test reports on fire resistance rated wall assemblies under ASTM E 119, Inchcape Testing Services NA, Inc., signed by R. Joseph Pearson and R. Davison:
- 6.6.1** One hour wall, wood studs 2x4 at 16 inches o.c. with 1 layer of ½ inch sound board on each side and 1 layer of 5/8 inch Type X gypsum wallboard on each side, Report No. 295-1358-96-01, November 11 & 12, 1996.
- 6.6.2** One hour wall, wood studs 2x4 at 16 inches o.c. with 2 layers of ½ inch Type X gypsum wallboard on each side, Report No. 295-1358-96-02, November 21 1996.
- 6.7** Quality Assurance Program, Intertek Testing Services, March 05/01.
- 6.8** Test report on fire resistance rated floor/ceiling assembly under ASTM E 119, NGC Testing Services, Assignment K-743, Test NO. FC-559, December 17, 2001, signed by Richard A. Costolnick and Robert J. Menchetti.

## 7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for National Evaluation Service finds that The Icynene Insulation System® as described in this report complies with or is a suitable alternate to that specified in the 2000 International Building Code® with 2002 Accumulative Supplement, the 2000 International Residential Code® for One- and Two-Family Dwellings with 2002 Accumulative Supplement, the BOCA® National Building Code/1999, the 1999 Standard Building Code®, the 1997 Uniform Building Code™, and the International One and Two Family Dwelling Code 1998 subject to the following conditions:

- 7.1** This Evaluation Report and the installation instructions, when required by the code official, shall be submitted at the time of permit application.
- 7.2** The Icynene Insulation System® shall be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable Code.

- 7.3** The Icynene Insulation System® shall be separated from the interior of the building by an approved 15 minute thermal barrier see section 4.3 of this report.

Exception:

The Icynene Insulation System® installed in attics and crawl spaces may be exposed when installed in accordance with Section 4.3 above.

- 7.4** The Icynene Insulation System® shall not exceed the thickness and density noted in section 4.2.2 of this report.
- 7.5** The Icynene Insulation System® shall not be deemed to add to the structural strength of any wall assembly or used as a nailing base.
- 7.6** The Icynene Insulation System® has not been evaluated for use as a firestopping material or through-penetration system. Fire Resistance Rated Wall and Floor/Ceiling Assemblies are listed in Section 4.4 of this report.
- 7.7** The Icynene Insulation System® is required to be protected from the weather after application.
- 7.8** The Icynene Insulation System® shall be applied by contractors certified in accordance with section 4.2.3 of this report.
- 7.9** The Icynene Insulation System® shall not be installed on the exterior of foundation walls or below floor slabs on ground.

In jurisdictions that have adopted the Standard Building Code, the International One and Two Family Dwelling Code and the International Residential Code when the Icynene Insulation System® is installed in buildings of wood construction the insulation shall not be installed on the exterior of foundation walls or below floor slabs on ground or in contact with the ground. The Icynene Insulation System® shall have a clearance above grade and exposed earth of 6 inches (152 mm) or greater.

- 7.10** The Icynene Insulation System® has not been evaluated for use with exterior walls of buildings of noncombustible construction under 2603.5 International Building Code, 2603.6 Standard Building Code, 2603.6 BOCA National Building Code and 2602.5.2.2 Uniform Building Code.
- 7.11** This report is subject to periodic re-examination. For information on the current status of this report, consult the ICC-ES website.

# The Icynene Insulation System®

## LIFETIME LIMITED WARRANTY

Icynene Inc. ("Icynene"), subject to the conditions and limitations listed herein, warrants that The Icynene Insulation System® (the "Product"), when installed according to its installation instructions by an Icynene Licensed Dealer, will perform as indicated in the product specification sheet published at the time of the installation. This Lifetime Limited Warranty is in effect throughout the life of the building, provided the original purchaser registers with the Icynene Warranty Department within 30 days of occupancy. Icynene's sole responsibility under this Warranty shall be to repair or replace any defective Product at the cost of the material only. Icynene shall not be responsible for labor or other costs whatsoever in connection with the removal or installation of either the original or replacement insulation.

Icynene shall have no liability under this Lifetime Limited Warranty for defects or failure caused by improper storage, or an installation not in strict adherence with its written instructions, or any damage due to fire, storms, other Acts of God, misuse, neglect, or accident, or defects, failure, or damage caused by materials adjacent to the Product. Icynene shall not be responsible for damage caused by alteration after completion of the installation of the Product. Statements about performance qualities of the Product by Licensed Dealers or contained in advertising literature do not constitute an express warranty.

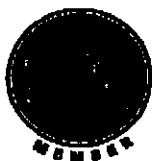
THE WARRANTY IS MADE IN FULL AND EXCLUDES ALL OTHER WARRANTIES, WHETHER WRITTEN OR IMPLIED UNDER STATUTE, OR IN TORT, OR BY IMPLICATION OF LAW OR OTHERWISE. ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE LENGTH OF THIS WARRANTY. ICYNENE SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, ARISING FROM A BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, OR THE COST OF REMOVING, INSTALLING, OR REINSTATING ANY REPAIR OR REPLACEMENT.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This Lifetime Limited Warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

To obtain performances under this Lifetime Limited Warranty, the customer must notify Icynene in writing of the defect promptly following its discovery and must submit with this notice proof of the date of purchase and the date, location and description of the circumstances under which the defect occurred or was first noticed. Notice shall be given in writing to:

### WARRANTY DEPARTMENT

Icynene Inc.  
6747 Campobello Road  
Mississauga, Ontario  
L5N 2L7  
Canada





*"Quality You Can Trust Since 1886... From  
North America's Largest Roofing  
Manufacturer"*

*Technical Services  
1361 Alps Road, Bldg. 11-1  
Wayne, NJ 07470  
Phone: 1-800-766-3411, option 1*

June 27 2007

Re: Unventilated Insulated Roof Decks

To Whom It May Concern:

The GAF Limited Material Warranty will remain in force when its fiberglass asphalt shingles manufactured to meet ASTM D 3462 are applied to roof deck assemblies on slopes greater than 2/12 where foam insulation is prefabricated into the roof deck system or where insulation is installed beneath an acceptable roof deck system.

Acceptable roof deck surfaces

Acceptable roof deck surfaces must consist of either minimum 3/8" thick APA graded plywood or OSB.

Role of the Design Professional

The design professional is responsible for ensuring...

- proper quality and application of the insulation
- provision of adequate structural ventilation and/or vapor retarder as determined to be necessary
- that all local codes are met (particularly taking into account local climate conditions)

Special attention should be taken if cellular foam, fiber-glass, cellulose insulation, or other highly permeable insulation will be used in an unventilated system. Care should also be taken to ensure air leaks are prevented that could lead to moisture transmission and condensation problems.

GAF Responsibility

GAF shall not have any liability or responsibility under its warranty for...

- Damage to or defects in its shingles caused by settlement, movement, distortion, deterioration, cracking, or other failure of the roof deck or of the materials used as a roofing base over which its shingles are applied
- Damage caused by the growth of mold or mildew
- Defects, damage, or failure caused by application of its shingles

If you have any further questions, please feel free to contact me at 1 800 766 3411, option 1.

Sincerely,

*Michael Schweart*

Michael Schweart, RCI-RRD  
Manager, GAF Contractor Services

# TECHNICAL BULLETIN

## THE ICYNENE INSULATION SYSTEM®

This will confirm Elk premium roofing products have been approved for use with spray-in-place Icynene Insulation System® since September 28, 1999, and carry the full limited warranty according to the following:

1. All structural roof work including decking/sheathing is in place and in compliance with local codes.
2. The Icynene Insulation System® is applied in accordance with the manufacturer's specifications and guidelines to the underside of the roof decking/sheathing and complies with local codes.
3. Apply Elk starter strip, Elk hip and ridge shingles, and Elk field shingles in accordance with the recommendations printed on each bundle wrapper. Elk hip and ridge shingles will carry the limited warranty period applicable to the Elk field shingles.
4. Elk will not be responsible for any deficiencies or movement of the roof deck, manufacturing defects in the fasteners resulting in their failure to perform, and/or improper application of the substrate or Elk fiberglass shingles.
5. It is the responsibility of the design professional to examine the need for structural ventilation and to ensure interior air quality. For any building, construction must be in compliance with local codes.

For our product specifications, limited warranties, or other information regarding Elk premium roofing products, please contact the Elk location nearest you or visit our web site at [www.elkcorp.com](http://www.elkcorp.com).

For information regarding The Icynene Insulation System®, please call 800-758-7325 or visit their web site at [www.icynene.com](http://www.icynene.com).

TBSD 001 Date Issued: 9/23/03

Icynene Insulation System® is a registered trademark of Icynene, Inc.

P.O. Box 500  
Ennis, TX 75120  
Toll Free  
1-866-355-8324

4600 Stillman Blvd.  
Tuscaloosa, AL 35401  
1-800-848-8545

**ELK**  
The Premium Choice®  
[www.elkcorp.com](http://www.elkcorp.com)

6200 Zerker Rd.  
Shafter, CA 93283  
1-800-355-4668

P.O. Box 228  
Myerstown, PA 17067  
1-800-844-4344

-----  
ADDRESS . . : 4094 CHRISTIAN LIGHT RD SUBDIV: PHELMA B ROGERS & WILLIAM H  
CONTRACTOR : PHONE :  
OWNER . . : HADDOCK BRIAN & DANIELLE PHONE : (919) 577-0071  
PARCEL . . : 05-0633- - -0036- -06-  
APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
ON RT BEFORE BOB & NANS STORE.JD  
-----

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK  
FLOOD ZONE . . . . : FLOOD ZONE X  
-----

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07	BS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
	10/11/07	AP	
B103 01	10/18/07	BS	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846
	10/18/07	AP	
B105 01	10/23/07	BS	R*OPEN FLOOR VRU #: 001508381
	10/23/07	AP	
A814 01	10/24/07	TI	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001507505
	10/22/07	AP	4094 Christian Light Rd
E207 01	10/31/07	BS	R*ELEC TEMP SERVICE POLE VRU #: 001512441
	10/31/07	AP	
R427 01	11/27/07	MR	FOUR TRADE ROUGH IN >2500 VRU #: 001525658
	11/27/07	DA	1. firecaulk all holes , elect, plumb or mech. At top plate and bottom 2. bolt garage beam per specs or provide product guide to explain 3. jaccuzzi leaks at fittings 4. other tuub leaks at drain area 5. no water in test pipe for DWV 6. no water pressure 7. no baffles in place 8. rodent proof below all tubs 9. cricket needed at fireplace roof (r1001.17) 10. wall framing at north attic gable wall does not have a top plate and exceeds height for 2x4 framing 11. openings at doors exceeding 4'9" need two jack studs 12. ductwork in garage must be metal
R427 02	11/30/07	BS	FOUR TRADE ROUGH IN >2500 VRU #: 001528065
	11/30/07	AP	Ductwork to be enclosed, will check roof cricket at final, no baffles because insulation is icynene foam. ok to insulate
I129 01	12/14/07	TI	R*INSULATION INSPECTION VRU #: 001535467
	<i>12.14.07</i>	<i>APBS</i>	

----- COMMENTS AND NOTES -----



ADDRESS : 4094 CHRISTIAN LIGHT RD  
 CONTRACTOR :  
 OWNER : HADDOCK BRIAN & DANIELLE  
 PARCEL : 05-0633- - -0036- -06-  
 APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
 DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
 ON RT BEFORE BOB & NANS STORE.JD  
 \*\*\*\*\*PEM# 95085719 \*\*\*\*\*

SUBDIV: PHELMA B ROGERS & WILLIAM H  
 PHONE :  
 PHONE : (919) 577-0071

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK  
 FLOOD ZONE : FLOOD ZONE X

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07	BS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
	10/11/07	AP	
B103 01	10/18/07	BS	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846
	10/18/07	AP	
B105 01	10/23/07	BS	R*OPEN FLOOR VRU #: 001508381
	10/23/07	AP	
A814 01	10/24/07	TI	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001507505
	10/22/07	AP	✓4094 Christian Light Rd
E207 01	10/31/07	BS	R*ELEC TEMP SERVICE POLE VRU #: 001512441
	10/31/07	AP	
R427 01	11/27/07	MR	FOUR TRADE ROUGH IN >2500 VRU #: 001525658
	11/27/07	DA	1. firecaulk all holes , elect, plumb or mech. At top plate and bottom 2. bolt garage beam per specs or provide product guide to explain 3. jaccuzzi leaks at fittings 4. other tuub leaks at drain area 5. no water in test pipe for DWV 6. no water pressure 7. no baffles in place 8. rodent proof below all tubs 9. cricket needed at fireplace roof (r1001.17) 10. wall framing at north attic gable wall does not have a top plate and exceeds height for 2x4 framing 11. openings at doors exceeding 4'9" need two jack studs 12. ductwork in garage must be metal
R427 02	11/30/07	BS	FOUR TRADE ROUGH IN >2500 VRU #: 001528065
	11/30/07	AP	Ductwork to be enclosed, will check roof cricket at final, no baffles because insulation is icynene foam. ok to insulate
I129 01	12/14/07	BS	R*INSULATION INSPECTION VRU #: 001535467
	12/14/07	AP	
H824 01	1/22/08	BM	✓ENVIR. OPERATIONS PERMIT TIME: 17:00 VRU #: 001551514
	1/22/08	AP	
R431 01	2/11/08	TI	FOUR TRADE FINAL >2500 VRU #: 001560770

2-11-08 DABS

COMMENTS AND NOTES

*Kip Underwood 669-9509*

ADDRESS : 4094 CHRISTIAN LIGHT RD  
 CONTRACTOR :  
 OWNER : HADDOCK BRIAN & DANIELLE  
 PARCEL : 05-0633- - -0036- -06-  
 APPL NUMBER: 07-50018390 CP NEW RESIDENTIAL (SFD)  
 DIRECTIONS : 401 LEFT ON CHRISTIAN LT RD 2MILES LOT  
 ON RT BEFORE BOB & NANS STORE.JD  
 \*\*\*\*\*PEM# 95085719 \*\*\*\*\*

STRUCTURE: 000 000 70X60 3BR CRAWL W/GARAGE & DECK  
 FLOOD ZONE : FLOOD ZONE X  
 # BEDROOMS : 3.00  
 SEPTIC - EXISTING? : NEW  
 PROPOSED USE : SFD

PERMIT: CPSF 00 CP \* SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/11/07	BS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001503046
	10/11/07	AP	
B103 01	10/18/07	BS	R*BLDG FOUND & TEMP SVC POLE VRU #: 001506846
	10/18/07	AP	
B105 01	10/23/07	BS	R*OPEN FLOOR VRU #: 001508381
	10/23/07	AP	
A814 01	10/24/07	TI	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001507505
	10/22/07	AP	4094 Christian Light Rd
E207 01	10/31/07	BS	R*ELEC TEMP SERVICE POLE VRU #: 001512441
	10/31/07	AP	
R427 01	11/27/07	MR	FOUR TRADE ROUGH IN >2500 VRU #: 001525658
	11/27/07	DA	1. firecaulk all holes , elect, plumb or mech. At top plate and bottom 2. bolt garage beam per specs or provide product guide to explain 3. jaccuzzi leaks at fittings 4. other tuub leaks at drain area 5. no water in test pipe for DWV 6. no water pressure 7. no baffles in place 8. rodent proof below all tubs 9. cricket needed at fireplace roof (r1001.17) 10. wall framing at north attic gable wall does not have a top plate and exceeds height for 2x4 framing 11. openings at doors exceeding 4'9" need two jack studs 12. ductwork in garage must be metal
R427 02	11/30/07	BS	FOUR TRADE ROUGH IN >2500 VRU #: 001528065
	11/30/07	AP	Ductwork to be enclosed, will check roof cricket at final, no baffles because insulation is icynene foam. ok to insulate
I129 01	12/14/07	BS	R*INSULATION INSPECTION VRU #: 001535467
	12/14/07	AP	
H824 01	1/22/08	BM	ENVIR. OPERATIONS PERMIT TIME: 17:00 VRU #: 001551514
	1/22/08	AP	
R431 01	2/11/08	BS	FOUR TRADE FINAL >2500 VRU #: 001560770
	2/11/08	DA	1. Insulate around perimeter of attic access door. 2. Need plastic under house. 3. Must have a disconnect on 5 kw heat strip on unit under house.
R231 01	2/12/08	TI	TWO TRADE FINAL>2500 VRU #: 001561612

COMMENTS AND NOTES

**COUNTY OF HARNETT  
DEPARTMENT OF BUILDING INSPECTION  
AND PLANNING/DEVELOPMENT  
CERTIFICATE OF OCCUPANCY**

This certificate issued pursuant to the requirements of Section 105 of the North Carolina State Building Code and the Harnett County Zoning Ordinance certifies at the time of issuance this structure was in compliance with the various ordinances of the County of Harnett regulating development and building construction or use. For the following:

Use Classification: <u>SFD</u>	Conditional Use Permit No.: _____
Type of Construction: <u>V</u>	Building Permit No.: _____
Owner of Building: <u>Brown; Danielle Hardlock</u>	Electrical Permit No.: _____
Building Address: <u>41094 Christa Ln</u>	Insulation Permit No.: _____
Zoning District: _____	Plumbing Permit No.: _____
Zoning Permit No.: <u>N/A</u>	Mech. Permit No.: _____
Date: <u>2-12-08</u>	Envir. C.O. No.: _____
<u>B. J. [Signature]</u> Building Official	<u>[Signature]</u> Zoning Official