

# *Tale of a King, a Queen and the Couyons*



*By*  
*Claudette Hanks Reichel, Ed.D.*  
*Professor, Extension Housing Specialist*  
*Director, LaHouse Resource Center*



# La Acadienne (Cajun)





# Canadians... once removed

*(by force)*



# *Laissez les bons temps rouler!*

[lay say lay bohn tohn roo lay]

(Let the good times roll!)



*Joie de vivre*

(joy of living)





# Understanding Cajun

*Comment ca va, Grand-mère* = How's it going, Grandma.  
 (Come-aw sah vah, graw-mare)

*Ma cher petite fille!* = My dear little girl!  
 (Mah sha tee fee!)



# Understanding Cajun

That's *lagniappe* [lahn yop]  
 (a little something extra)



But *ça va* [sah vah] for now  
 (that's enough)



So, *allons!* [ah lohn]  
 (let's go)





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# Cooperative Extension Service

- Educational outreach arm of land grant universities
  - *Louisiana State University AgCenter*
- Mission:
  - Disseminate and foster adoption (*change agent*)
  - Research-based knowledge (*objective, credible info*)
  - Address national and local needs (*issue-based*)
  - To improve quality of life (*public service*)



Celebrate 100 Years  
of Extending Knowledge and Changing Lives

visit: [www.Extension100Years.net](http://www.Extension100Years.net)



# 2000 vision for



*To shape the future  
for Louisiana living*



# ***Sustainable Housing***

## **Permanent, Educational Exhibit**

- Building science based demo
- Look & feel like a home +
- Cut-aways, models
- Signage and video tours
- Consumer publications
- Training Center (garage)
- Exhibit room (conditioned attic)
- On-site staff
- Educational attraction
- Meetings, events





# Housing Issues

## National Issues

- energy costs
- disaster costs
- public health risks
- threatened water supply
- economic vitality
- aging baby-boomers



## Louisiana Challenges

- hurricanes, floods
- Formosan termites
- mold and decay
- hot, humid climate
- high asthma rate
- pollution, waste disposal
- local economy



# Silos...



**Disaster Resilient**



**FEMA**



**Resource-Efficient**

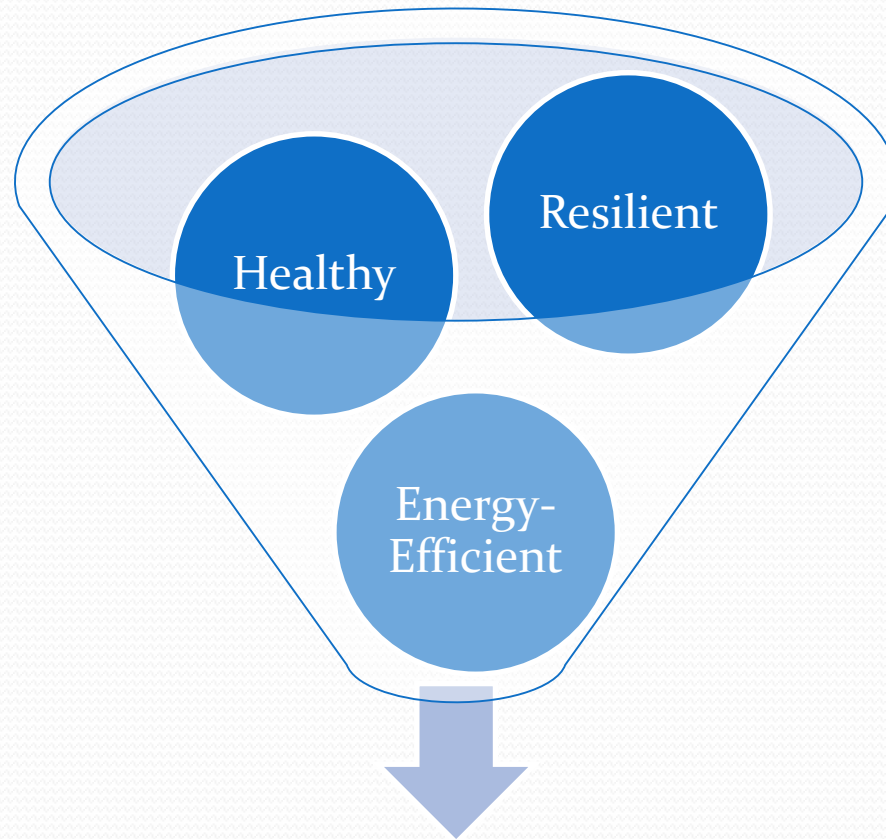


**Healthy**





# What people need is a *fusion*...



## *High Performance Home*



# *Fusion*

Blending separate things to create something new and good







# Fusion of 5 Criteria = Benefits

## ● Resource Efficient

- energy efficiency
- water conservation
- waste management
- pollution prevention

## ● Durable

- wind & flood resistance
- pest resistance
- decay & mold resistance
- hail & fire resistance

## ● Healthy

- indoor air quality
- universal design

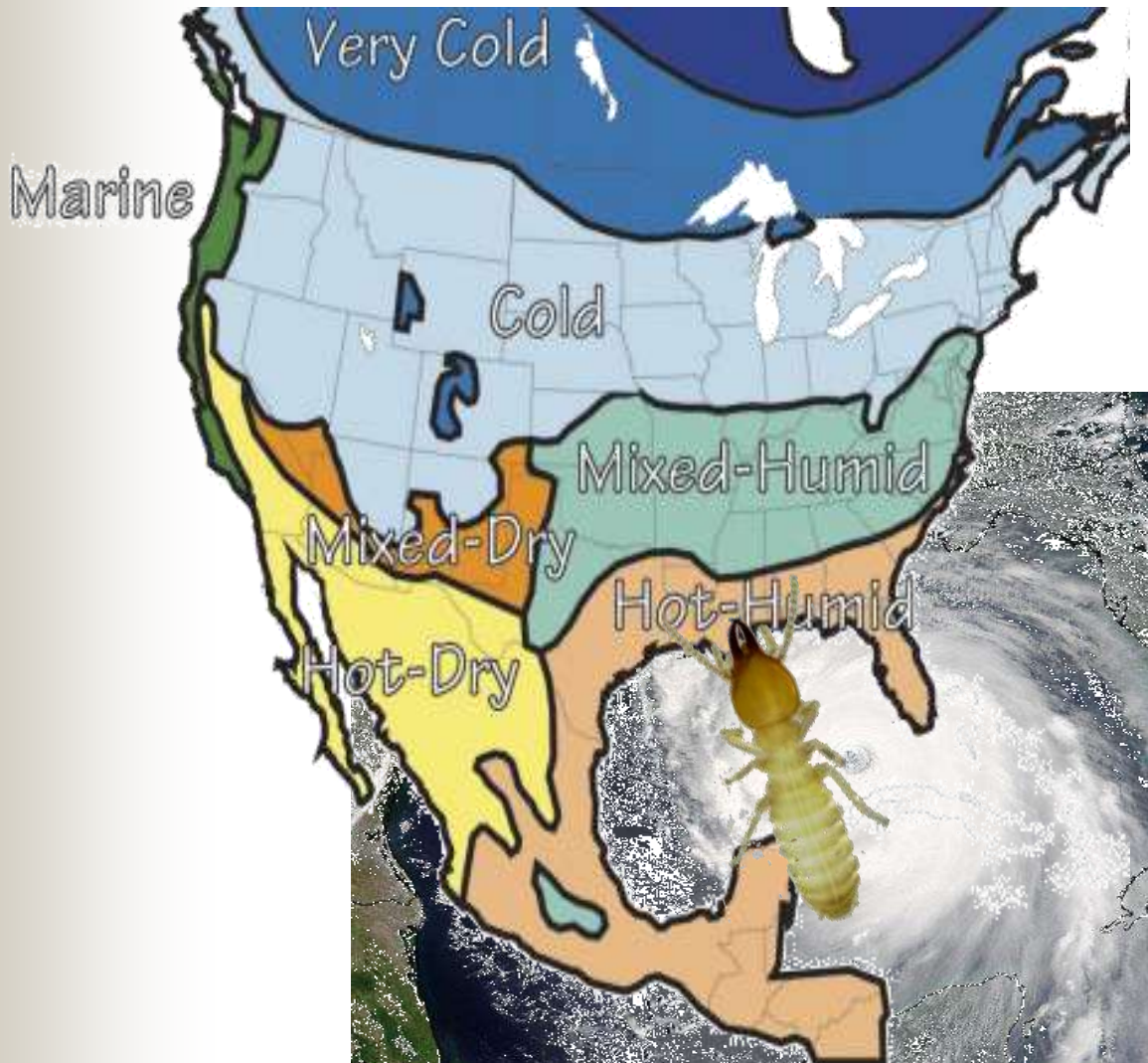
## ● Practical

- marketable
- cost-effective, available

## ● Convenient

- functional
- low-maintenance
- easy

# To produce high-performance homes....

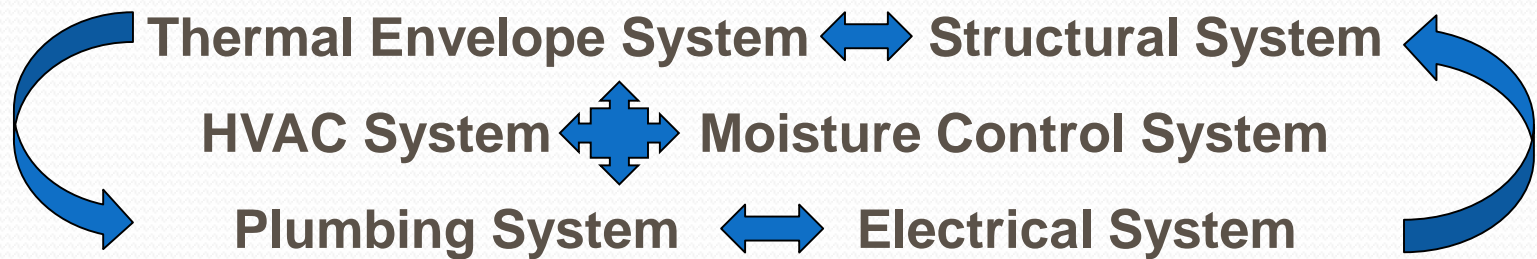


*Climate,  
Conditions,  
& Hazards  
Matter!*

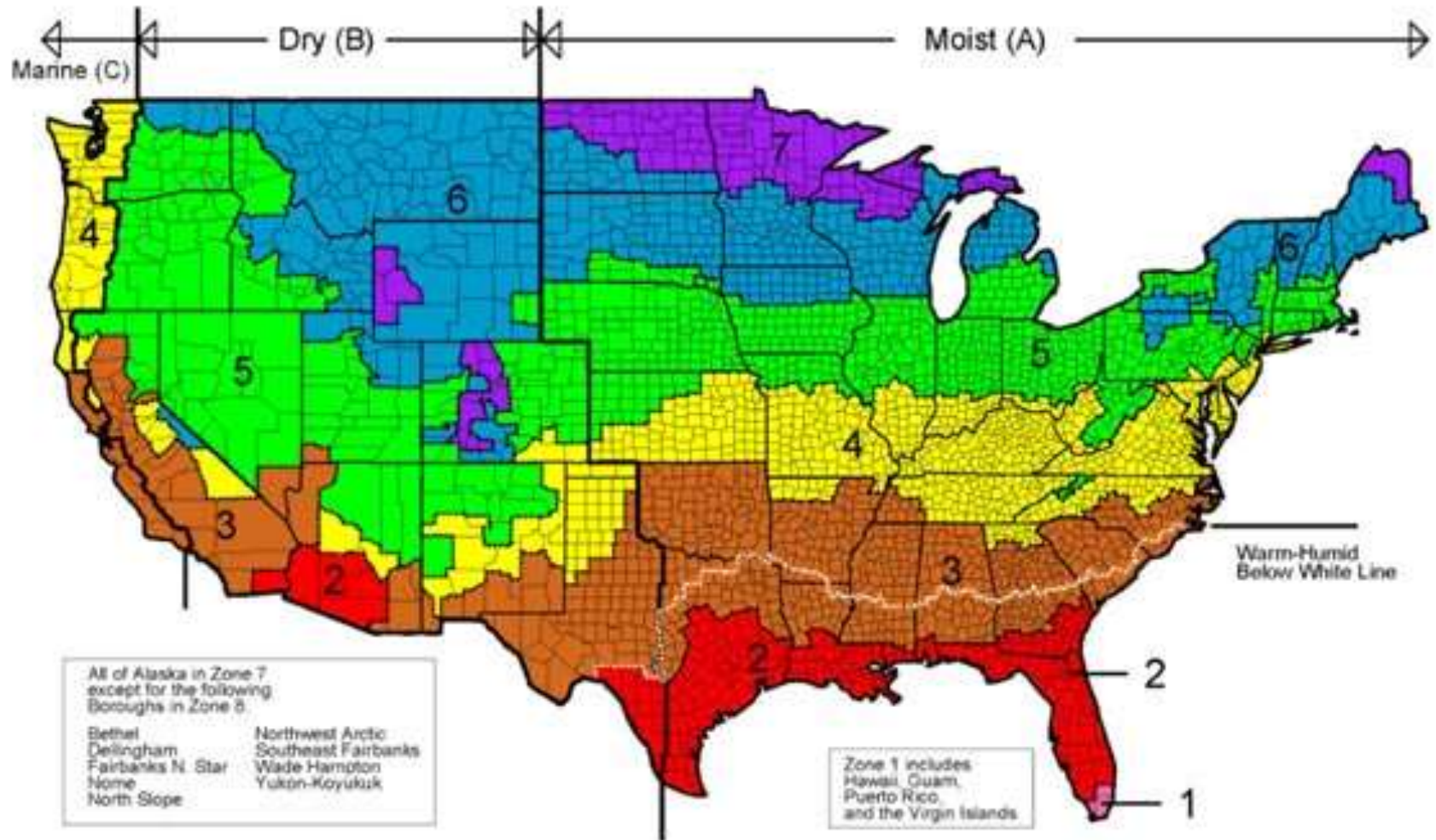


# A House is a System

of *dynamic*, interacting systems...

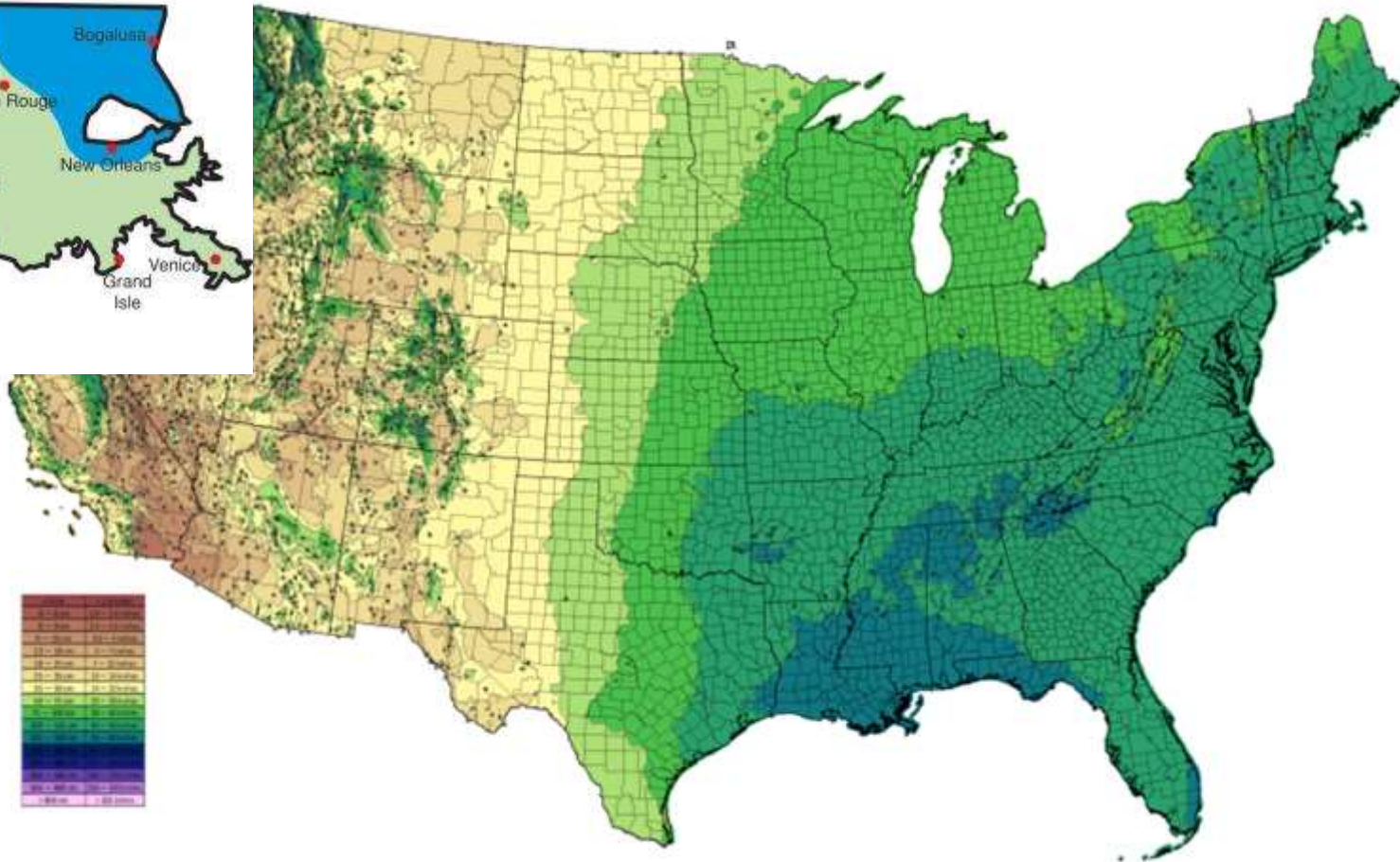


# Climate Zones: 2 & 3 – Hot, Humid





# From high to extreme rainfall

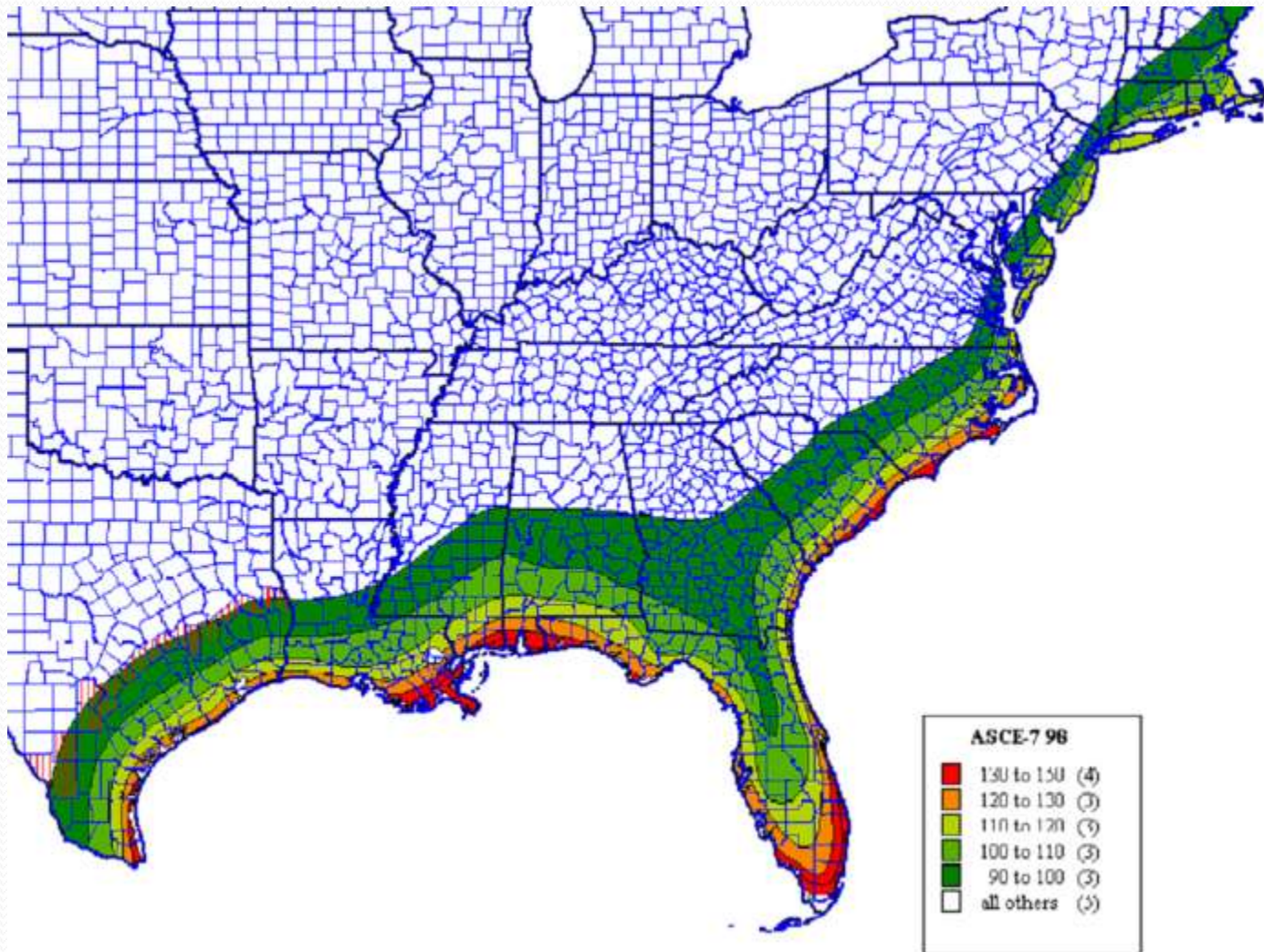








# Design Wind Speed Map





# Formosan Subterranean Termites

Can cause major damage in 1 year!









**These beauties got Joe to say yes!**



Formosan Subterranean Termites

# Input from many...





Joe came, Joe taught, we learned much – especially about moisture.

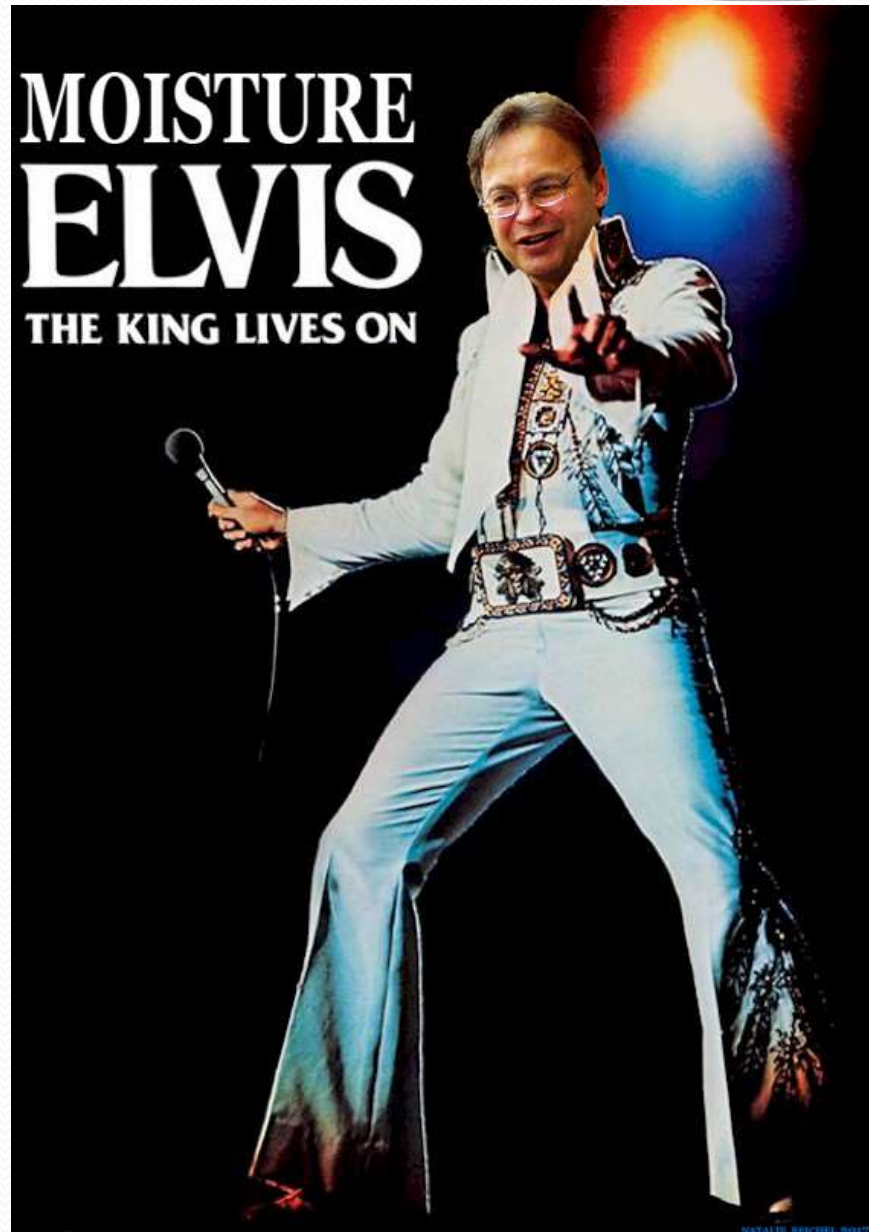




# Trula's truth...



Remson • Haley  
ARCHITECTS  
A Professional Architectural Corporation



# MOISTURE ELVIS

THE KING LIVES ON



## Thanks to extensive technical assistance from:



**Building Science Corporation**  
 30 Forest Street  
 Somerville, MA 02143  
[www.buildingscience.com](http://www.buildingscience.com)

**Dr. Joseph Lstiburek**, Principal



**Dr. Tim Reinhold**, Chief Engineer  
 and Sr. VP of Research



FEMA

Remson Haley Architects, Carroll Mathews, Lemoyne Design, Dr. Mark Levitan, Wooden Creations plus many LSU and other colleagues and industry partners.

## and the generous support of:

Entergy Louisiana, Paula Manship, Borate Treated Wood Alliance, La. Home Builders Assoc., Roy Domangue, Roy O Martin Lumber, and 300+ donors.





# LaHouse

## Louisiana House

Home & Landscape Resource Center



Timeless, Appealing Design  
by Local Architects

Rayon Hoyle  
ARCHITECTS



*Blending of the 5 criteria  
with LSU campus*





# Showcase of Solutions

- 4 *high performance (HP)* building systems
- 4 HP foundation systems
- 10 types of windows, doors
- 3 HVAC systems
- 5 attic treatments
- 5 moisture mngt. systems
- 5 termite protection strategies
- *Fortified... for safer living*
- *DOE Building America*
- *Energy Star*
- *Healthy Home / IAQ*
- *Green Building*
- *Universal Design*





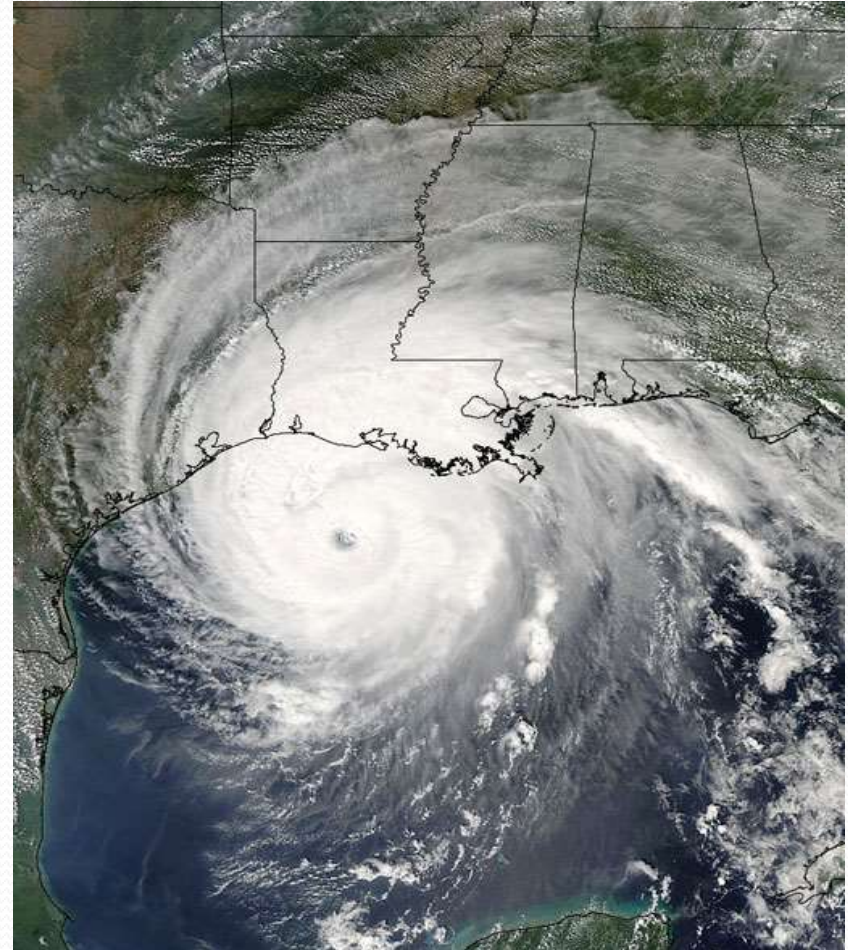
In 2005

**Katrina**

August 29

**Rita**

Sept. 24









# Impact upon one state

- 1,080 deaths
- 215,000 severely damaged homes
- 515,000 (31%) homes damaged
- 60,300,000 cu. yd. debris
- \$100,000,000,000 infrastructure loss
- 81,000 businesses affected
- 18,700 businesses destroyed
- Historic treasure, culture threatened

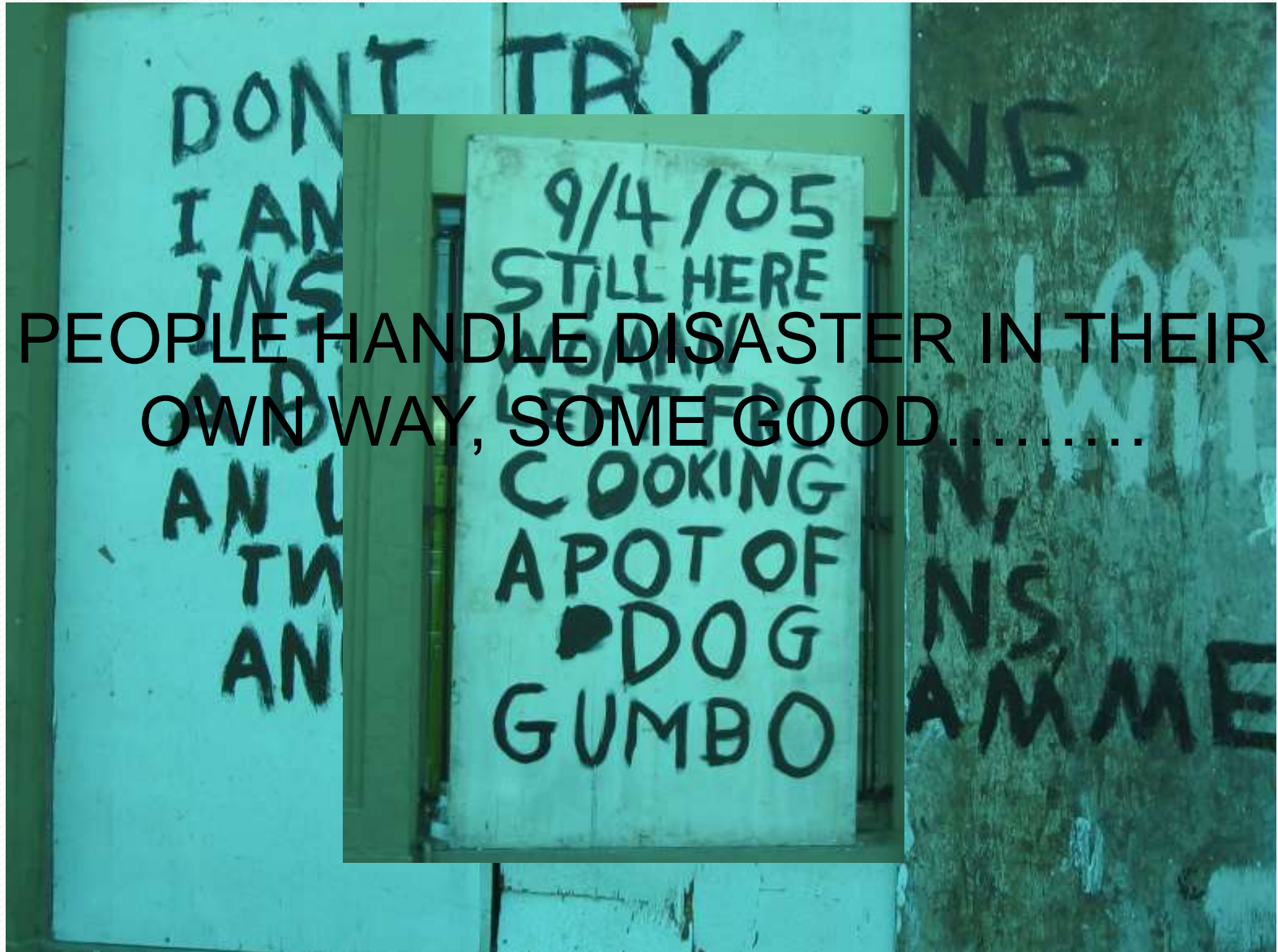
# Impacts on Families





The work,  
the time,  
the cost,  
the toll.





PEOPLE HANDLE DISASTER IN THEIR OWN WAY, SOME GOOD.....





# Memorable Holidays



# A year after Katrina





# Why did it take so long???



# ***Complicating Issues for Rebuilding***

***Fumbling... at all levels***  
***Displaced population***  
***Levee "protection" not***  
***Political turf***  
***Lost revenue***

***Lack of housing = lack of workers***



# Where's the money?

- FEMA – *temporary housing only*
- Flood insurance – *not enough*
- Homeowners insurance
  - *Wind vs. flood disputes...*
  - *Slow claims*
  - *Mold exclusion*
- Disaster Assistance – *1-2 years later!*



**Too little, too slow!**

## ***Too much, too fast!***

- **Battles of the plans**
- **Unlicensed contractors, scammers (*carpetbaggers*)**
- **Media frenzy**
- **Confusion, misinformation**
- **Mega Mold**
  - **Conflicting, inappropriate guidelines**
  - **Mold remediators – 31 pricey flavors**
  - **Volunteers, D-I-Y tackling it**









NATALIE BEICHEL 2017



# By request of The National Trust DIY guide on one sheet of paper for mass distribution

## Disaster Information Resources

from the LSU AgCenter

**LSU**  
 AgCenter

For the latest research-based information on just about anything, visit our Web site: [www.lsuagcenter.com](http://www.lsuagcenter.com)

### Mold Removal Guidelines For Your Flooded Home



A flood-damaged home needs special care to remove mold safely and effectively. Mold begins to grow on materials that stay wet longer than two or three days. The longer mold grows, the greater the health hazard and the harder it is to control. So, as soon as it is safe to return, don't delay cleanup and dry out.

Take photographs before cleaning up for insurance purposes, and get started. Do not walk for the camera; adjust to see your home before removing wet and moldy materials. Most homeowners' insurance policies do not cover mold damages or cleanup costs, but flood insurance may cover it.

#### What is Mold?

Molds are a type of fungi. They serve as nature's recycler by helping to break down dead materials. Molds produce tiny cells called spores that float and spread easily through the air. Live spores act like seeds, forming new mold growths (colonies) when they find the right conditions – moisture, nutrients (nearly anything organic) and a suitable place to grow. Of these, moisture is the key factor – for growth and for control.

#### Mold and Health

Some people are much more sensitive to mold than others, but long-term or heavy exposure is unhealthy for anyone. Mold can trigger allergic reactions and asthma attacks, may lower resistance to illness or have other effects. Young children, the elderly and the ill are most vulnerable. Some molds can make toxins that can be carried in live or dead spores and fragments. "Black mold" is a misleading term since many molds are black.

#### Mold Testing and Remediation Services

Mold testing in a home is not usually needed and is rarely useful to answer health concerns. Some insurance companies and legal services may require sampling for evidence. Professional mold remediation contractors may test before and after cleanup to measure the cleanup's effectiveness.

If you hire a contractor to remove mold, seek a licensed mold remediation contractor with special training and equipment such as HEPA vacuums and dehumidifiers.

Get in writing the cost, methods and steps to be used. Compare their procedures with the do-it-yourself guidelines below and to EPA's *Mold Remediation in Schools and Commercial Buildings* available online at [www.epa.gov/mold](http://www.epa.gov/mold). Also, review the CDC's *Mold Prevention Strategies and Possible Health Effects* in the *Altamira* of *Humana's Katrina and Rita* available online at [www.bt.cdc.gov/disaster/moldreport/](http://www.bt.cdc.gov/disaster/moldreport/).

#### Do-It-Yourself Mold Cleanup Steps

Follow these guidelines, and also refer to the EPA publication, *A Brief Guide to Mold, Moisture and Your Home*, at [www.epa.gov/mold](http://www.epa.gov/mold).

- Wear protective gear during cleanup.** People are rarely exposed to mold by breathing spores and skin contact. Wear gloves, goggles and a respirator rated N-95 or higher. Some types have valves to make it easier to breathe. A properly fitted half-face or full-face respirator with filter cartridges provides greater protection and comfort than the dust mask types.
- Isolate work area and ventilate to outdoors.** Disrupting mold colonies during cleanup can cause a huge release of spores into the air, so seal off the moldy areas from the rest of the house. Open windows, and don't run the central air system during cleanup. Tape plastic over air grilles, and drape plastic in the stairwell if the second story is dry and clean. If power is on, put a box fan in a window to blow out and exhaust mold-filled air to the outdoors.
- Remove moldy, porous materials.** Porous moldy or sewage-contaminated materials should be removed, put in plastic bags if possible and thrown away. To reduce the release and spread of mold spores, it is helpful to cover moldy material with plastic sheathing before removing it.
  - Remove all flooded carpeting, upholstery fabrics and mattresses right away. It's best to discard them, but if you hope to salvage a valuable item, have it cleaned, disinfected and dried quickly outside the home. Never reuse flooded padding.



- Remove all wet fibrous insulation, even if wallboard appears to be dry. Wet insulation will stay wet for too long, leading to the growth of hidden unhealthy mold and decay fungi inside the walls. Cut wall covering above the level that was wet; water can wick up above the flood level.
- Remove all moldy, porous materials, including gypsum wallboard, processed wood products, ceiling tiles and paper products.
- Clean and sanitize plaster, wood paneling and nonpaper-faced gypsum board walls that dried, are in good condition and have no insulation in the wall. It's best to remove multiple layers of paint on old plaster to aid drying. There is a risk of mold on the outside, however, that can release spores into the home through air leaks in the walls. If you choose to restore these materials, seal interior gaps with caulk.
- Remove all vinyl wallpaper, flooring and any other materials that hamper drying of framing toward the interior space. All interior side plastic sheeting or full-faced insulation should be removed.
- Clean and disinfect. Surface mold can be effectively cleaned from nonporous materials such as hard plastic, concrete, glass and metal; solid wood can also be cleaned since mold cannot penetrate solid wood but grows only on the surface. Cleaning should remove, not just kill, the mold, because dead spores can still cause health problems.

After cleaning, you may choose to use a disinfectant to kill any mold raised by the cleaning. If there was sewage contamination, disinfection is a must. If you detect, follow label directions and warnings. Handle carefully, wear rubber gloves, and never mix bleach with ammonia or acids. Many disinfectants, including bleach, can kill molds but do not prevent regrowth of new colonies.

- Remove any sediment from out opened wall cavities, if necessary.
- Wash dirty or moldy materials with nonphosphate all-purpose cleaners, because phosphate residue in mold food. Rough surfaces may need to be scrubbed. Rinse, but avoid pressure spray that can force water into materials.
- Use a HEPA filtered vacuum (not a regular vacuum) to remove dust and mold residue, if possible.
- Disinfect wall cavities and other materials after cleaning to kill any remaining fungi and bacteria.

Soil can make some disinfectants, including bleach, less effective. On colorfast, nonmetal surfaces, you can disinfect with a solution of 1/2-1 cup household chlorine bleach per gallon of water. Do not use in the air conditioning system. You can use milder, less corrosive disinfectants, such as alcohols, phenolics and hydrogen peroxide on materials that may be damaged by bleach.

- Consider a borate treatment to resist termites, decay and mold. Solutions that penetrate wood over time are more expensive but offer better protection. Other mold inhibitors such as latex zinc paints and fungicides also may help inhibit mold regrowth during drying. Do NOT apply sealants that can impede drying. Framing materials that are difficult to clean or remove (such as "blackwood," OSB sheathing, rough surfaces, etc.) can be painted with latex paint to "encapsulate" any remaining mold and prevent its release to the air.
- Flush the air. After cleaning and disinfecting, air out the building. Use fans in windows to pull mold spores to the outdoors.
- Speed dry. Dry all wet materials as quickly as possible. Close windows and air condition, run fans and use a dehumidifier, if possible. If there is no power, keep windows open.
- Remain on Mold Alert. Continue looking for signs of moisture or new mold growth. New mold can form in as little as 2-3 days if materials stay wet. Wood and other materials that may look dry can still be wet enough to support new growth. If mold returns, repeat cleaning and, if possible, use speed drying equipment and moisture meters. Regrowth may signal that the material was not dry enough or should be removed.
- Do not attempt restoration until all materials have dried completely. Wood moisture content should be less than 20 percent. Do NOT use vinyl wallpaper, oil-based paint or other interior finishes that block drying to the inside.
- Restore with flood-resistant materials, if possible, "wet floodproof" your home so it can better withstand a flood. Use closed-cell spray foam insulation in walls, or rigid foam insulating sheathing that does not absorb water. Choose solid wood or water-resistant composite materials. Elevate wiring and equipment. Consider removable, cleantable wallcovering or paneling. Use paperless drywall that does not provide a food source for mold. Use moisture flooring such as ceramic tile, solid wood, stained concrete, etc.

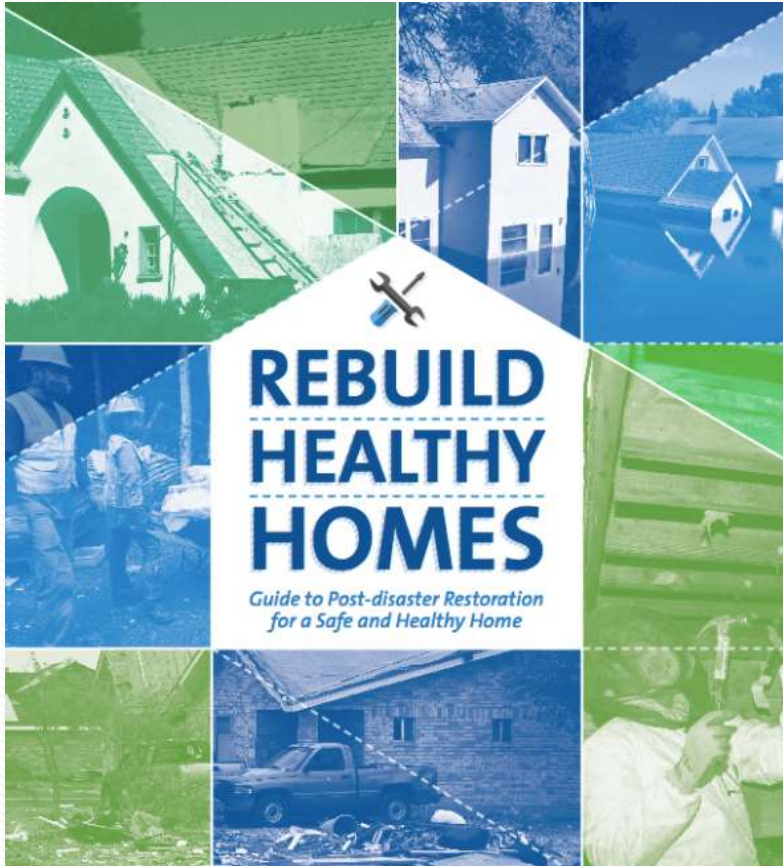
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Louisiana State University Agricultural Center  
 William B. Richeaux, Chancellor  
 Louisiana Agricultural Experiment Station  
 David J. Beeftink, Vice Chancellor and Director  
 Louisiana Cooperative Extension Service  
 Paul D. Conill, Vice Chancellor and Director  
 Pub. 2949-B (10/06) 5/06

Issued in furtherance of Cooperative Extension work. Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.



**HUD.gov/HealthyHomes**



## 2015 Edition

- Updated and expanded edition
- For all types of disasters & hazards
  - Mold, lead, asbestos, chemical, etc.
- Comprehensive how-to manual
- For homeowners and volunteers
- *Restore for More than Before* resilient restoration section
- FREE online pdf and mobile app



U.S. Department of Housing and Urban Development  
Office of Lead Hazard Control and Healthy Homes (OLHCHH)

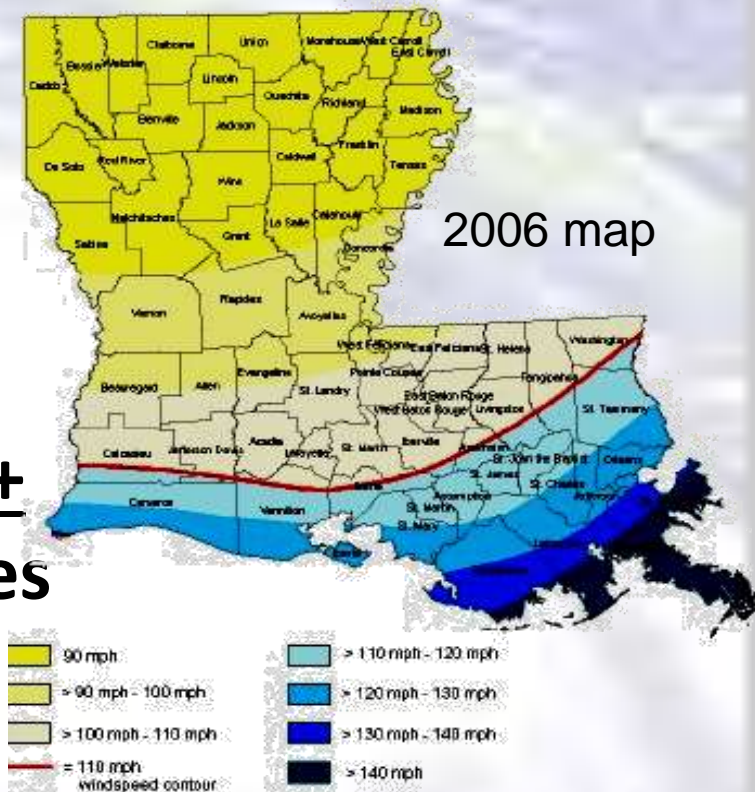




# Enacted Nov. 2005

## La. Uniform Construction Code

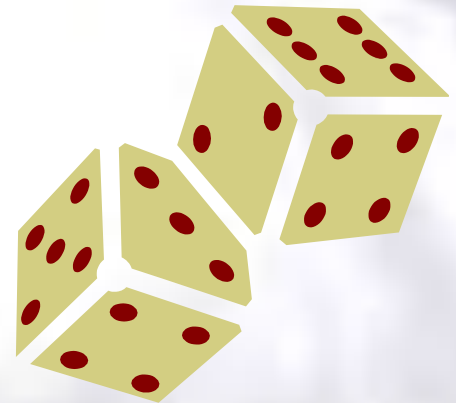
- Created La. Code Council
- **Statewide uniform code**
  - Recent IRC as amended by council
  - Local may not amend
- **Immediate emergency wind + flood code for coastal parishes**
  - Went statewide Jan. 1, 2007
  - Code requirements vary by wind speed map



# Base Flood Elevations (BFE)

## State Uniform Construction Code:

- IRC uses NFIP standards for flood zones
  - FFE above BFE on flood map A-zone
  - Subfloor above BFE, no stemwalls in V-zone
  - Flood resistant materials below BFE
  - Community may require “freeboard”
- FEMA *flood advisories* not BFE
  - BUT required for public money
- **Based upon 1% probability**
  - ***Assumes repaired levees will hold***





# Resulting in...

- **Steep learning curve**
  - No prior code in many areas
  - Complexity of wind code
  - Cost of undo-redo
- **Shortage of code officials, inspectors, housing design pros**
  - Few familiar with wind codes
  - 3<sup>rd</sup> party inspectors scarce
  - Liability issues
  - Permit backlogs, moratoria
  - No \$ to train or hire (for 2 years)





In mid-construction @ Katrina/Rita  
*prime stage to see resilience features*





# LaHouse *LIVE*

*Merci (thanks) to BMI!*

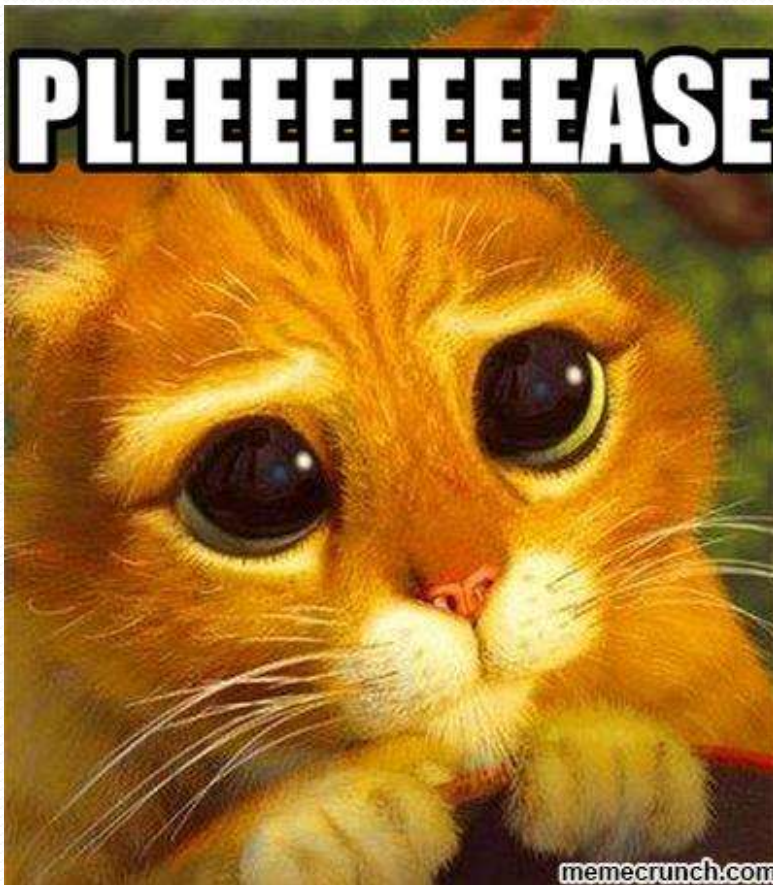




# October 2005









## King Joe and Queen Claudette 2006 Down da Bayou Tour (with Tim Reinhold, IBHS)

8:30	Welcome	Dr. Claudette Reichel
8:35	Wind	Dr. Tim Reinhold
9:35	Flood	Dr. Tim Reinhold
10:45	Rain	Dr. Joseph Lstiburek
1:00	Air	Dr. Joseph Lstiburek
2:00	Moisture	Dr. Joseph Lstiburek
4:40	HVAC	Dr. Joseph Lstiburek

700+ home building professionals

### Best Building Practices for the Gulf Region

6-hour continuing education seminar  
for residential contractors, building officials, inspectors and designers



When you protect your clients and their homes from  
water, mold, wind and rising energy costs,  
you build so much more than a house.

**Presenters:** **Joseph Lstiburek**, Principal of Building Science Corporation (BSC), [www.buildingscience.com](http://www.buildingscience.com) – prominent building authority, popular speaker, forensic engineer, author of climate-specific building and moisture control guides, industry consultant, member of ASHRAE, ASTM and ICC.  
**Tim Reinhold**, VP of Engineering, Institute of Business and Home Safety (IBHS), [www.ibhs.org](http://www.ibhs.org) – nationally recognized wind engineer and consultant for engineering firms worldwide.

**Sponsors:** Training, materials and lunch are provided free through the generous support of BSC, IBHS, the LSDOE Building America Program, Georgia Pacific, LaHouse Resource Center and local Home Builders Assoc. (HBA) chapters to help Katrina and Rita impacted communities and home builders.

**Content:** Best building materials, assemblies, techniques and HVAC for south Louisiana hazards, conditions and climate. Workable ways to combine hot-humid climate moisture control, energy efficiency, comfort and indoor air quality with wind and flood-resistant building code requirements and options. Common flaws and failures – and how to avoid them. Options for restoring or building homes to withstand floods and keep out wind-driven rain.

**Materials:** Attendees will receive a variety of reference materials and building guides.

**Master Builder/Designer Option:** A voluntary designation is being developed to recognize, promote and give a competitive advantage to local home builders and designers who complete a specified continuing educational program. LaHouse Master Builders and Designers will be recognized on [www.LouisianaHouse.org](http://www.LouisianaHouse.org) and lists provided to consumers and collaborating housing agencies. This course will fulfill part of the requirements for the designation.

DATES	LOCATIONS	TIME*	LOCAL HBA	CONTACT INFO
April 25	Baton Rouge: Room 212 Efferson Hall, LSU	8:15-4:15	225-769-7696	<a href="mailto:lynnda@centralregionhba.com">lynnda@centralregionhba.com</a>
April 26	Houma: Woodman of the World Hall	8:00-3:30	985-868-4725	<a href="mailto:stewart@bellco.ish.net">stewart@bellco.ish.net</a>
May 3	Metairie: 2424 N. Arnaud Rd., HBA of GNO office	8:45-4:15	504-837-2700	no email
May 4	Mandeville: Benedicts Restaurant	8:45-4:15	985-882-5002	<a href="mailto:dp.louis@rthba.org">dp.louis@rthba.org</a>
May 17	Lafayette: 135 N. Domingue Rd., AHBA office	8:45-4:15	337-981-3053	<a href="mailto:kellen@ahbaonline.com">kellen@ahbaonline.com</a>
May 18	Lake Charles: Lake Charles Civic Center	8:45-4:15	337-478-7893	<a href="mailto:rick@hba3@cs.com">rick@hba3@cs.com</a>

\* Time includes registration (15 min), sponsored lunch and breaks. Baton Rouge includes lunch tour of LaHouse.

Register online at <http://www.LouisianaHouse.org/bestpractices>  
or call local HBA contact above. Seating is limited.



Visit our Web Site: [www.lsuagcenter.com](http://www.lsuagcenter.com)

Louisiana State University Agricultural Center, William B. Richardson, Chancellor  
funded in fulfillment of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.



Philantropists and more royalty...  
with good intentions and \$, but...



Founder of *Make it Right* Homes

***Don't do  
stupid things!***

**MOISTURE  
ELVIS  
THE KING LIVES ON**





# *Maís cher, ça c'est couísson!*

*[may sha, sah say cou-yon]*



You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



The ***Sinking Ship***  
*Make It Right* house design



You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



The ***Shark Mouth***  
*Make It Right* house design

# You decide: *Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



The ***Up, Up and Away*** flight wings  
*Make It Right* house design



You decide:  
*Ça c'est bon* or *Couïllion*

(That's good)

(Coyon)



**A Nawlins**  
*Home Again* house design

You decide:  
*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



The ***Waterfall Welcome – Rain Catcher***  
*Make It Right* house design



You decide:  
*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



The ***For Where There's No Rain, No Sun, No Wind***  
*Make It Right* house design

# You decide: *Ça c'est bon* or *Couïllion*

(That's good)

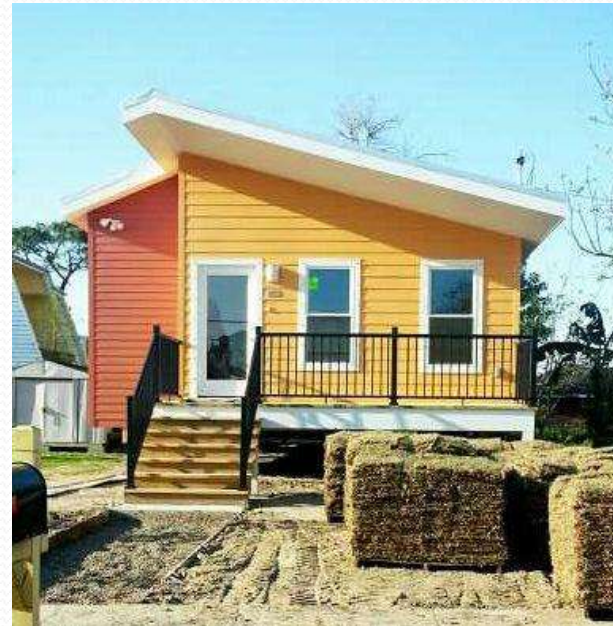
(Couyon)



New improved & affordable, ***Nawlins***  
*Make It Right* house designs



You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



New improved, affordable **Nawlins SIPS**  
*Make It Right* house designs

You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



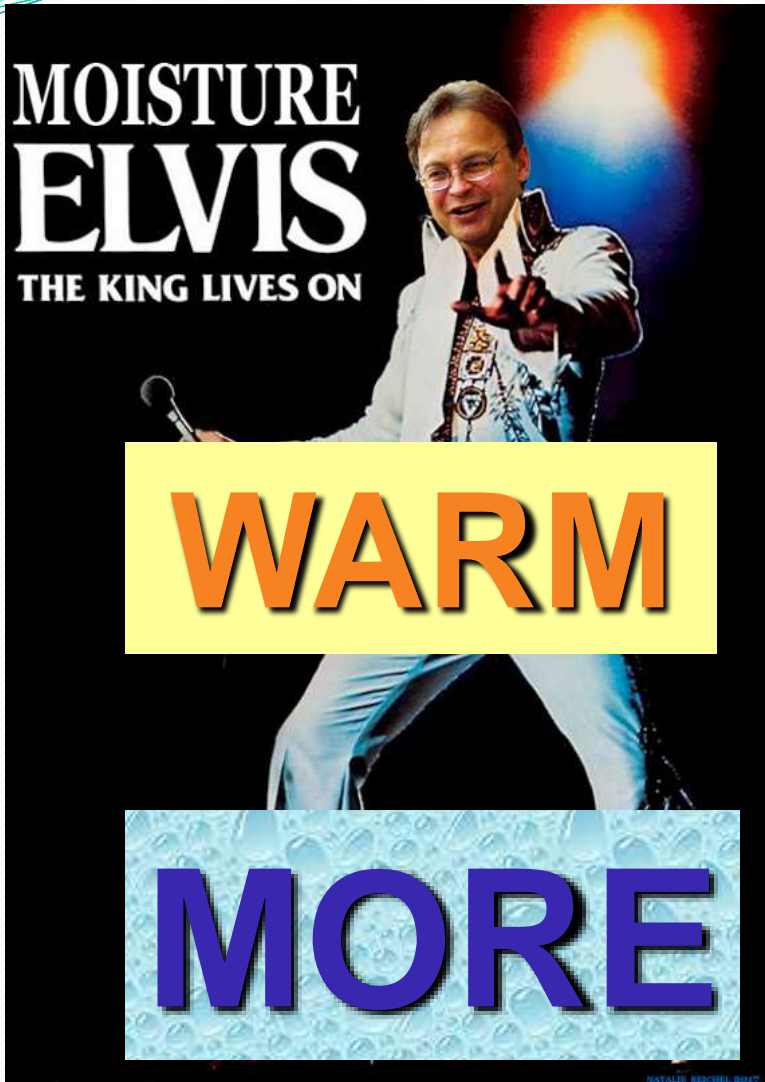
***Flood Thy Neighbor***



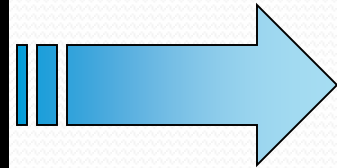
You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



subfloor fiberglass insulation



# Moisture Flows...



**COLD**



**less**



So....

*Which way does it flow in La.?*



**Hot and humid outside  
+ Cool, dry A/C inside**

***Our floors rot  
and cup in  
the summer!***

**Cool A/C  
+ impermeable flooring  
+ permeable insulation**

---

---

**wet subfloors  
cupped wood flooring  
mold and decay fungi  
termite attraction**





You decide:

*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



subfloor fiberglass insulation + gyp board

You decide:

*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



sealed crawlspace  
(in New Orleans)



You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



sealed crawlspace at Joe's house

## Insulating Raised Floors in Hot, Humid Climates



Raised floor home in Baton Rouge

Research Findings on Moisture Management



Available at *LaHouse Resource Center* web site  
[www.LSUAgCenter.com/LaHouse](http://www.LSUAgCenter.com/LaHouse)



# Raised Wood Floor Option 1: Sealed, Rigid Foam Panels Under Floor Joists

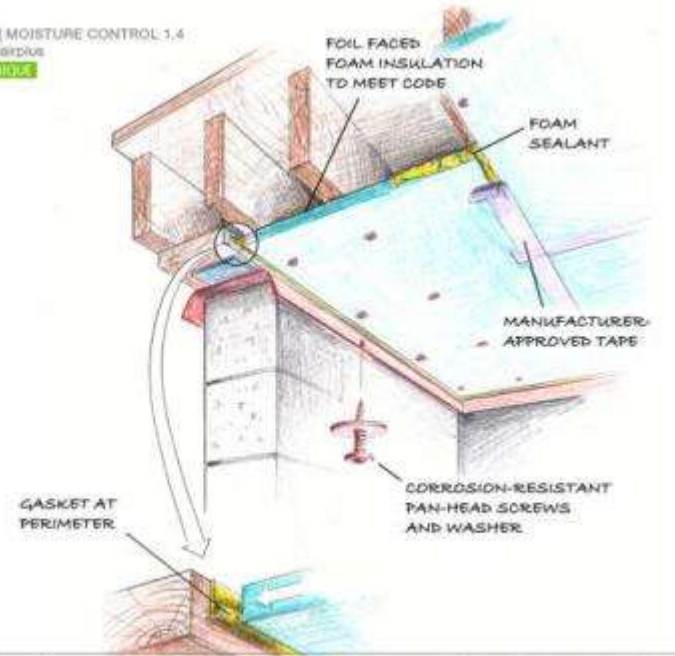
**Airtight, vapor barrier insulation system – protects entire subfloor**

- **Foil-faced Iso board** (fire code)
- **Taped seams, sealed edges & penetrations**
- **Spray foam insulated rim**
- **Termite shield, capillary break**
- **Flood vents or open pier & beam**

U.S. Environmental Protection Agency's "Indoor air PLUS" new homes labeling program <[www.epa.gov/indoorairplus](http://www.epa.gov/indoorairplus)>, see Technical Guidance-Moisture Control; Illustrations- Dennis Livingston, Community Resources.



EPA Indoor airPLUS | MOISTURE CONTROL 1.4  
[www.epa.gov/indoorairplus](http://www.epa.gov/indoorairplus)  
**BEST PRACTICE TECHNIQUE**



CRAWL SPACE/FLOOD ZONE: FOAM BOARD-INSULATED FLOOR DECK

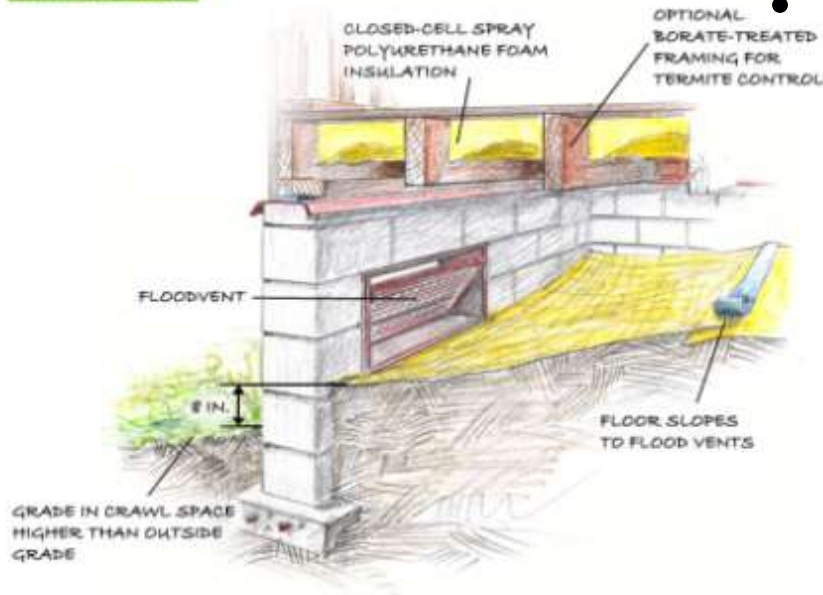
## Raised Wood Floor Option 2: *Closed Cell Spray Foam*

**Airtight low-perm insulation system**

- **Min. 2 in. (R-13 & vapor retarder)**
- **Inside grade higher than outside**
- **Plastic ground cover**
- **If enclosed, coat joists**
- **Termite shield below wood**

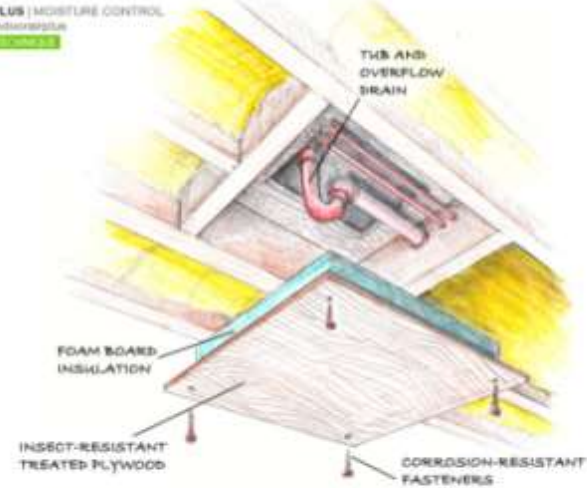


EPA Indoor airPLUS | MOISTURE CONTROL  
www.epa.gov/indoorairplus  
**BEST PRACTICES TECHNIQUE**



CRAWL SPACE/FLOOD ZONE: VENTED CRAWL SPACE WITH "FLOOD VENTS"

EPA Indoor airPLUS | MOISTURE CONTROL  
www.epa.gov/indoorairplus  
**BEST PRACTICES TECHNIQUE**



CRAWL SPACE/FLOOD ZONE: ACCESS HATCH BENEATH T&B



You decide:

*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



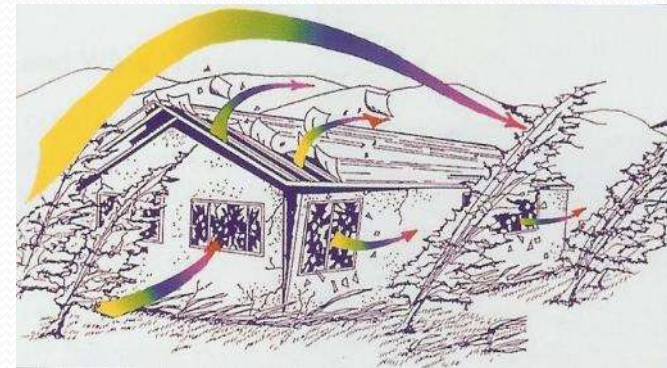
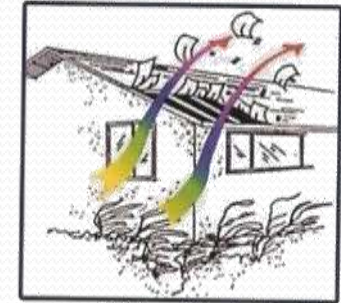
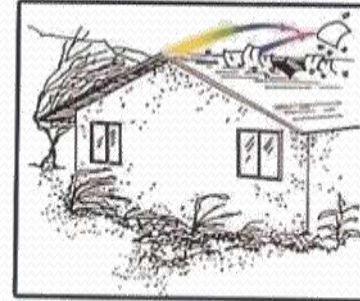
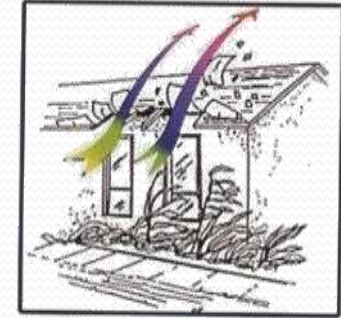
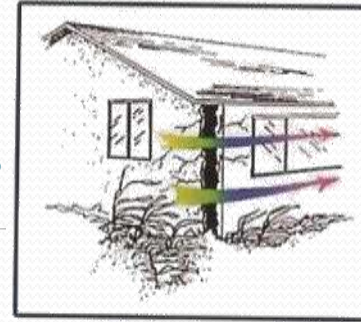
elevated A/C unit

# Wind Still Matters!





# External Pressures



# Internal Pressures

# Hurricane Damages

## *The major building envelope issues:*

1. Loss of roof cover
2. Loss of roof sheathing
3. Debris impact – large holes via broken windows and doors
4. Window and door anchorage, connections, and pressure ratings
5. Garage doors & sliding glass doors
6. Water leakage
7. Ridge vents, gable vents and soffits





You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



Roof-wall flashing

You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



© 2004 Institute for Business & Home Safety®

Stapled roof decking



# You decide: *Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



French (double swing) doors

You decide:  
*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



window replacement



You decide:

# *Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



Narrower Garage Return

You decide:

*Ça c'est bon* or *Couïllion*

(That's good) (Couyon)



Anchor Bolt Placement



# You decide: *Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



Suspended soffit vents

You decide:  
*Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



home security?

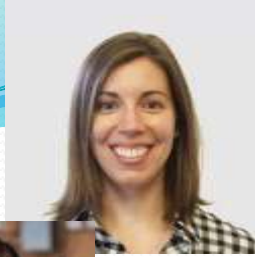




*Mais cher,  
ça c'est bon!*

2008

2010



# The *Wash-N-Wear* Houses

Prototype post-Katrina demonstration homes in New Orleans



# Prototype *Green Dream* Homes 1 & 2

(Flood-hardy, strong, durable, energy-efficient, healthy, affordable)

GD1



GD2

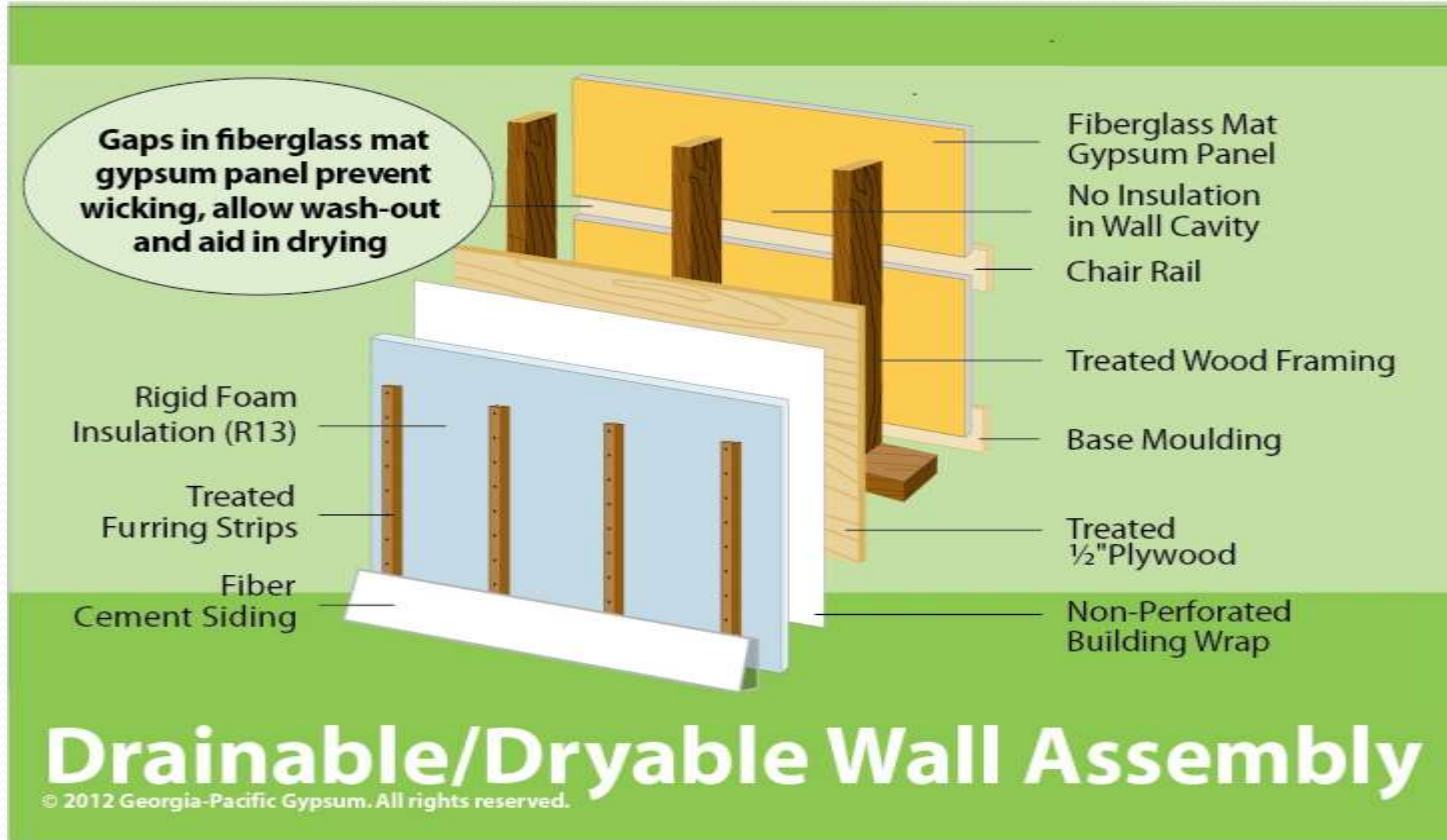


- **Flood-hardy** materials and building systems
- **Elevated** on piers to BFE +2
- **Wind connections**, sheathing for 130 mph
- **Termite-resistant** borate-treated lumber, plywood
- **Rain, moisture, air and thermal controls**
- **HVAC** for low energy and healthy home





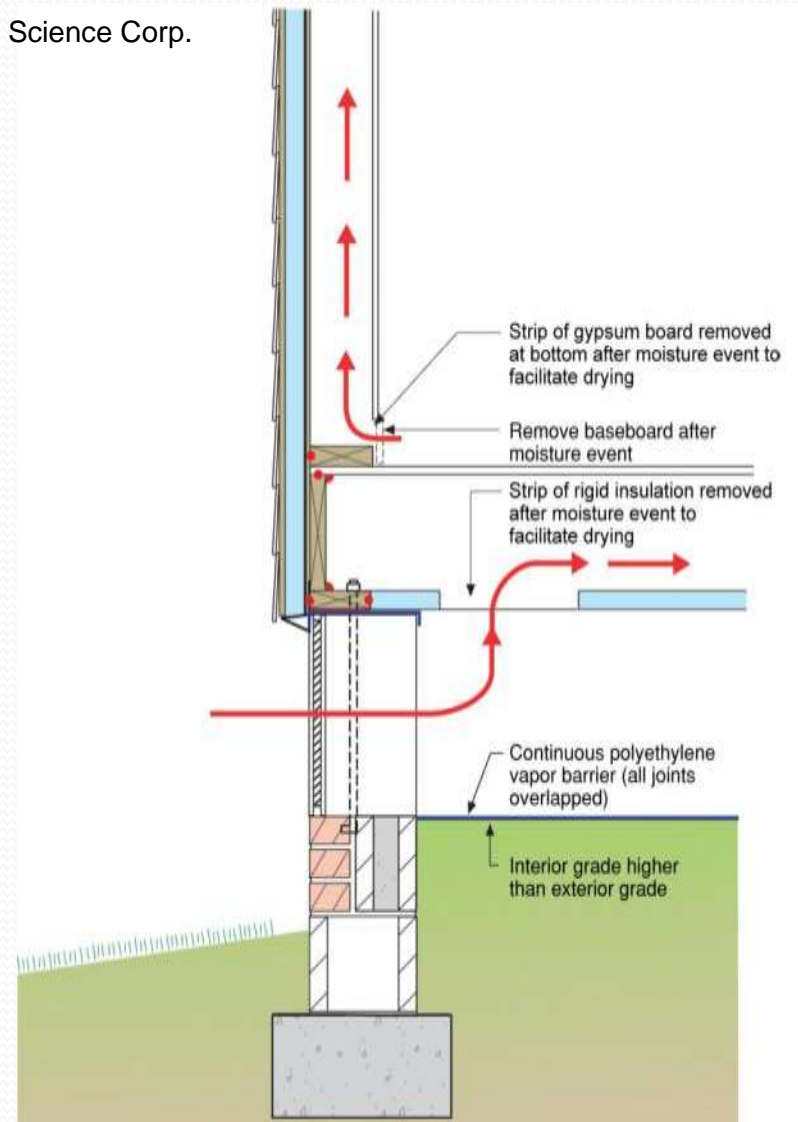
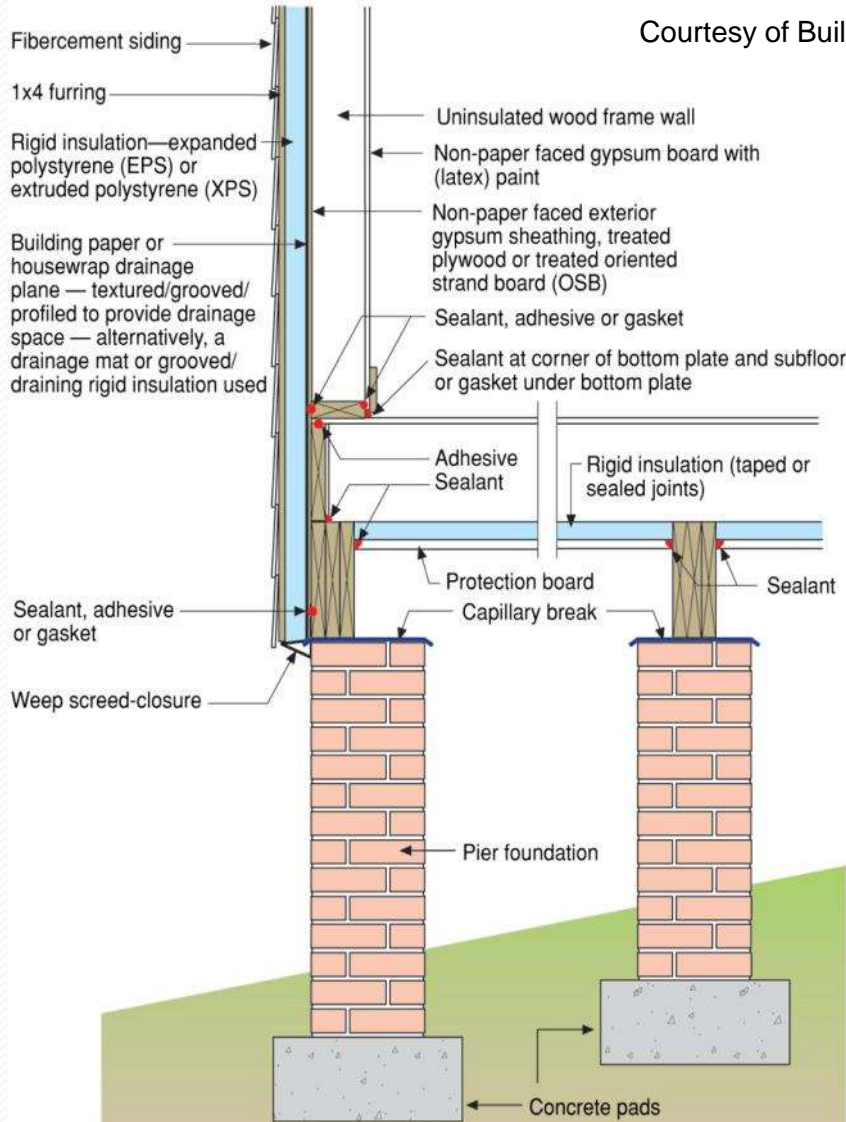
# Flood-hardy!!!



**For homes in *levee-dependent*  
 or *uncertain* flood level areas  
 (potential to flood above BFE)**

# Wood frame, Flood-Hardy (*drainable, dryable*) Building System (solid lumber, plywood & closed cell foam insulation)

Courtesy of Building Science Corp.





# Elevated, Stable Foundation

- Elevated to BFE + 2 (5 ft. above grade)
- **Pier and beam:** precast concrete piers on continuous footings



# Flood Hardy Materials

solid lumber & plywood – no OSB or LSL in floor and walls





# Flood Hardy Materials

GD 1: 2.5" closed cell spray foam in wall cavities – partial fill

GD 2: 2" rigid Iso foam board outside sheathing & wrap



**GD 1**



**GD 2**

# Flood Hardy Materials

GD 1: Fire rated rigid foam under floor joists, taped & sealed

GD 2: Closed cell spray foam between floor joists, rim



**GD 1**



**GD 2**



# Flood Hardy Materials

Paperless drywall w/ moisture resistant core – no mold food

Tile flooring

Fiber cement siding and trim



# Hurricane Hardy Roof

Plywood decking, ring shank nails, 6 in. spacing

Peel-and-stick membrane – *secondary moisture barrier*

**Class H (150-mph) wind-rated, Class 4 hail-rated shingles**





## **Hip Roof** with moderate slope

Aerodynamic + sheds water away + shades all sides

## **Continuous Sheathing** to resist racking

Blocking at seams so all edges nailed to framing



## High DP, Impact Rated, Flood-hardy Energy Star Windows and Doors





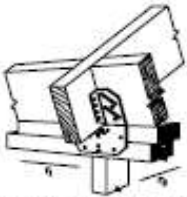
## HURRICANE TIES AND STRUCTURAL CONNECTORS



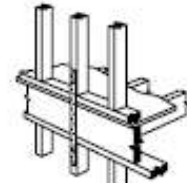
2 | HL1 - TOP PLATE TO RAFTER CONNECTOR  
1 SIMPLY STRAPPED TO CHAIN



3 | HL2.5 - TOP PLATE TO RAFTER CONNECTOR  
1 SIMPLY STRAPPED TO CHAIN



4 | HL10 - TOP PLATE TO RAFTER CONNECTOR  
1 SIMPLY STRAPPED TO CHAIN



5 | HLSTAIR / LSTAIR - STRAP TIE  
1 SIMPLY STRAPPED TO CHAIN

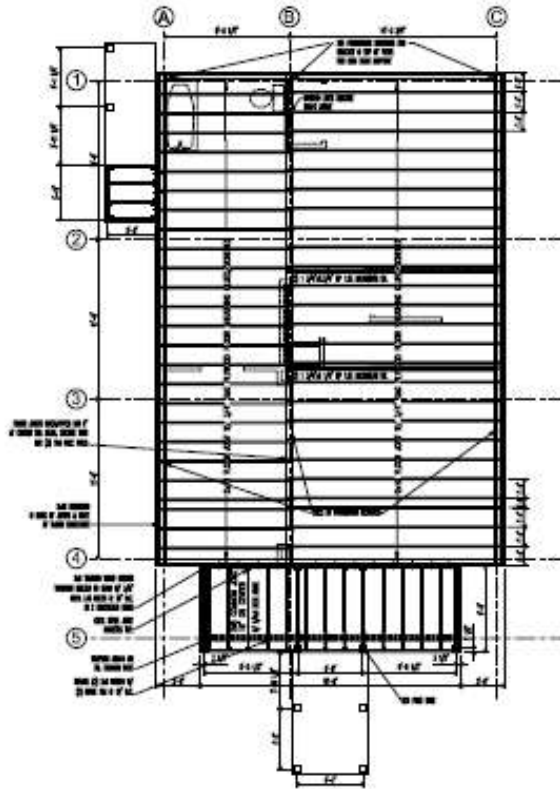


7 | HL6 - STUD TO FLOOR DECK TIE  
1 SIMPLY STRAPPED TO CHAIN



6 | HLDA - HOLD-DOWN  
1 SIMPLY STRAPPED TO CHAIN

# 130 mph wind load connection specs



1 | FIRST FLOOR FRAMING PLAN  
SCALE: 1/4" = 1'-0"

I have researched this chapter of the Louisiana State Uniform Construction Code and to the best of my knowledge and belief these drawings are in compliance therewith. I take full responsibility for the contents of these plans. I am not generally admitting the work.

Anthony J. Lammara, Ph.D., P.E. Date  
LA PE 001640

PROJECT: 130 MPH WIND LOAD CONNECTION SPECS  
DATE: 10/15/2010  
DRAWN BY: [Name]  
CHECKED BY: [Name]

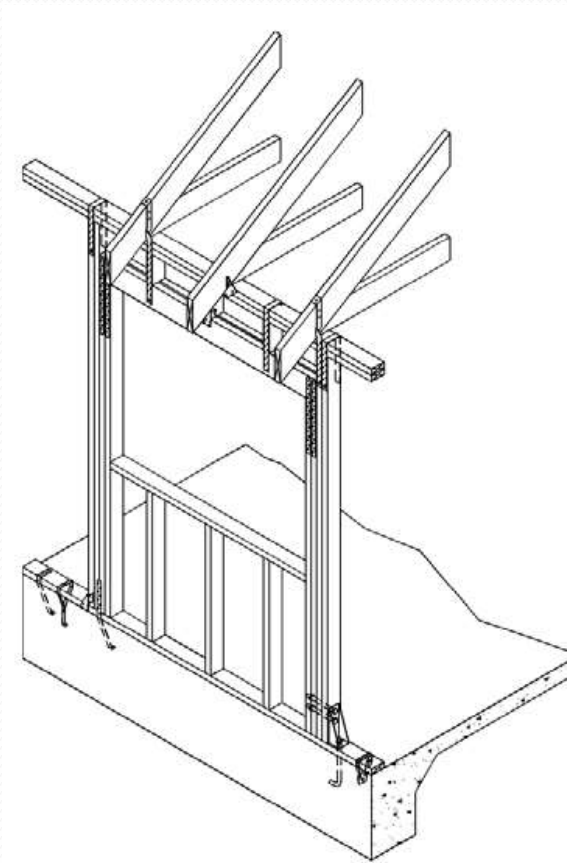
- ### GENERAL STRUCTURAL NOTES
- Wind speed design based on 130 mph (3-second peak gust) Exposure C.
  - Wind action based on engineering standard ASCE 7-05, Minimum Design Loads for Buildings and Other Structures and the 2009 Wood Frame Construction Manual, Guide to Wood Construction in High Wind Areas for One and Two-Family Dwellings, 2006 Edition.
  - Fasteners: 2x4s use #10 gal. steel nails; 2x6s use #12 gal. steel nails; 2x8s use #14 gal. steel nails; 2x10s use #16 gal. steel nails.
  - Min. allowable bending stress in framing lumber is to be 1400 psi or less wood chloride.
  - Min. allowable bending stress in micro-lam or parallel beams is to be 2000 psi. Minimum Modulus of Elasticity is to be 1.2 x 10<sup>6</sup> psi.
  - Reserved.
  - Wood in contact with masonry, concrete or the ground is to have appropriate wood preservative in ground decay.
  - Metal connectors installed on wood treated with ACG or other amide based products shall be galvanized to coating designation G-90 or be stainless steel unless otherwise protected with a zinc membrane.
  - Connector is to provide a continuous load path from each roof-truss element to the foundation with appropriate base transfer connectors. Each connector is to be labeled with the number of nails specified by the manufacturer of the connector.
  - All connectors noted on the plans are Simpson Strong-Tie. Use these connectors or an approved equal.
  - This building has been specifically designed for high velocity hurricane of materials or methods must be approved by the architect or engineer of record.
  - Some structural plans are schematic in nature. Architectural plans have precedence for dimensions, levels and locations.
  - Connector is to verify that nails used with pneumatic nailing equipment have the capacities in shear and withdrawal required by the structural design. All nails exposed to the environment shall be galvanized unless connectors are stainless steel in which case the nails must also be stainless steel.
  - The foundation specifier is to state the allowable soil bearing capacity. Contractor is to verify this capacity is present on undisturbed soil.
  - A specific flood design has not been performed for this house. While there is an assumption that the house will be located in a floodable area, there is an assumption of no to minimal flood flow or velocity, a flood depth that will not be greater than the lowest finished ground elevation of the house (the highest edge and center flood support beams), and there will be little to no water around or under the foundation. All of these conditions must be confirmed by the foundation specifier.

BUILDING SCIENCE CORPORATION  
 CRESCENT HOUSE, NEW ORLEANS  
 HOT-HUMID CLIMATE  
 First Floor Framing Plans  
 S-1



# Continuous Load Path

from roof to foundation





# Keep It Dry

## Rain and Moisture Management



*Wet happens...  
can it dry???*

- Drainage plane AND gap behind wall claddings
- Integrated flashing systems, installed shingle-fashion
- Dry foundation design
- Capillary breaks
- Simple roof design
- High-performance roof underlayment
- Strong, fastened soffits
- Permeable interiors (no vinyl wallpaper)

# Keeping the Walls Dry

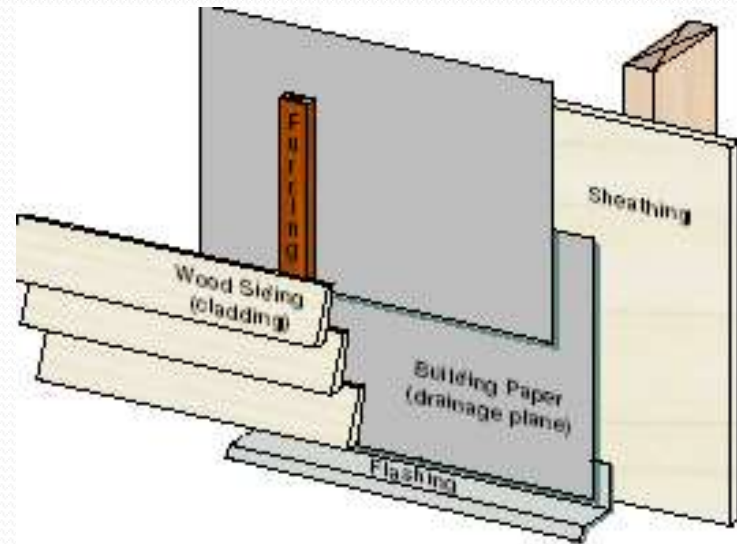
You've heard Joe's mantra...

*Drain the rain*

*on the*

*WRB*

(formerly known as  
*the drainage plane*)



Reproduced with permission from  
Building Science Corporation



GD1 Solution:

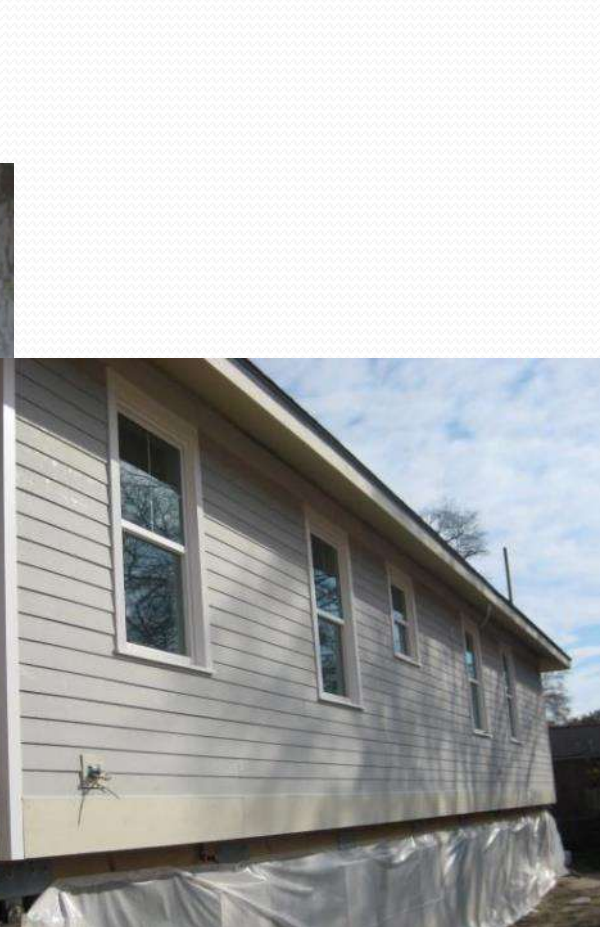
# Drainage plane AND space



**Furring strips over non-perforated housewrap w/ screen wrap insect excluder**

**Fiber cement siding**

## GD2 Solution: **Drainage Plane AND Space**



**1. Non-perforated housewrap over plywood sheathing.**

**2. Insect screen draped over bottom flashing.**

**3. Foil-faced 2" rigid foam board over housewrap.**

**4. Furring strips over foam board, screen wrapped over strips.**

**5. Trim out window well.**

**6. Fiber cement siding, trim.**





## Flashing Systems

- Shingle-fashion layering
- Sill + corner protection & drainage
- Interior air seal





## Formosan Subterranean Termites can destroy a home in 2 years!



***Multiple lines of defense are wise!***



# Termite IPM

## Multiple lines of defense

- Borate treated lumber
  - Pressure-treated or spray-applied
- Treated plywood
- Raised concrete foundation
- Metal termite barriers
- Composite siding
- Moisture control
- Landscape IPM



# Materials That *Last*

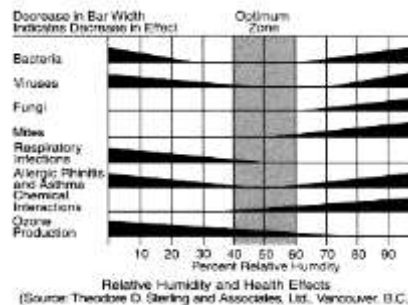
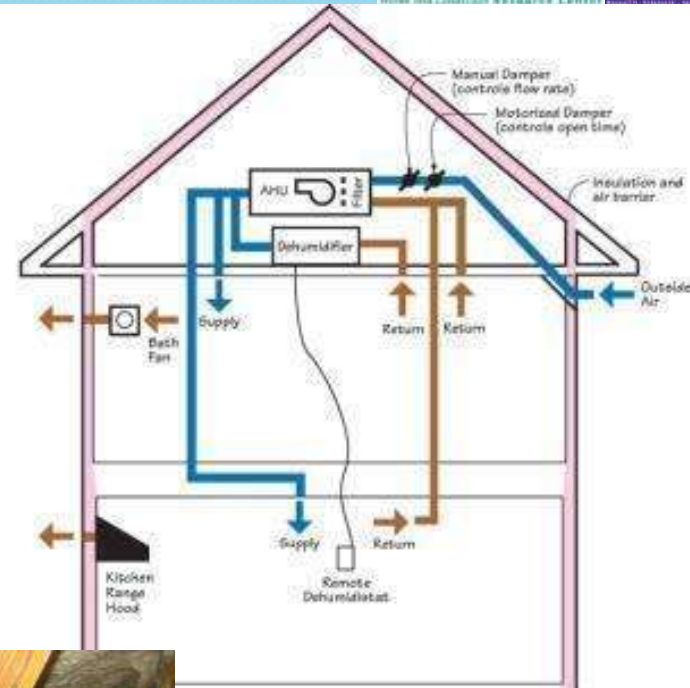
- Foundation for expansive soils
- Treated woods
- Corrosion resistant hardware
- Pre-primed fiber cement siding
- 30-year HP roofing (UL Class 4 hail, Class H wind)
- 20-year window glass
- Long-lasting floorings, countertops, factory finish, moisture resistant
- Energy Star equipment with long warranties





# High, Dry & Healthy Efficient HVAC

- HVAC in semi-conditioned, unvented attic
- Elevated outdoor unit
- Controlled fresh air supply
  - Clean outside air ducted to AH
  - Filter + flow controller
  - Positive pressure: dries building in hot, humid climate
- Spot exhausts
- Dehumidification





***If (or when) the levees fail again...***

***They won't be homeless, again.***







## Taking Walls from 20th Century *Brown* to 21st Century *Green*



1. This home started with wet clapboards and no bulk water, air, or vapor retarder.



2. There is balloon framing allowing air to pass from the crawlspace up through the walls.

3. A bulk water drainage space behind the siding was provided by installing a plastic mesh that was cut to fit within each stud cavity.



4. Rigid foam board was installed over the drainage mesh and sealed to provide both air and water vapor retarders.

Wall Assembly Section Cut



- |  |   |
|--|---|
| 1. Existing Clapboards                   | 4. Vegetable Oil-based Spray Foam Insulation (Agribalance, courtesy of Demilec) |
| 2. Drainage Mesh                         | 5. Paperless Drywall  |
| 3. Extruded Polystyrene Rigid Foam Board |   |



## Historic home *green restoration:*

- drainage mat +
- rigid foam board weather barrier +
- cavity insulation +
  - spray foam is reversible due to rigid foam board
  - use closed cell only for flood-hardy feature
- paperless drywall

***Lessons learned?***

***Problem solved?***

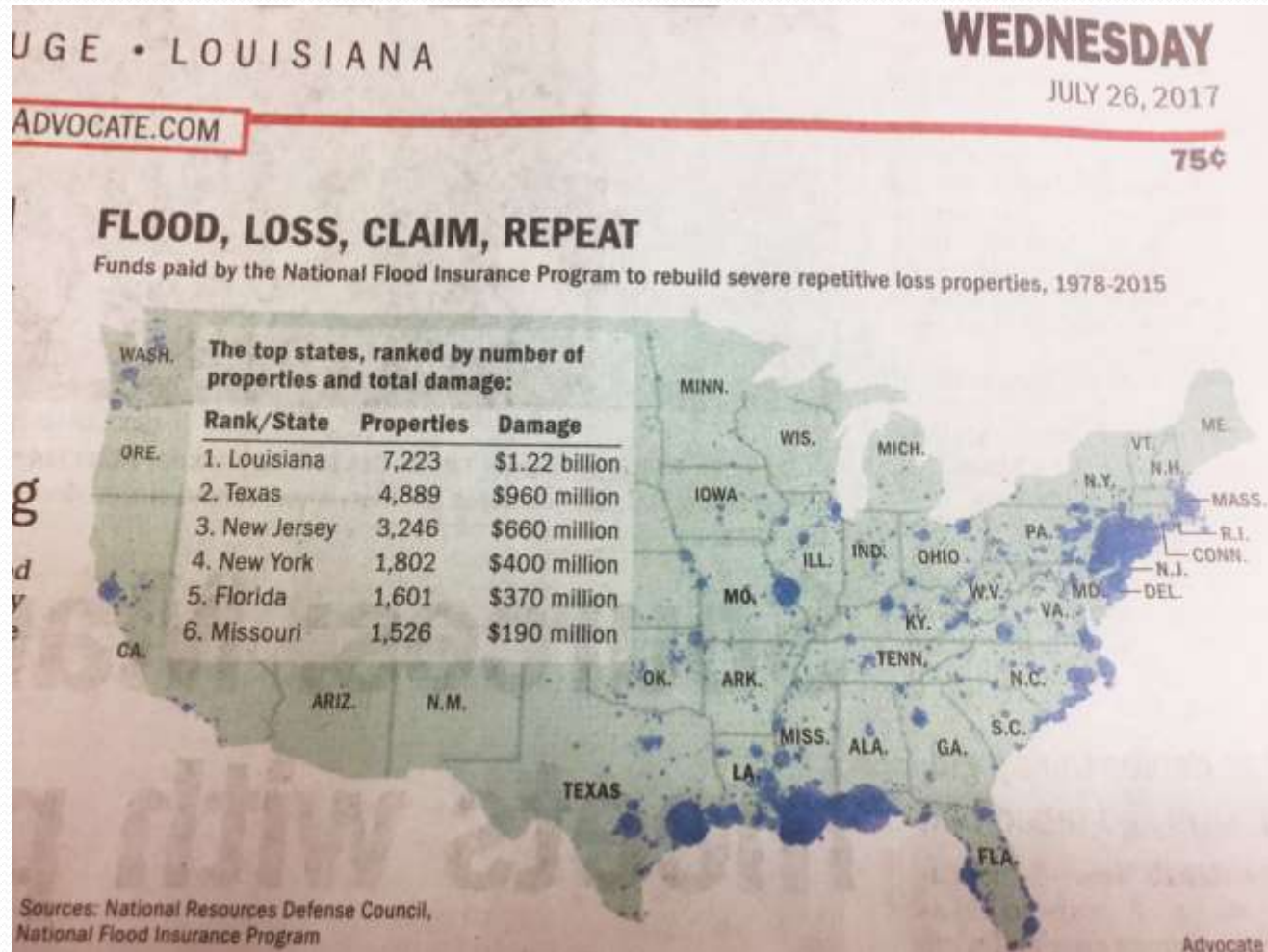


***Comme ci, comme ça***  
*[so-so, or not too good, not too bad]*

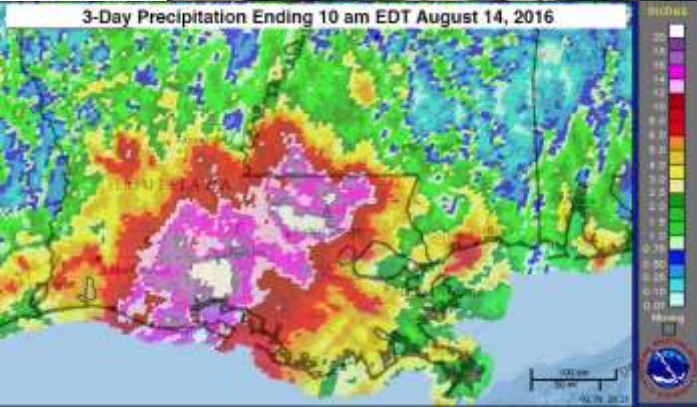


# Still Number 1

## Repetitive Flood Loss State



# In 2016 *The Great Flood*



**17-31 inches of rain in 3 days!!!  
70% of 140,000+ NOT in flood zone!!!**



You decide:  
*Ça c'est bon* or *Couïllion*  
(That's good) (Couyon)



**2006 FEMA trailers (RV's)**

# You decide: *Ça c'est bon* or *Couïllion*

(That's good)

(Couyon)



Filter bolted in

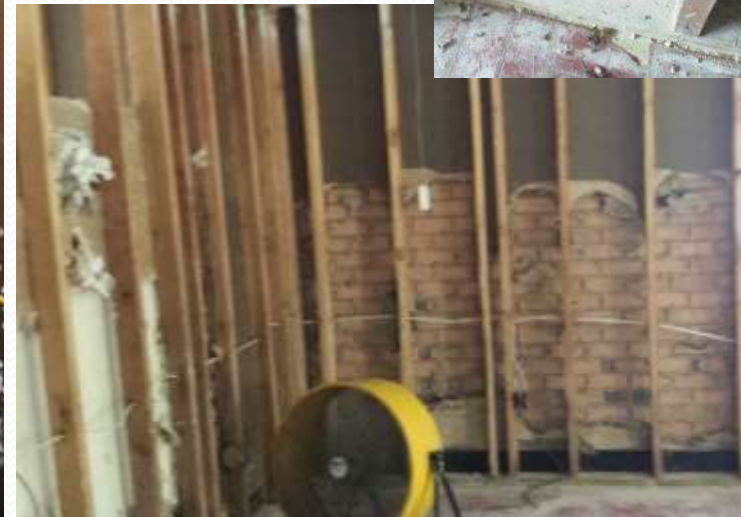


View from interior

## 2016 FEMA mobile homes



# *The Great Flood of 2016*



*Now what about restoring existing homes?*

# www.LSUAgCenter.com/LaHouse

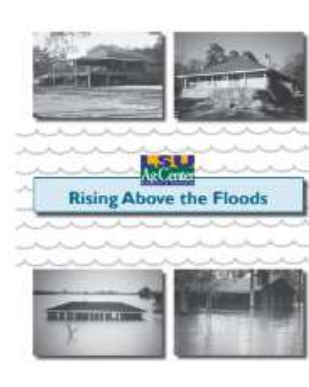
## Flood Recovery Resources



Storm Damage Cleanup Highlights



Wet Floodproofing



Disaster Information



FAQ's - After Gutting Your Flooded Home

Innovate . Educate . Improve Lives

The LSU AgCenter and the LSU College of Agriculture



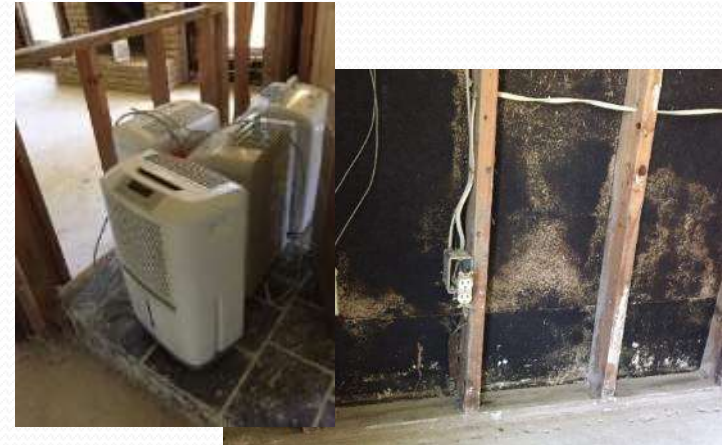
# FAQ's: After Gutting Your Flooded Home

1. ***My home is gutted above the flood level. Now what?***
2. ***Does bleach kill mold? Should I clean with bleach?***
3. ***What should be sprayed in wall cavities, etc.?***
4. ***Does flooding affect my termite treatment?***
5. ***Who should I hire to remediate or apply treatments?***
6. ***So how should mold be removed and prevented?***
7. ***What is "speed drying"? I'm using fans, so why is it taking so long?***
8. ***How do I know when it's dry enough to restore?***
9. ***Do I need a "clean home certification"?***
10. ***What's that material between the studs and bricks (or siding)? Is it needed?***
11. ***The studs are dry, but not the sheathing/subfloor. What should I do?***
12. ***Must siding be removed to help exterior sheathing dry?***

*Ça c'est bon*



**Lead-safe (RRP)**  
**Clean + speed dry**  
**15%MC, 30-60% RH**  
**Borate spray**



*Couillion*



**Clean Home cert**  
**Toxic biocides**  
**Sealants**  
**Fiberboard**

**13. What's that black plastic/tar paper at the bottom of the wall cavity, between studs and sheathing?**

**What should I do with it?**

- **Brick ledge flashing**
- **Installed wrong, but still needed**
- **Slit to allow drying, then restore**

**14. What should be done with brick weep holes?**

- **Remove mortar mounds**
- **Clear weep holes**





**15. When damaged sheathing is removed (since it's rotten, soft, won't dry, mold infested fiberboard, etc.), but there are brick ties..., how can it be replaced?**

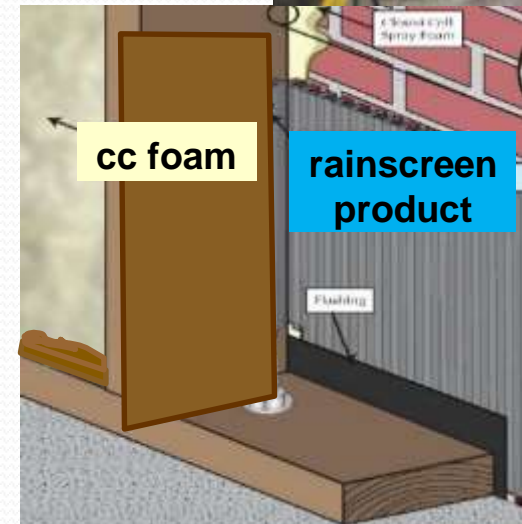
**16. I can't afford to replace the brick veneer, so now what?**

### CC spray foam with rainscreen method:

- Rainscreen strips on brick for drainage
- 2" closed cell (cc) spray foam

### Considerations:

- Provides **weather barrier/drainage plane**
- Adds **structural capacity**, but **hard to quantify**
- **R13 air-tight insulation** system for energy efficiency
- **Fast**, minimal labor and workmanship
- Can be "**flood-hardy, drainable, dryable wall**"
- **Permit officials** may require 1-inch space
- **Will hamper drying**
  - So limit to **60% fill**, avoid coating studs
- Need **well-trained installer**
- **Expensive**



## Rigid XPS foam board sheathing method:

- **Restore brick ledge flashing**
- **Cut to fit XPS rigid foamboard**
- **Insert exterior to flashing – align w/ sheathing**
  - **Maintain drainage space**
- **Seal to framing w/ compatible caulk**
- **Install any insulation (unfaced)**

## Considerations:

- **DIY method**; available & lower cost materials
- **Labor intensive**, time consuming, detail work
- **XPS serves as WRB** (drainage plane)
- **XPS is flood-hardy**
- ½ in. XPS = **R 2.5**, caulk creates air seal (energy-saving)
- **Must use compatible caulk with XPS**
- **Exterior of studs exposed**, so paint or retain sheathing
- **Might need structural reinforcement** (i.e. let-in bracing)





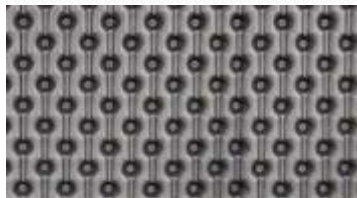
**17. Where can I get a “rainscreen” or vent baffle product to maintain drainage space behind brick veneer?**

***No endorsements, but we found:***

- ADO Brand Durovent® polystyrene air channel (cut to fit)
- Advanced Building Products, Inc. Mortairvent® 203 rainscreen
- Benjamin Obdyke Home Slicker® Plus Typar® rainscreen 10 mm
- Brentwood Industries AccuVent® cathedral ceiling vents (16” o.c.)
- Cosella-Dorken Products Inc. Delta-Dry® ventilated rainscreen
- MTI Masonry Technology Inc. 10mm Sure Cavity™ rainscreen drainage plane
- Stuc-o-flex WaterWay® 11 or 19 mm rainscreen and ventilation mat

***Check compatibility with cc foam!***

***Get OK from code official!***



## 18. What kind of insulation should be used...?

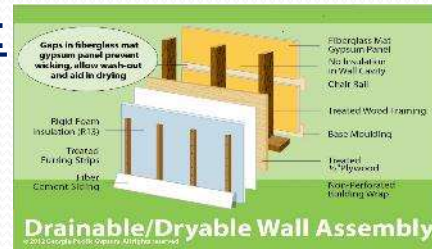
Many options for R13:

- **Unfaced batts** installed w/ no voids or compression
- **BIBS** – properly dense packed
- **Dry spray** mineral/glass fiber
- Damp spray **cellulose with boric acid** – min. water
- **Open cell foam**



For flood-hardy, drainable, dryable wall:

- **2.5 - 3 inches XPS (rigid)**
- **2 in. closed cell spray foam**



## 19. Should cellulose or cotton insulations be avoided...?

**No.** Absorbency can increase moisture “buffer capacity”.

## 20. Does foam cause moisture problems & mold? Don't walls need to breathe?

**Wrong term! Air leaks are NOT good!**

**We DO need water vapor open (permeable) interior finish.**

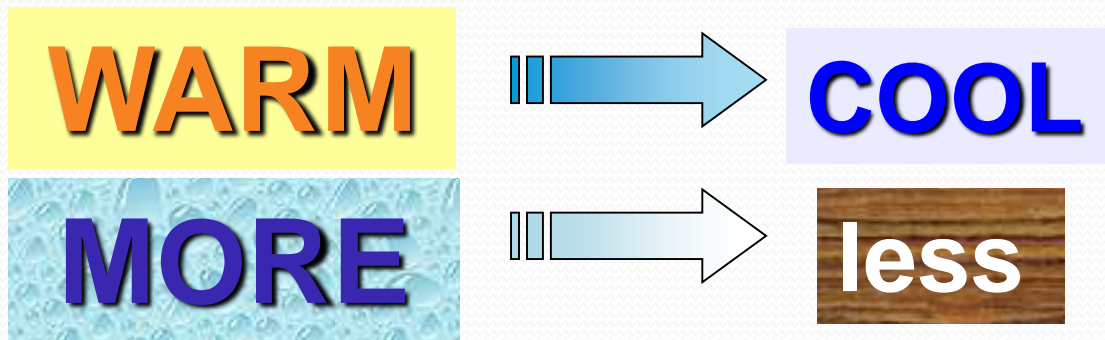
- In hot, humid climate – walls dry to inside.



**21. What caused wood flooring to cup before the flood?  
 How should a raised floor be insulated?**



## Moisture Flows...

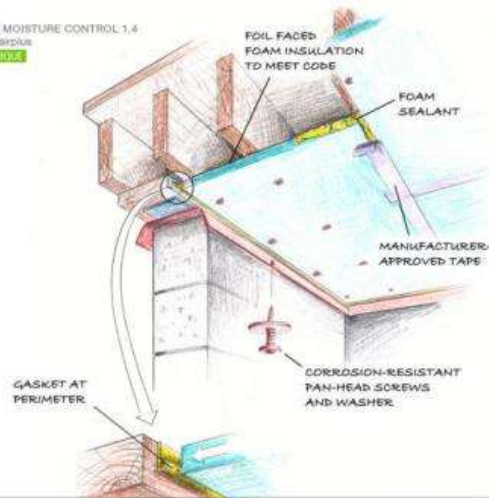


**So...**

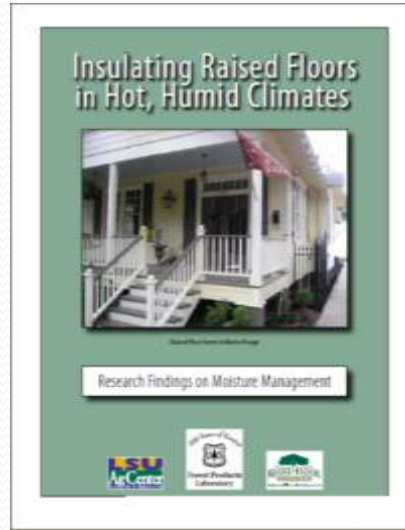
**Cold A/C + Urethane Finish (low perm) + Hot, Wet Summer  
 = strong moisture drive + condensation  
 = wet subfloor and wet, swollen planks**



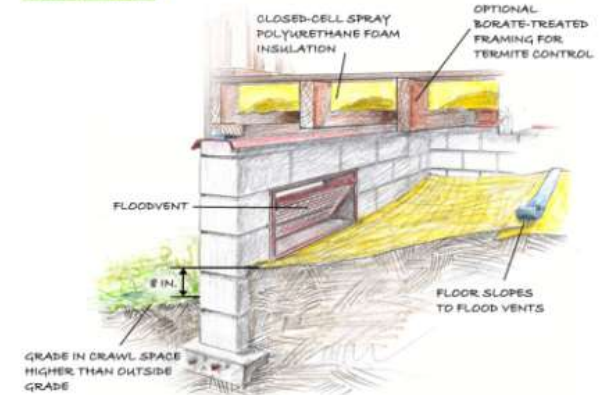
EPA Indoor airPLUS | MOISTURE CONTROL 1.4  
[www.epa.gov/indoorairplus](http://www.epa.gov/indoorairplus)  
**BEST PRACTICE TECHNIQUES**



CRAWL SPACE/FLOOD ZONE: FOAM BOARD-INSULATED FLOOR DECK



EPA Indoor airPLUS | MOISTURE CONTROL  
[www.epa.gov/indoorairplus](http://www.epa.gov/indoorairplus)  
**BEST PRACTICE TECHNIQUES**



CRAWL SPACE/FLOOD ZONE: VENTED CRAWL SPACE WITH "FLOOD VENTS"

Available at **LaHouse Resource Center** web site  
[www.LSUAgCenter.com/LaHouse](http://www.LSUAgCenter.com/LaHouse)



## 22. If I can't elevate, is there any way to avoid so much damage and hassle after another flood?

### Wet Floodproofing: Reducing Damage from Floods



The phrase "wet floodproofing" may sound like a contradiction, but it is the label used to refer to a collection of methods intended to reduce damage to a building when flooding occurs.

The difference between wet floodproofing and dry floodproofing is that dry floodproofing keeps the building interior dry by holding water outside the structure, while wet floodproofing lets water into the building but protects the structure, contents and building systems independently.

#### Considerations

Wet floodproofing often is the most practical method of reducing flood damage. Since it is not an "all or nothing" system – but instead is a set of improvements – wet floodproofing is flexible, can be done in stages and may be the least expensive floodproofing option.

Even small, inexpensive modifications in your choice of materials while remodeling or replacing a flooring can lead to large savings after a flood through reduced losses, easier cleanup and faster recovery.

If you cannot elevate your home or build reliable flood barriers (for structural, financial or other reasons), wet floodproofing and making the house watertight (dry floodproofing) are options.

Dry floodproofing exposes exterior walls of the structure to the unbalanced force of water on one side, while letting water into a structure allows pressure to equalize and reduces the potential for structural damage. When the strength of the exterior walls is in doubt (from inadequate construction, decay or termite damage), wet floodproofing is the safer option.

On the other hand, a wet floodproofed home is still subject to the ordeal and expense of flooding.

Before the flood, contents and furniture must be elevated or moved to avoid damage. And it may not be practical to make all parts of the building flood resistant.

After the flood, cleanup, decontamination and drying time still are needed, but need for restoration or replacement should be reduced considerably.

Wet floodproofing your home will not reduce your flood insurance premiums or make it compliant with local

flood damage prevention ordinances. (Certain agricultural and accessory structures are exempt from complying with elevation standards, but must be wet floodproofed.) Financial assistance from the National Flood Insurance Fund for flood damage reduction generally cannot be used for wet floodproofing.

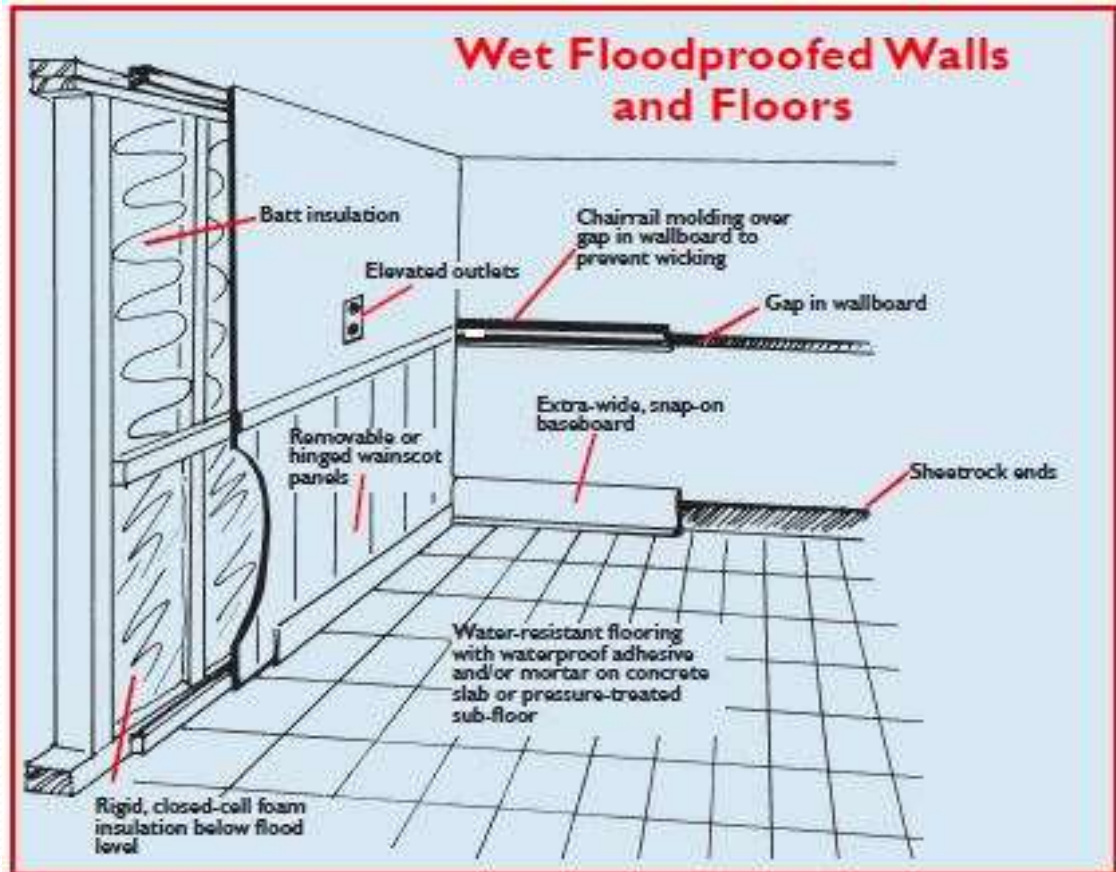
However, the Small Business Administration Disaster Loan program can lend up to 20 percent over the amount of a repair loan for mitigation actions to reduce future damages. Some wet floodproofing activities, especially those involving elevation of systems, are eligible for financing in this way.

#### Maximizing Your Wet Floodproofing Investment

The best time to wet floodproof is during the restoration of your damaged home or when you remodel for any reason. Then the time and expense of the job can be more cost-effective because it serves both purposes of home improvement and wet floodproofing to reduce future losses.

If inside wallboard or paneling will be removed after flood damage, that is a good time to relocate the electrical outlets higher in the wall and to replace wet insulation with a type that does not hold water. Also consider different interior wall finishes that can withstand flooding or make restoration easier, such as removable wainscoting, extra wide baseboards or using decorative "chair rail" molding to hide a horizontal gap in the wallboard; the gap will prevent wicking up the wall.

LSU AgCenter Pub. 2771 Wet Floodproofing



# 23. What else should I do or consider during my home's restoration?



## Improve Your Home and Prosper

Include energy-saving, hazard-hardy upgrades

### Money isn't all you're saving!

When you save energy and prevent damage to your home, you're not just saving money. You're helping the environment and our nation. While making a wise investment, you also can feel good about reducing harmful air pollution that causes respiratory ailments, smogging metropolitan areas, and the ozone layer. So save money and help the planet.

Much of the energy used to heat or cool a home is produced by power plants that burn fossil fuels such as coal, oil or natural gas. They produce air pollution that can contribute to smog, acid rain and respiratory illnesses. In fact, the energy used by the average home accounts for more air pollution than the average car! Choosing energy-efficient products for your home is one of the few ways you can do your part to improve the environment. Using energy-efficient products instead of standard ones can result in a reduction of carbon dioxide emissions equal to taking a car off the road for seven years.

A durable home that withstands natural hazards saves money, time, the risk of making repairs and potentially even your health. Flood-resistant design can lead to the growth of mold-resistant mold. Durable buildings help communities and the nation by reducing disaster costs. They help the environment, too, by reducing waste.

- Using energy-efficient products and services:
- Lower energy bills
  - Greater comfort
  - Higher quality
  - Less damage, expense and related after-credits and fees
  - Less maintenance
  - Environmental benefits
- The right home improvement investment can result in:
- Lower energy bills
  - Greater comfort
  - Higher quality
  - Less damage, expense and related after-credits and fees
  - Less maintenance
  - Environmental benefits

Here are some smart investments to improve your southern region home and to prosper:

### Lighten Up

**On the outside**  
When repainting, or adding or re-doing your home, choose light colors. Lighter colors reflect more heat, which means less air conditioning. A white painted metal or aluminum roof can make a big difference in cooling your home and saving cooling costs.

Light-colored siding may cool off a much better as heat reflective siding, but color choice also is a no-brainer way to reduce heat gain through walls.

**On the inside**  
Light-colored curtains (rather than no-curtain) also help reflect heat.

### Choose Appliances and Lighting That Pay Back

In general, each dollar invested in energy-saving home features the energy needed to cool by an additional half. So when you buy energy-efficient appliances and lighting, you save energy and money over time and increase your home's comfort and convenience.



Compact Refrigerator

**Labels that make it easy**  
When replacing appliances, electronics, lighting fixtures and other products, look for models with labels. Energy Star label, a coefficient of high energy efficiency. Also, see the big yellow EnergyGuide labels on appliances to reveal the hidden costs (operating costs) and hidden benefits. Even though the purchase price may be a little higher, investing in higher efficiency will pay off over the life of the equipment - usually several years.

**EnergyGuide Use**

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Energy Use (kWh/year)	150	145	140	135	130	125	120	115	110	105	100

**Advancements in lighting**  
When replacing or adding new lighting fixtures (both indoor and outdoor), choose from the many attractive, residential styles of fluorescent, LED or other high efficiency lighting fixtures. Fluorescent lamps now are available that produce a natural, appealing light. Look for a CRI rating over 90 and a warm color or CRI of 2,700 to 5,000 K. Compact fluorescent lamps are made in various sizes and colors. You can even get dimmable and motion level fluorescent.

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Energy Star logo

**Far flood hazard areas**  
This is chosen appliances that can be installed above the first floor level. A free loading water on a built-in dryer has multiple advantages: energy and water conservation, a more convenient layout, protection from low-level flooding, storage space and accessibility from a wheelchair. A separate wet and cooling dryers conserve and high above the floor. Install a new energy-efficient

Water heating typically is the second largest energy user, after cooling and heating, so invest in the most energy-efficient water heater you can afford.

### Seal and Seal Leaks

Sealing cracks and other openings in your home's exterior walls, windows, doors, and roof can help reduce energy loss. This is a good investment because it can pay for itself in energy savings. Sealant is available in many colors and textures that will blend with your home's exterior. Sealant is available in many colors and textures that will blend with your home's exterior.



### Go Duct Hunting - For Leaks

If you have a crawl space, you should do ductwork for heating. This is a good investment because it can pay for itself in energy savings. Sealant is available in many colors and textures that will blend with your home's exterior.

### Increase A/C SEER, Not Size

When it comes to air conditioning, it's not just about the size of the unit. A higher SEER rating means a more efficient unit. This is a good investment because it can pay for itself in energy savings.



### Water and Wind Warnings

Water and wind warnings are important for home safety. This is a good investment because it can pay for itself in energy savings.

### Look Overhead

When you're looking at a house, look for signs of roof damage. This is a good investment because it can pay for itself in energy savings.



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### Go With Windows

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*History has shown us...*



*As we shape our homes...  
we shape our future.*





# LaHouse Home and Landscape Resource Center



Shape your home to shape your future

explore learn benefit

Visit Baton Rouge

2858 Gourier Avenue . [LSUAgCenter.com/LaHouse](http://LSUAgCenter.com/LaHouse)

Open M-F 10:00-4:30

## LaHouse Tour Map

**Benefits and criteria of a high performance home**

- Resource-efficient**
  - Energy-efficient
  - Water-efficient
  - Material-efficient
  - Healthy indoor air quality
  - Healthy indoor climate
  - Healthy indoor lighting
- Durable**
  - Weather and climate resistant
  - Long-lasting
  - Low maintenance
  - Healthy indoor air quality
  - Healthy indoor climate
  - Healthy indoor lighting
- Healthy**
  - Healthy air quality
  - Healthy indoor climate
  - Healthy indoor lighting
- Practical & Convenient**
  - Low cost
  - Healthy indoor air quality
  - Healthy indoor climate
  - Healthy indoor lighting

**ALL**

**LSU AgCenter** [www.lsuagcenter.com/lahouse](http://www.lsuagcenter.com/lahouse)

**LaHouse Building Systems**

- Healthy Concrete Floors (HCF)
- Structural Insulated Panel Systems (SIPS)
- Enhanced Wood Joist Framing (EWF)
- Advanced Framing (AF) w/ or w/o studs

**Benefits and criteria of a high performance home**

**Tour Stop Number**

**Reveal**  
A library or door that reveals what is currently hidden

**QR Code**  
Scan with a cell phone enabled for your smartphone to see more details

**Second Story**

**First Story**

**LSU AgCenter** [www.lsuagcenter.com/lahouse](http://www.lsuagcenter.com/lahouse)

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**Building Your High-Performance Home**

Gulf Region Homeowners Guide



**Improve Your Home and Preserve**

100+ Tips and Tricks for Homeowners



LaHouse Resource Center

A high-performance home showcase of solutions and more...



My House, My Home

Enjoy the benefits of high efficiency, comfort, durability and a healthy home.



Housing Professionals

Continuing education and building science resources for the south.

**Solar Power for Your Home**

A Clear Path to L.A.B.E.

**Insulating Raised Floors in Hot, Humid Climates**

Research Findings on Moisture Management

[LSUAgCenter.com/LaHouse](http://LSUAgCenter.com/LaHouse)

[Facebook.com/myLaHouse](https://Facebook.com/myLaHouse)

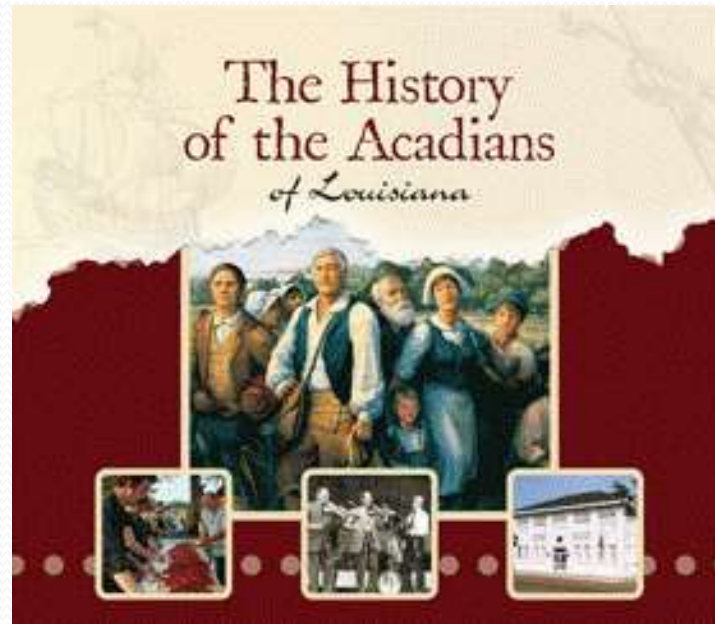
[YouTube.com/myLaHouse](https://YouTube.com/myLaHouse)

# Despite all the Couyons...

# *Lache pas la patate!*

(Losh pa la pa tot)

*(Don't let go of the potato – i.e. don't give up!)*



***A testament to the enduring spirit of the Cajun people***



*So the morale of this tale is...*

*Hindsight is 20/20...*



*Foresight is Priceless*

*Mais cher...L'heure est arrivée*

(But dear, the time has come)

*Joie de vivre*

(joy of living)





*Throw me somethin', mista!*



*Laissez les bons temps rouler!*  
(Let the good times roll!)