

RESNET ANNUAL CONFERENCE

FEBRUARY 19, 2008



***ENERGY STAR Qualified Homes
Thermal Bypass Checklist:***

***Oh What a Year
It's Been***

OUTLINE



- *How We Got There*
- *Thermal Bypass Checklist*
Lessons Learned:
 - *How to Sell It*
 - *Technical Requirements*
 - *Overall Requirements*



Thermal Bypass Checklist: How We Got There

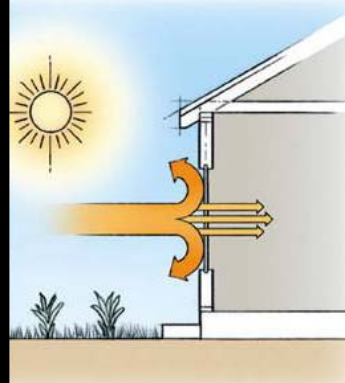
ENERGY STAR FOR HOMES OLD SPEC



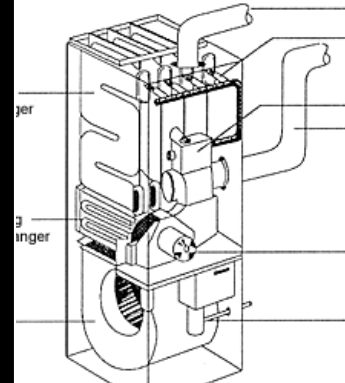
Tight
Ducts



Air
Sealing



Advanced
Windows



Efficient
Equipment

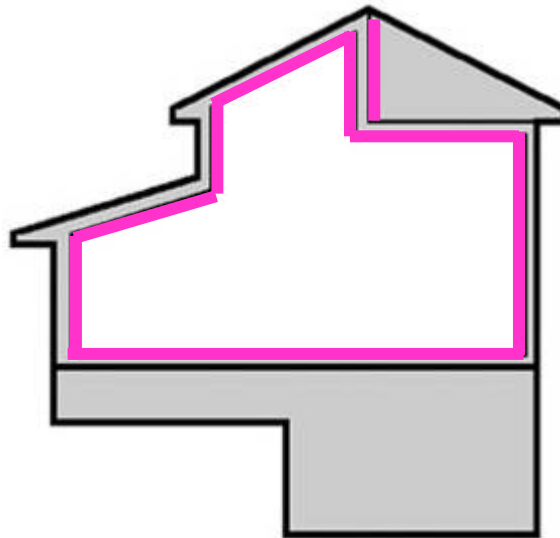


Field
Verified

ENERGY STAR FOR HOMES NEW SPEC



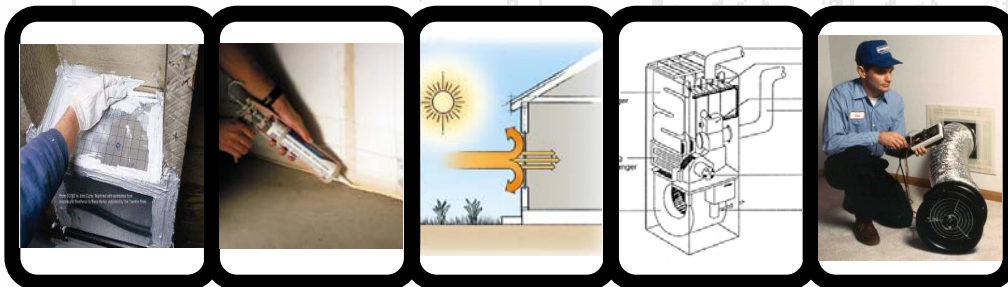
Insulation
Installation



Thermal Bypass



Right Sizing



NEW SPEC: TRULY ENERGY EFFICIENT



AEC Study:

- *~7,000 homes (1998 and 2004)*
- *~3,300 baseline (est. 20% > MEC 93)*
- *~3,000 ENERGY STAR Qualified Homes*
- *~800 Guaranteed Performance Homes*

16%
**ENERGY
STAR**

33%
**Guar.
Perform.**

Energy Savings Compared to Baseline

Source: Measuring Public Benefit from Energy Efficient Homes [2005], Advanced Energy Corp.

NEW SPEC: COST-EFFECTIVE



	<i>Monthly</i>	<i>Annual</i>
<i>Utility Savings</i>	<i>\$40</i>	<i>\$480</i>
<i>Added Mortgage</i>	<i>\$15</i>	<i>\$180</i>
<i>Cost Savings</i>	<i>\$25</i>	<i>\$300</i>

= \$1,000's *for typical ownership period*



Thermal Bypass Checklist Lessons Learned: How to Sell It



Low Cost Infrared Cameras:



Panasonic

AW-E650 1/2-Inch 3-CCD Convertible System Camera with Extreme Low-Light Sensitivity, Built-In Filters and Infrared Total Darkness Vision [More Info](#)

Mfr # AWE650 • B&H # PAAWE650

Availability : **Accepting Orders**

Quantity



Add to Cart

Add to Wishlist

Price : \$ 4,099.95

Shipping Cost





The IRISYS
Buy Now
\$2000.00

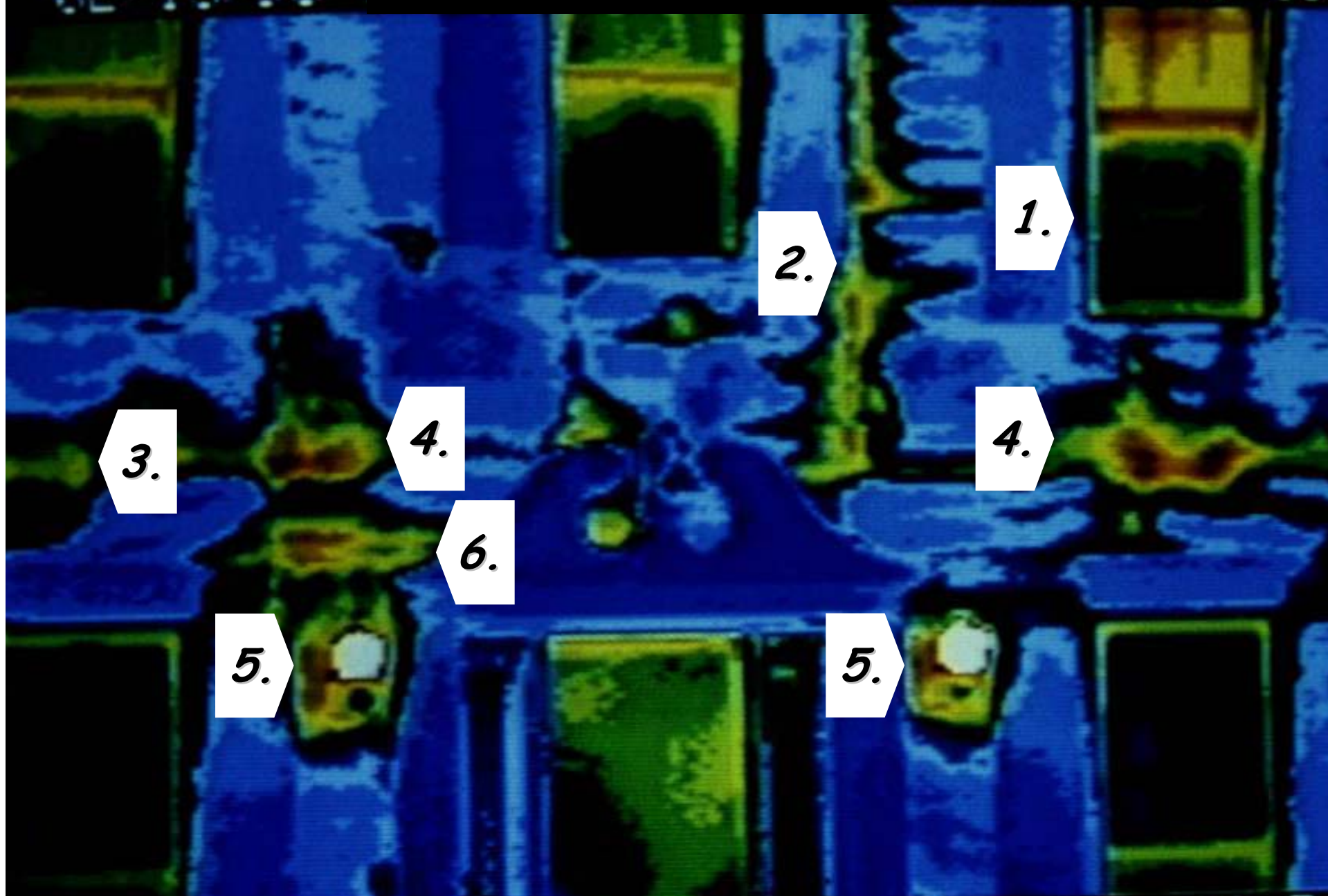
Defects Invisible



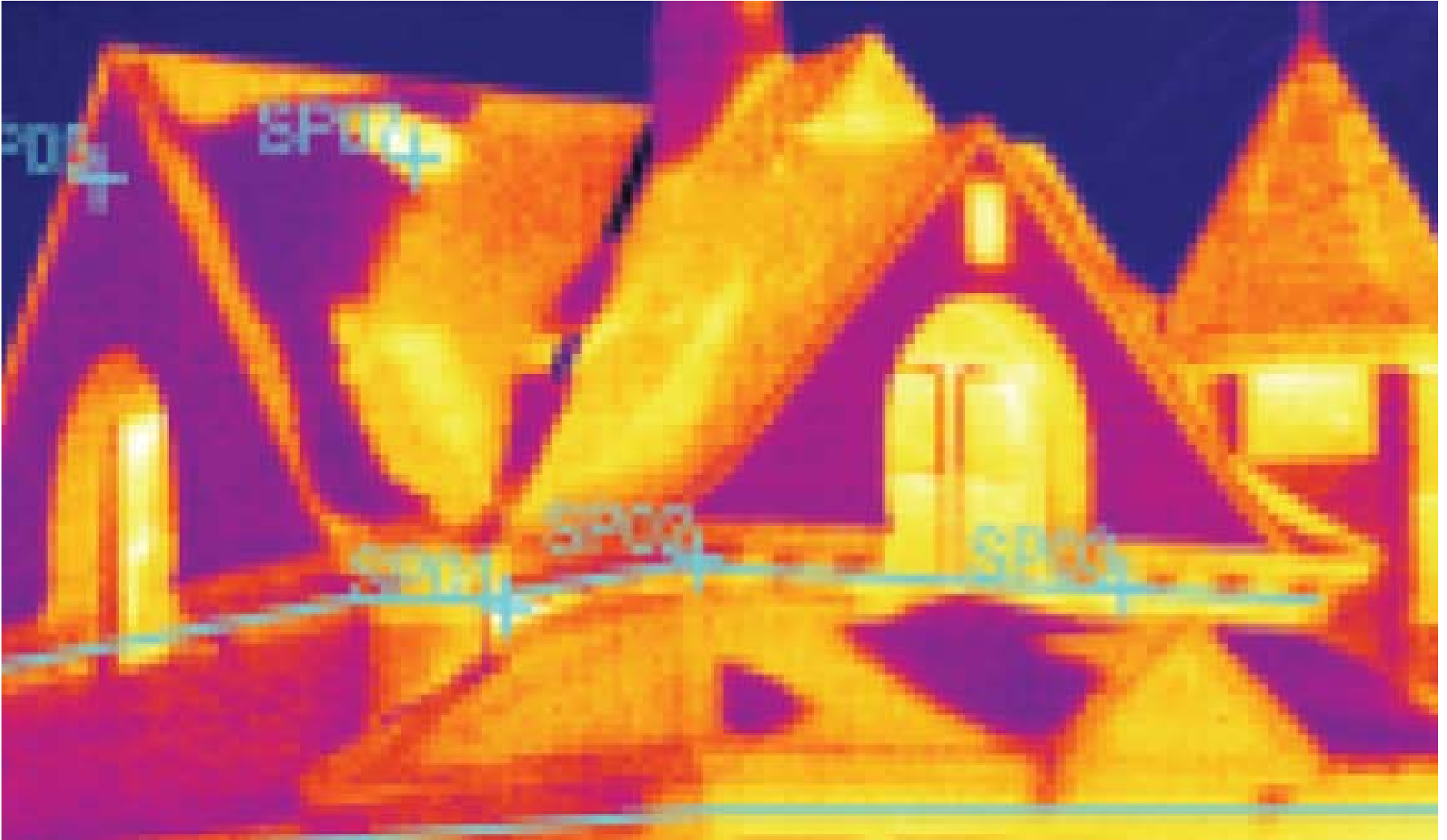
02/15/93

Defects Visible

00 BB 20:41:59

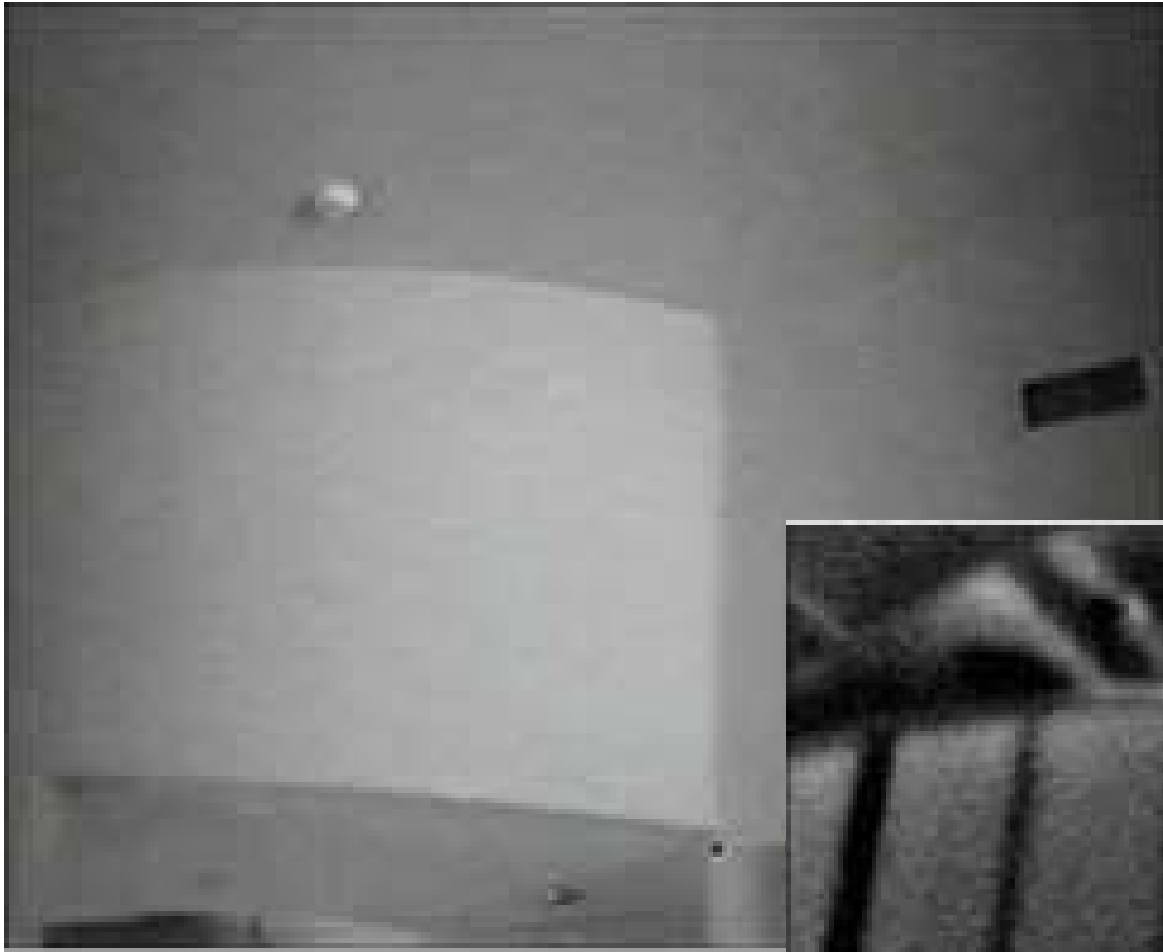


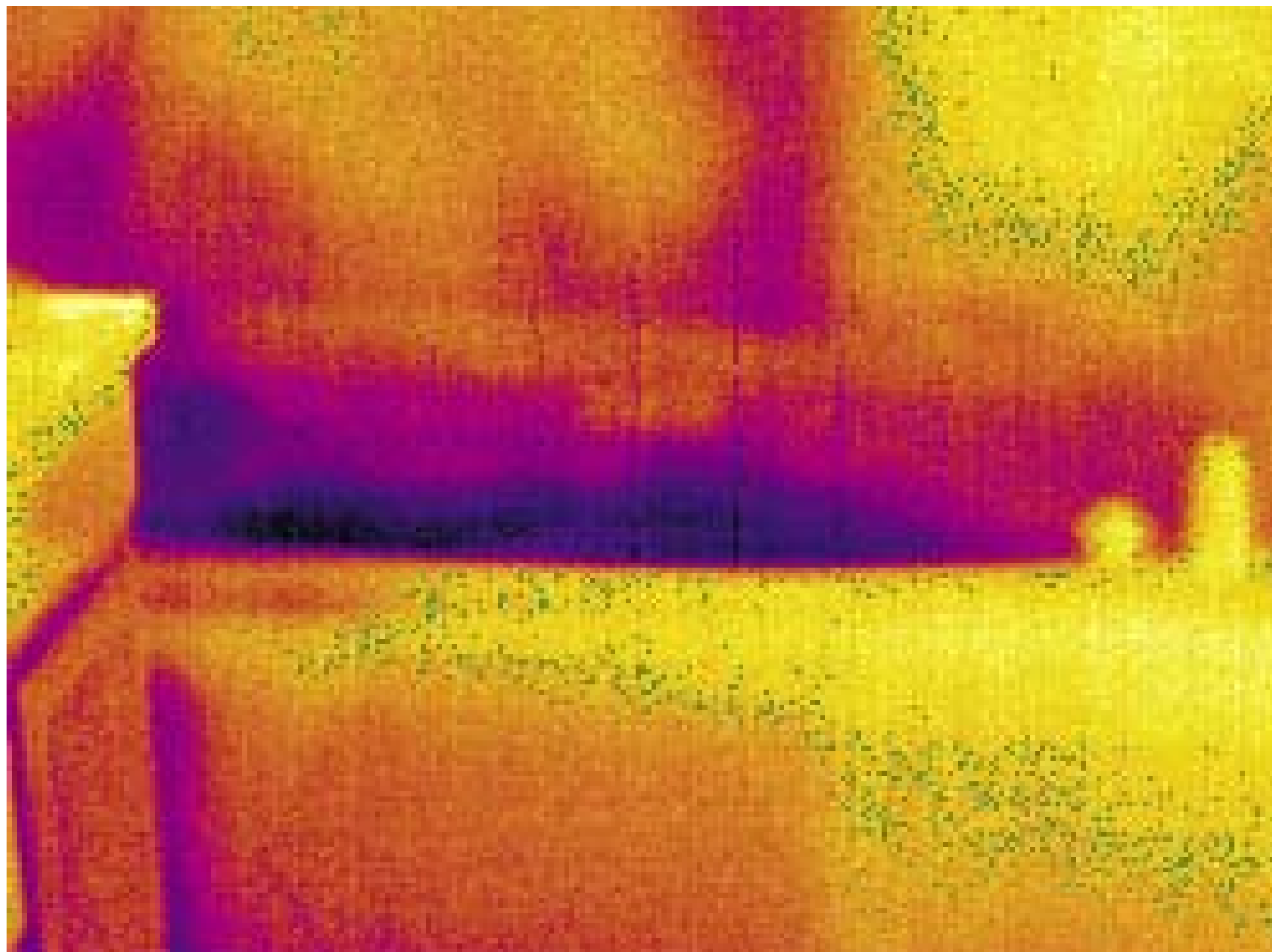
Used Homes = Obsolete Competition

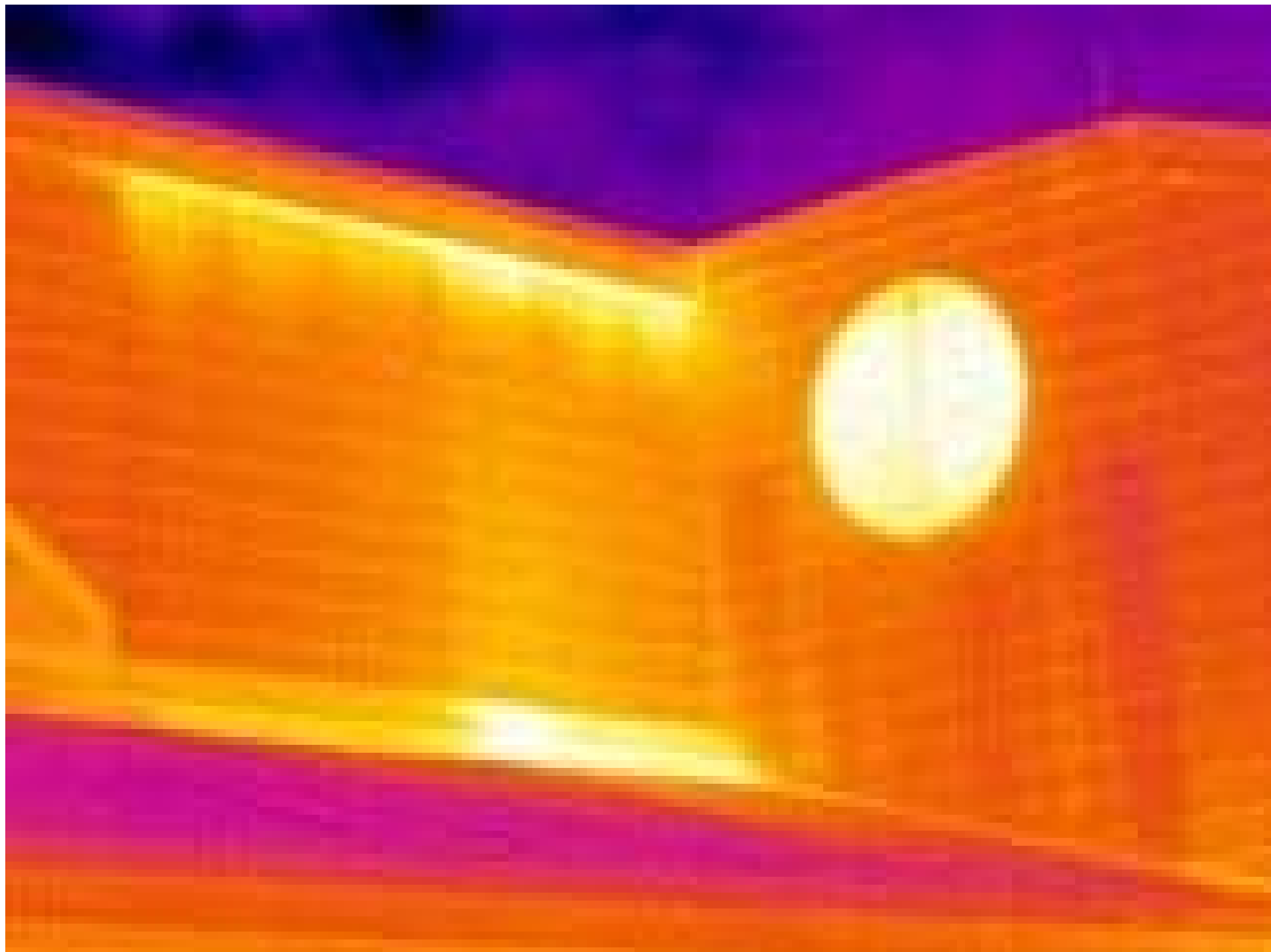


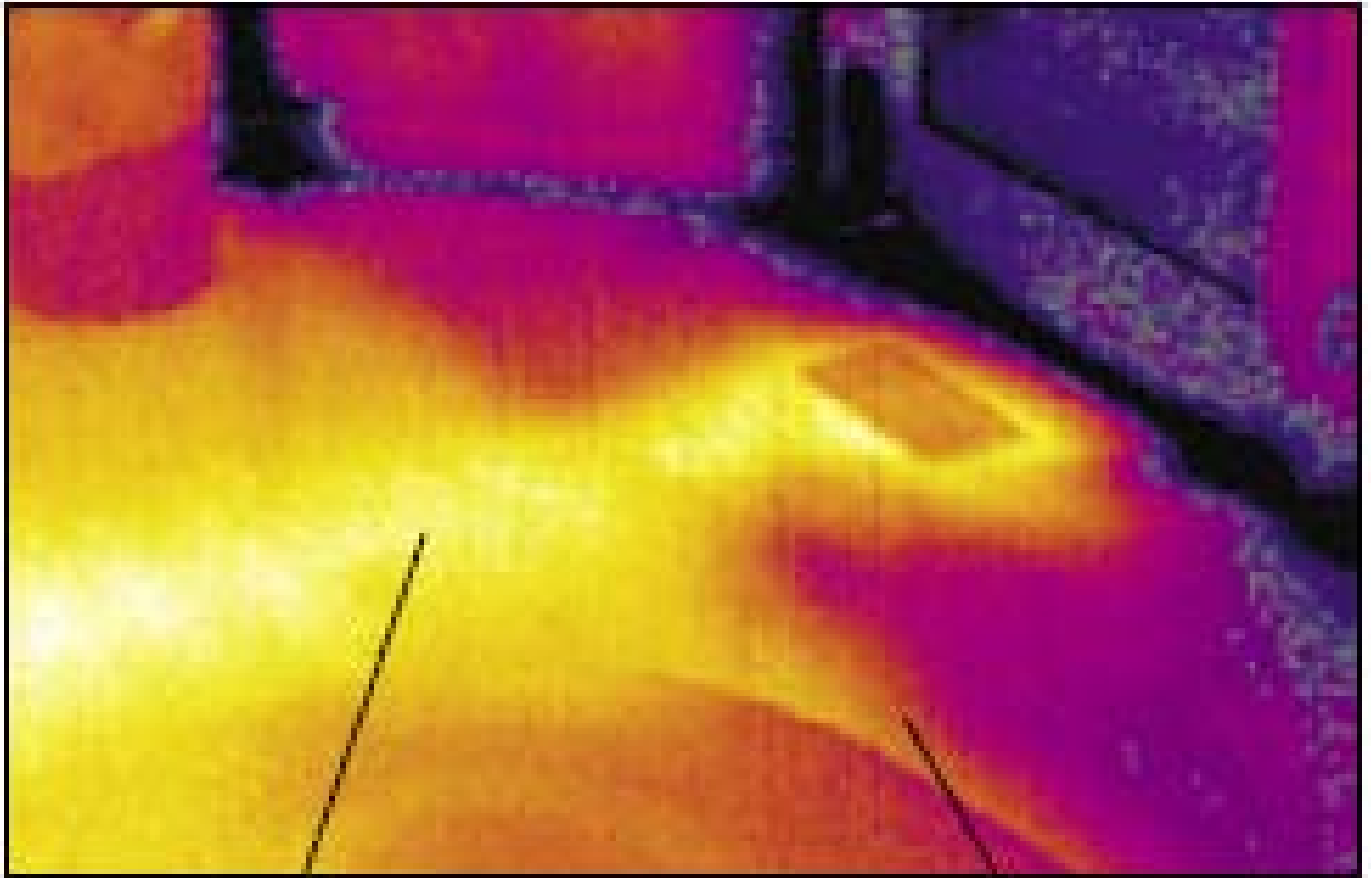
New Homes = Obsolete Competition



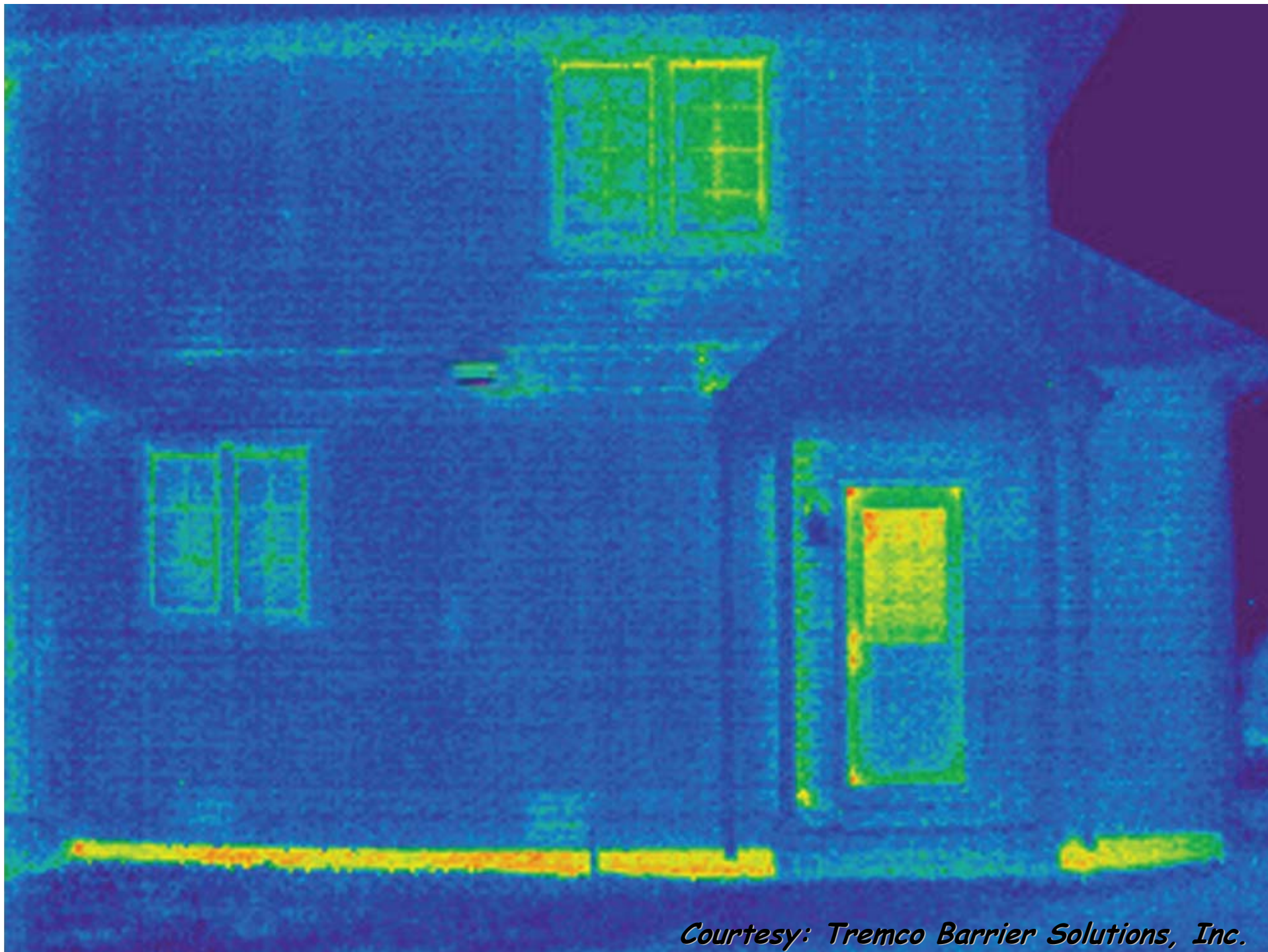








Courtesy of Fort Collins Utilities



Courtesy: Tremco Barrier Solutions, Inc.

CODE NONCOMPLIANCE EXPOSED



***Most thermal bypass details
required by code, but
not enforced.***

Builders still liable!



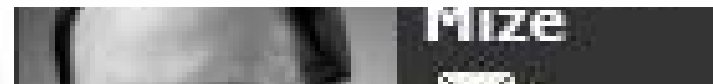
Make the scary man stop! Make the scary man from the government be quiet!! Make the scary man from the government quit talking about making houses more energy efficient!!!

By Richard Mize

+ BOOKMARK

Make the scary man go away!

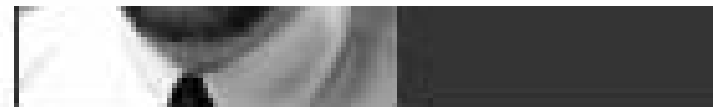
farmhouse I grew up in, where the wind came sweeping out of the hills, through the walls and across



My inner child grew up to live in a 22-year-old house, not a new one, and he wants to sell it someday and doesn't want it to be as obsolete as his grandpa's outhouse and wash basin.

Energy Star program. He was a speaker at the Best of Building Science seminar presented Thursday by Guaranteed Watt Saver, which consults on Energy Star homes and other energy-efficient construction.

Energy Star is a program that



ENERGY STAR®



Together you and America's Homes® are helping the environment by reducing air pollution and our dependency on foreign energy sources.

In 2005 ENERGY STAR awarded greenhouse gas emissions equivalent to those from 23 million cars—all while saving \$12 billion in utility bills.



Since home's insulation is optional and is properly installed, eliminating voids and pockets.



Every America's home's ductwork is tightly sealed, sufficiently insulated, and tested for air leakage.



THERMAL BYPASS

All America's homes are built to new 2006 ENERGY STAR qualified homes specifications that include advanced building practices ensuring insulation delivers full rated performance. This is achieved by removing proper insulation methods and adding a comprehensive set of air barrier details blocking common areas where heat flow can bypass insulation.

Thermal Bypass = Impressive Energy Savings and Improved Comfort



1" Insulating Foam Board and Metal Stucco Lath
Insulation is installed in full contact with the air barrier to provide continuous alignment of the insulation with the air barrier.



Over 90% of America's energy upgrades, inspections, diagnosis and repairs energy efficiency and energy savings.



100% of America's homes are built with airtight ducts. This is achieved by using straps, rather than...

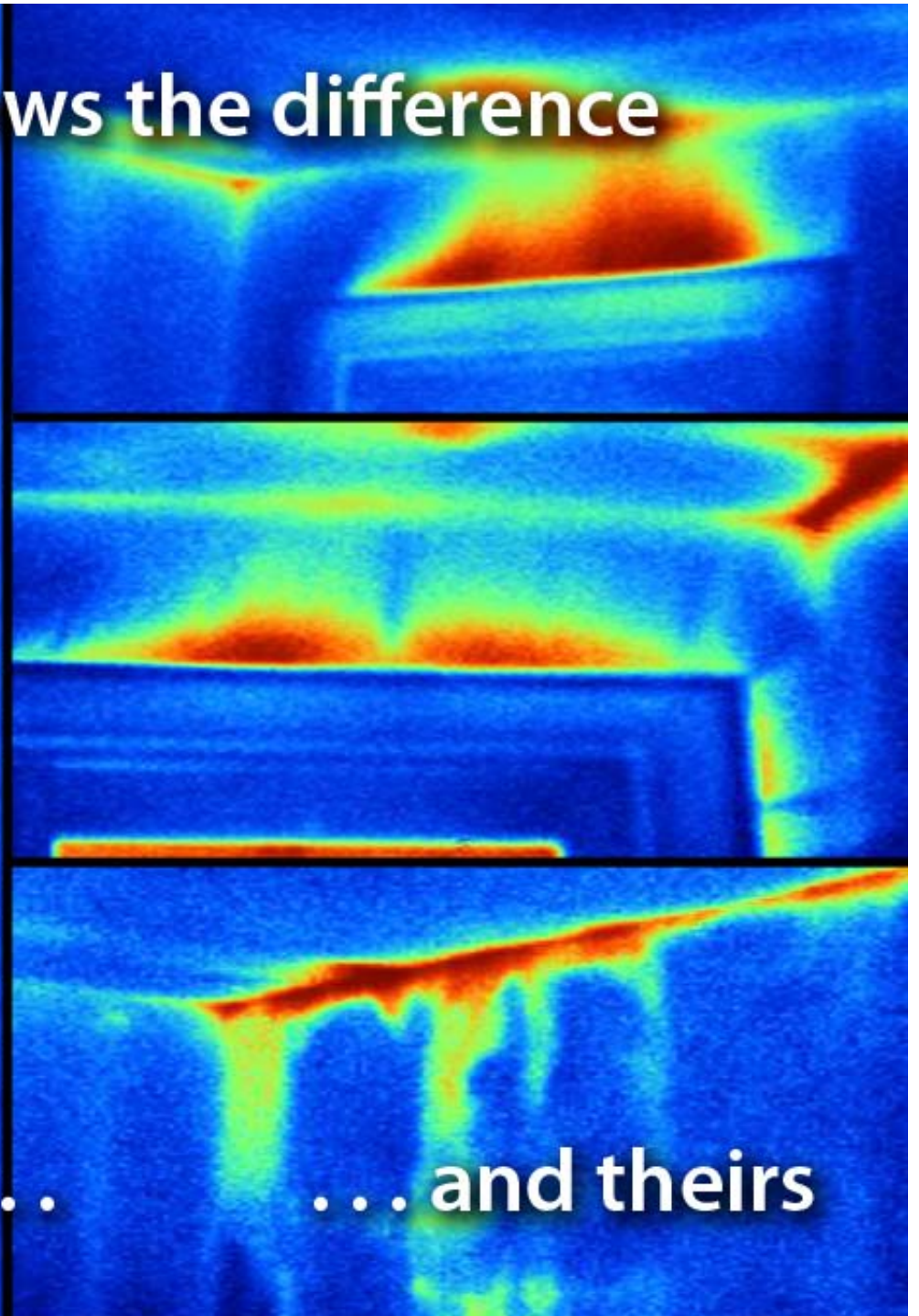


and create. These protocols create better heating and cooling costs and better air distribution.



Infrared imaging shows the difference

Our insulated walls and theirs



MONEY ALERT

Paula Toti

MONEY ALERT



SAVING ENERGY BEHIND THE WALLS

Infrared Energy Auditing – How Home Inspectors Gain a Competitive Edge

According to the U.S. Department of Energy, the typical family spends close to \$2,500 a year on their home's utility bills, and unfortunately, a large portion of that energy is wasted due to insufficient insulation and a lack of weather stripping around doors and windows. Professional home inspection and energy auditors have been using leading-edge infrared technology to perform energy auditing of homes and buildings to improve energy efficiency, thus leading to savings on energy costs.

Howard Vics of Building Performance Consulting in Schenectady, NY and Gary Goodman of Energy Construction, LLC in Roseton, NY rely on their FLIR Systems EX260 infrared camera for home energy auditing assessments. Built for harsh environments, the EX260 is a rugged yet flexible infrared solution featuring interchangeable optics, high-resolution imaging and extreme thermal sensitivity. Feature-rich and affordable, the EX260 is the smallest, smartest infrared camera on the market today.

"We are thrilled to have this instrument," said Vics. "We use the EX260 on every job, whether it's for a comprehensive home energy audit, heat loss analysis or for a quality assurance check of installed insulation. As I complete the assessment, I can easily detect missing insulation in walls and ceilings, or air leakage around doors, windows and along the foundation. We

can then develop an insulation and air-sealing strategy to address the problem. By using an infrared camera, I am able to instantly see and diagnose the problem via a nondestructive method, which is a definite competitive edge for our business."

Both Vics and Goodman work with the New York State Energy Research and Development Authority (NYSERDA), and have been certified by the Building Performance Institute. The New York Energy SmartSM Program and Energy Star® have partnered together to develop a program to assist homeowners to make energy efficiency improvements. Having a qualified home performance inspector, who has been trained in Building Science, perform a comprehensive energy audit will reveal where there is energy being wasted, so improvements can be made to enhance safety and comfort.

"We also use our FLIR infrared camera for the Energy STAR® new homes program as well," Vics explains. First, I do an evaluation of the building plans, followed by two or three on-site inspections during critical stages of construction and heating system configuration. It is at the final stages (before and after drywall installation) that the ThermoCAM thermal imaging camera is key, because I can "see" duct leakage and inconsistencies of insulation. "The final energy audit takes place when the construction is complete, just before the owner gets their certificate. "We have found that the IR camera is an invaluable tool when doing building diagnostics of newer homes."

Goodman, who specializes in the application and installation of insulation and air sealing techniques, uses the infrared camera before starting a job and after installation of insulation as a final quality assurance check to make sure he hasn't missed a bay or some other source of cold air.

Infrared thermography is a well-accepted method of imaging and evaluating the

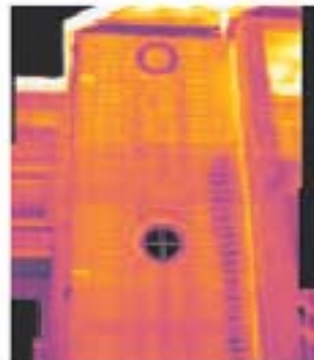
thermal efficiency of home and building insulation, doors, windows, and other penetrations, along with the efficiency of heating and cooling systems. Home energy auditors have been able to proactively address the issue of wasted energy by using infrared cameras, and in turn help to make homes more energy efficient, saving money and natural resources.

About FLIR Systems, Inc.:

FLIR Systems, Inc. (NASDAQ:FLIR) designs, manufactures and markets infrared imaging systems worldwide. Commercial product applications include non-destructive testing, research and development, manufacturing process control, predictive maintenance/condition monitoring, and broadcast imaging. With over 30 years experience and more than 30,000 of its IR systems in use, FLIR is the global leader in infrared cameras, software, service, training and support. FLIR ThermoCAM thermal imaging cameras are the most widely used IR non-contact temperature measurement systems worldwide. FLIR products also play pivotal roles in such diverse applications as public safety, defense, navigation and search and rescue. For more information, please visit our website at: www.flirthermography.com or call 1-800-464-6372.

Howard Vics is certified by the Building Performance Institute in Building Analysis and is a Certified Thermographer with a specialty in Building Science. He formed Building Performance Consulting in 2004 and serves the greater Capital region performing home energy audits, infrared thermography and building diagnostics. Gary Goodman is "triple certified" by the Building Performance Institute with specialties in Building Analysis, Shell, and Heating Systems and has been installing and air sealing homes in the Capital region for over 25 years. For more information you can reach Howard Vics at (518) 366-4546 and Gary Goodman can be reached at (518) 756-4303.

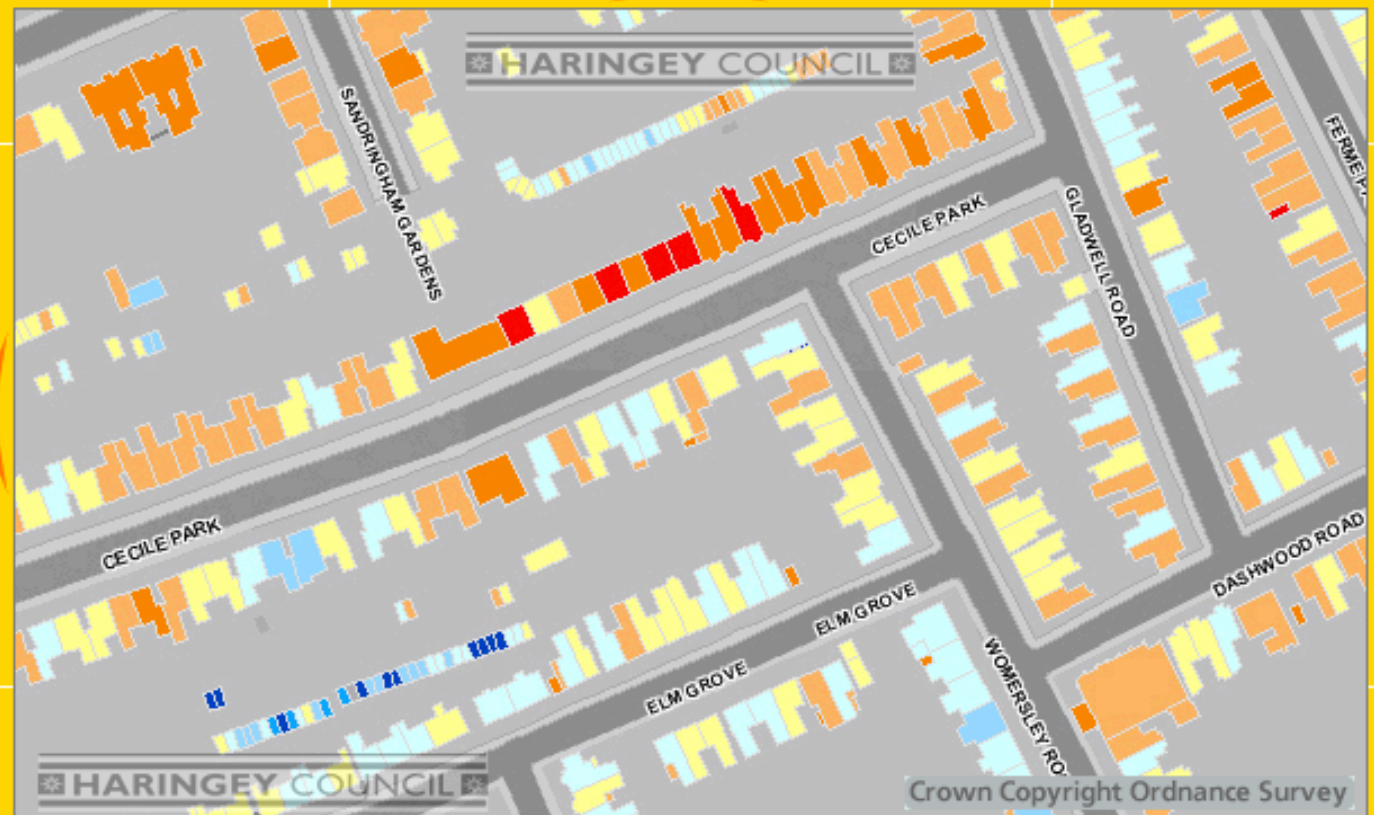
FLIR
The Global Leader in Infrared Cameras



Haringey Interactive Heat Loss Map

[Return to Haringey.gov.uk](http://Haringey.gov.uk)

Developed by  Ltd.



High  Low
Heat Loss



Find an address

Street Name

or Postcode

Go



Heat Loss Survey Data provided by hotmapping.co.uk & [Horton Levi](http://HortonLevi.com)

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THE ULTIMATE SCARY MAN



"Construction defects

can dramatically change the comfort and quality of your home... We can help!...

Over \$430,000,000

awarded to our clients!!!"

<http://www.kasdansimonds.com/constructiondefects.asp>

SMARTER CUSTOMERS



~80%

*of New Homes Buyers use the Web
before purchasing a new home*

MORE INFO FOR SMARTER BUYERS



JD Powers and Assoc. 2005 Builder Quality Rankings

Market	2005		
Major Market Total	112	Raleigh/Durham	113
Austin	122	Seattle/Tacoma	113
Orange County (CA)**	122	Denver/Colorado Springs	111
Sacramento	120	San Diego	111
Houston	118	San Francisco Bay Area	111
Tucson	118	Portland*	109
Dallas/Ft. Worth	117	Atlanta	108
Los Angeles/Ventura Counties**	116	Detroit	108
Minneapolis	116	Ft. Myers/Naples	108
Charlotte	115	Palm Beach	107
Chicago	115	Baltimore*	106
Tampa	115	Albuquerque*	104
Phoenix	114	Orlando	104
Inland Empire (CA)**	113	Washington, D.C.	104
Las Vegas	113	Philadelphia	101
		Jacksonville	98

MORE INFO FOR SMARTER BUYERS



J.D. Power Builder Comparisons



2006 New-Home Builder Customer Satisfaction Study

Portland

Award Recipient: Centex

Company		<u>Overall Customer Satisfaction</u>	<u>Quality of Workmanship & Materials</u>	<u>Price & Value</u>	<u>Home Design</u>
▲▼ Centex Award Recipient		▲▼ ●●●●●	▲▼ ●●●●●	▲▼ ●●●●●	▲▼ ●●●●●
Arbor Custom		●●●●○	●●●●○	●●●●○	●●●●○
D.R. Horton		●●●●○	●●●●○	●●●●○	●●●●○
Don Morissette		●●●●○	●●●●○	●●●●○	●●●●○
JLS Custom		●●●●○	●●●●○	●●●●○	●●●●○
Legend Homes Corp.		●●●●○	●●●●○	●●●●○	●●●●○

Scoring Legend

●●●●● Among the best ●●●●○ Better than most ●●●○● About average ●●○●○ The rest

MORE INFO FOR SMARTER BUYERS

[ABOUT US](#)[INVESTOR RELATIONS](#)[PRESS ROOM](#)[CAREERS](#)[CONTACT](#)[DEL WEBB](#)[DIVOSTA HOMES](#)[SEARCH FOR YOUR HOME](#)[ESPAÑOL](#)

PULTE HOMEOWNER FOR LIFE™

[GETTING STARTED](#)[FIND YOUR HOME](#)[PERSONALIZE YOUR HOME](#)[FINANCE YOUR HOME](#)[BUILDING YOUR HOME](#)[LIVING IN YOUR HOME](#)

Highest in
Customer
Satisfaction

GO



PULTE HOMES
Come and
visit us today.



Find Your Home

Where do you want to live?

Select a state to begin
your search.

SELECT STATE:

--- Select State ---



Ready to Move

Sign up to receive
email updates on
available homes.

GO

DOES LEADERSHIP MATTER?



NIKE LUCKOVICH
ILL. BY JIM L. CHRISTENSEN
© 2006



THELMA & LOUISE

LEADERSHIP OPPORTUNITY



Minimize Cost:

ENERGY STAR Cost:
\$2,000

100 Home Dilemma:
\$2,500 x 100 homes =

***\$.2** million*

VS.

Maximize Value:

New Home Avg. Cost:
\$400,000+

***< .5%** investment*

- *Visible Quality*
- *Obsolete Competition*
- *Reduced Liability*
- *Increased Satisfaction*
- *Recognition as Leader*



***Thermal Bypass Checklist
Lessons Learned
Technical
Requirements***



1.

***OVERALL AIR BARRIER
AND THERMAL
BARRIER ALIGNMENT***

1. OVERALL AIR BARRIER/THERMAL BARRIER ALIGNMENT: PROBLEM: POOR ALIGNMENT

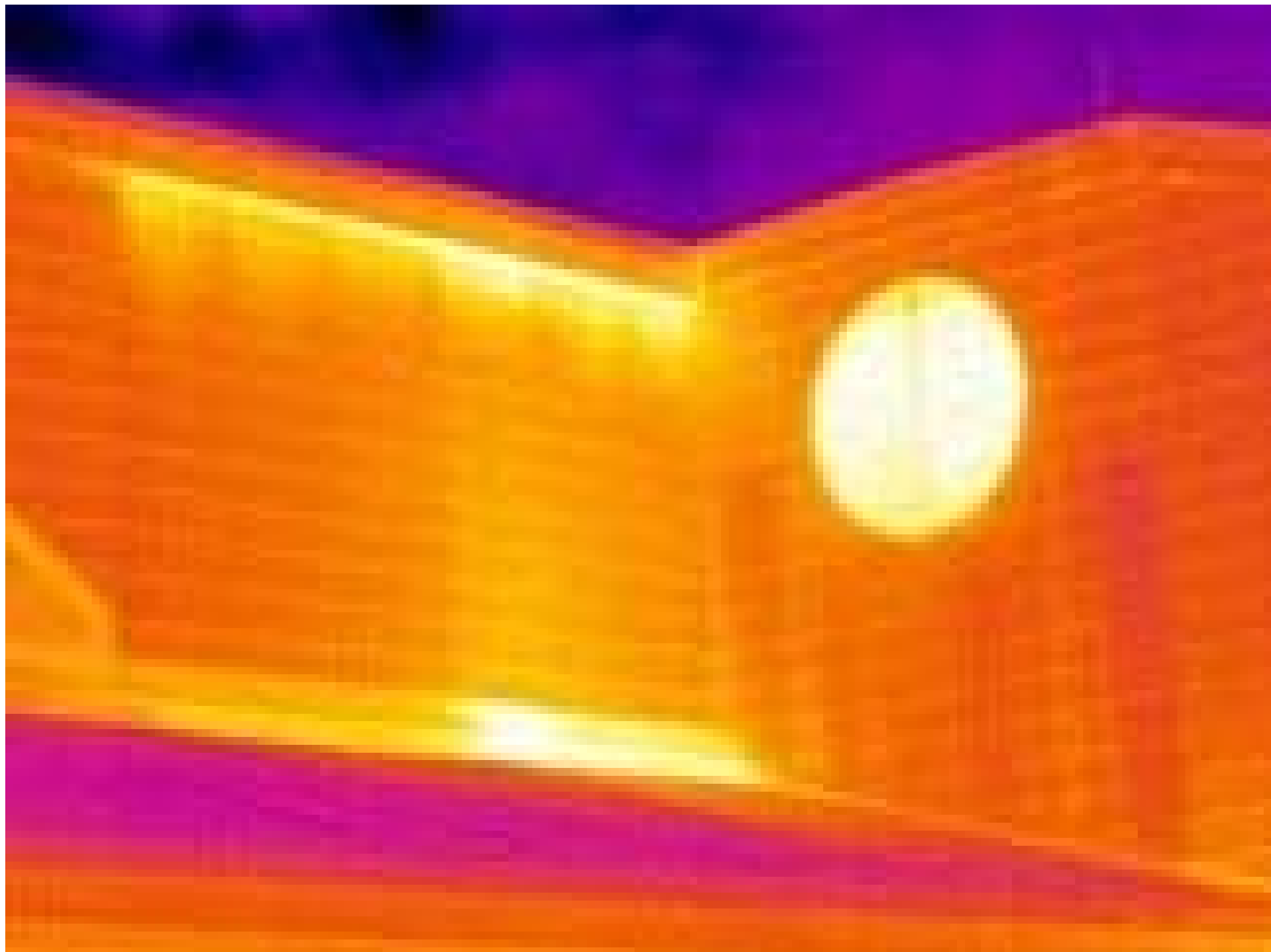


OVERALL AIR BARRIER AND THERMAL ALIGNMENT PROBLEM: INSET STAPLING



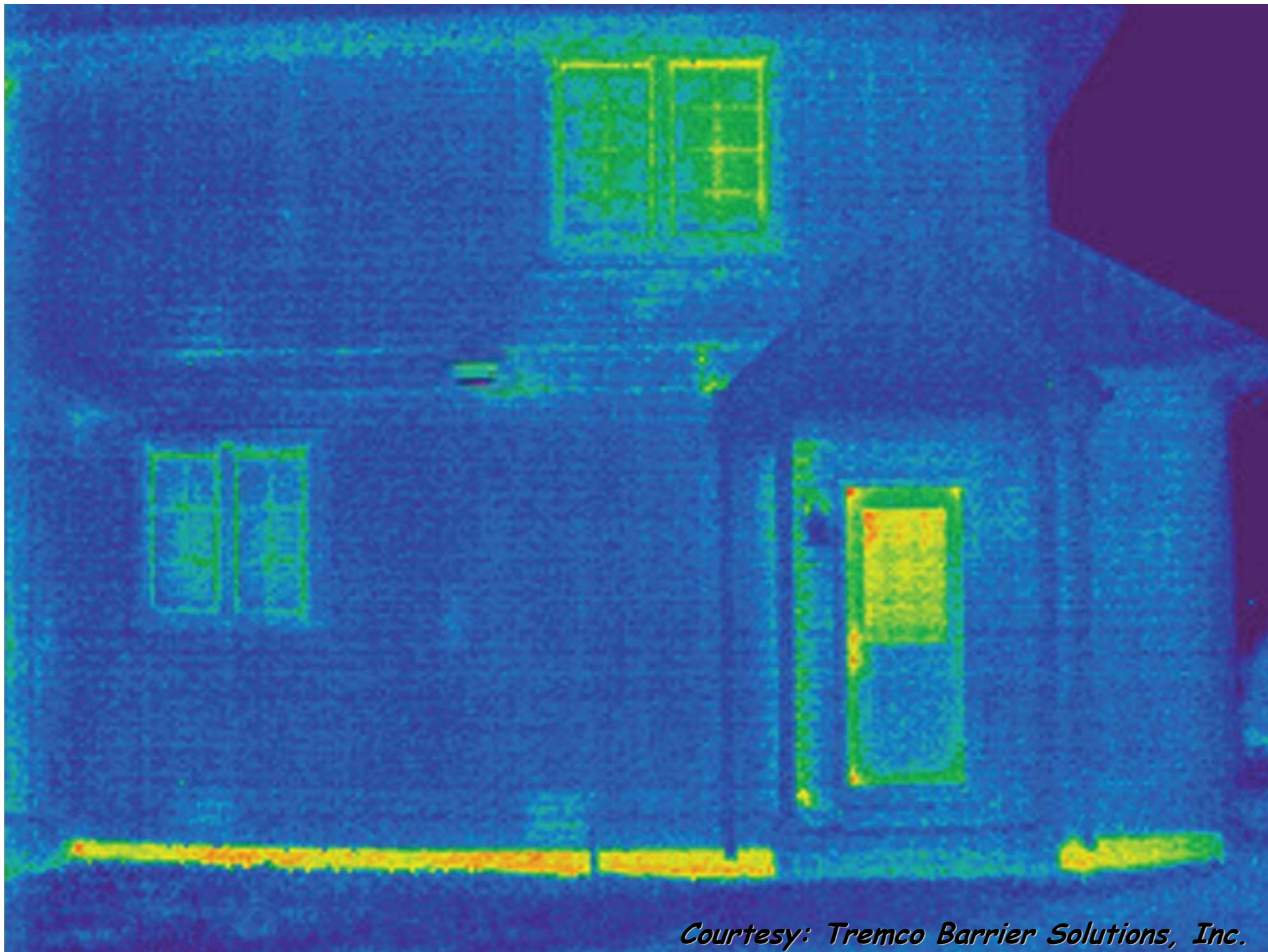
OVERALL AIR BARRIER AND THERMAL ALIGNMENT PROBLEM: INSET STAPLING





OVERALL AIR BARRIER AND THERMAL ALIGNMENT INSULATION INSTALLATION PROBLEM



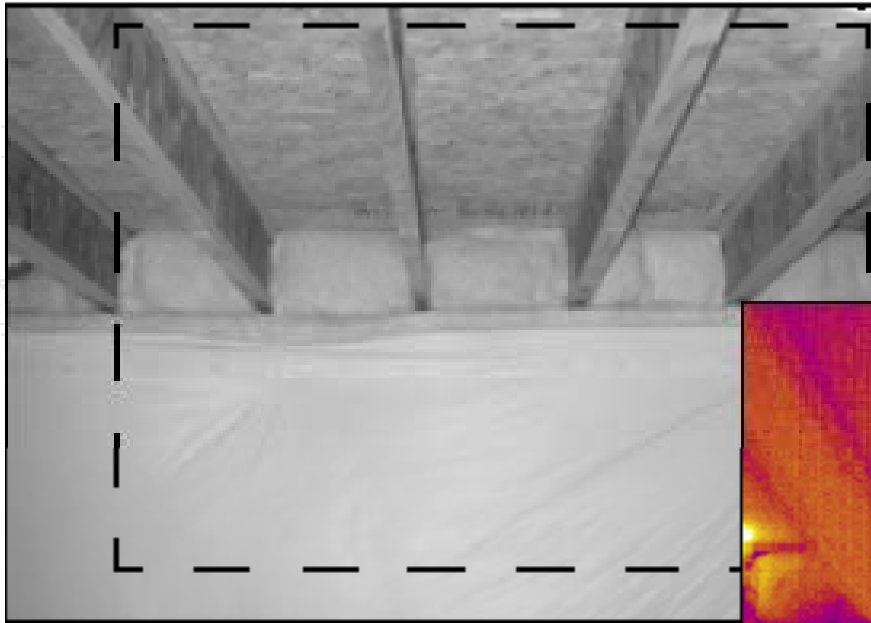


Courtesy: Tremco Barrier Solutions, Inc.

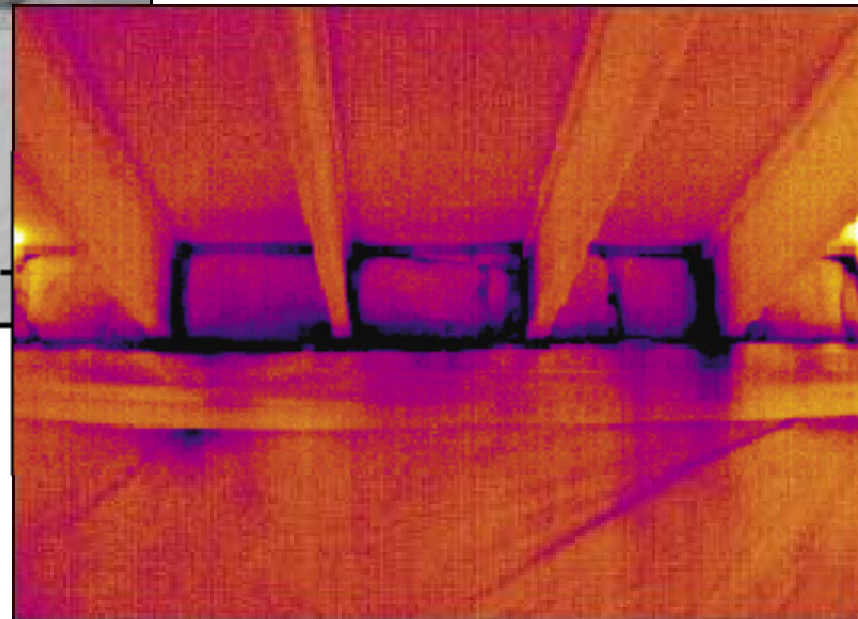
OVERALL AIR BARRIER AND THERMAL ALIGNMENT INSULATION PROBLEM



OVERALL AIR BARRIER AND THERMAL ALIGNMENT RIM JOIST PROBLEM



The infrared photo (right) shows the symptoms of compressed insulation and air leakage at the rim joist.



Courtesy of Fort Collins Utilities

OVERALL AIR BARRIER AND THERMAL ALIGNMENT ATTIC EAVE SOLUTION



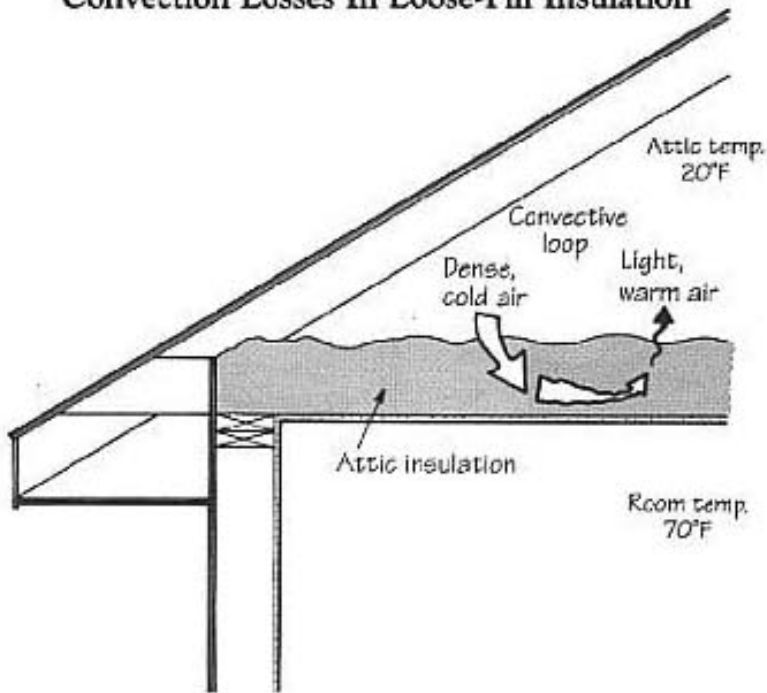
Baffles at every bay

Image courtesy of MaGrann Associates

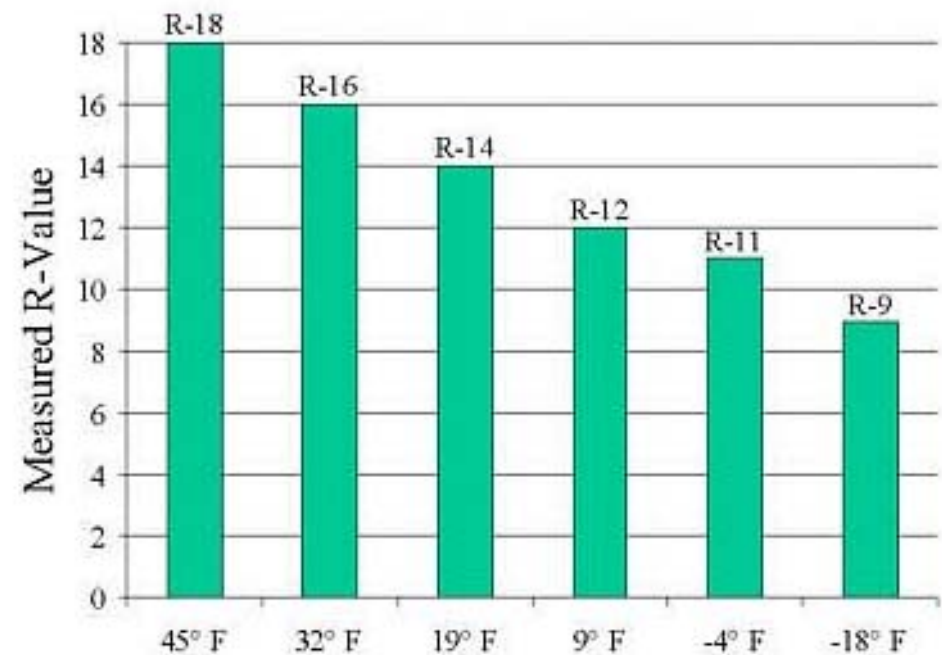
OVERALL AIR BARRIER AND THERMAL ALIGNMENT EXCEPTION TO SIX-SIDED AIR BARRIER



Convection Losses In Loose-Fill Insulation



R-Value vs. Temperature
For Loose-Fill Fiberglass



Source:
David South
Enviro-Seal Foam Insulation



2.

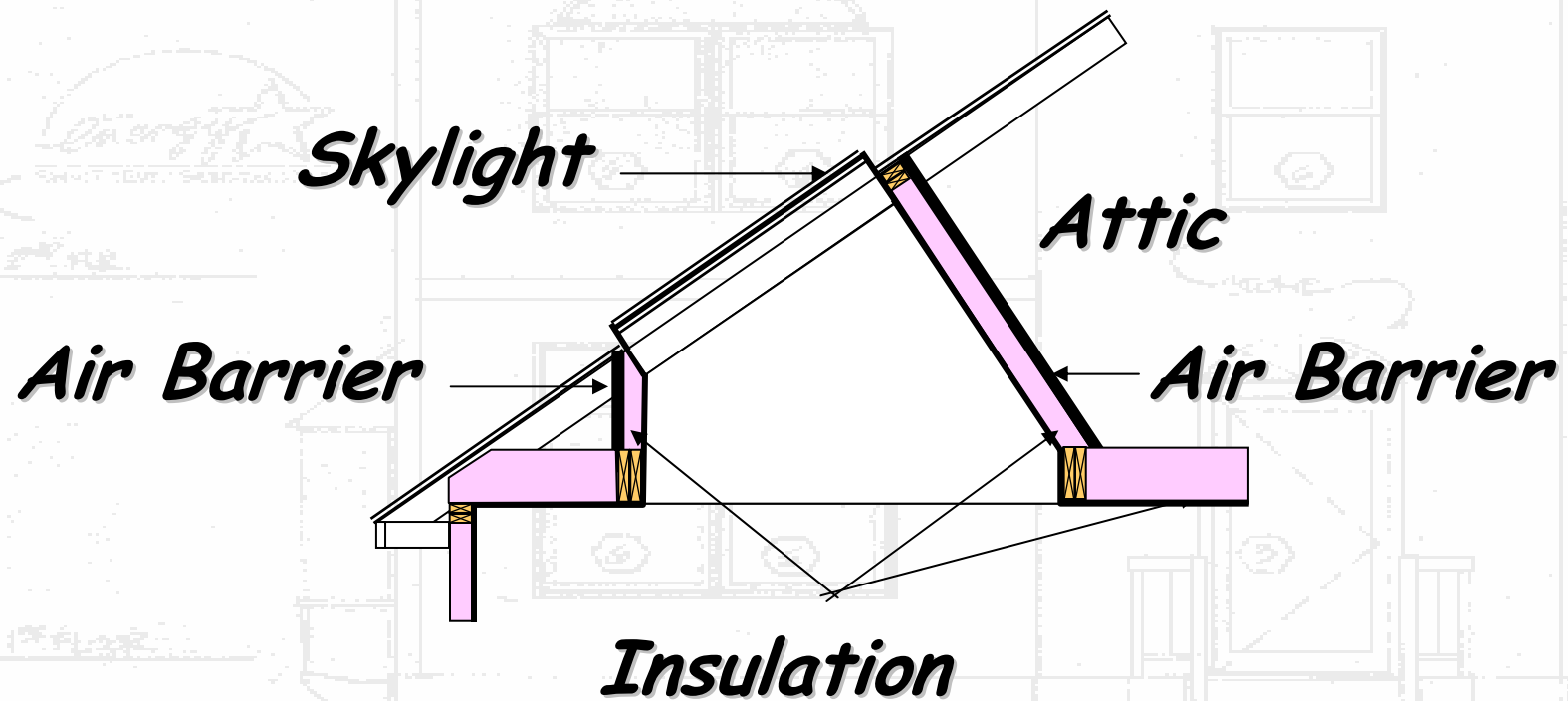
***WALLS ADJOINING
EXTERIOR WALLS OR
UNCONDITIONED
SPACES***

WALLS ADJOINING EXTERIOR OR UNCONDITIONED SPACES ATTIC KNEE WALLS



Images courtesy of Energy Services Group

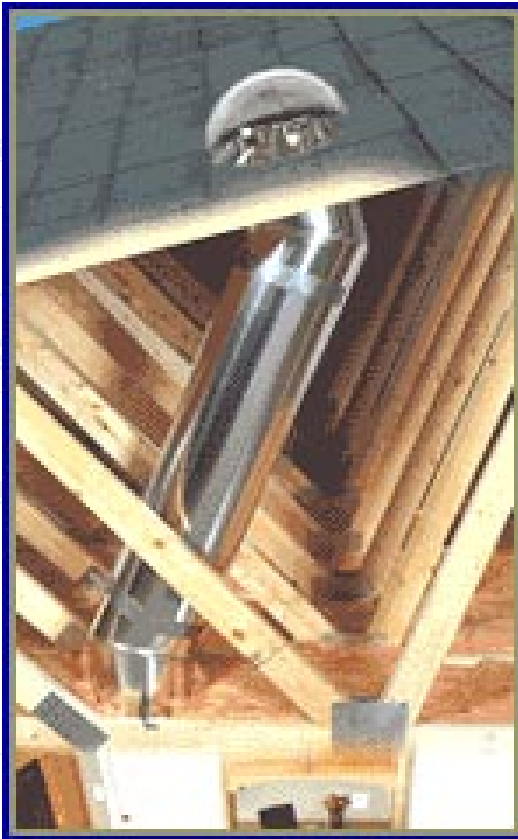
WALLS ADJOINING EXTERIOR OR UNCONDITIONED SPACES SKYLIGHT SHAFT



WALLS ADJOINING EXTERIOR OR UNCONDITIONED SPACES SKYLIGHT SHAFT

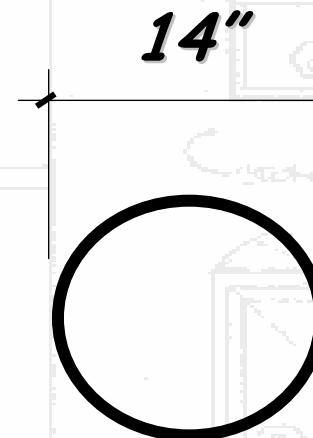


WALLS ADJOINING EXTERIOR OR UNCONDITIONED SPACES TUBULAR SKYLIGHT



Exception:

*Note required if does not meet
manufacturer installation requirements*



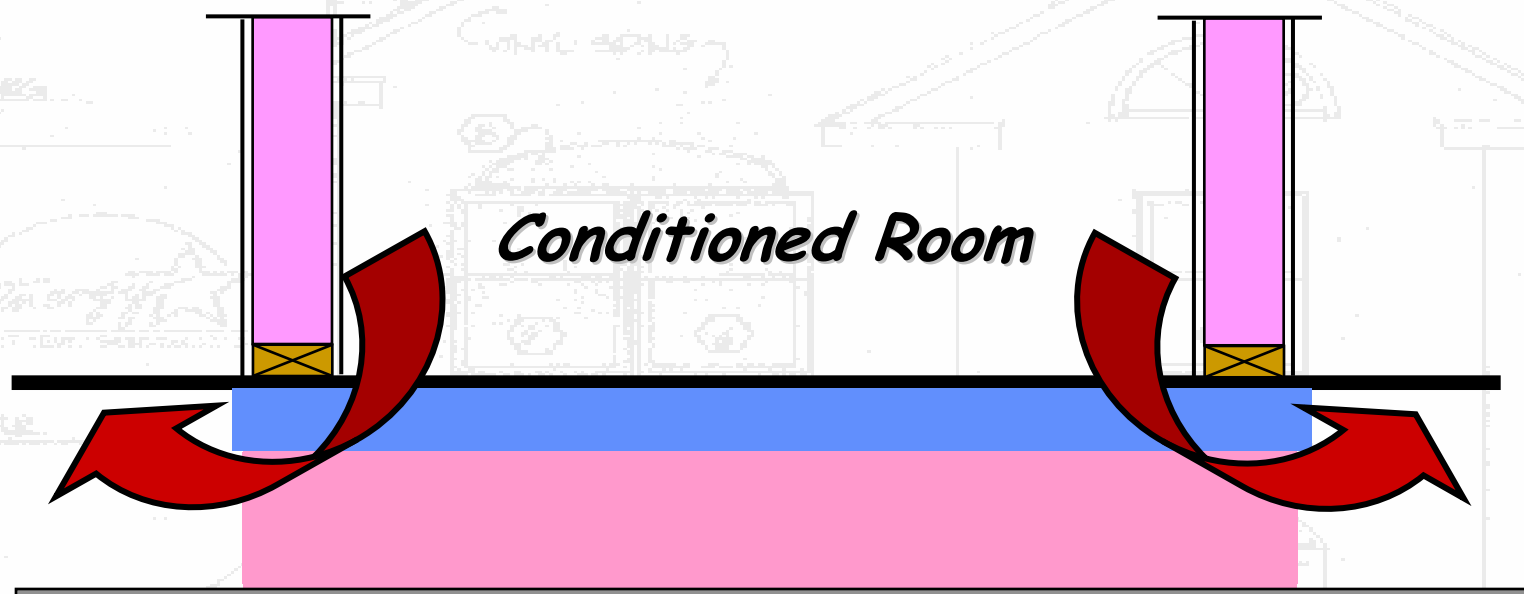
*Exposed area = ~30 sq. ft.
Need insulation and air barrier*



3.

***FLOORS BETWEEN
CONDITIONED AND
EXTERIOR SPACES***

FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES
INSULATED FLOOR OVER GARAGE



Conditioned Room

Garage Ceiling

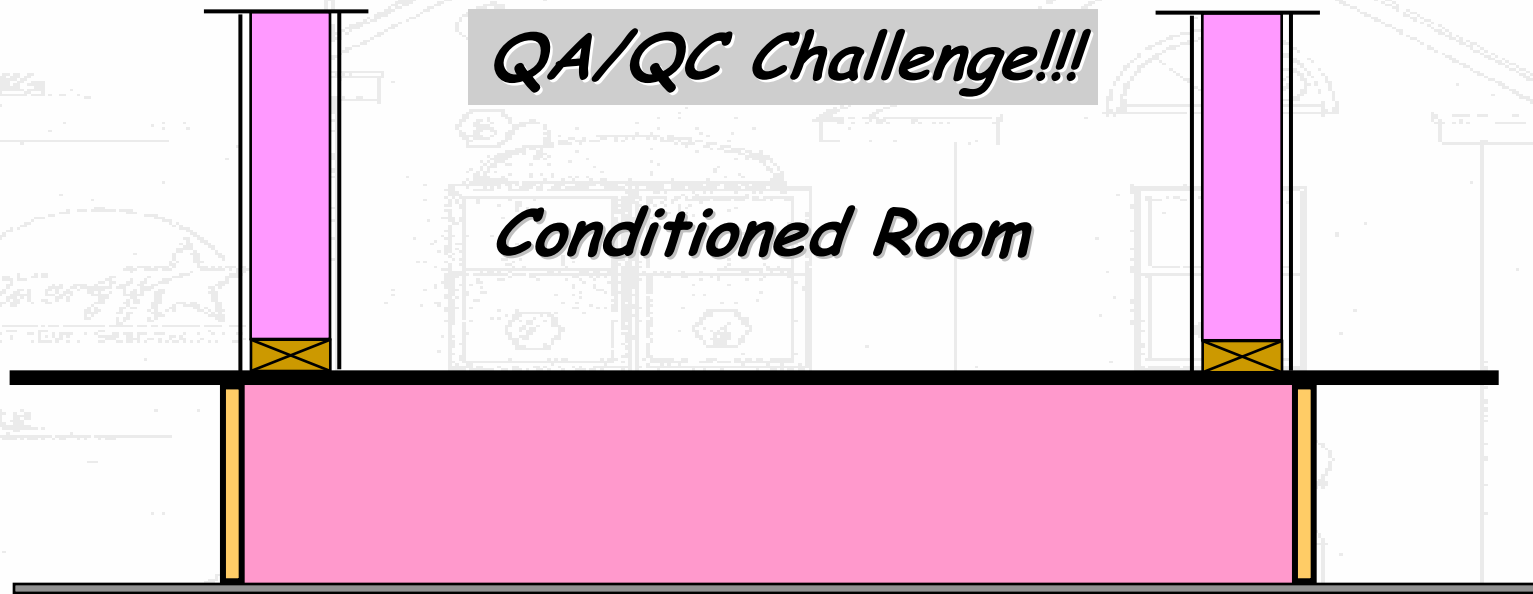
Winter

FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



QA/QC Challenge!!!

Conditioned Room



Garage Ceiling

***Option 1: Fill framing space with insulation
and blocking***

FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



Blocking at Footprint

FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



*Improper insulation!
It must touch the
surface it is
intended to insulate*





FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



*3" uninsulated
space at every
truss-joist*



Wrong technology for the job!

FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



*Insulation gap with
subfloor*

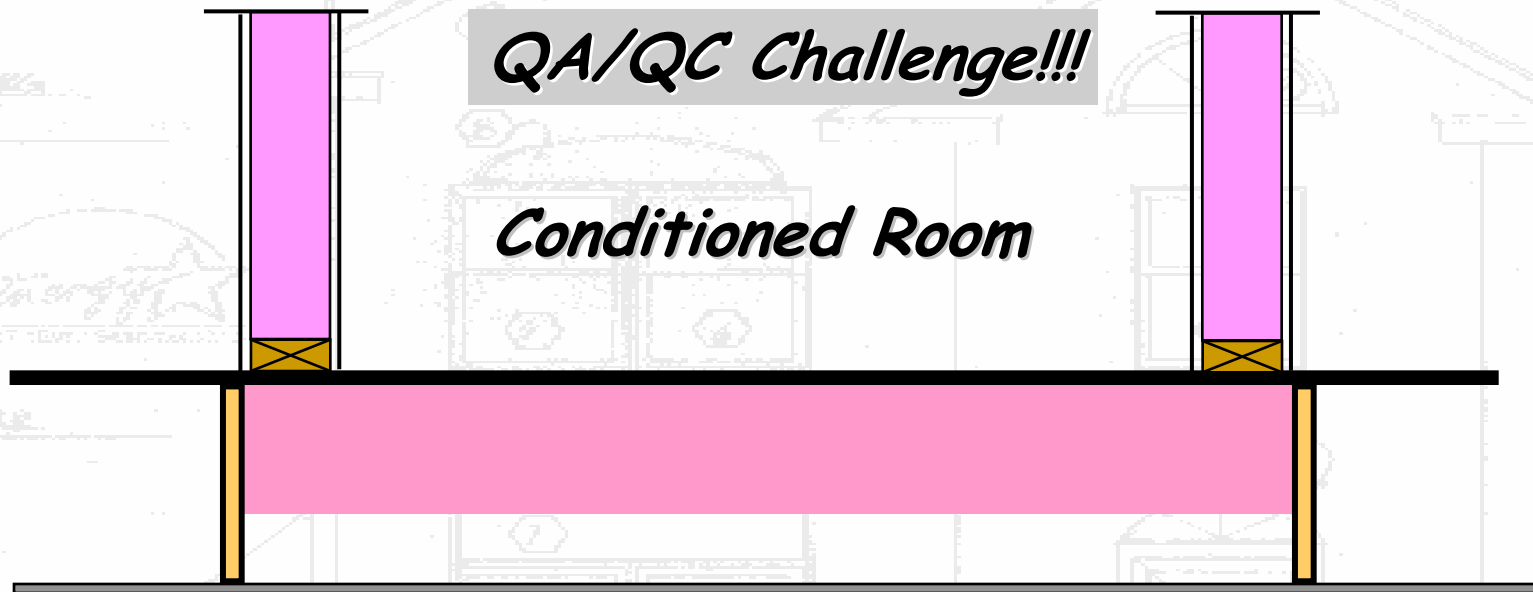


FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



QA/QC Challenge!!!

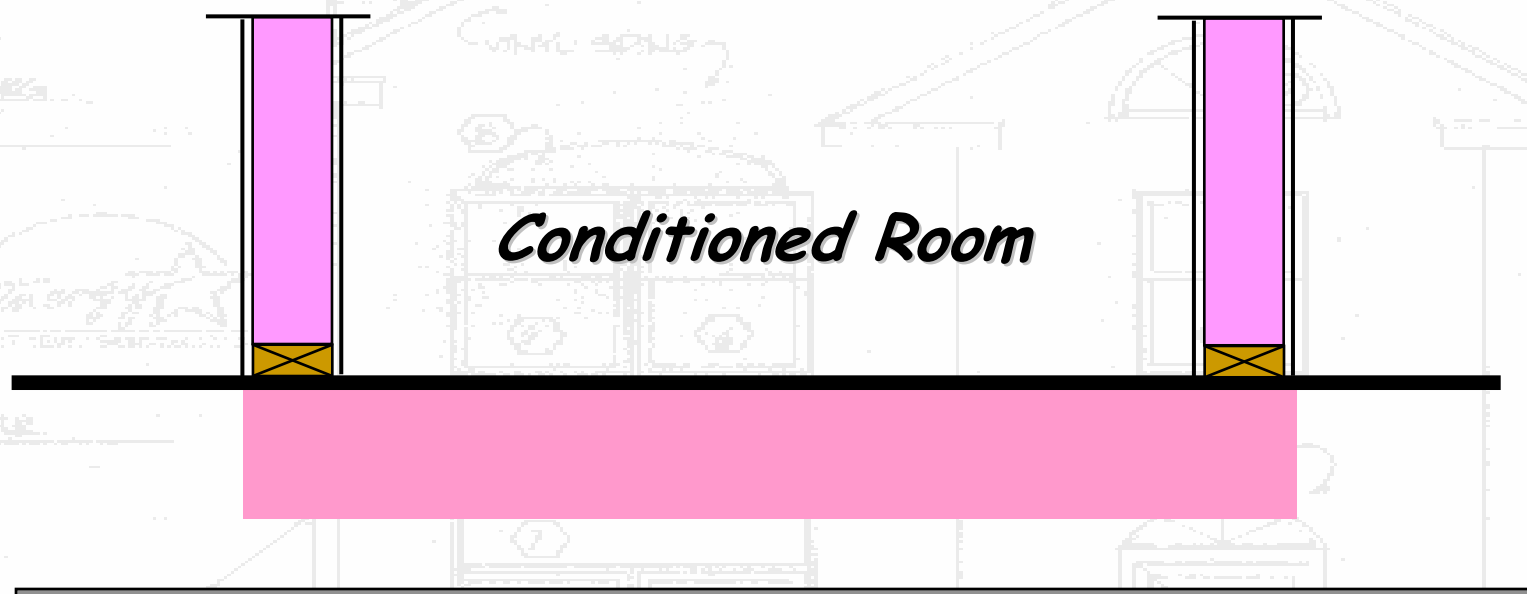
Conditioned Room



Garage Ceiling

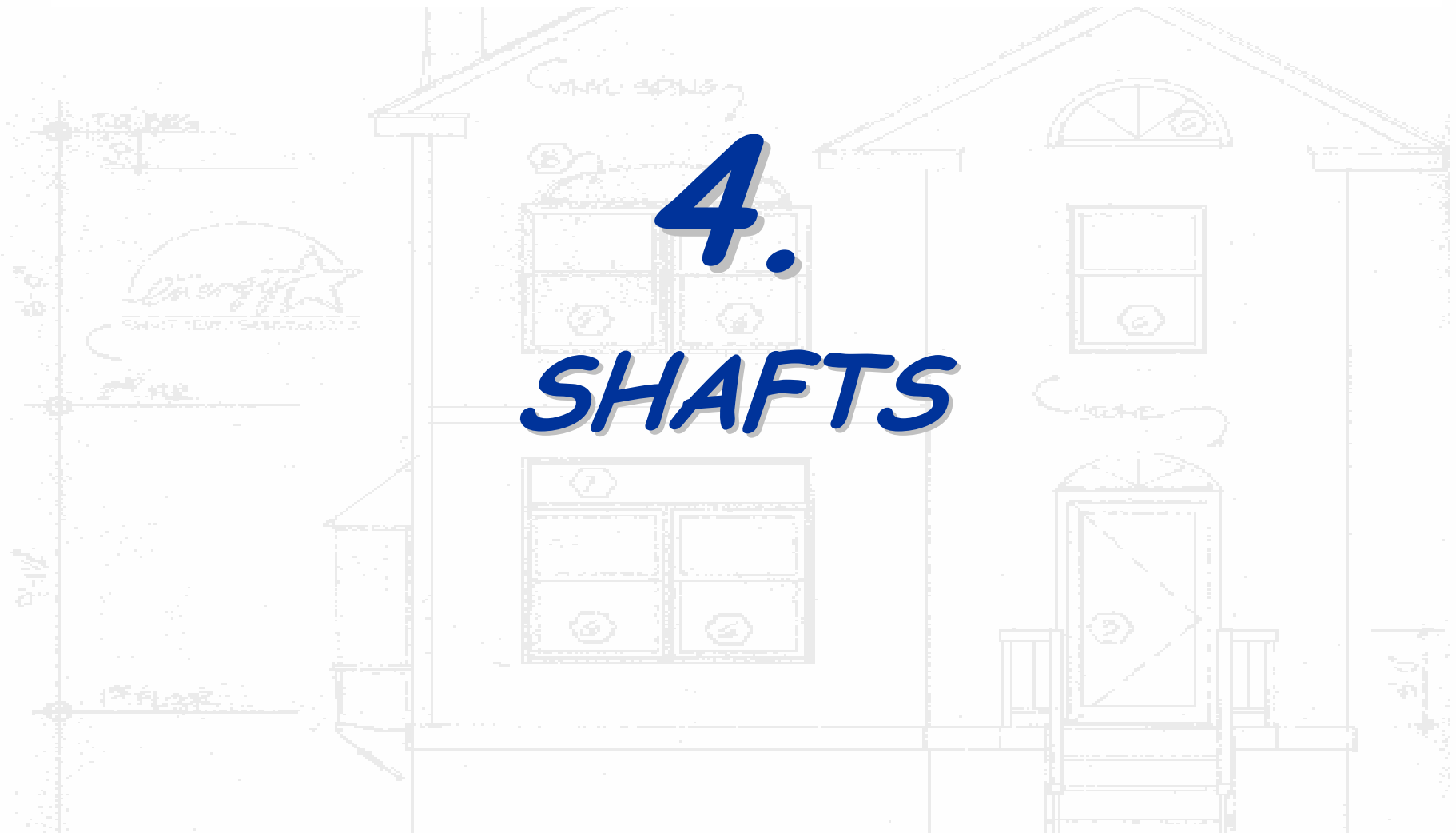
***Option 2: Batt or Blown-in Insulation
aligned with sub-floor
Only acceptable until July 1, 2008***

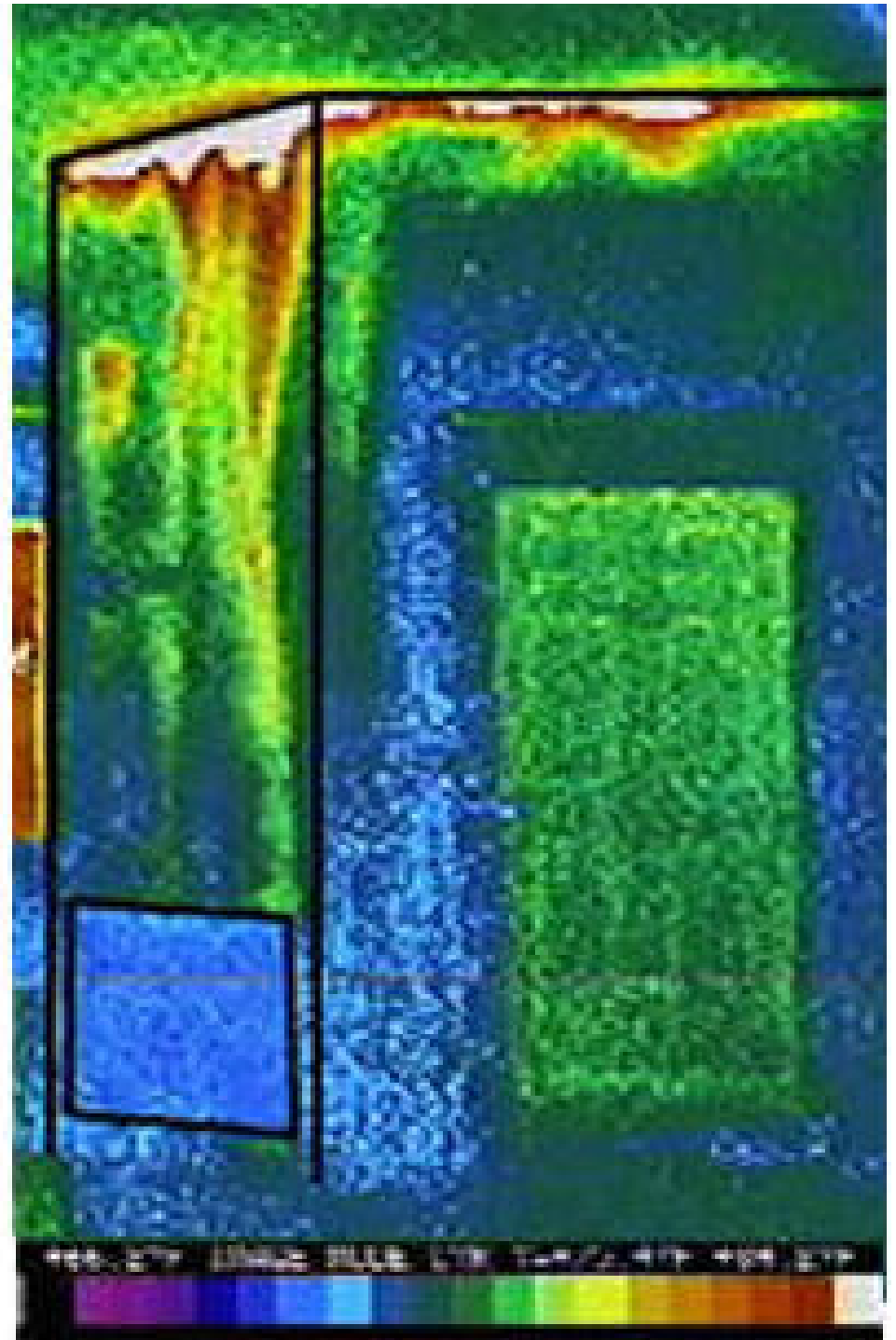
FLOORS BETWEEN CONDITIONED/UNCONDITIONED SPACES INSULATED FLOOR OVER GARAGE



Option 3: Spray foam

4. *SHAFTS*





SHAFTS SOLUTION



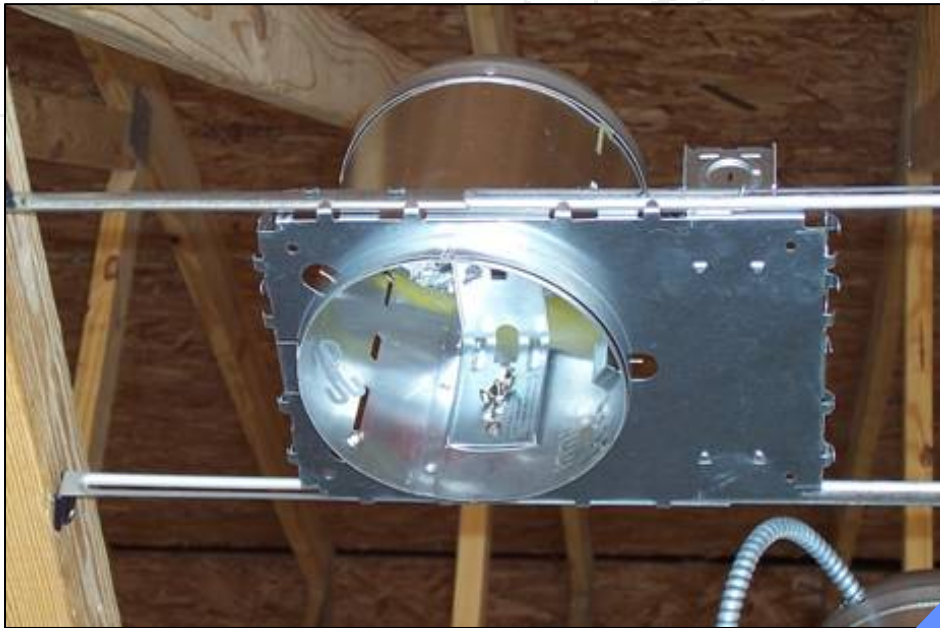
Courtesy of Advanced Energy



5.

ATTIC/CEILING INTERFACE

ATTIC/CEILING INTERFACE RECESSED LIGHTING



***Unacceptable.
Does not meet most
codes because of
multiple holes.***



***Washington State
Energy Code Approved.
Still need to gasket or
caulk at drywall.***



Lesson Learned:

*Large variation in recessed can
air tightness*

A faint, light gray architectural drawing of a house is visible in the background. It shows the front facade with a gabled roof, a central door with a small porch, and several windows. Some windows have small circular callouts with numbers inside. The drawing is a line sketch style.

6. ***COMMON WALLS BETWEEN DWELLING UNITS***

COMMON WALLS BETWEEN DWELLINGT UNITS PROBLEM

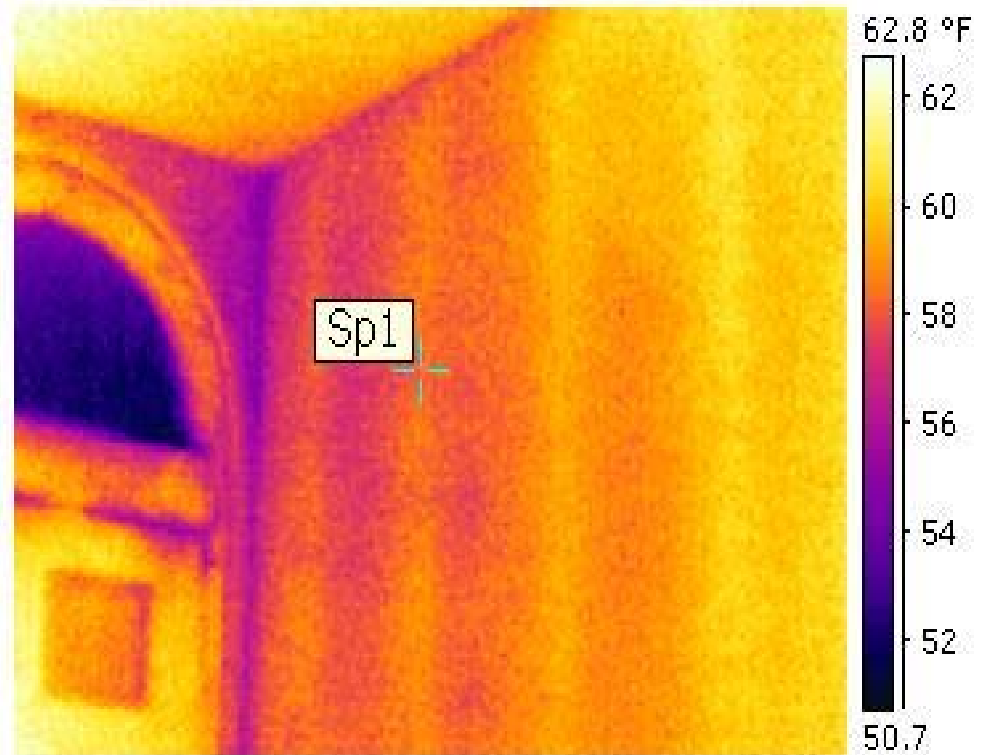
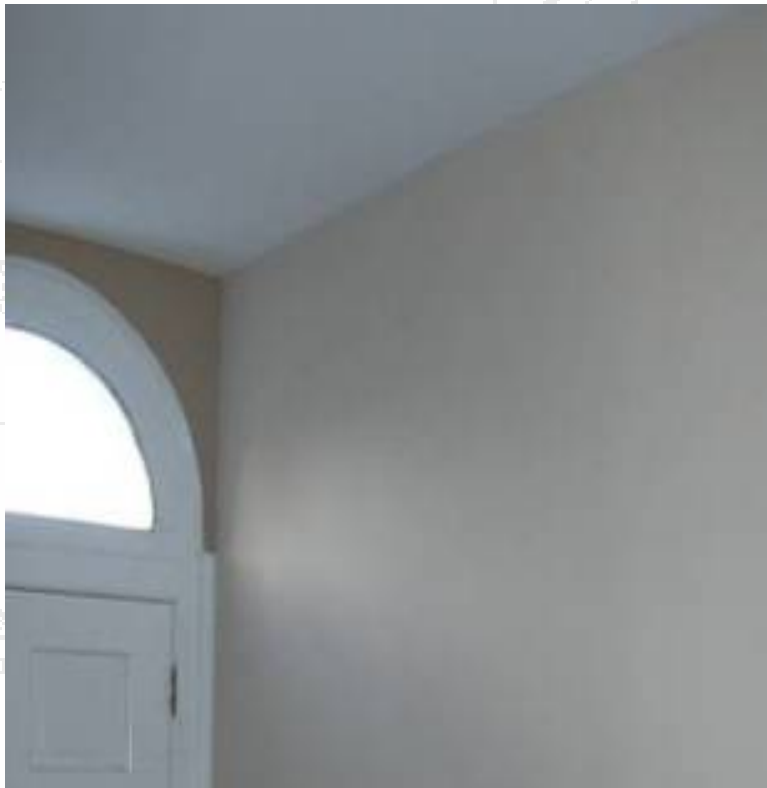


COMMON WALLS BETWEEN DWELLINGT UNITS PROBLEM



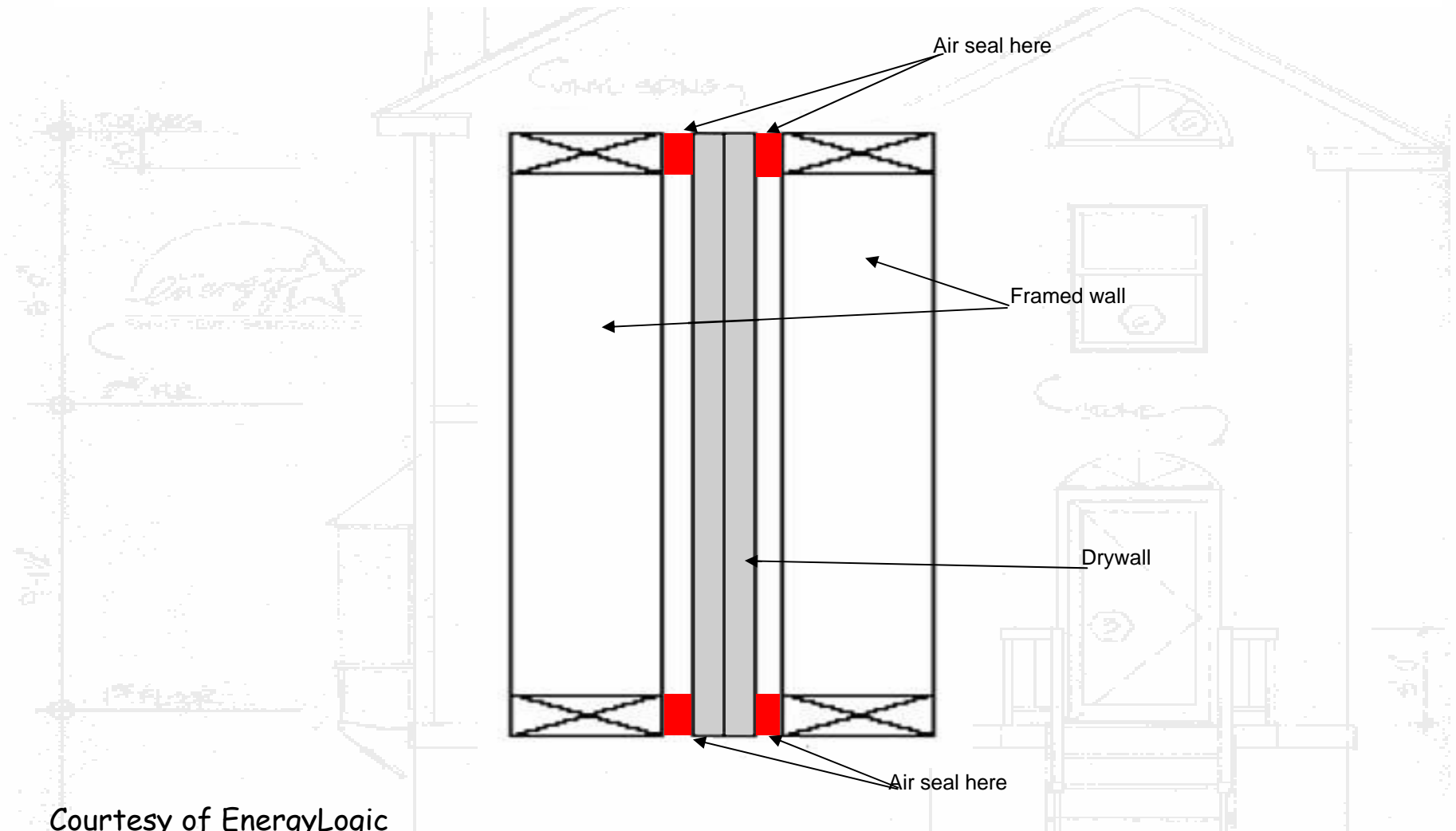
Courtesy of Energy Services Group

COMMON WALLS BETWEEN DWELLINGT UNITS PROBLEM



Courtesy of Energy Services Group

COMMON WALLS BETWEEN DWELLINGT UNITS SOLUTION



Courtesy of EnergyLogic

COMMON WALLS BETWEEN DWELLINGT UNITS SOLUTION



Courtesy of Energy Services Group

COMMON WALLS BETWEEN DWELLINGT UNITS SOLUTION



Lesson Learned:

- *Confirm preferred material acceptable to local code official.*
- *Fireproof spray caulk with special color now available.*



Courtesy of MaGrann Associates



***Thermal Bypass Checklist
Lessons Learned
Overall
Requirements***



Overall Requirements
Lesson No. 1:
Don't Be
Overwhelmed



ENERGY STAR Qualified Homes Thermal Bypass Inspection Checklist

Home Address: _____		City: _____	State: _____			
Thermal Bypass	Inspection Guidelines	Corrections Needed	Builder Verified	Rater Verified	N/A	
1. Overall Air Barrier and Thermal Barrier Alignment	Requirements: Insulation shall be installed in full contact with sealed interior and exterior air barrier except for alternate to interior air barrier under Item no. 2 (Walls Adjoining Exterior Walls or Unconditioned Spaces)					
	All Climate Zones:					
	1.1 Overall Alignment Throughout Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	1.2 Garage Band Joint Air Barrier (at bays adjoining conditioned space)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	1.3 Attic Edge Barriers Where Vented/Lossage Exit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Only at Climate Zones 4 and Higher:					
	1.4 Slab-edge Insulation (A maximum of 20% of the slab edge may be uninsulated in Climate Zones 4 and 5.) Best Practices Encouraged, Not Req'd.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	1.5 Air Barrier At All Band Joints (Climate Zones 4 and higher)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	1.6 Minimize Thermal Bridging (e.g., OVC framing, SIPs, ICFs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	2. Walls Adjoining Exterior Walls or Unconditioned Spaces	Requirements: + Fully insulated wall aligned with air barrier at both interior and exterior, OR + Alternate for Climate Zones 1 thru 3, sealed exterior air barrier aligned with RESNET Grade 1 insulation fully supported + Continuous top and bottom plates or sealed blocking				
2.1 Wall Behind Shower/Tub		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.2 Wall Behind Fireplace		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.3 Insulated Attic Slopes/Walls		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.4 Attic Knee Walls		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.5 Skylight Shaft Walls		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.6 Wall Adjoining Porch Roof		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.7 Staircase Walls		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.8 Double Walls		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Floors between Conditioned and Exterior Spaces		Requirements: + Air barrier is installed at any exposed insulation edges + Insulation is installed to maintain permanent contact w/ sub-floor above + Optional until July 1, 2009, insulation is installed to maintain permanent contact with air barrier below				
	3.1 Insulated Floor Above Garage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	3.2 Cantilevered Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Shafts	Requirements: Openings to unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam (provide fire-rated collars and caulking where required)					
	4.1 Duct Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	4.2 Piping Shaft/Penetrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	4.3 Flue Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Attic/Ceiling Interface	Requirements: + All attic penetrations and dropped ceilings include a full interior air barrier aligned with insulation with any gaps fully sealed with caulk, foam or tape + Movable insulation fits snugly in opening and air barrier is fully gasketed					
	5.1 Attic Access Panel (fully gasketed and insulated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	5.2 Attic Drop-down Stair (fully gasketed and insulated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	5.3 Dropped Ceiling/Soffit (Full air barrier aligned with insulation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	5.4 Recessed Lighting Fixtures (ICAT labeled and sealed to drywall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	5.5 Whole-house Fan (insulated cover gasketed to the opening)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Common Walls Between Dwelling Units	Requirements: Gap then drywall shaft wall (common wall) and structural framing between units is sealed at all exterior boundary conditions					
	6.1 Common Wall Between Dwelling Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rater Inspection Date: _____		Builder Inspection Date: _____				
Home Energy Rating Provider: _____		Builder Company Name: _____				
Home Energy Rater Company Name: _____		Builder Division Name: _____				
Home Energy Rater Signature: _____		Builder Employee Signature: _____				

*Most homes only
have 10 to 12
applicable items*



Overall Requirements

Lesson No. 2:

Difficulty Varies

LESSONS LEARNED:
MOST SIGNIFICANT CHALLENGES



- *Ceiling between conditioned room and garage*
- *Cantilevered floors*
- *Garage/conditioned house interface*

Solution:

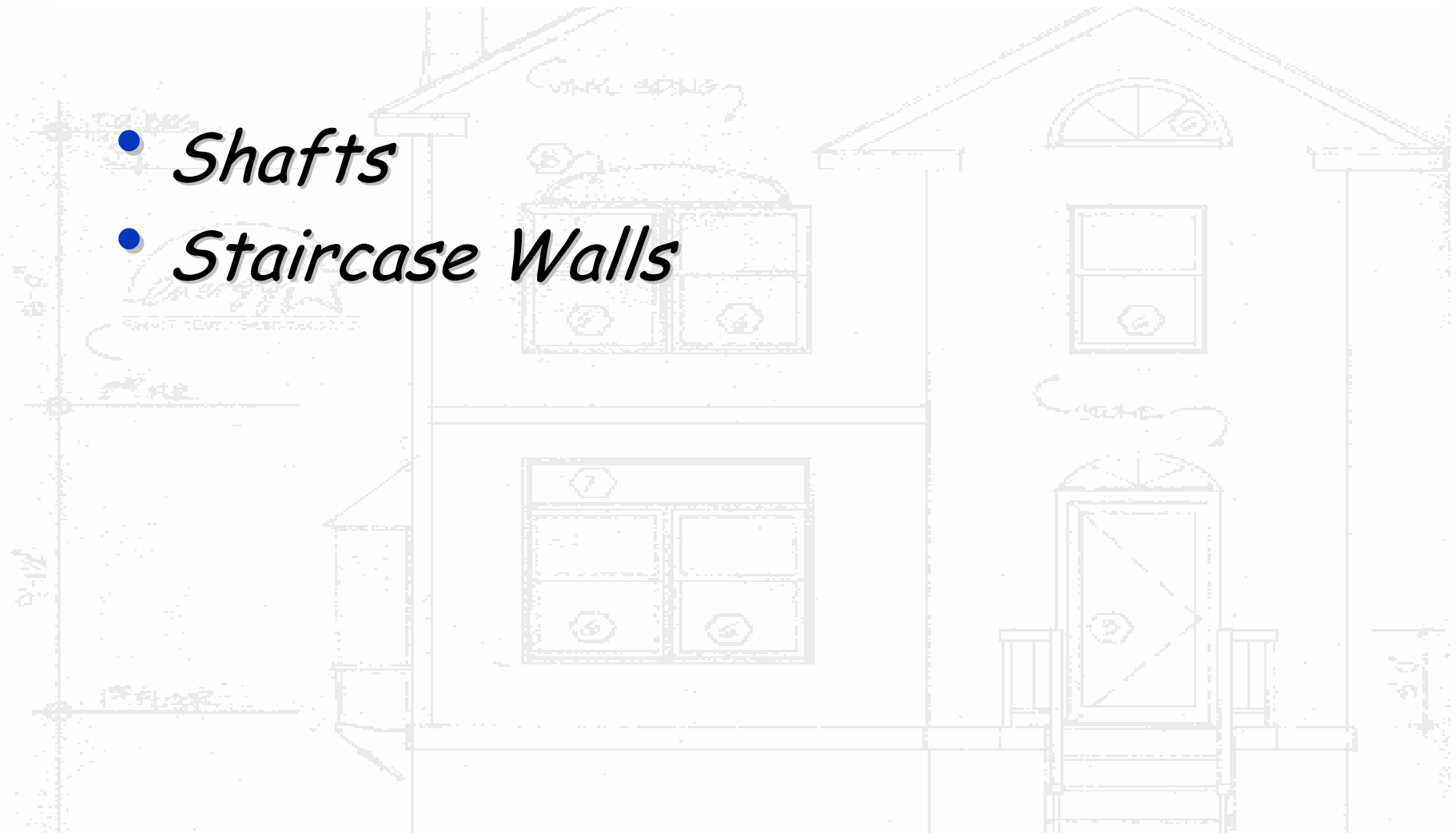
Advanced insulation products/systems

LESSONS LEARNED

AREAS WITH LEAST CHALLENGE



- *Shafts*
- *Staircase Walls*





Overall Requirements
Lesson No. 3:
Be Careful

LESSONS LEARNED:

REMOVE INSULATION TO INSPECT



Sound insulation in place.



Party wall properly sealed.



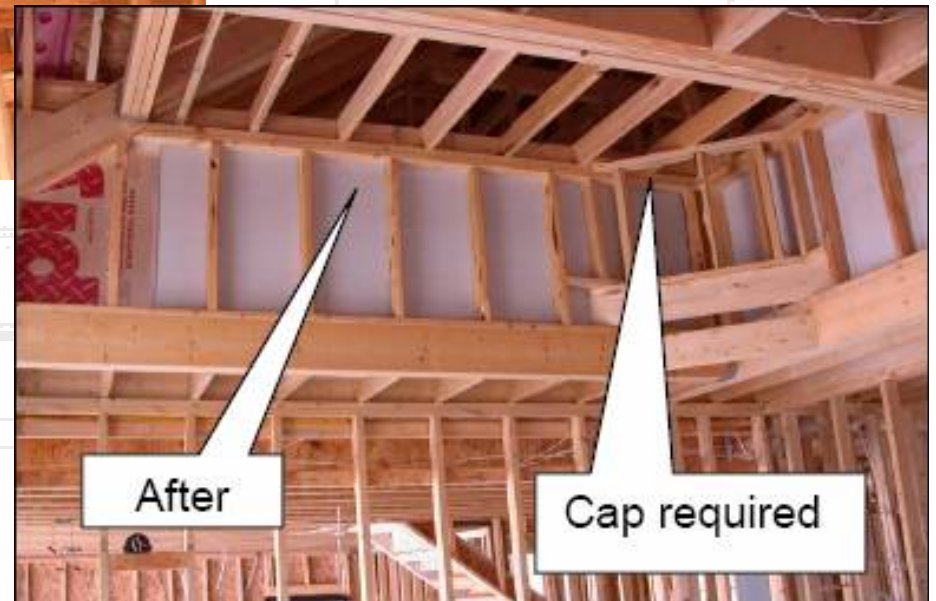
The wire hole is sealed, but the party wall isn't.

LESSONS LEARNED:
LOOK FOR COMBINATIONS



*Plenty of caulk, but
no air barrier at tub and no attic knee wall air barrier*

LESSONS LEARNED: LOOK FOR COMBINATIONS



Courtesy of Advanced Energy

LESSONS LEARNED:

LOOK OUT FOR TRICKY DETAILS



Kneewall Open to Attic Rafters

LESSONS LEARNED:
LOOK OUT FOR TRICKY DETAILS



Dropped Ceiling air barrier missing

LESSONS LEARNED:
LOOK OUT FOR TRICKY DETAILS



Dropped Sloped Ceiling



Missing Blocking



Overall Requirements
Lesson No. 4:

New Technologies
are Your Friend

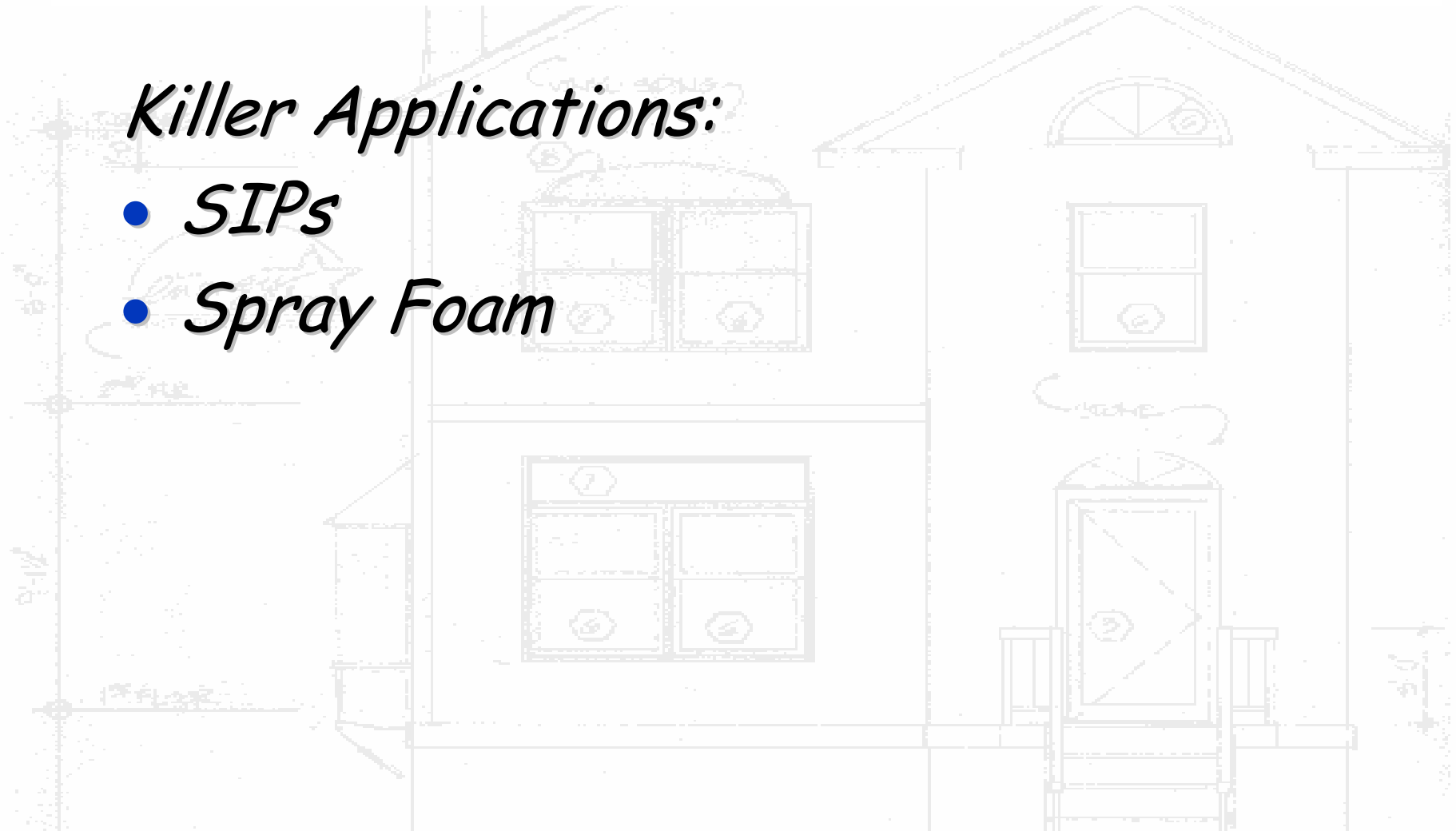
LESSONS LEARNED:

NEW TECHNOLOGIES ARE YOUR FRIEND

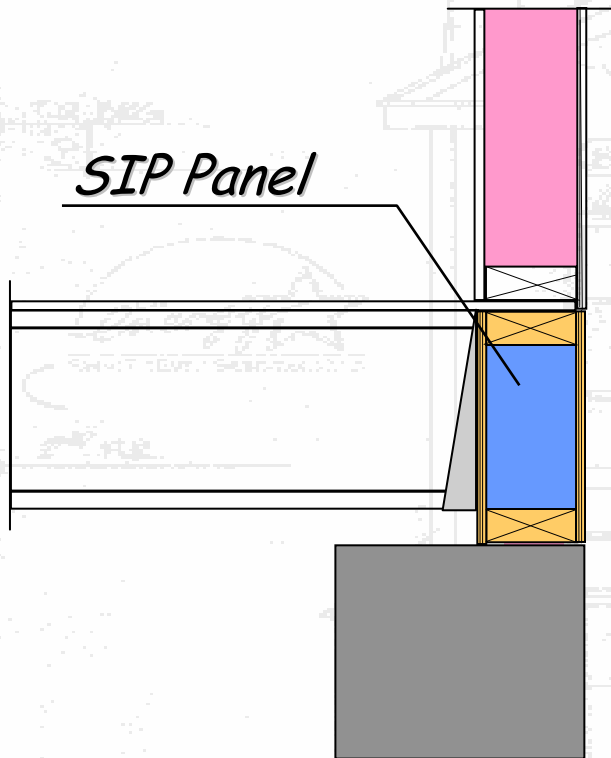


Killer Applications:

- *SIPs*
- *Spray Foam*



SIP KILLER APPLICATIONS BAND JOIST BEST PRACTICES



EMERCOR

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[ABOUT US](#) | [PRODUCTS](#) | [EMERCOR HOMES](#) | [WARRANTY & SERVICES](#) | [KNOWLEDGE CENTRE](#)

Floors

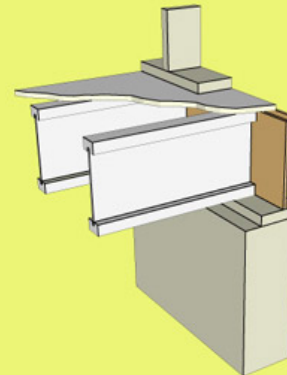
► Insulated Rimboard

Cantilever Soffit
Insulated Panels

Exterior Walls

Foundation & Basement
Walls

Cathedral Ceilings & Attics
Bonus Rooms



Insulated Rimboard

The Quick & Easy Way To Insulate The Floor Perimeter

EMERCOR's Insulated Rimboard is an integral part in building a better home, delivering comfort, health and energy efficiency to homeowners. Accounting for up to 14 per cent of a homes total air infiltration, the Insulated Rimboard eliminates air leakage and enables proper workmanship during installation. Truly a time saving material, the Insulated Rimboard turns a three-step process into one easy and sure way to install insulation at the floor system.

[Advantages](#)
[Load Table](#)
[Specifications](#)

[Brochure](#) 
[Installation Guide](#) 

Advantages

Energy Efficient - R 14:

Up to 14 per cent of total home air leakage occurs around the rim joist. EMERCOR's Insulated Rimboard decreases air leakage by ensuring that continuous R-14 insulation is placed around the floor perimeter.

Easy Installation - 20% Faster Install:

EMERCOR's Insulated Rimboard has a unique joining detail and installs up to 20 per cent faster than regular Rimboard. It also eliminates the nightmare of trying to insulate and seal around every floor joist.

Moisture Resistant - Type 1 Vapor Barrier:

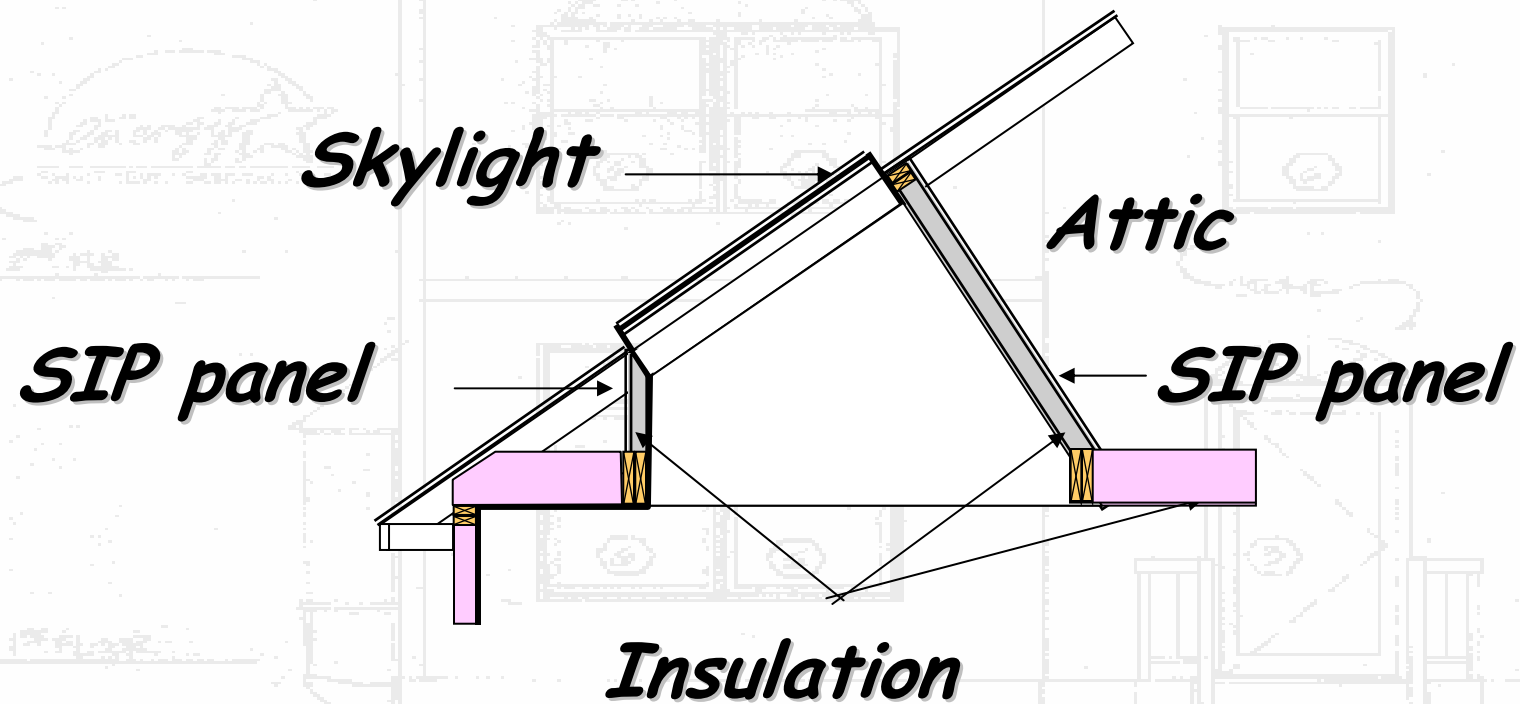
EMERCOR's Insulated Rimboard has a vapor permeance of less than one, making it a Type 1 vapor barrier. This barrier prevents moisture condensation in the building envelope which leads to rot, mold and eventually structural damage.

Environmental - Reduce job site waste:

EMERCOR's Insulated Rimboard is engineered with a unique joining detail. This joining detail allows traditionally discarded pieces to be reused along the floor perimeter. EMERCOR's commitment to sustainability is driven through the '[EMERGreen Program](#)', with an internal focus on implementing lean in both their manufacturing and office facility.

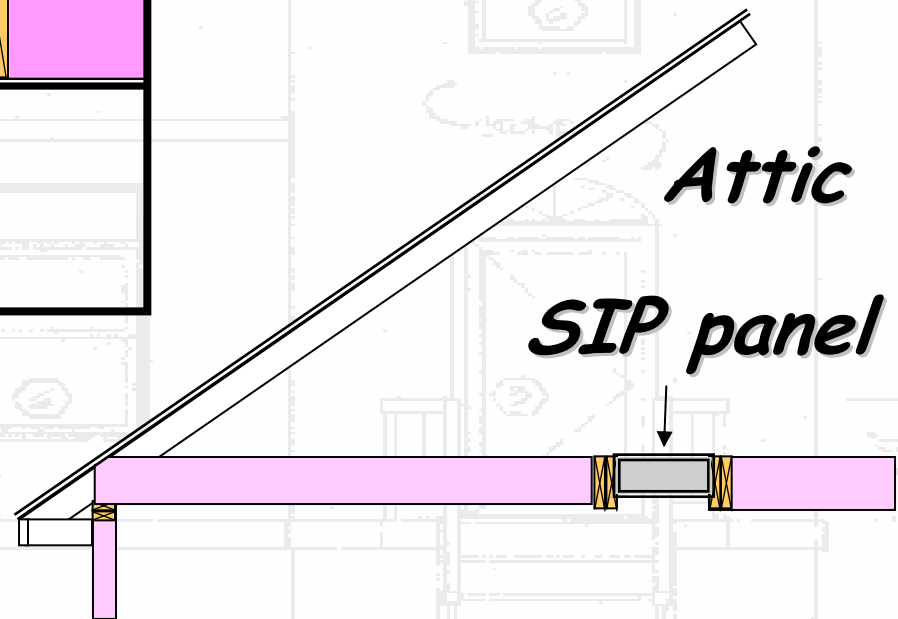
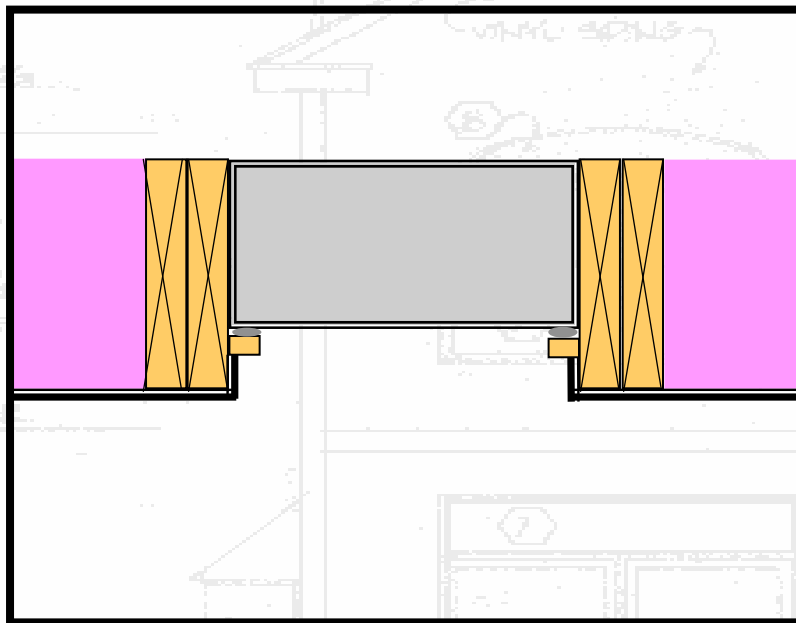
SIP KILLER APPLICATIONS

ATTIC KNEE WALLS

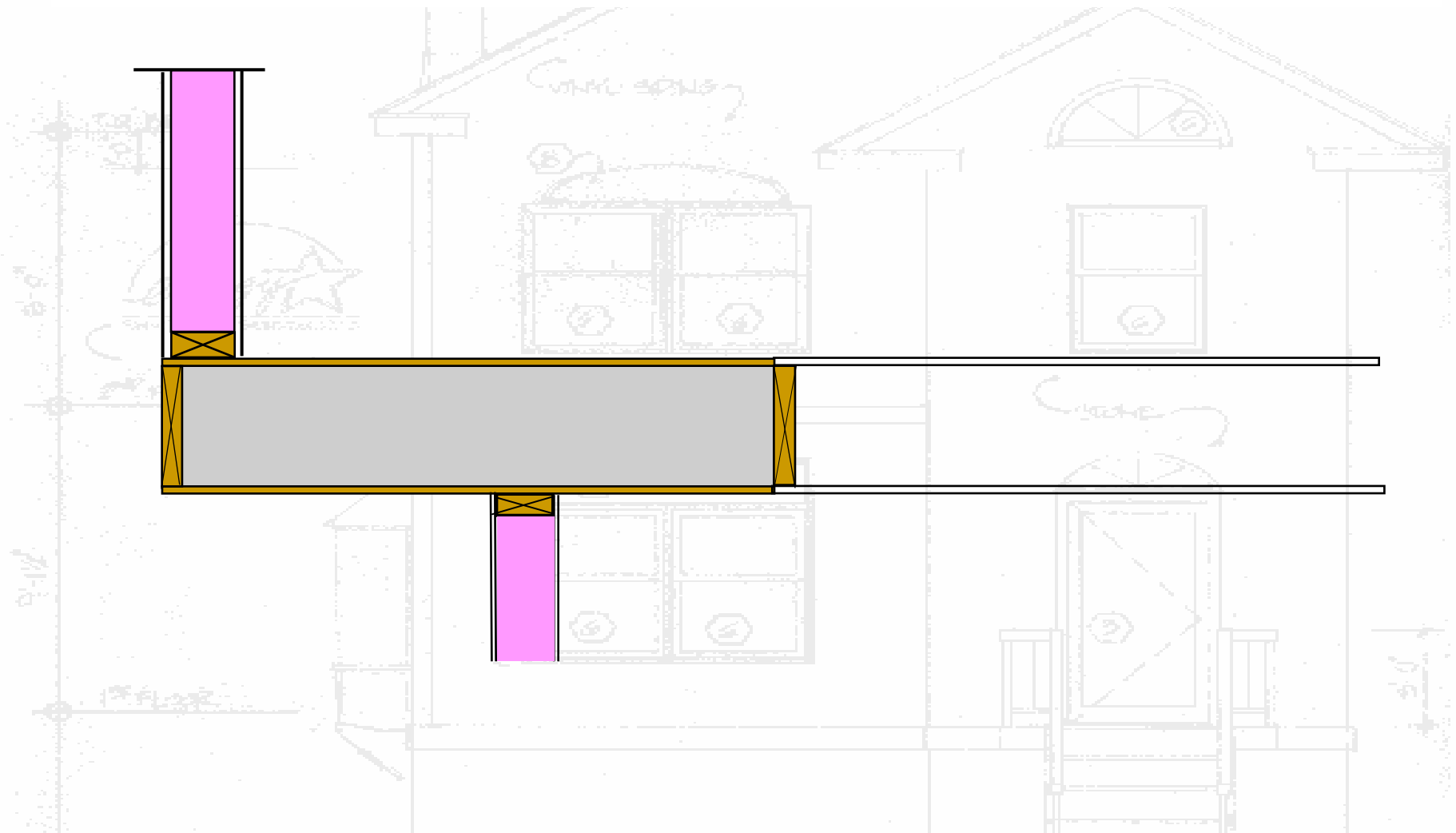


SIP KILLER APPLICATIONS

ATTIC ACCESS PANEL

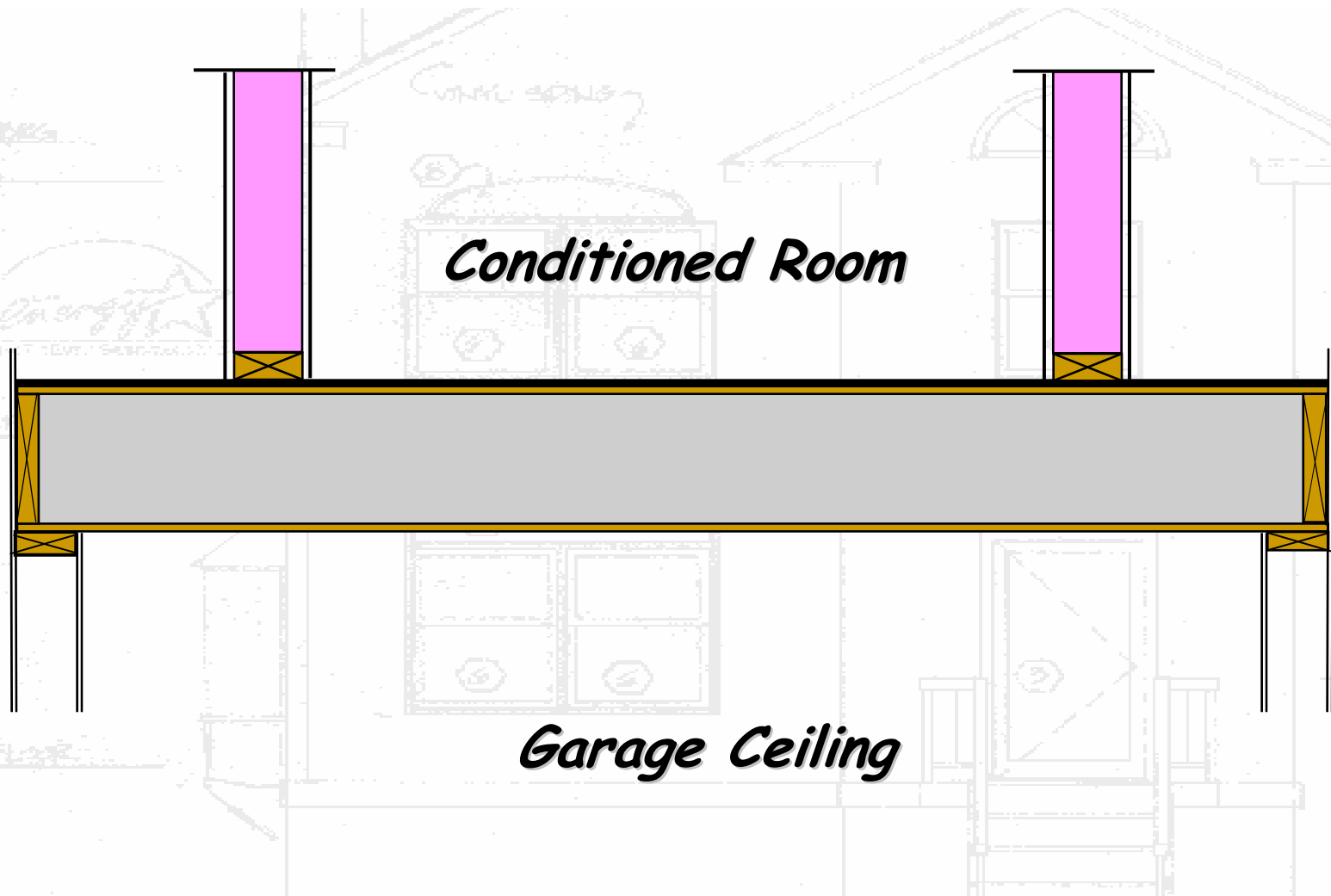


SIP KILLER APPLICATIONS CANTILEVER FLOORS

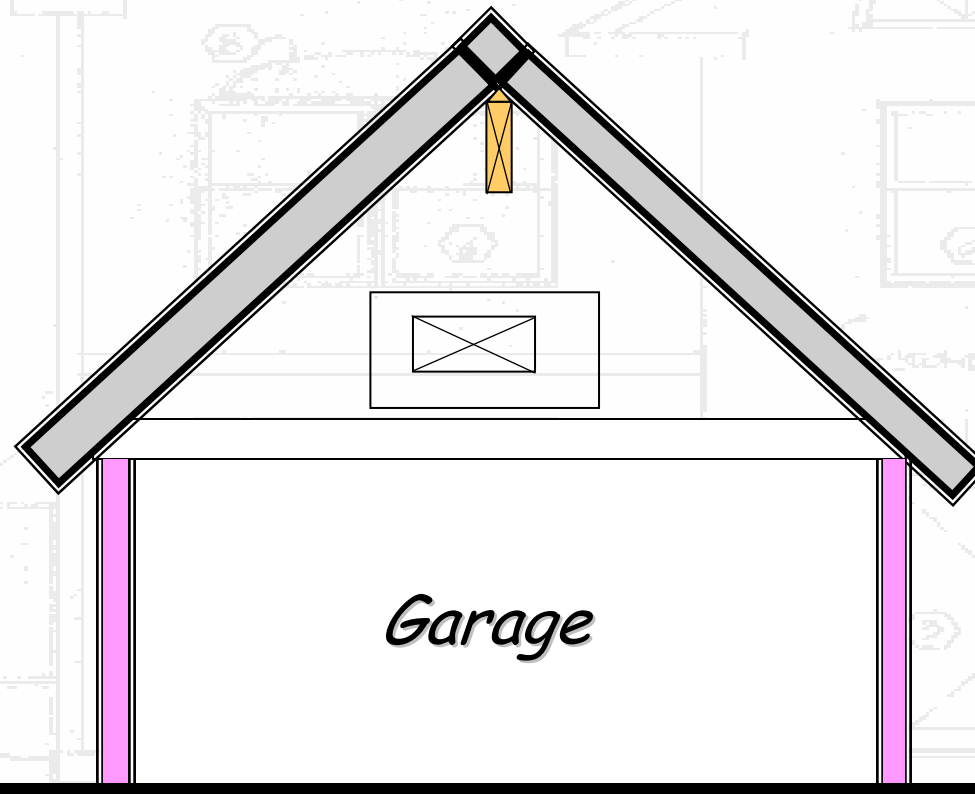


SIP KILLER APPLICATIONS

INSULATED FLOOR OVER GARAGE



SIP KILLER APPLICATIONS UNVENTED ATTICS

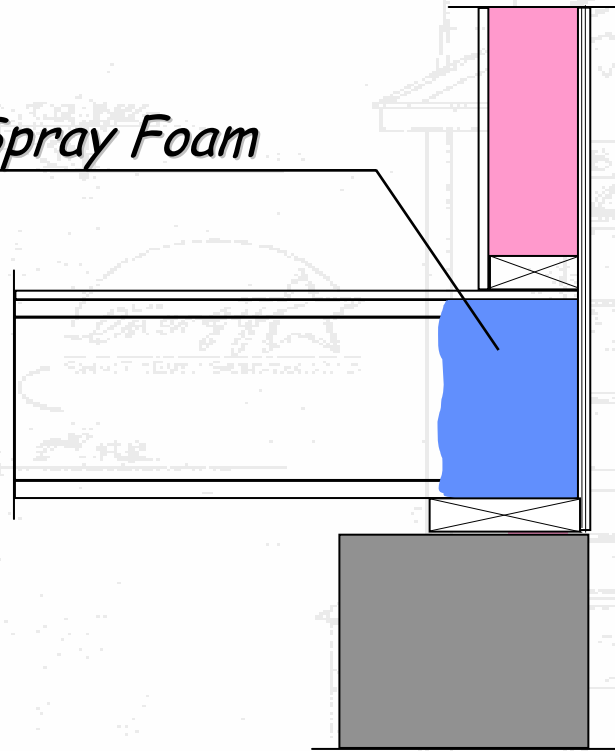


SPRAY FOAM KILLER APPLICATIONS

RIM JOISTS



Spray Foam



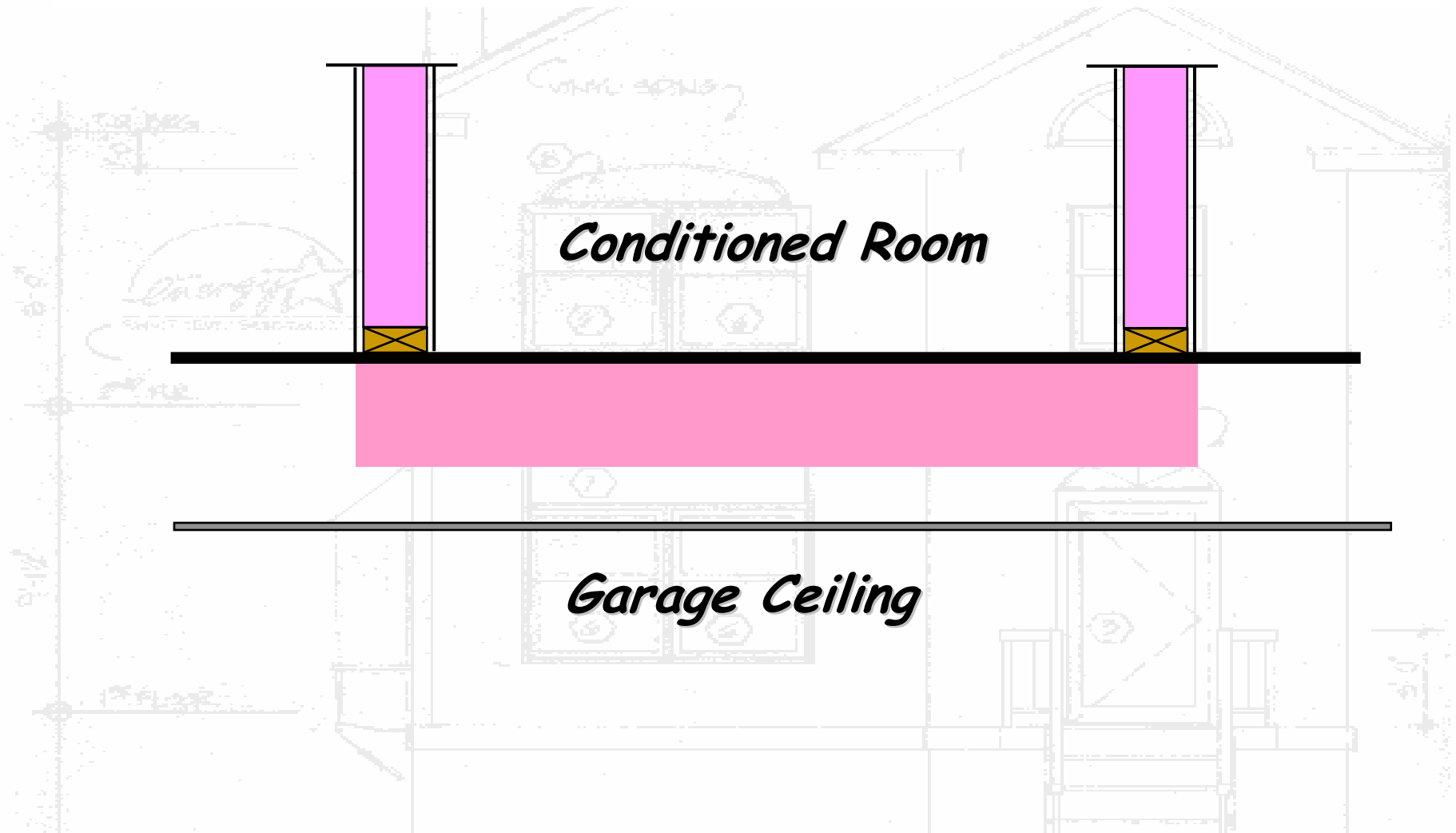
SPRAY FOAM KILLER APPLICATIONS

CONDITIONED FLOOR OVER GARAGE



Conditioned Room

Garage Ceiling



SPRAY FOAM KILLER APPLICATIONS

UNVENTED ATTICS





Overall Requirements
Lesson No. 5:

Quality Assurance
is Important

 FLIR

°F

72



56

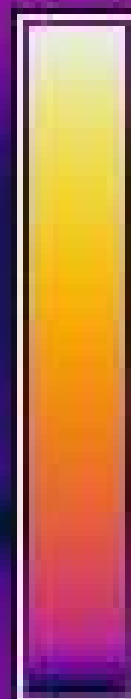
Theater Room

12/29/07 11:17:41 e=0.95

 FLIR

°F

171



60

Theater Room

12/29/07 11:17:23 e=0.95

 FLIR

°F

76

61

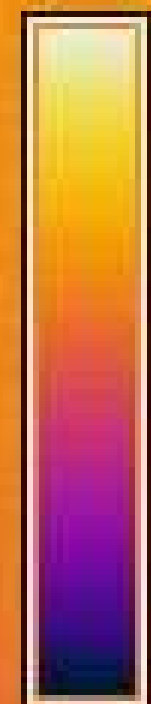
Laundry Room

12/29/07 11:16:54 e=0.95

 FLIR

°F

70



55

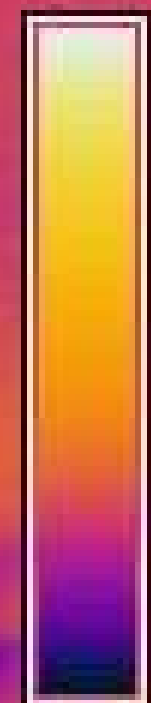
Guest Bedroom

12/29/07 11:11:12 e=0.95

 FLIR

°F

93



61

NW Bedroom

12/29/07 11:08:36 e=0.95

LESSONS LEARNED: OOPS...



LESSONS LEARNED: LOTS OF WASTED CAULKING



Caulk where not necessary = Wasted time and money.

HOW TO GET MORE INFORMATION



On the Web at:
<http://www.energystar.gov/homes>

