

Raised Wood Floors

Case studies in progressive home construction





More and more builders are benefiting from the competitive advantages of a raised wood floor system.

As homebuyers rediscover the classic style, comfort and practicality of raised wood floor houses, there is a growing opportunity for home builders to combine traditional architecture with progressive building techniques to create more durable, attractive and faster-selling homes. Visually, a raised wood floor offers historic charm, and – built with the latest advances in wood products and technology – it is a proven building method for most any location and soil condition, especially for high wind and flood-prone areas.

With the know-how to properly construct a raised wood floor, well-informed builders can build homes faster and more cost effectively, all while establishing a reputation for quality and craftsmanship that distinguishes them from the competition. This publication showcases builders and designers and their best practices for building raised wood floor homes. These practices are presented not as APA or Southern Pine Council (SPC) recommendations, but as innovative examples of how contemporary raised wood floor houses are designed and built.

WHAT IS A RAISED WOOD FLOOR?

A raised wood floor system is an assembly of beams and girders, floor joists, and plywood or oriented strand board (OSB) floor sheathing, all properly sized, connected together and placed on a foundation. A raised wood floor system is designed to elevate the living space off the ground, isolating it from moisture and pests. American homes have been built on raised wood floor systems since Colonial times, and the aesthetic and practical reasons for building a raised home still apply today.

Many terms are frequently used to describe raised floor systems in different regions of the country. Examples include raised wood floor, off-grade floor, pier-and-beam foundation and crawlspace construction. Regardless of the exact term or construction method used, a raised wood floor system provides numerous advantages.

10 REASONS TO BUILD RAISED

Builders who offer the raised wood floor option, framed with durable, renewable wood, create value for not only their clients, but also themselves. The construction advantages of a raised wood floor system include:

1. Costs less to build than slab-on-fill – A raised wood floor system can be a cost-competitive alternative to a concrete slab system – especially when bringing in dirt to elevate a structure is necessary.

2. Expedites scheduling of trades – Construction of a raised wood floor helps accommodate the scheduling of trades. For example, concrete and masonry work does not have to wait on plumbing installation and inspection, which is typically the case with slab foundations.

3. Speeds up construction – Concrete forming and curing is time consuming. Hauling in fill dirt and properly compacting it adds more time. Poor weather and inspections can result in lengthy concrete delays. Constructing a pier-and-beam or pile foundation, builders contend, is faster, regardless of the weather.

4. Provides more level foundations on any soil type – Raised wood floor systems may be constructed on any soil type and perform very well on problematic soils, such as expansive clays, which can crack conventional concrete slabs. While any foundation can settle, the use of piers with a raised wood floor system makes leveling or repairs simple. Repairing or leveling a cracked, damaged concrete slab can be very expensive.

5. Solves floodplains and sloping lots – Raising a slab with fill dirt to meet floodplain elevation requirements can be expensive, time consuming and difficult to properly compact. A raised wood floor system provides a practical and affordable solution for meeting code and keeping a home above flood waters. For sloped lots, a raised wood floor on piers is more economical and practical than building a “cut and fill” slab foundation. Less soil is disturbed, reducing erosion, and the piers eliminate the need for reinforced retaining walls.



6. Simplifies repairs and renovations – Installation, maintenance and modification of utilities such as water, sewer and electrical is easy and economical compared to slab systems. Routing and rerouting of wiring for electrical, telephone, television and home entertainment is more quickly accomplished. Renovating or relocating plumbing fixtures is relatively easy and less expensive.

“The main thing is selling houses, and I’ve found that raised floors sell quicker.”

John Cooper
COOPER HOMES
Roswell, Georgia

7. Identifies the builder as green and progressive – A raised wood floor is the right choice for the environment. Wood is a renewable resource that takes far less energy to produce than concrete or steel. The latest advances in wood products and building technology help produce more durable and efficient homes.

8. Sells homes faster and for more profit – The aesthetics of a raised floor home make an impression

on homebuyers. “People notice that,” says builder John Cooper of Cooper Homes. “If they don’t pay more for (the aesthetics) – which I think they do – the house will sell faster than a house that is on a slab.”

9. Matches changing consumer preferences – More and more homebuyers desire traditional style and charm but don’t want to sacrifice modern conveniences. Raised wood floors “give home owners the amenities of the present while embracing the style of the past,” says builder Dennis Collier of Collier Construction. In flood-prone areas, “people like (raised wood floors) just for peace of mind,” says builder Peter Russell of Bay Homes.

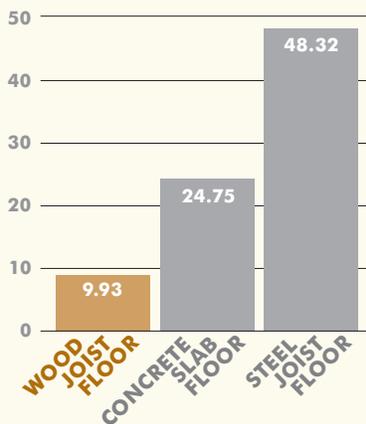
10. Reduces call-backs and liability – Strong, durable wood houses last for several generations. Furthermore, foundation access on a raised wood floor home allows many structural modifications and maintenance to be performed easily, extending the useful life of the structure. The elevated living space of a raised wood floor foundation is isolated from ground moisture, termites and pests, and is less susceptible to disruption from growing tree roots. Easy foundation access makes inspections fast.

BUILDING WITH WOOD

Throughout history, wood has found favor as a building material due to its strength, economy, workability, beauty and durability. Wood-frame buildings are economical to build, heat and cool, and provide maximum comfort to occupants. Wood construction is readily adaptable to traditional, contemporary and the most cutting-edge building styles. Its architectural possibilities are limitless and its durability spans the centuries.

Wood building materials are good for the environment, too. Wood is a renewable, sustainable resource that is manufactured in energy efficient processes that optimize use of renewable energy sources. In fact, in a comparison of fossil fuel consumption associated with the materials for three floor systems – wood, concrete and steel – the wood joist floor required the least amount of fossil fuel energy.

CONSUMPTION OF FOSSIL FUELS (MJ/FT²) ASSOCIATED WITH THREE FLOOR DESIGNS



Note:

One megajoule (MJ) is equivalent to 0.27778 kilowatt hours or 947.8 BTUs.

Source: Consortium for Research on Renewable Industrial Materials (CORRIM)

RAISED WOOD FLOOR FOUNDATION SYSTEMS

A solid foundation is the most important part of a new home. A raised wood floor can be supported by a variety of foundation types, the most common of which are pier-and-beam foundations and stem walls, also known as continuous foundations. Always check the local building code for specific foundation requirements. Regardless of the foundation system used, the foundation and the footings must be of adequate size and strength to support the design loads. Once the foundation is in place, a system of beams and girders, floor joists, and plywood or oriented strand board (OSB) floor sheathing, is installed to complete the raised wood floor.

» PIER-AND-BEAM

A builder has several options for constructing piers when building a pier-and-beam foundation. The piers can rest on spot footings or a continuous footing. The placement and spacing of the footings and the piers is determined by the location of load bearing walls and the span capabilities of the floor joists.



» STEM WALL

A continuous foundation wall around the perimeter of the home. It is frequently constructed of reinforced masonry or poured concrete and supported by a continuous, reinforced-concrete footing.



» WOOD STEM WALL

A continuous foundation fabricated of lumber-framed walls sheathed with structural plywood or OSB panels on top of a continuous footing. Wood stem walls reduce concrete costs, simplify leveling and are easily built on site.



» WOOD PILE AND PIER FOUNDATIONS

Treated wood piles and wood piers minimize or eliminate the use of concrete altogether. They are popular in coastal areas for acquiring necessary height, but can also be cost effective for raising floors just a few feet. Piles are often used in soils with low-bearing capacity.





Dennis Collier
COLLIER CONSTRUCTION
 Carriere, Mississippi
www.denniscollierconstruction.com

“The raised floor sold faster and for more money than the slab.”

Dennis Collier of Collier Construction has been building raised wood floor homes in Mississippi and Louisiana for 15 years. “Raised foundations give home owners the amenities of the present while embracing the style of the past,” says Collier, who has a reputation for incorporating new and efficient building products while maintaining the character and historical feel of traditional homes.

For the Garden District, a 33-lot development in Picayune, Mississippi, Collier wanted to “put a sense of unity back into the community.” He envisioned a traditional neighborhood with craftsman-style homes that would reflect the character and class of the South. The charm and hospitality of a front porch, a natural extension of a raised wood floor home’s living space, was a big part of Collier’s vision.

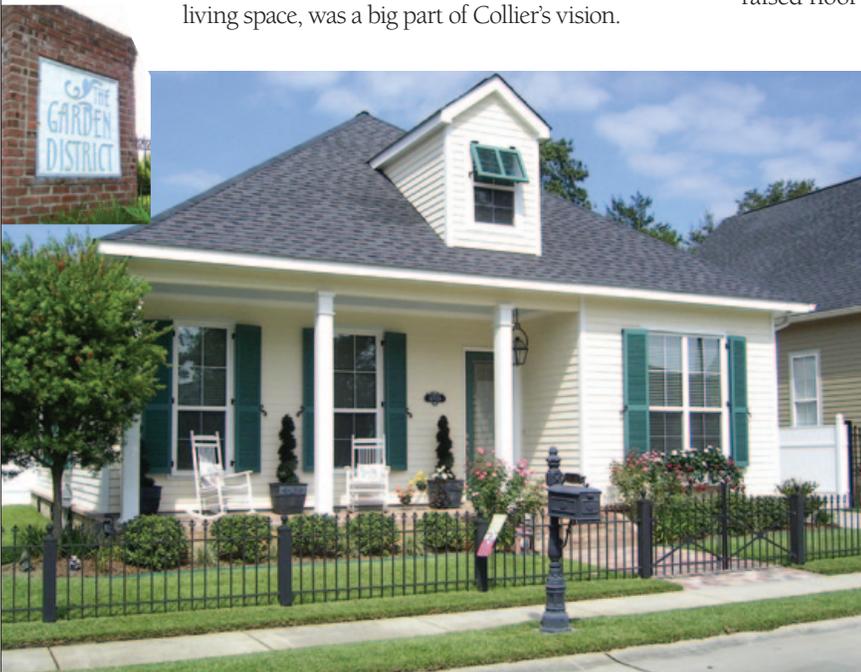
“The houses have raised front porches, and we put the sidewalks close to the porches with wrought-iron gates,” explains Collier. “It’s just more personal. People sit out on the front porch and they talk to their neighbors, to someone passing by the gate or walking their dog.”

“It’s like grandma’s front porch. It’s just inviting. It says, come on up and share a glass of tea,” says Collier. “Aesthetically, to me and my customers, raised wood floors are just pleasing to the eye.”

Aesthetics, Collier claims, help him turn a greater profit. “I did a test. I built two houses, one was raised and one was on a slab. Everything else was the same, but the raised floor sold faster and for more money than the slab.”

It also cost less to build, says Collier. Slab systems often require bringing in fill dirt – an expense that has increased in recent years due to soaring fuel costs. “Today we pay nearly twice as much for a load of dirt than we paid just a few years ago. There is an old saying that dirt is cheap. Well it’s not true!” Collier says. “That’s why I love building raised. I can eliminate that extra cost and time. I don’t have near the delays as I do when I pour a slab.”

« “A house that is raised looks grander,” says builder Dennis Collier. “It brings back the past. It’s reminiscent of how our forefathers built houses before concrete came out.”



RAISED WOOD FLOORS LOWER COSTS FOR HABITAT FOR HUMANITY

When Dennis Collier built eight houses for Habitat for Humanity in Picayune, Mississippi, local flood ordinances did not require the houses to be raised. Collier, however,

convinced the nonprofit Christian housing ministry that raised wood floors would save money. “Building raised was the cheapest way to go,” says Collier. “We did a cost analysis

and they agreed. I was able to save them about \$860 per house. Multiply that amount by eight and it’s a pretty good chunk of savings – especially for smaller homes!”



Kang Shen
NEW CITI HOMES
 Houston, Texas
www.newcitihomes.com



« ♪ These entry-level houses are built quickly and affordably with shallow poured one-piece pier footings. “The tube-formed concrete piers are very easy to set and pour,” says Purchasing Manager Kang Shen. “With one concrete crew, we can set and pour about two to three foundations in a day.”

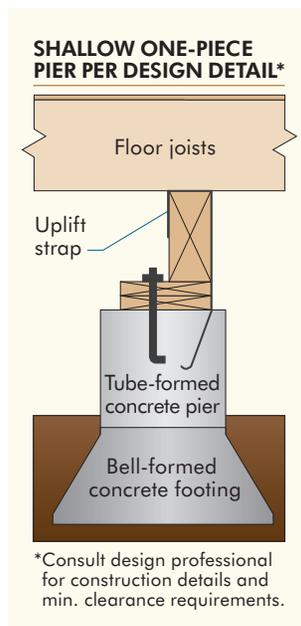
“Speed and eco-friendly construction are the result of the design.”

As part of the Houston HOPE program, New Citi Homes builds entry-level houses with energy-efficient products and cost-effective floor plans for low-income families.

foundations in a day, given good conditions. Considering the speed and ease of pouring the concrete piers, we manage to keep the costs consistent.”

Purchasing Manager Kang Shen says that flooding is a concern in many Houston neighborhoods and that “raised floors mitigate some of the damages that can occur from flash floods.” One design used by New Citi Homes as part of a raised wood floor system is a poured one-piece pier footing, a method that is effective in the area’s problematic soils and is cost-competitive compared to deep-drilled piers.

“Speed and eco-friendly construction are the result of the design,” says Shen of the footing design that features tube-formed reinforced concrete piers on top of bell-formed concrete footings. Many local builders choose to build raised foundations over reinforced concrete masonry, but Shen says his method is quicker. “The tube-formed concrete piers are very easy to set and pour. With one concrete crew, we can set and pour about two to three



Shen says that another reason why New Citi Homes builds raised wood floors is that they are “much more eco-friendly than conventional slab-on-grade construction.” Wood is a renewable, sustainable resource that takes far less energy to produce than the other most common floor system materials, concrete and steel. “Raised wood floor systems use minimal concrete and steel compared to homes on slabs.”

Repairs can be made on a raised wood floor system with minimal labor and cost. According to Shen, that’s a significant advantage in areas with expansive soils, like Houston. “As a house settles, the entire foundation may settle unevenly. With the raised floor home, minor adjustments can be made to the foundation without major destruction of the yard. And the equipment needed to level the foundation is much less invasive than that needed to repair a slab.”



Scott Murray
Bryan Murray, P.E.
MURRAY ENGINEERING
Green Cove Springs, Florida
www.murrayengr.com



“We took a progressive approach to the crawlspace construction.”

When brothers Scott and Bryan Murray of Murray Engineering, a full-service engineering consultation firm based in Green Cove Springs, Florida, partnered to design and build Scott’s personal residence, they were not constrained by floodplain requirements. They still opted to build a raised wood floor. “The first reason was to add height to the structure and improve curb appeal, without having to utilize a bunch of fill dirt and being concerned about the settlement of that fill dirt. Second, I was looking for the wood-porch feel that is characteristic of the architecture that I like. Third was access to my mechanicals and electrical systems, and being able to maintain and upgrade those systems down the road. It’s a lot more feasible than on a slab,” said Scott Murray.

He wanted the house to have a traditional style but

with a very modern use of building techniques and materials. “We’ve taken a home that you would typically see 100 years ago, similar to a farmhouse style with perimeter porches, and we’ve made it hurricane-

resistant – to meet local code – and incorporated more progressive ideas on conditioning and properly managing moisture inside the house.”



The Murray brothers decided on an unventilated, enclosed and conditioned crawlspace, known as a *closed crawlspace*. “It’s my experience that, in our hot and humid climate, moisture is one of our biggest concerns,” Scott

Murray says. “So we looked at how we control humidity and temperatures inside of the crawlspace. It just made sense to condition that area and keep it dry. That allows for all of the mechanical systems, the plumbing, electrical and the HVAC systems to be in a conditioned



» **PREVIOUS PAGE:** “I continually get compliments from the neighbors,” says Scott Murray of his raised wood floor home. “They say, if they had to do it over again, the first thing they would change is to elevate their house.”

» **CLOCKWISE FROM TOP LEFT: 1.** Products such as I-joists (shown) and wood floor trusses can minimize the necessary number of interior piers; **2.** An entry provides access into the crawlspace for repairs, upgrades, pest control and inspections; **3.** Inside the crawlspace, walls are insulated with a low-density foam to prevent air infiltration and condensation buildup, while polyethylene is used as a vapor barrier on the ground; **4.** A continuous stem wall foundation encloses an unventilated crawlspace, known as a *closed crawlspace*.

environment. It controls the odors in those areas. And obviously, if you don't have moisture, you don't have the mold growth.”

To achieve this, the Murrays took “a progressive approach to the crawlspace construction,” says Scott Murray. “We extended the first floor wall to the ground. Although my walls are 10 feet on the first floor, they are effectively 14 feet, because they extend approximately 4 feet from the finished floor to the grade level.”

All 14 feet of the walls are insulated. “Insulating all the way down to that ground level (instead of underneath the first floor) totally seals off the perimeter of that area, prohibiting outside air infiltration,” explains Scott Murray. “So we are dehumidifying that area. We are also conditioning that area and treating it as a living space.”

“I placed a 10-mil layer (of polyethylene) directly over the clean fill. It's taped and seamed and turned up the

wall. The poly and insulation help prevent moisture and air infiltration,” says Scott Murray. “The poly also keeps pests out of the area. And (the floor) is elevated slightly above the exterior grade, so we don't have any moisture buildup in that area.”

Scott also expects the closed crawlspace to result in energy savings. “Based on case studies I've seen, an unventilated closed system seems to use less energy (then a ventilated system) because there is no air infiltration from the exterior.”

According to Scott Murray, any builder can adopt the same progressive approach to crawlspace construction. “Learning these new techniques is not really rocket science. All you're doing is closing the openings, putting in flashing around the perimeter walls, and preventing moisture from getting into the building envelope.”

For more information on closed crawlspaces, visit Advanced Energy's crawlspaces web page at www.crawlspaces.org.



Peter Russell
BAY HOMES
Bay St. Louis, Mississippi
www.bayhomesmississippi.com

“Driving posts is much more cost effective than bringing in fill dirt.”

Formed in an effort to respond to the devastation of the senior housing market by Hurricane Katrina, Bay Homes has established a reputation for building affordable, high-quality, low-maintenance residences along the Gulf Coast in Mississippi, Louisiana and Alabama.

Structures in coastal high-hazard areas are required to be elevated above the base flood elevation (BFE). To raise its houses in low-lying areas, Bay Homes uses a treated wood pile foundation on homes that are as low as 3 feet off the ground. Bay Homes’ Peter Russell says that people want their homes raised, even where it may not be required by the BFE. “Because of past hurricanes and water issues, and knowing that Mother Nature can do some ridiculously quirky things, people like it just for peace of mind. That’s a big reason why we maintain it throughout all of the structures that we do.”

“There are a lot of advantages to the raised wood floor beyond just getting over the BFE,” says Russell, noting that an elevated living space is isolated from moisture and pests. Russell also says that, on occasion, Bay Homes will raise a house upwards of 8 feet – even when the BFE is only 3 feet – because a homebuyer wants to use the area underneath the house for parking or a patio.

When a house is required to be elevated, according to Russell, a treated wood pile foundation is faster to build than a concrete slab placed on fill dirt that has to be compacted. “In a lot of scenarios, it makes a lot more sense to elevate the house rather than bringing the elevation up with dirt,” says Russell. “What we are doing is much quicker. We don’t have to wait to set up forming



➤ Treated wood pile foundations, such as this one constructed by Bay Homes, are cost effective whether near the beach or inland.

and for concrete to cure. We can drill and set the posts, and put in the wood I-joists and have the walls framed in two days with the trusses on.”

When building an elevated slab, Russell says, “it can take a week or two just to get the foundation in place. So if you really want to punch production out, you can go with drilling and setting the posts... Our own personal best record (for completing a house), from breaking ground to finish, is 18 days. It was a 1,176-square-foot three-bedroom house. That was pretty phenomenal!”

Russell says that treated wood pile foundations are also less costly for the builder. “Driving or setting posts to raise a house is much more cost effective than bringing in fill dirt to elevate a slab.”

Faster and less expensive construction helps Bay Homes produce homes priced in the \$69,000 to \$89,000 range as part of its affordable house program. “It is truly an affordable house,” says Russell, noting the current unique market conditions and a readily available labor force that can play to a builder’s advantage.



John Cooper
COOPER HOMES
Roswell, Georgia
www.cooperhomesinc.com



“I get \$10,000 to \$15,000 more for a raised home.”

Since 1982, John Cooper of Cooper Homes has built homes and communities inspired by the architecture and style of Atlanta’s historic neighborhoods. He prefers raised wood floors because they provide historic character to a house – a feature that is attractive to home buyers.

“The main thing for me is the aesthetics and streetscape,” says Cooper. “When a home is raised, people come up to it – and they may not really figure out exactly what it is – but they just know it is a better looking house. And the streetscape – having a raised front porch and stairs in front – is just much more comfortable for a community. You can sit out front and say hello to your neighbors. If you are flat on the ground, it just doesn’t have the same feel. People notice that. If they don’t pay more for (the aesthetics) – which I think they do – the house will sell faster than a house that is on a slab.”

Cooper says that finish siding over the foundation walls, such as brick or stone, is the kind of detailing that can have a significant visual impact. “That’s a big dimension to cover the base, as opposed to a house that just comes down to the ground with siding. You can picture how much more pleasing it is to people who are looking for houses.”

Cooper builds closed crawlspaces to better condition the main floor of the

house and minimize moisture infiltration. He covers the dirt floor of the crawlspace with concrete for a more finished look. “You don’t have to do a full 4-inch concrete floor,” explains Cooper. “You can do 2 inches of concrete, which cuts your cost in half. You still get the same effect because you are not putting any weight on that floor. And that crawlspace is now dry and clean so it can be used for storage.”

The finishing touches of a high-end raised floor home may cost a little more up front, but, according to Cooper, the builder will more than make up for it on the sale. “I’ve figured it out,” Cooper says. “While it may cost me roughly \$5,000 more to build it, in a normal market I will definitely get \$10,000 to \$15,000 more for a raised home.”

» Raised front porches provide historic character to John Cooper’s homes. “The main thing is selling houses, and I’ve found that raised floors sell quicker.”

» Cooper’s closed crawlspaces are semi-conditioned, keeping them dry and mildew-free, and can house mechanical equipment and ductwork for improved energy efficiency.





Mark Jeffrey
JEFFREY HARRINGTON HOMES
 Houston, Texas
www.jhcustomhomes.com

“The preference from consumers is changing.”

Jeffrey Harrington Homes has been building custom homes in the Houston area since the 1960s. President Mark Jeffrey says that although floodplain consideration may be the primary reason many houses around Houston are built raised, other factors – including technical advancements and aesthetics – are generating builder interest. “It’s changing fast. Five years ago, only in certain areas would people consider raised foundations. Now it’s being rapidly accepted and a lot of builders who do it regularly appreciate it,” says Jeffrey. “And I believe the preference from consumers is changing.”

Jeffrey Harrington Homes has employed many different foundation types in recent years but now is encouraging its clients to choose a raised foundation with a crawlspace. “In our mind, it is the best way to build a foundation. It keeps the house cooler in the summer – which is our primary design consideration – and it’s easy to get under the house and do the repairs if you need to make adjustments because of shifting soil conditions,” Jeffrey says. “My understanding is that (the Houston area) has some of the worst soil conditions in the country.”

Raised wood floor assemblies may be constructed on any soil type. In fact, they perform very well even on problematic soils, such as expansive clays which often crack conventional slabs. And while any foundation can settle, a raised wood floor system makes it easy to level or repair a shifting foundation. A raised wood floor crawlspace is also a convenient location for plumbing and ductwork – through floor trusses or between joists – which can be easily accessed for modification

» “As a custom builder, you are always looking to differentiate yourself,” says Jeffrey Harrington Homes President Mark Jeffrey, whose homes often feature raised wood floors. “In our mind, it is the best way to build a foundation.”

» This home from Jeffrey Harrington features a wood stem wall foundation on grade beam. “We have done lots of different foundations over the last few years and we’ve really tried to push our clients more and more to a raised foundation with a crawlspace,” says Jeffrey.



or repair. Repair accessibility is a key benefit of raised foundations that Jeffrey wants to improve upon even more.

“Our intent is to move to design brackets that hold the floor joists in place in a manner that we could make adjustments easily if we need to. We’re even thinking about offering a service where we annually check the customer’s foundation to see if they have any shifting. We would crawl underneath the foundation with a laser level – we would have previously marked all of the piers – so in just a few minutes we could identify if there has been any shifting and then adjust as needed.”

That kind of technical advancement can give a builder a leg up on the competition. “As a custom builder, you are always looking to differentiate yourself from everyone else. We tend to be earlier adopters of technology, as long as we feel there is a solid base for it,” says Jeffrey. “I just believe raised wood floors are the right way to go.”

“We build durable homes that will last for several generations.”

In Houston, architect LaVerne Williams of Environment Associates, builder Les Albin of LACON Homes and engineer Gary Beck of Eco-Holdings Engineering (see page 14) have more than 60 years of combined experience designing and building houses. They share a reputation for supporting green building and sustainable design. “We build durable homes that will last for several generations without major repair,” says Williams.

All three have contributed their expertise to a high-end custom home in Houston. It’s a region where more and more buyers are looking for raised wood floor homes, says Albin. “Ever since tropical storm Allison, it has been a lot more attractive for people to elevate the first floor of their homes – even if it’s not required – to make sure they are above where flood waters will be.”

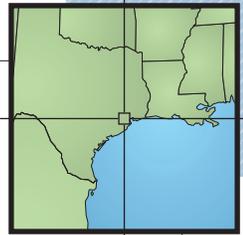
William’s raised wood floor design features a closed crawlspace – the first in a Houston floodplain area. Eco-Holdings engineered a single pour foundation design that combines the stem wall with the foundation beam, saving time and money. Cast-in-place voids for all drain vents are structurally located.

LACON Homes constructed the house. “Floodplain consideration was probably the main reason (to build the house raised),” says President Les Albin. “But, in general, a raised foundation is probably a better system than a slab-on-grade (for long-term durability) because of the humid climate and the clay-type soils around Houston.”

“By bringing the whole crawlspace into an air-conditioned space, we eliminate (moisture) problems,” says Williams. Protecting building products from moisture is an important factor in preventing fungal decay. Wood framing

LaVerne Williams, AIA, LEED® AP
ENVIRONMENT ASSOCIATES
Houston, Texas
www.environmentassoc.com

Les Albin
LACON HOMES
Houston, Texas
www.laconhomeshouston.com



» This house, the first in a Houston floodplain area with a closed crawlspace, features automatic foundation flood vents. “They open when they are under water, and close again once the water level goes back down,” says architect LaVerne Williams.



maintained at a moisture content of less than 20 percent will not decay. A raised wood floor foundation separates a structure from one of the biggest sources of moisture – the ground itself. With proper design, construction and maintenance practices, a raised floor system – constructed of durable, renewable wood – can remain dry and free of moisture-related problems.

“Anything we can do to control moisture is going to help the longevity of the structure,” says Albin.

Longevity of the structure, according to Williams, is something all builders should be concerned with. “We need to be concerned about the environmental cost of the way we build,” says Williams. “We have to strive for a higher sustainability in what we are doing.”



Larry Nelson
THERMAL SHELL HOMES
Houston, Texas
www.thermalshellhomes.com

Gary Beck, P.E., SECB, LEED® AP
ECO-HOLDINGS ENGINEERING
Houston, Texas
www.eco-holdings.com

“SIPs combine speed, moisture control and structure into one system.”

SIPs (structural insulated panels) are high-performance building panels made by sandwiching a core of rigid foam insulation between two skins of wood structural panels. SIPs are often used in wall construction because they offer improved energy efficiency, strength to the structure, and are prefabricated off site for fast installation. Thermal Shell Homes owner-builder Larry Nelson says that SIPs are just as advantageous in a raised floor system. “The quality of a SIP floor system is higher. It goes together faster and it saves the builder time.”

“SIP subfloors just go down so fast,” adds Eco-Holding’s

owner-engineer Gary Beck. “You put your beams down, then you lay your panels down, and then you are ready to start building your walls. And you’re already insulated too.”

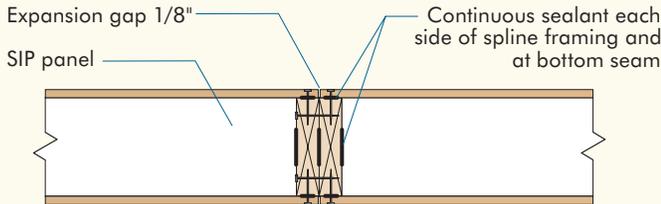
Nelson, who has built with SIPs since 1987, and Beck have designed and built many raised floor homes with SIPs in the Houston area. “Even if you’re not building the rest of the house with SIPs, they have too many good things to offer just as a subfloor,” says Beck. “SIPs combine speed, moisture control and structure into one system.”

Nelson says “all-in-one” SIPs are the most labor and energy-efficient floor system on the market today. “Once you lay down that SIP panel, you’ve got your structural framing, you’ve done your insulation, you’ve done your air barrier... everything! You don’t have to fool around with subcontractors or handle additional materials. It just simplifies things.”

According to Beck, SIP subfloor panels that are properly joined together during construction eliminate air infiltration, preventing drafts and moisture from entering the house. “When properly detailed, you don’t get that moisture transfer or that temperature differential across the SIP subfloor,” says Beck. “Having seen other systems and all different ways of doing insulation, a SIP subfloor on a crawlspace foundation can be cost-effective, in terms of energy, and very effective in structural performance.”

« Larry Nelson’s homes typically feature Structural Insulated Panel (SIP) floor systems. “The SIP itself serves as the structural framing, insulation, air barrier – all combined into one product. When you install a SIP panel, you achieve all of these requirements.”

COMMON SIP SUBFLOOR SPLINE CONNECTION*



*Consult design professional for exact detail.



ABOUT RAISED FLOOR LIVING

Raised Floor Living is a promotional program sponsored by the Southern Pine Council in partnership with APA. The program's objective is to provide home builders, home designers and home buyers with the resources they need to make informed decisions about building, designing and selecting raised wood floor homes. For more information, visit www.RaisedFloorLiving.com.

ABOUT APA

APA is a nonprofit trade association of and for plywood, oriented strand board (OSB), glulam timber, wood I-joist, structural composite lumber, and other engineered wood product manufacturers. Based in Tacoma, Washington, APA represents approximately 150 mills throughout North America, ranging from small, independently owned and operated companies to large integrated corporations.

APA is a leader in wood-design testing and research. APA's 42,000-square-foot Research Center is staffed with an experienced corps of engineers, wood scientists and wood-product technicians. Their expertise plays an important role in producing panel and engineered wood systems that meet the industry's highest performance standards and braced-wall designs that reduce the risk of catastrophic home failure. For our latest research in building strong, safe and durable structures, visit www.apawood.org.

ABOUT SOUTHERN PINE COUNCIL

The Southern Pine Council (SPC) is a promotional program sponsored by the Southern Forest Products Association (SFPA). SFPA is a nonprofit trade association representing companies operating hundreds of Southern Pine lumber mills throughout the Southeastern United States.

SPC promotes the use of Southern Pine lumber products in a wide variety of construction applications, focusing on Southern Pine's attributes of strength, treatability and beauty. SPC is the leading source of information about Southern Pine products for building professionals and consumers. Visit www.southernpine.com to learn more.

TO LEARN MORE

Visit www.RaisedFloorLiving.com

For more information about the builders and system details featured in this publication, visit www.apawood.org/raisedfloors.

Raised Wood Floors

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