ADDRESS . : 660 POPE LAKE RD SUBDIV:
CONTRACTOR : ALLEN CUSTOM CONSTRUCTION LLC PHONE : (910) 814-2721
OWNER . . : MCKINNON JR HALBERT & ANN H PHONE :
PARCEL . . : 04-0692- - -0006- -04-
APPL NUMBER: 09-50022773 CP NEW RESIDENTIAL (SFD)
DIRECTIONS : T/S: 09/03/2009 12:33 PM VBROWN ----
POPES LAKE RD, POPES LAKE SUB DIV #3
ANGIER 27501. 421S TO BUIES CREEK,
LEFT 27E TO COATS, LEFT ON HWY 55W,
TAKE RIGHT ON OLD STAGE RD, RIGHT ON
LANGDON RD, LEFT ON POPES LAKE RD, LOT
ON RIGHT.

STRUCTURE: 000 000 64X60 4BDR 3BTH SFD W GAR,DECK,BONRM,CRL
FLOOD ZONE . . . . : FLOOD ZONE X
BEDROOMS . . . . . : 4.00 PROPOSED USE . . . . . : SFD
SEPTIC - EXISTING? . . . . : NEW SEPTIC WATER SUPPLY . . . . . : COUNTY

PERMIT: CPSF 00 CP * SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
B101 01	10/22/09 10-22	TI AP	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001840002

NS T Pole

COMMENTS AND NOTES

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65238318

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B101 01	10/22/09	KS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001840002
	10/22/09	AP	No t-pole up yet. T/S: 10/22/2009 10:14 AM KSLATTUM
A814 01	11/03/09	TI	ADDRESS CONFIRMATION VRU #: 001845163
B103 01	11/03/09 11-03-09	TI KSAP	R*BLDG FOUND & TEMP SVC POLE VRU #: 001845148

COMMENTS AND NOTES

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B103 01	11/03/09	KS	R*BLDG FOUND & TEMP SVC POLE VRU #: 001845148
	11/04/09	AP	
B105 01	11/05/09	TI	R*OPEN FLOOR VRU #: 001846211
	11-6	AE	

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

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	11/04/09	AP	
A814 01	11/03/09	TW	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001845163
	11/04/09	AP	660 pope lake rd lot 3 ---------- angier 27501 T/S: 11/04/2009 04:12 PM TWARD ----------
B105 01	11/05/09	KS	R*OPEN FLOOR VRU #: 001846211
	11/05/09	AE	girder under master bedroom calls for 4 members. can check at rough-in T/S: 11/05/2009 02:55 PM KSLATTUM ----------
R427 01	12/22/09 12-22	TI AE	FOUR TRADE ROUGH IN >2500 VRU #: 001863729

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

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			T/S: 11/05/2009 02:55 PM KSLATTUM
R427 01	12/22/09	KS	FOUR TRADE ROUGH IN >2500 VRU #: 001863729
	12/22/09	AE	Fire block between risers at top run.
			Floor joist cut for master bath tub drain.
			T/S: 12/22/2009 03:42 PM KSLATTUM
I129 01	1/08/10 1-8	TI DP	R*INSULATION INSPECTION VRU #: 001868405

COMMENTS AND NOTES

FOAM WORK INSULATORS LLC

Building Inspections Department

Harnett Co.

RE: 1060 Pope Lake Rd.

Foam Work Insulators, LLC sprays The Icynene Insulation System® to nominal depths of 5 or 6 inches in ceilings, roof decks, cathedrals, slopes and overhangs, as well as 3 inches nominal in floors and exterior walls, per the attached letter from Icynene Engineering. (Five inches exceeds an R-30 of fiberglass and six inches exceeds an R-38). I have included both the mentioned letter from Icynene, as well as the supporting document, titled "The Economic Thickness of Insulation" with this letter. I have also included in this package: Product Specifications for Icynene, ICC-ES report number ESR-1826, the engineering detail for the roof insulation, the document titled "Goldseal: Residential Occupancy Time" (which assures your safety in entering the dwelling and inspecting the Icynene one day after spraying) and a copy of the lifetime warranty. This house has CertainTeed or GAF/Elk shingles on it, so I have included the letters from both companies which affirm the full warranty on the shingles and the engineered drawing on the unvented attic assembly. In the attic and in the small areas behind kneewalls and the crawl space, we are adhering to Assembly #2 in the ESR report which allows for Icynene to be sprayed to the roof deck, ceilings and vertical walls without Thermal Barrier or Ignition Barrier covering. (See attached ESR and Drawings).

This letter also certifies that for 1060 Pope Lake Rd, Foam Work Insulators, LLC. has sprayed The Icynene Insulation System® in accordance with North Carolina codes, which require R-13, R-19 and R-30 (Zone 3b) or R-38 (Zone 4) insulation values in walls, floors and ceilings/roofs, respectively. Based on information published by Icynene, we provided 3 inches of Icynene in the exterior walls and floors and 5 inches (Zone 3b) or 6 inches (Zone 4) of foam in floors, ceilings, slopes, cathedrals and overhangs.

Please call me if you have any other questions, or requests for information.

Sincerely,

Rich Brown

Rich Brown
Team Leader
Foam Work Insulators, LLC
1212 Home Ct.
Raleigh, NC 27603
Ph: 919-524-6826
Fx: 919-256-9601

ICYNENE INC.

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 then 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

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			T/S: 12/22/2009 03:42 PM KSLATTUM
I129 01	1/08/10	KS	R*INSULATION INSPECTION VRU #: 001868405
	1/08/10	DP	Rough-in violations not repaired. $50 re-inspection fee
			T/S: 01/08/2010 09:04 AM KSLATTUM
I129 02	1/12/10	TI	R*INSULATION INSPECTION TIME: 17:00 VRU #: 001869411
	1-12	AP	T/S: 01/11/2010 11:54 AM DJOHNSON

COMMENTS AND NOTES

PRODUCT SPECIFICATION

ICYNENE INC.

1. PRODUCT NAME

Icynene® and The Icynene Insulation System® are registered trademarks for polyicynene 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. (RSI/25mm)
ASTM C518: R3.6 hr. ft² °F/BTU
RSI 0.62 m² °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-m² @75 Pa for 5.25"
0.0080 L/S-m² @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•m²) @ 3" (76mm) thick
10 perms 565 ng/(Pa•s•m²) @ 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	.11	.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_{50} –12

CANADA Specifications	
Corner Wall Test CAN4-S102 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 emmissions 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.

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 INC.

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
E-mail:	inquiry@icynene.com

ICC-ES Evaluation Report

ESR-1826

Reissued May 1, 2009

This report is subject to re-examination in one year.

www.icc-es.org | (800) 423-6587 | (562) 699-0543 *A Subsidiary of the International Code Council®*

DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07210—Building Insulation

REPORT HOLDER:

ICYNENE, INC.
6747 CAMPOBELLO ROAD
MISSISSAUGA, ONTARIO L5N 2L7
CANADA
(905) 363-4040
www.icynene.com

EVALUATION SUBJECT:

ICYNENE LD-C-50™ (formerly known as The Icynene Insulation System®)

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code®* (IBC)
- 2006 *International Residential Code®* (IRC)
- 2006 *International Energy Conservation Code®* (IECC)
- Other Codes (see Section 8.0)

Properties evaluated:

- Surface burning characteristics
- Physical properties
- Thermal performance (R-values)
- Attic and crawl space installation
- Fire resistance
- Air permeability

2.0 USES

Icynene LD-C-50™ is used to provide thermal insulation in buildings and to seal areas such as plumbing and wiring penetrations against air infiltration, in Type III and Type V construction (IBC) and dwellings under the IRC. The Icynene Insulation System may be used in fire-resistance-rated construction when installed in accordance with Section 4.5.

3.0 DESCRIPTION

3.1 General:

Icynene LD-C-50™ is a low-density, open-cell, polyurethane foam plastic insulation and air barrier system that is 100 percent water-blown with an installed nominal density of 0.5 pcf (8 kg/m^3). Icynene LD-C-50 is a two-component, spray-applied product. The two components of the insulation are Base Seal®, a polyisocyanate, and Gold Seal®, a resin. Base Seal® must be stored at a temperature of 50°F (10°C) or greater, and has a shelf life of six months. Gold Seal® must be stored at temperatures below 100°F (37.8°C), and has a shelf life of six months.

3.2 Surface Burning Characteristics:

When tested in accordance with ASTM E 84, at a thickness of 5.5 inches (140 mm) and a nominal density of 0.5 pcf (8 kg/m^3), Icynene LD-C-50 has a flame spread index of 25 or less and a smoke-developed index of 450 or less.

3.3 Thermal Resistance:

Icynene LD-C-50 has thermal resistance (R-values) at a mean temperature of 75°F (24°C) as shown in Table 1.

3.4 Air Permeability:

Based on testing in accordance with ASTM E 283, Icynene LD-C-50 is considered air-impermeable.

3.5 Intumescent Coatings:

3.5.1 FireFree 88: FireFree 88 is a water-based intumescent coating manufactured by International Fire Resistant Systems, Inc. FireFree 88 is supplied in 5-gallon (19 L) buckets and has a shelf life of one year when stored in a factory-sealed container at temperatures between 35°F (1.7°C) and 85°F (29°C).

3.5.2 SafeCoat Latex: SafeCoat Latex Fire Retardant Coating is a latex-based intumescent coating manufactured by Magna Coatings Technology Inc. SafeCoat Latex is supplied in 1-gallon (3.8 L), 5-gallon (19 L) and 50-gallon (189 L) quantities and has a shelf life of 24 months when stored in a factory-sealed container at temperatures above 50°F (10°C).

3.5.3 Aldocoat 757: Aldocoat 757 intumescent ignition barrier coating is a water-based acrylic coating manufactured by Aldo Products Company, Inc. Aldocoat 757 is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of six months when stored in a factory-sealed container at temperatures between 40°F (4.5°C) and 90°F (32°C).

4.0 DESIGN AND INSTALLATION

4.1 General:

The manufacturer's published installation instructions and this report must be strictly adhered to and a copy of these instructions and this evaluation report must be available on the jobsite at all times during installation.

4.2 Application:

Icynene LD-C-50 must be applied using spray equipment specified by Icynene, Inc. Icynene LD-C-50 must not be used in areas which have a maximum service temperature greater than 180°F (82°C). The foam plastic must not be used in electrical outlet or junction boxes or in contact with rain or water, and must be protected from the weather during and after application. Where Icynene LD-C-50 is used as an air-impermeable barrier, such as in unventilated attic spaces regulated by IRC Section R806, the insulation must be installed at a minimum thickness of 3.5 inches (89 mm). Icynene LD-C-50 can be installed in one pass to the maximum thickness. Where multiple passes are required, the cure time between passes is negligible. Icynene LD-C-50 must only be installed by licensed dealers, certified by Icynene, Inc., to install Icynene LD-C-50.

4.3 Thermal Barrier:

Icynene LD-C-50 must be separated from the interior of the building by an approved thermal barrier, such as $^1/_2$-inch (12.7 mm) gypsum wallboard installed using mechanical fasteners in accordance with the applicable code, or an equivalent 15-minute thermal barrier complying with the applicable code. When installation is within an attic or crawl space as described in Section 4.4, a thermal barrier is not required between the foam plastic and the attic or crawl space, but is required between the foam and the interior of the building.

4.4 Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier: When Icynene LD-C-50 is installed within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 and IRC Sections R314.5.3 and R314.5.4, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code and must be installed in a manner so that the foam plastic insulation is not exposed. Icynene LD-C-50 may be installed in unvented attics in accordance with IRC Section R806.4.

4.4.2 Application without a Prescriptive Ignition Barrier: Where Icynene LD-C-50 is installed in an attic or crawl space without a prescriptive ignition barrier, in accordance with Sections 4.4.2.1 through 4.4.2.5, the following conditions apply:

1. Entry to the attic or crawl space is only for the service of utilities.
2. There are no interconnected attic or basement areas.
3. Air in the attic or crawl space is not circulated to other parts of the building.
4. Combustion air is provided in accordance with Section 701.4.2 of the *International Mechanical Code®*.

4.4.2.1 Assembly No. 1: Icynene LD-C-50 is applied to the underside of the solid roof sheathing between rafters in attics and to the underside of the floor deck between floor joists over crawl spaces, to a maximum thickness of 10 inches (254 mm). The insulation is not installed on vertical surfaces. See Figure 1.

4.4.2.2 Assembly No. 2: Icynene LD-C-50 is applied to the underside of the roof deck between rafters in attics, and to the underside of the floor deck between floor joists over crawl spaces, to a maximum thickness of 10 inches (254 mm), and to vertical wall surfaces to a maximum thickness of $3^1/_2$ inches (89 mm). See Figure 1.

4.4.2.3 Assembly No. 3A: Icynene LD-C-50 is applied to the underside of the roof deck between rafters in attics, and to the underside of the floor deck between floor joists over crawl spaces, to a maximum thickness of 10 inches (254 mm); and to vertical wall surfaces to a maximum thickness of 6 inches (152 mm). The insulation on the vertical wall surfaces is covered with Aldocoat 757 or Safecoat Latex, described in Section 3.5, or a prescriptive ignition barrier as described in Section 4.4.1. The intumescent coatings must be installed in accordance with the coating manufacturers' published installation instructions. Aldocoat 757 coating must be spray-applied at a rate of 1 gallon per 100 ft^2 (0.00025 L/m^2). Safecoat Latex must be spray-applied at a rate of 1 gallon per 80 ft^2 (0.00031 L/m^2). See Figure 1.

4.4.2.4 Assembly No. 3B: Icynene LD-C-50 is applied to the underside of the roof deck between rafters in attics, and to the underside of the floor deck between floor joists over crawl spaces, to a maximum thickness of 10 inches (254 mm); and to vertical wall surfaces to a maximum thickness of 6 inches (152 mm). The insulation is covered with FireFree 88, described in Section 3.5. The intumescent coating must be installed in accordance with the coating manufacturer's published installation instructions. FireFree 88 coating must be applied at a rate of 1 gallon per 100 ft^2. See Figure 1.

4.4.2.5 Assembly No. 4: Icynene LD-C-50 is applied to the top of the ceiling, between joists in attic floors, to a maximum thickness of 6 inches (152 mm). See Figure 1.

4.5 One-hour Fire-resistance-rated Assemblies:

4.5.1 Assembly 1 (Limited Load-bearing Wood Stud Wall): Minimum nominally 2-by-4 [$1^1/_2$ by $3^1/_2$ inches (38 mm by 89 mm)] southern pine (G = 0.55), No. 2 grade studs spaced 16 inches (406 mm) on center with a base layer of $^1/_2$-inch-thick (12.7 mm) wood fiber sound board installed horizontally on each face with vertical joints located over the studs, attached with 6d box nails, 2 inches (51 mm) long and spaced 24 inches (610 mm) on center along the studs, and a second layer of $^5/_8$-inch-thick (15.9 mm) Type X gypsum wallboard installed vertically on each face, attached with 8d box nails, $2^1/_2$ inches (64 mm) long and spaced 7 inches (178 mm) on center along the studs. The stud cavity contains Icynene insulation nominally 2 inches (51 mm) thick.

4.5.1.1 Axial Design: Axial loads applied to the wall assembly must be limited to the least of the following:

- 1,805 pounds (8029 N) per stud.
- Design stress of 0.78 *F'*c.
- Design stress of 0.78 *F'*c at a maximum l_e/d of 33.

4.5.2 Assembly 2 (Limited Load-bearing Wood Stud Wall): Minimum nominally 2-by-4 [$1^1/_2$ by $3^1/_2$ inches (38 mm by 89 mm)] southern pine (G = 0.55), No. 2 grade studs spaced 16 inches (406 mm) on center with two layers of $^1/_2$-inch-thick (12.7 mm) Type X gypsum wallboard installed vertically with joints staggered on each face, attached with 8d box nails, $2^1/_2$ inches (64 mm) long and spaced 7 inches (178 mm) on center along the studs for the face layer and 6d cement coated box nails, 2 inches (51 mm) long and spaced 24 inches (610 mm) on center along the studs. The stud cavity contains Icynene insulation nominally 2 inches (51 mm) thick.

4.5.2.1 Axial Design: Axial loads applied to the wall assembly must be limited to the least of the following:

- 1,805 pounds (8029 N) per stud.
- Design stress of 0.78 *F'c*.
- Design stress of 0.78 *F'c* at a maximum l_e/d of 33.

4.5.3 Assembly 3 (Floor/Ceiling): Minimum nominally 2-by-10 [$1^1/_2$ by $9^1/_4$ inches (38 mm by 235 mm)] Douglas fir, No. 2 grade wood joists spaced 24 inches (610 mm) on center, with minimum 1-by-3 [$^3/_4$ by $2^1/_2$ inches (19.1 by 64 mm)] spruce bridging at mid-span. Floor decking must be minimum $^1/_2$-inch-thick (12.7 mm) exterior grade plywood installed perpendicular to joists and fastened with 2-inch-long (51 mm) ring shank nails 6 inches (152 mm) on center at the joints and 12 inches (305 mm) on center at the intermediate joists. Plywood joints must occur over joists. Icynene insulation must be applied to the underside of the plywood deck between the joists to a depth of 5 inches (127 mm). Two layers of minimum $^5/_8$-inch-thick (15.9 mm), Type X gypsum wallboard must be attached perpendicular to the joists on the ceiling side of the assembly. The first layer must be attached with $1^1/_4$-inch-long (32 mm), Type W drywall screws, spaced 24 inches (610 mm) on center. The second layer must be applied perpendicular to the joists, offset 24 inches (610 mm) from the base layer. The second layer must be attached with 2-inch-long (51 mm), Type S drywall screws spaced 12 inches (305 mm) on center. Additional fasteners must be installed along the butt joints of the second layer, securing the two layers together. These fasteners must be $1^1/_2$-inch-long (38 mm), Type G drywall screws placed 2 inches (51 mm) back from each end of the butt joint and spaced 12 inches (305 mm) on center. The wallboard joints on the exposed side must be treated with paper tape embedded in joint compound and topped with an added coat of compound, and the fastener heads must be coated with joint compound in accordance with ASTM C 840 or GA-216.

5.0 CONDITIONS OF USE

Icynene LD-C-50 described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.

5.2 Icynene LD-C-50 must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. If there is a conflict between the installation instructions and this report, this report governs.

5.3 Icynene LD-C-50 must be separated from the interior of the building by an approved 15-minute thermal barrier. When installation is in attics and crawl spaces in accordance with Section 4.4, a thermal barrier is not required on the attic or crawl space face of the insulation.

5.4 Icynene LD-C-50 must not exceed the thickness and density noted in Section 3.2 of this report, except as permitted for attics and crawl spaces as described in Section 4.4.

5.5 Icynene LD-C-50 must be protected from the weather during and after application.

5.6 Icynene LD-C-50 must be applied by installers certified by Icynene, Inc.

5.7 Use of Icynene LD-C-50 in areas where the probability of termite infestation is "very heavy" must be in accordance with IRC Section R320.5 or IBC Section 2603.8, as applicable.

5.8 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1101.4.1 and IECC Sections 102.1.1 and 102.1.11, as applicable.

5.9 A vapor retarder must be installed in accordance with the applicable code.

5.10 Icynene LD-C-50 is manufactured in Mississauga, Ontario, Canada, under a quality control program with inspections by Intertek Testing Services (AA-691).

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated May 2008.

6.2 Test report on air leakage rate in accordance with ASTM E 283.

6.3 Comparative crawl space tests and related analysis, to justify attic and crawl space assemblies.

6.4 Test reports in accordance with ASTM E 119.

7.0 IDENTIFICATION

All packages and containers of Icynene LD-C-50 must be labeled with the Icynene, Inc., name and address; the product name; the flame spread index and the smoke-developed index; the shelf life expiration date; the label of the inspection agency (Intertek Testing Services); and the evaluation report number (ESR-1826).

8.0 OTHER CODES

8.1 Scope:

The products recognized in this report have also been evaluated for compliance with the following codes:

- 2003 *International Building Code®* (2003 IBC)
- 2003 *International Residential Code®* (2003 IRC)
- 2003 *International Energy Conservation Code®* (2003 IECC)

8.2 Uses:

See Section 2.0.

8.3 Description:

See Section 3.0.

8.4 Installation:

8.4.1 General: See Section 4.1.

8.4.2 Application: See Section 4.2.

8.4.3 Thermal Barrier: Icynene LD-C-50 must be separated from the interior of the building by an approved thermal barrier, such as 0.5-inch (12.7 mm) gypsum wallboard installed using mechanical fasteners in accordance with the applicable code, or an equivalent 15-minute thermal barrier complying with the applicable code, except where installation is within an attic or crawl space as described in Section 8.4.4.

8.4.4 Attics and Crawl Spaces:

8.4.4.1 Application with a Prescriptive Ignition Barrier: When Icynene LD-C-50 is installed within attics or crawl spaces where entry is made only for service of

utilities, an ignition barrier must be installed in accordance with 2003 IBC Section 2603.4.1.6, 2003 IRC Section R314.2.3, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code and must be installed in a manner so that the foam plastic insulation is not exposed.

8.4.4.2 Application without a Prescriptive Ignition Barrier: See Section 4.4.2.

8.4.5 One-hour Fire-resistance-rated Assemblies: See Section 4.5.

8.5 Conditions of Use:

The Icynene LD-C-50 described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 8.1 of this report, subject to Conditions of Use 5.1 through 5.6, 5.8, 5.10 and 5.12.

8.6 Evidence Submitted:

See Section 6.0.

8.7 Identification:

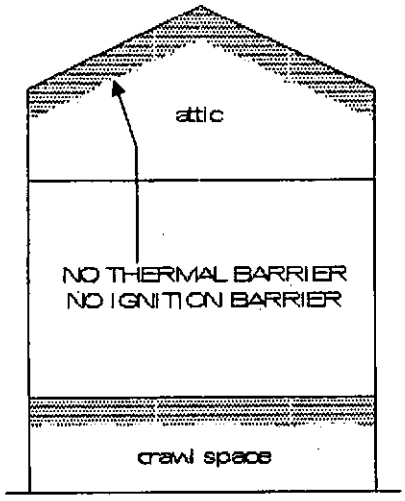
See Section 7.0.

TABLE 1—THERMAL RESISTANCE (*R*-VALUES)

THICKNESS (inches)	*R*-VALUE (°F·ft²·h/Btu)
ASTM C 518 Tested Values	
1	3.7
3.5	13
Calculated *R*-Values[1]	
2	7
3	11
4	14
5	18
5.5	20
6	22
7	25
7.5	27
8	29
9	32
9.5	34
10	36

For **SI:** 1 inch = 25.4 mm, 1 °F·ft²·h/Btu = 0.176 110 °K·m²/W.

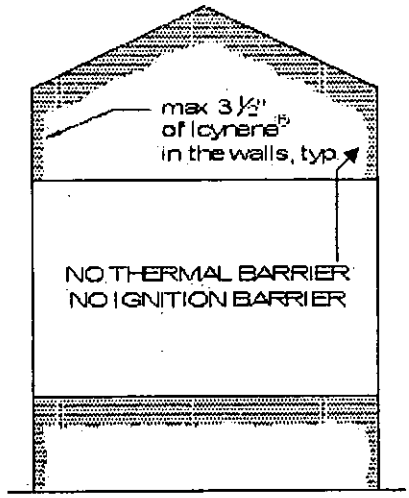
[1]Calculated *R*-values are based on tested *K* values at a 3.5-inch thickness.



Icynene[®] installed without a thermal or ignition barrier:

- under the roof sheathing.
- under the floor sheathing.
- no insulation on vertical walls.

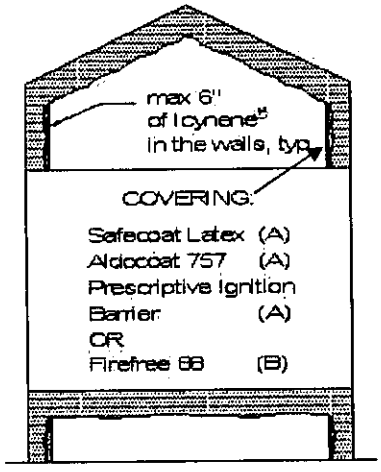
Assembly No. 1



Icynene[®] installed without a thermal or ignition barrier:

- under the roof sheathing.
- under the floor sheathing.
- on vertical walls.

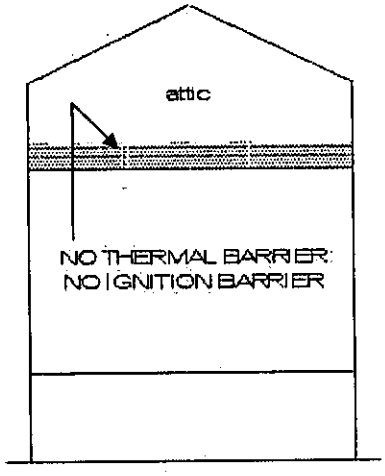
Assembly No. 2



Icynene[®] installed:
- under the roof sheathing.
- under the floor sheathing.
- on vertical walls.

(A) Only Icynene on the walls needs to be covered, or
(B) Firefree 88 needs to cover all foam surfaces.

Assembly No. 3



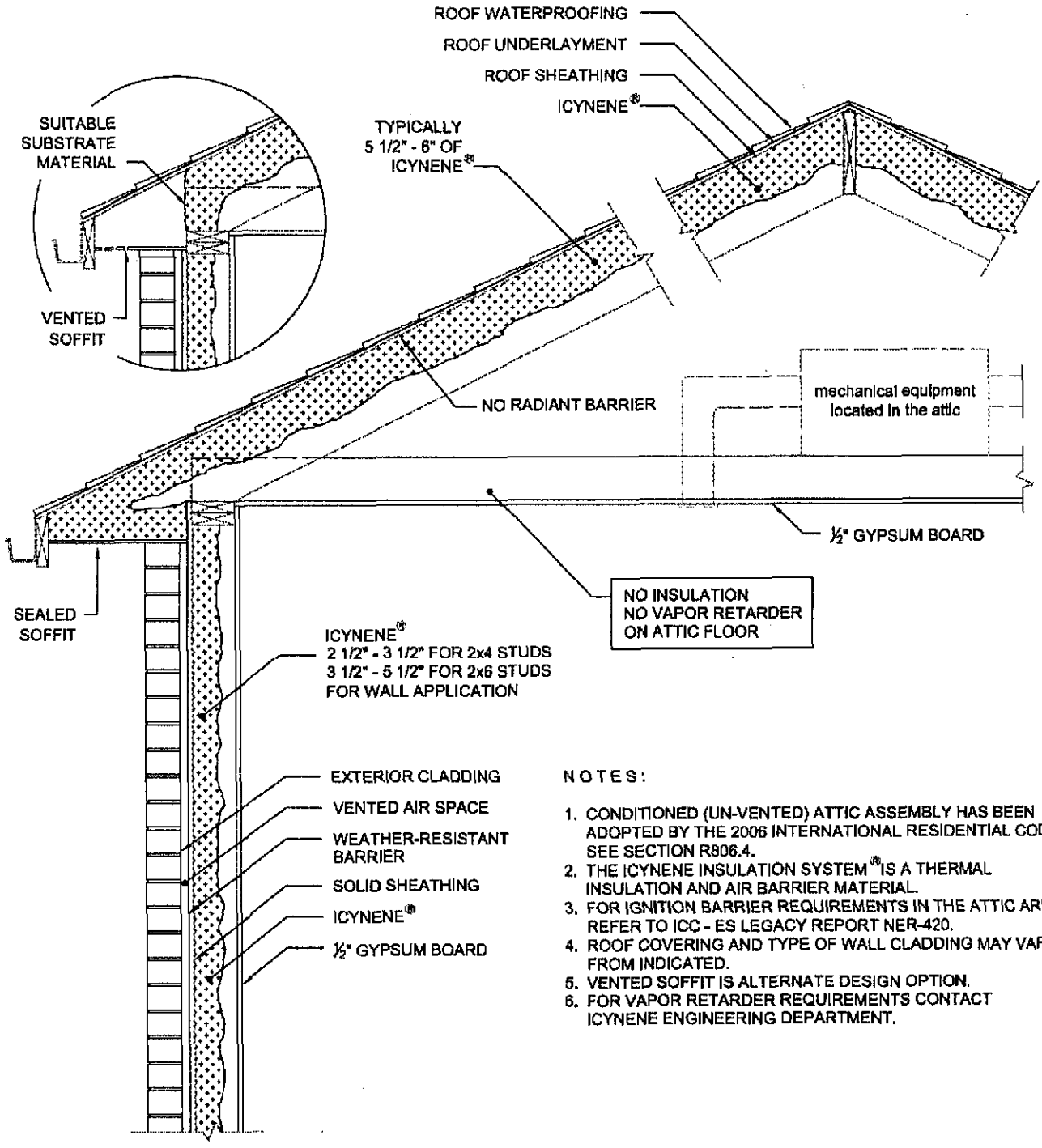
Icynene[®] installed without a thermal or ignition barrier:

- on the floor of the attic space.

Assembly No. 4

See Section 4.4.2 for general requirements

FIGURE 1—ATTIC AND CRAWL SPACE INSTALLATION WITHOUT A PRESCRIPTIVE IGNITION BARRIER



N O T E S :

1. CONDITIONED (UN-VENTED) ATTIC ASSEMBLY HAS BEEN ADOPTED BY THE 2006 INTERNATIONAL RESIDENTIAL CODE, SEE SECTION R806.4.
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

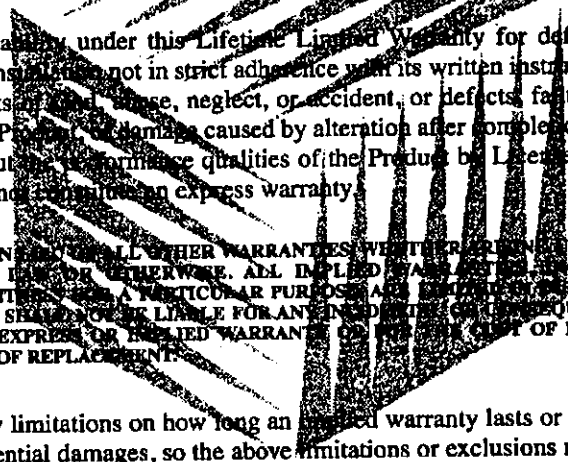
NOV 2006

ICY_ENG_01

The 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 [illegible] within 30 days of occupancy. Icynene's sole responsibility under this Warranty shall be to [illegible] any defective Product at the cost of the material only. Icynene shall not be responsible for [illegible] other costs whatsoever in connection with the removal or installation of either the original [illegible] installation.



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, abuse, neglect, or accident, or defects, failure, or damage caused by materials adjacent to the Product, or damage caused by alteration after completion of the installation of the Product. Statements about the performance qualities of the Product by Licensed Dealers or contained in advertising literature do not constitute an express warranty.

THE WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, WHETHER ARISING 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 IN DURATION 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 FOR 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

MEMBER

ENVIRODESIC™

SL-306-01

PRINTED IN CANADA

ADDRESS . : 660 POPE LAKE RD SUBDIV:
CONTRACTOR : ALLEN CUSTOM CONSTRUCTION LLC PHONE : (910) 814-2721
OWNER . . : MCKINNON JR HALBERT & ANN H PHONE :
PARCEL . . : 04-0692- - -0006- -04-
APPL NUMBER: 09-50022773 CP NEW RESIDENTIAL (SFD)
DIRECTIONS : T/S: 09/03/2009 12:33 PM VBROWN ----
POPES LAKE RD, POPES LAKE SUB DIV #3
ANGIER 27501. 421S TO BUIES CREEK,
LEFT 27E TO COATS, LEFT ON HWY 55W,
TAKE RIGHT ON OLD STAGE RD, RIGHT ON
LANGDON RD, LEFT ON POPES LAKE RD, LOT
ON RIGHT.

STRUCTURE: 000 000 64X60 4BDR 3BTH SFD W GAR,DECK,BONRM,CRL
FLOOD ZONE . . . . : FLOOD ZONE X
BEDROOMS . . . . . : 4.00 PROPOSED USE . . . . . : SFD
SEPTIC - EXISTING? . . . . : NEW SEPTIC WATER SUPPLY . . . . . : COUNTY

PERMIT: CPSF 00 CP * SFD

TYP/SQ	REQUESTED / COMPLETED	INSP RESULT	DESCRIPTION / RESULTS/COMMENTS
B101 01	10/22/09	KS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001840002
	10/22/09	AP	No t-pole up yet. T/S: 10/22/2009 10:14 AM KSLATTUM ----------
B103 01	11/03/09	KS	R*BLDG FOUND & TEMP SVC POLE VRU #: 001845148
	11/04/09	AP	
A814 01	11/03/09	TW	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001845163
	11/04/09	AP	√660 pope lake rd lot 3 ---------- angier 27501 T/S: 11/04/2009 04:12 PM TWARD ----------
B105 01	11/05/09	KS	R*OPEN FLOOR VRU #: 001846211
	11/05/09	AE	girder under master bedroom calls for 4 members. can check at rough-in T/S: 11/05/2009 02:55 PM KSLATTUM ----------
R427 01	12/22/09	KS	FOUR TRADE ROUGH IN >2500 VRU #: 001863729
	12/22/09	AE	Fire block between risers at top run. Floor joist cut for master bath tub drain. T/S: 12/22/2009 03:42 PM KSLATTUM ----------
I129 01	1/08/10	KS	R*INSULATION INSPECTION VRU #: 001868405
	1/08/10	DP	Rough-in violations not repaired. $50 re-inspection fee T/S: 01/08/2010 09:04 AM KSLATTUM ----------
I129 02	1/12/10	KS	R*INSULATION INSPECTION TIME: 17:00 VRU #: 001869411
	1/12/10	AP	T/S: 01/11/2010 11:54 AM DJOHNSON ----------
H824 01	3/01/10	JM	ENVIR. OPERATIONS PERMIT TIME: 17:00 VRU #: 001889054
	3/01/10	DA	PER JAMES MANHART WATER LINE NEEDS TO BE CHECKED BEFORE FINAL CAN BE ISSUED. T/S: 03/01/2010 11:15 AM SSTEWART ---------- T/S: 03/01/2010 11:16 AM SSTEWART ----------
H824 02	3/08/10	JM	√ENVIR. OPERATIONS PERMIT TIME: 08:00 VRU #: 001892728
	3/08/10	AP	T/S: 03/09/2010 11:31 AM SSTEWART ---------- T/S: 03/09/2010 11:31 AM SSTEWART ----------
R431 01	3/29/10 3.29.10	TI DABS	FOUR TRADE FINAL >2500 TIME: 17:00 VRU #: 001901339 T/S: 03/26/2010 12:24 PM DJOHNSON ----------

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

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PARCEL . . : 04-0692- - -0006- -04-
APPL NUMBER: 09-50022773 CP NEW RESIDENTIAL (SFD)
DIRECTIONS : T/S: 09/03/2009 12:33 PM VBROWN ----
POPES LAKE RD, POPES LAKE SUB DIV #3
ANGIER 27501. 421S TO BUIES CREEK,
LEFT 27E TO COATS, LEFT ON HWY 55W,
TAKE RIGHT ON OLD STAGE RD, RIGHT ON
LANGDON RD, LEFT ON POPES LAKE RD, LOT
ON RIGHT.

STRUCTURE: 000 000 64X60 4BDR 3BTH SFD W GAR,DECK,BONRM,CRL
FLOOD ZONE . . . . : FLOOD ZONE X
BEDROOMS . . . . . : 4.00 PROPOSED USE . . . . . : SFD
SEPTIC - EXISTING? . . . . : NEW SEPTIC WATER SUPPLY . . . . . : COUNTY

PERMIT: CPSF 00 CP * SFD

TYP/SQ	REQUESTED / COMPLETED	INSP / RESULT	DESCRIPTION / RESULTS/COMMENTS
B101 01	10/22/09	KS	R*BLDG FOOTING / TEMP SVC POLE VRU #: 001840002
	10/22/09	AP	No t-pole up yet. T/S: 10/22/2009 10:14 AM KSLATTUM ----------
B103 01	11/03/09	KS	R*BLDG FOUND & TEMP SVC POLE VRU #: 001845148
	11/04/09	AP	
A814 01	11/03/09	TW	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 001845163
	11/04/09	AP	✓660 pope lake rd lot 3 ---------- angier 27501 T/S: 11/04/2009 04:12 PM TWARD ----------
B105 01	11/05/09	KS	R*OPEN FLOOR VRU #: 001846211
	11/05/09	AE	girder under master bedroom calls for 4 members. can check at rough-in T/S: 11/05/2009 02:55 PM KSLATTUM ----------
R427 01	12/22/09	KS	FOUR TRADE ROUGH IN >2500 VRU #: 001863729
	12/22/09	AE	Fire block between risers at top run. Floor joist cut for master bath tub drain. T/S: 12/22/2009 03:42 PM KSLATTUM ----------
I129 01	1/08/10	KS	R*INSULATION INSPECTION VRU #: 001868405
	1/08/10	DP	Rough-in violations not repaired. $50 re-inspection fee T/S: 01/08/2010 09:04 AM KSLATTUM ----------
I129 02	1/12/10	KS	R*INSULATION INSPECTION TIME: 17:00 VRU #: 001869411
	1/12/10	AP	T/S: 01/11/2010 11:54 AM DJOHNSON ----------
H824 01	3/01/10	JM	ENVIR. OPERATIONS PERMIT TIME: 17:00 VRU #: 001889054
	3/01/10	DA	PER JAMES MANHART WATER LINE NEEDS TO BE CHECKED BEFORE FINAL CAN BE ISSUED. T/S: 03/01/2010 11:15 AM SSTEWART ---------- T/S: 03/01/2010 11:16 AM SSTEWART ----------
H824 02	3/08/10	JM	✓ENVIR. OPERATIONS PERMIT TIME: 08:00 VRU #: 001892728
	3/08/10	AP	T/S: 03/09/2010 11:31 AM SSTEWART ---------- T/S: 03/09/2010 11:31 AM SSTEWART ----------
R431 01	3/29/10	BS	FOUR TRADE FINAL >2500 TIME: 17:00 VRU #: 001901339
	3/29/10	DA	T/S: 03/26/2010 12:24 PM DJOHNSON ----------

---------- CONTINUED ONTO NEXT PAGE ----------

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PARCEL . . : 04-0692- - -0006- -04-
APPL NUMBER: 09-50022773 CP NEW RESIDENTIAL (SFD)

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
			1. Insulate water lines and trap on garage sink. 2. Need a handrail in garage. 3.Support cantilever on deck for brick veneer. 4. Support all doubles on deck carrying floor joists. 5. Need a grounding block on service GEC.
R431 02	3/31/10	TI	FOUR TRADE FINAL >2500 TIME: 17:00 VRU #: 001902675 T/S: 03/30/2010 12:05 PM VBROWN

COMMENTS AND NOTES

County of Harnett
Building Inspections Department
Planning Services

Certificate of Compliance:___ Occupancy:____

Certificate issued pursuant to the requirements of North Carolina General Statute 153A-363 and Harnett County Zoning Ordinances. This certifies at the time of issuance, this structure was in compliance with the various ordinances of the County of Harnett and the North Carolina State Building Codes. For the following:

Use Classification: Residential

Name: Allen Custom Homes

Address: 660 Popes Lake Rd.

Permit Numbers

Building: 8-30227-13

Electrical:

Insulation:

Plumbing:

Mechanical:

MFG Home:

Date: 3-31-10 Building Official: