



Terrebonne Readiness
and Action Coalition



Oxfam - America



Special Interest Group
in Urban Settlement
Department of
Architecture



Sustainable Housing on the Bayou The Louisiana LiftHouse

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THE LOUISIANA LIFTHOUSE

In the months and years following 2005's Hurricanes Katrina and Rita, New Orleans became the focus of an unprecedented array of reconstruction and recovery projects. Though many rural regions of South Louisiana were similarly devastated by the storms, substantially fewer resources were focused on the renewal and reconstruction of these areas.

In the months following the hurricanes, a collaborative effort between the Terrebonne Readiness and Assistance Coalition (TRAC), Oxfam America, and the Special Interest Group in Urban Settlement (SIGUS) at MIT, focused on creating a new model for affordable reconstruction housing for the communities in the bayou region of South Louisiana. The LiftHouse is designed to model common sense approaches to durable, environmentally sound, affordable housing for this rural region which is coping with the direct impacts of global climate change.

The first prototype LiftHouse was completed in the community of Chauvin in 2007. By 2008 the second and third houses were constructed in Dulac and Bayou Dularge respectively. The fourth house in Dulac was completed in 2009. The 5th house was completed in March 2010 (near Dulac) and the 6th house in Dularge is under construction.



Ms. Betty's – The first LiftHouse

Sketch by Non Arkaraprasertku

The Louisiana LiftHouse

PROVEN SUCCESS

In the summer of 2008, lower Terrebonne Parish was devastated by two powerful hurricanes. Though Hurricanes Gustav and Ike, both brought widespread flooding and wind damage to the area, all three of the LiftHouses built by that time weathered the Category 2 winds (96-110 mph) and deep flood waters with only minor superficial damage.

The four completed LiftHouses and the one in process provides experience in the construction and tests the design in real-time circumstances.



Storm Tested

Ms. Betty's LiftHouse after Hurricane Gustav





The first three



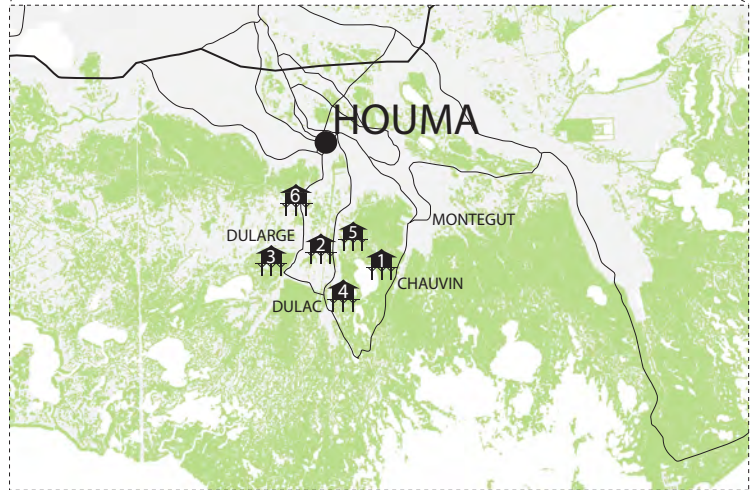
211 Oleander Steet
Chauvin



5832 Shrimpers Row
Dulac



3141 Dularge Hwy
Bayou Dularge



Construction Know-how

The Louisiana LiftHouse

RESPECTS TRADITION

The design blends into the rich culture on the bayou. It draws on the dominant motifs of the Louisiana coastal areas. The lifestyle is reflected in the plan with a generous porch and the open space underneath which offers a 'second home' in the outdoors.



Life on the bayou: water, Spanish moss, shrimpers and crabbers





A small community on the bayou.

Conceptual sketch of a LiftHouse community



Sketch by Yesica Guerra

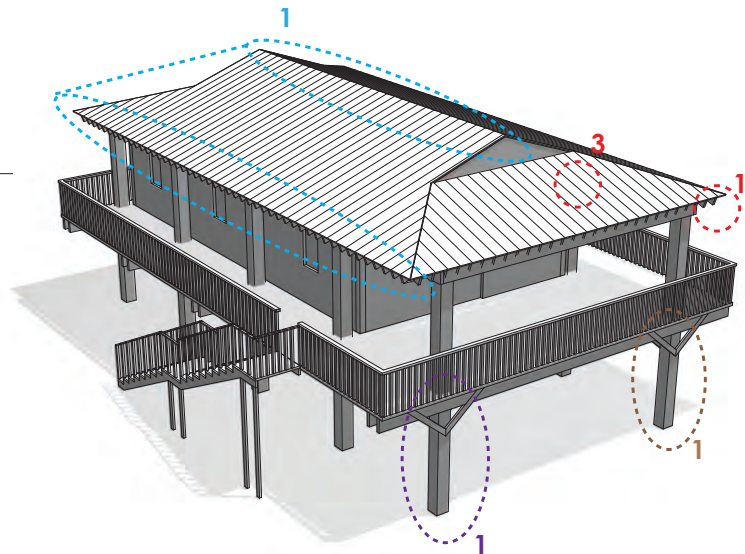
The Louisiana LiftHouse

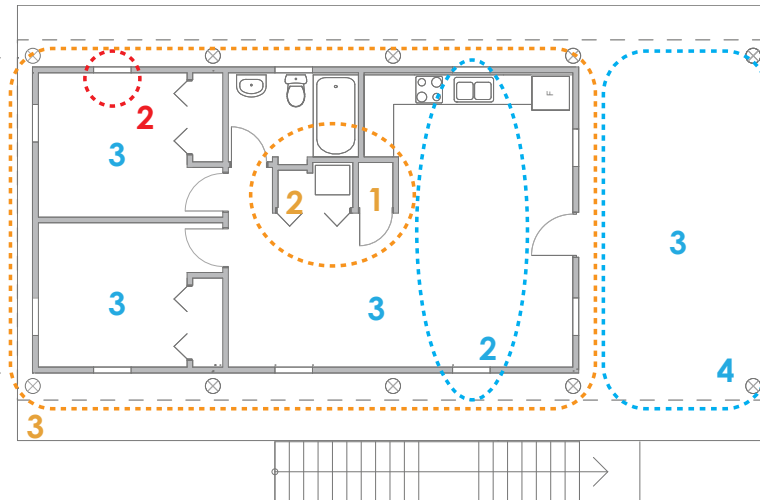
ENERGY AND ENVIRONMENTAL PARTNER

The LiftHouse was designed to demonstrate simple, practical, and easily-replicable building features that can dramatically improve the house's energy and environmental performance. Through the simple steps outlined at right, the house is designed to be:

- less expensive to operate over time;
- safer, healthier, and more comfortable; and
- more durable and storm-worthy.

The houses are in the process of being LEEDs certified.





reducing heat gain

- 1 - roof overhangs designed to shade windows and walls
- 2 - low-e double paned windows
- 3 - radiant barrier in attic space

natural ventilation

- 1 - soffit and ridge venting
- 2 - spaces designed for natural ventilation
- 3 - ceiling fans in all dwelling rooms
- 4 - large, shaded outdoor space

energy performance

- 1 - high efficiency appliances
- 2 - tankless hot water heater
- 3 - air sealed and highly insulated envelope

material sustainability

- 1 - locally sourced timber structure
- 2 - design for waste minimization

design for durability

- 1 - rot and termite resistance
- 2 - storm resistance and resilience

further research and future applications

- 1 - solar energy and hot water systems
- 2 - rainwater harvesting
- 3 - communication and outreach
- 4 - vegetated trellis for shading

The Louisiana LiftHouse

FLEXIBLE PLAN

The design of the LiftHouse allows for several different configurations to suit different client and family needs using the same basic structural system and construction techniques.

The structural module is designed according to standard material dimension to reduce construction waste and facilitate volunteer buildability.

STANDARD 2-BEDROOM

1350 total living

700 square feet living

650 square feet deck

Above advisory base flood elevation

Built to Cat. 5 Coastal Zone Standards

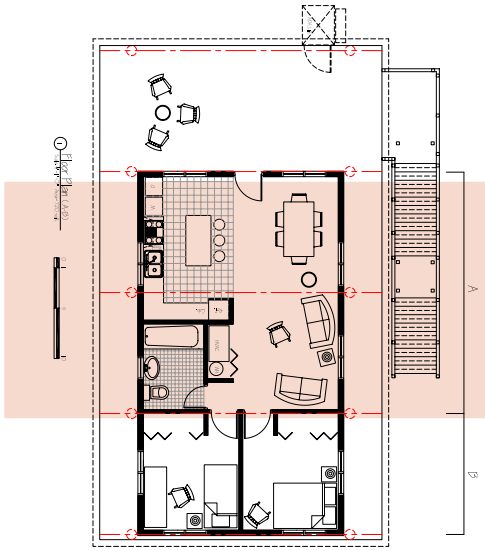
Energy Efficient

Handicap access

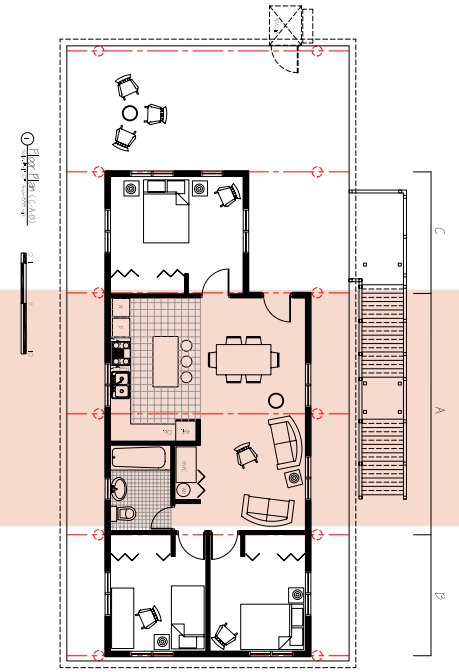
ESTIMATED COSTS PER UNIT: \$127,000
(2008)

Construction, elevation, concrete slab foundation for support, storm shutters, appliances, all furnishings, builders risk insurance, homeowner and flood insurance (1year).

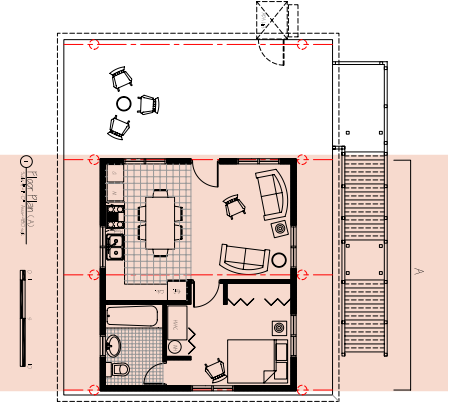




2-bedroom standard



3-bedroom variation

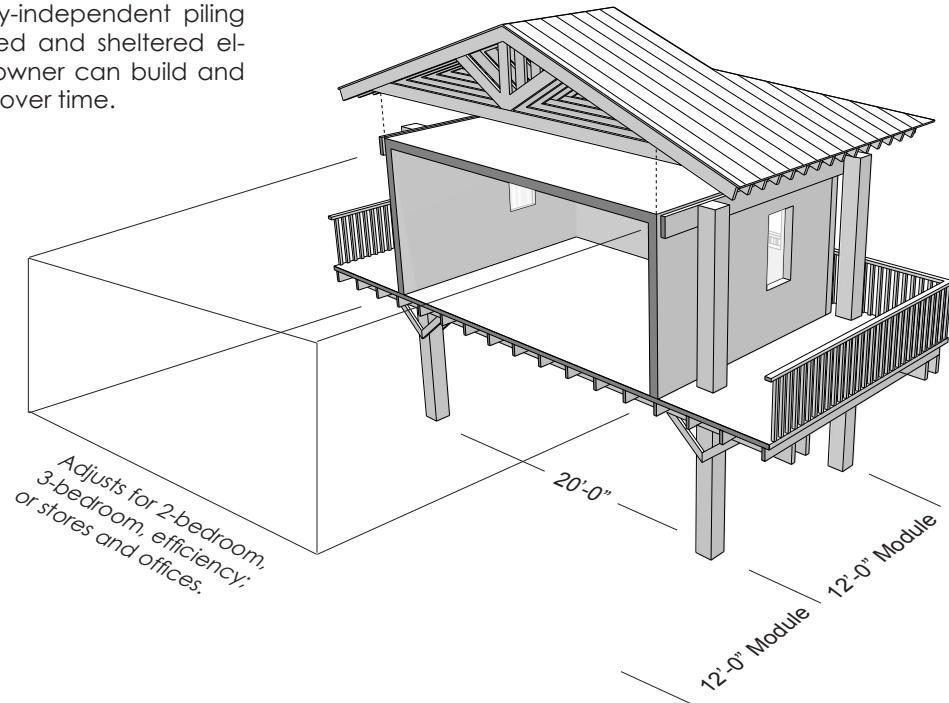


efficiency

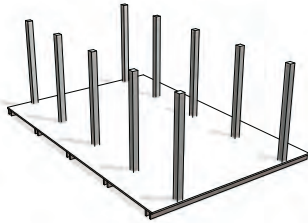
The Louisiana LiftHouse

FLEXIBLE STRUCTURE

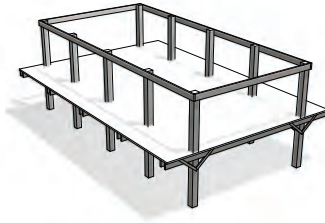
The LiftHouse's innovative construction process and structural system is designed to maximize flexibility through the life of the structure. The structurally-independent piling and roof assembly creates a shaded and sheltered elevated platform on which a homeowner can build and expand to suit their changing needs over time.



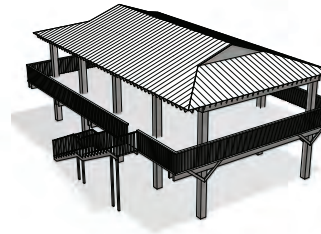
stages of construction



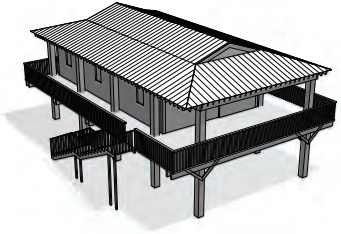
- Deck framing built on the ground.
- Foundations and pilings added.



- Deck raised to final position.
- Ring beam ties top of piling together and serves as base for roof framing.
- Allows for structural and design flexibility for future expansion.



- Pre-manufactured truss roof constructed over entire deck.
- Direct and continuous structural connection between roof and piling structures



- Space enclosed under some portion of roof structure.
- Future expansion facilitated by preexisting roof.



The Louisiana LiftHouse

COMPLEMENTS COMMUNITIES

Grouping capitalizes on the elevation of houses and the rich outdoor lifestyle on the ground. LiftHouses are sufficiently elevated to nurture activities underneath. Community active outdoor activities are embraced: BBQs, children's play areas, sitting areas sheltered from the sun and gardens and planting – all uses that

would not be disastrously affected if flooded. The elevated areas provide safety and are wonderful in catching cooling breezes.

In construction there are cost and time savings

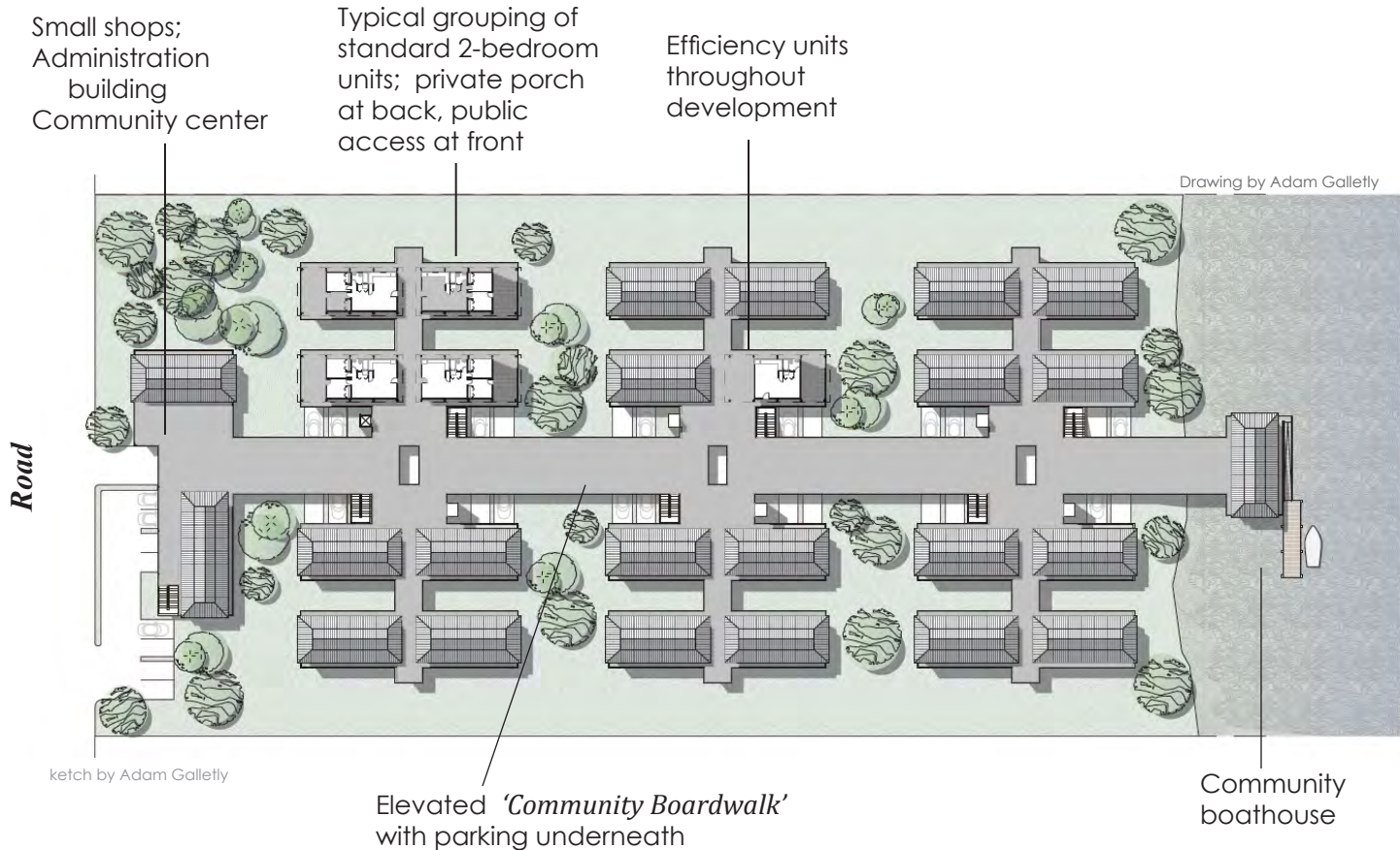
- Bulk material buying;
- Contractor negotiation and scheduling;
- Shared facilities, infrastructure, and services (eg wastewater treatment, laundry facilities, renewable energy generation equipment, driveways, stairs, elevators, etc).

Private developments, public housing, and innovative cohousing are all feasible.



Sketch by Yesica Guerra

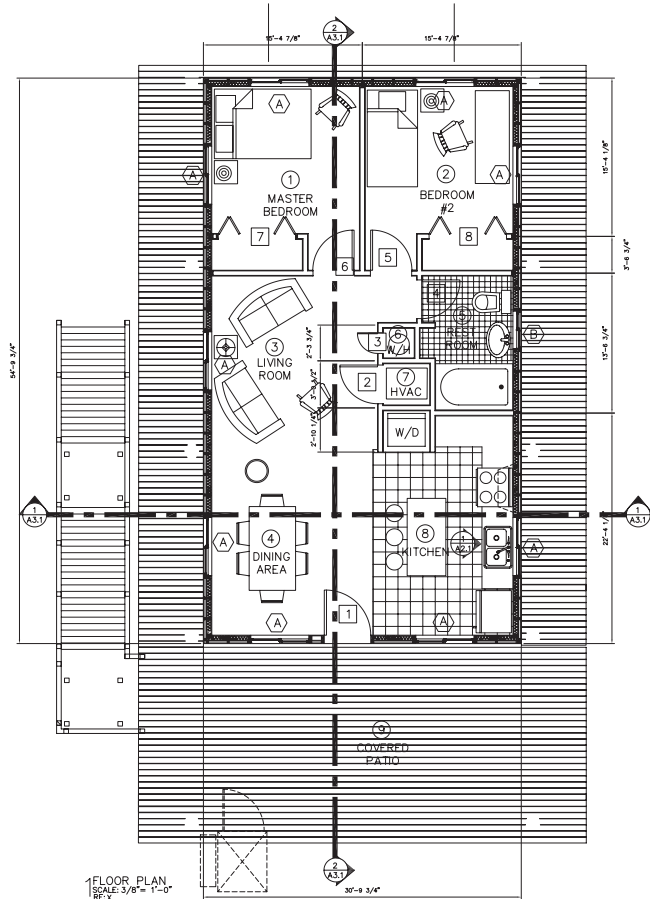




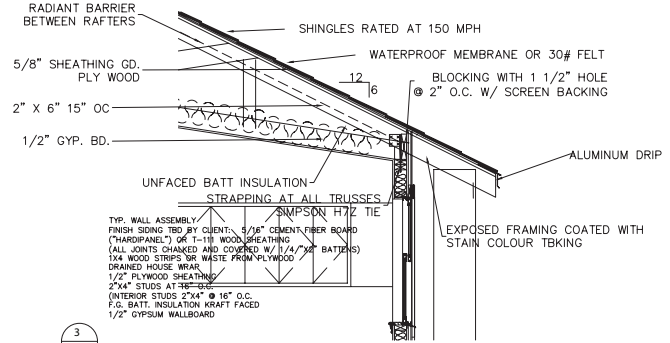
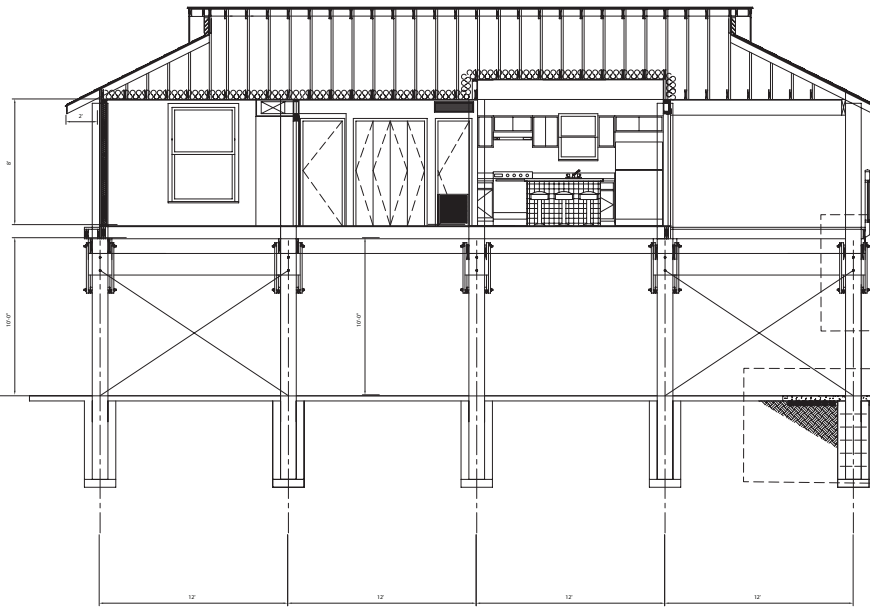
Stores provide daily items and cross-subsidize development.

TESTED PLANS

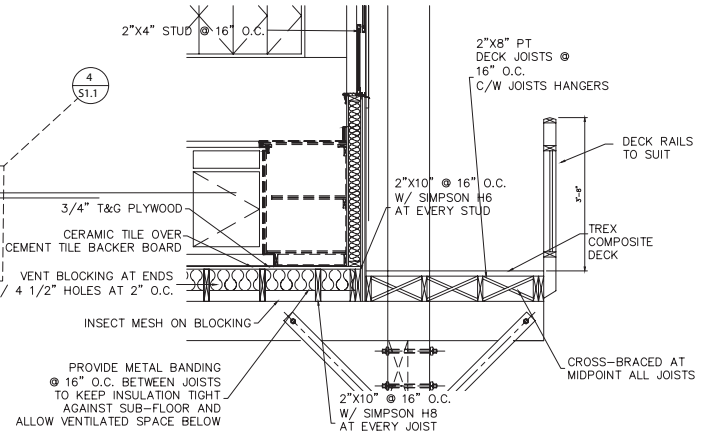
Each prototype built has increased confidence in the design. Small adjustments in the plan and in the construction are being made continuously with the growing experience. The design has shown to be a good fit in meeting the challenges of living in the bayou.



sections



3
S1.1
ROOF SECTION
SCALE: 1/2" = 1'-0"
REV. X



4
S1.1
DECK AND WALL SECTION
SCALE: 1/2" = 1'-0"
REV. X

MEET THE OWNERS

Five LiftHouses have been built as part of the pilot program. The program consists of designing and building houses that can withstand Category 5 hurricane force winds. They are constructed in five different bayou communities, and with multi-faceted goals:

1. Replacement of destroyed homes for low-to-moderate income families that could not afford to rebuild without financial assistance.
2. Homes are designed and built to comply with International Building Code requirements for Coastal Zone Construction which includes elevations of an average of 10 – 14ft above sea level.
3. Homes are energy efficient to help reduce energy consumption and lower monthly utility expenses.
4. Homes will serve as a model of affordable sustainable construction.



LiftHouse Number 1

Ms. Betty Jane Adams – Chauvin



Ms. Betty has a standard 2-bedroom LiftHouse, the first to be built.



LiftHouse Number 2

Gloria Scott – Dulac



Ms. Scott is proudly showing her Certificate of hurricane endurance. She has a standard 2-bedroom LiftHouse.



LiftHouse Number 3

Sterling & Geraldine Liner – Dularge, Theriot



*The Liner family and Certificate of Hurricane Endurance.
Photo top right - the previous house and Hurricane Rita*



The Liners have a modified 3-bedroom LiftHouse, which is wider, and longer to accommodate special handicapped needs.



LiftHouse Number 4

Ms. Mary Verret and Kenneth – Dulac



Ms. Mary Verret and her son Kenneth have a modified 2-bedroom LiftHouse. The kitchen is shifted opposite the bathroom and utility closet to improve the use of the space.



LiftHouse Numbers 5 and 6 are now completed, and more are on the way!

#5 Candace Fitch – 3bed/2bath
3826 Grand Caillou Rd (near Dulac)
Houma, LA

#6 Gladys & Millard Molitor - 2bed/1bath
313 Hidalgo Dr
Houma, LA (Dularge Bayou)

The LiftHouse Family

■ *Concept and Design*



Technical Support:

- EA Angeloz, Inc. Architecture
- CASE, Inc. Engineering



■ *Pilot Project Contributors*



■ *Project Manager*

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www.trac4la.com
