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January 2008 [www.greenbuildermag.com](http://www.greenbuildermag.com)

Green Builder

January 2008

# Building Their

Tour the **2008 Green Builder VISION House** to learn about innovative green technologies demanded by today's educated buyers.

By Jim Hackler

Photographs by James F. Wilson



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## Green Builder VISION House Orlando 2008, Monteverde, Fla.

Builder: Westmont Green Homes  
Architect: Environmental Dynamics Inc.  
Landscape architects: Gerlach + Staudt Studios; Central Florida Yards & Neighborhoods  
Engineer: Andreyev Engineering; Baxter Engineering; Biosphere Consulting  
Resource Recovery  
HVAC Design: Calcs Plus  
Interior Design: EcoDecor  
Certification: Florida Solar Energy Council, Florida Green Build Coalition, Institute for Business and Home Safety, and NAHB National Green Building Program

**T**he 2008 Green Builder VISION House Orlando showcases cutting-edge products and practical technologies, but what may be the home's most important takeaway for green builders is the story of the owner. You may already have worked with an involved client like him, but if not, you certainly will.

Roberto Carrion bought land on Lake

Apopka in Monteverde, Fla., in 2004, and like many of today's home buyers, he went on the Internet to research building his dream house.

"Nothing makes me more uncomfortable than going into the largest financial [commitment] in my life and not having a clue as to how a house is built," says Carrion. "The more I got into the research, and the more I came across this topic of green building, it was a no-brainer that if my wife and I were going to build a house, it had to be green."

Carrion discovered *Green Builder* magazine

# VISION



online and contacted executives there for information on how to build an environmentally responsible house. That initial conversation led to the first homeowner-initiated Green Builder VISION House, which will be available for touring during the 2008 International Builders Show in Orlando and the Lake County (Fla.) Parade of Homes.

“Guys like Roberto are forcing builders to do their homework,” says Ron Jones, *Green Builder’s* editorial director. “They won’t allow someone to just tell them that this is the way



that we’ve always done it. I think it’s really good for the industry—we want forward-thinking people.”

#### **Building for the New Client**

To fully engage a client as progressive and self-educated as Carrion, *Green Builder* turned to J. Stace McGee of Environmental Dynamics (EDI) to design the eco-friendly house. EDI is a leader in sustainable architectural design and was eager to take on VISION House 2008. “[Stace is] not just wrapped up in the things



Steep overhangs and smaller windows on the southern exposure of the 2008 VISION House will keep it naturally cool during the hot summer months in Monteverde, Fla. The lot dramatically slopes down from the front of the house to Lake Apopka where a full basement and two layers of dramatic balconies take full advantage of the spectacular view.



Locally grown cypress veneer over engineered wood trusses create a dramatic architectural detail above the main room of the VISION House (above). The furniture is from manufacturers who belong to the Sustainable Furniture Council.

All of the fireplaces in the VISION House are electric (opposite page, top photo) to avoid the potential for indoor air quality problems caused by gas or wood-burning models.

Light filters down from skylights in the home's central staircase (opposite page, bottom photo). Little details such as open steps and interior windows allow even more natural light to enter the house.

he knows," says Jones. "He's always interested in learning more. And so the project became a wonderful collaboration with Stace and the layers of input that came from the owner, the builder, and the team from *Green Builder*."

Westmont Green Homes in nearby Winter Garden was selected as the builder. Westmont used the NAHB's Model Green Home Building Guidelines and the Florida Green Building Coalition Standards to verify that the 2008 VISION House is indeed green. Although this is the company's first time certifying a home, co-founders Jim Rahman and Curt Roese note they have been incorporating green products and techniques into their projects for years. "It's truly the right thing to do and the right way to build," says Rahman. "The VISION House has been a real eye-opener for us to educate ourselves on what more can be done."

The style of the house incorporates the vernacular of Florida with elements of European and Caribbean design. "We wanted to address the site that drops from the left to the right,

so we reflected that in the architecture," says Jones. "We created an interesting massing with height variations and different surfaces to give it an organic quality."

One of the most striking features of the house is the colorful exterior stucco, which is a new product from American Clay that won't be on the market until late 2008. Manufactured without Portland cement, the plaster uses only recycled materials, making it one of greenest choices available for exteriors.

The colors chosen by EcoDesign also make the house feel more open and light. The underside of the soffits are painted a pale blue, which according to tradition, repels insects.

#### **Client Checklist: Cool and Comfortable**

One of the advanced technologies that Rahman believes is especially suited to Florida's extreme conditions is the structural insulated panels provided by FischerSIPS.

It's the first time he's used them, but he sees the advantages. "These composite panels



are energy-efficient [R-value greater than 20]; extremely strong, which safeguards against hurricane-force winds; and they can dramatically reduce the time to construct the home's

exterior envelope," says Rahman.

Another advantage to SIPs, when combined with an unvented attic insulated with closed-cell spray foam, is that the VISION House only needs an HVAC system that's half the tonnage of a comparable home. The Carrions will get the added benefit of the latest high-efficiency Lennox system. This will provide whole-house dehumidification, air filtration, and fresh air intake that's been properly designed with help from the Florida Solar Energy Center, which will be monitoring the home's performance with a remote data gathering system for the next year.

Not all of the home's energy-efficient features are so high-tech. "We brought to it some of the traditional elements that go back to the time when homes were built in this climate before air-conditioning," says Jones. Using a technique called passive solar design, the VISION House minimizes the east- and west-facing windows to reduce the sun's intense morning and late afternoon rays from heating up the home's interior. Roof overhangs also help shade the house, especially on its southern side.

#### Client Checklist: Interior Practicality

The eclectic architectural theme is carried into the interior of the 2008 VISION House with furnishings and finishes that demonstrate



American Clay  
www.americanclay.com



Columbia Forest Products  
www.columbiaforestproducts.com



EcoDecor  
www.ecodecor.com



Environmental Dynamics Inc.  
www.edi-arch.com



Kohler  
www.us.kohler.com



The creative cabinet design of the main kitchen (above) includes a section of hanging cabinets over the breakfast bar to display collectibles. The kitchen also features Energy Star appliances.

The aged patina of the reclaimed wood floors in the kitchen (opposite page, bottom photo) and dining room matches the warm colors of the natural clay plaster in the formal eating area (opposite page, top photo).

an environmentally responsible approach to design over a subfloor of Huber formaldehyde-free Advantech OSB. “The wood floors are all either reclaimed or engineered wood products or environmentally harvested, high-quality engineered flooring, and we went for all natural fibers and all natural dyes,” said Bernadette Upton of EcoDecor. “It’s busting the myth that green isn’t beautiful.”

Upton uses many of the interior design principles outlined by the American Lung Association’s Health House Program. All natural and mold-inhibiting clay plasters from American Clay are used on a number of the interior walls. The bright Caribbean colored paints are all low-VOC products from Color Wheel Paints & Coatings. Furniture during IBS and the Parade of Homes was provided by Florida home retailer Carls ([www.carls.com](http://www.carls.com)), a member of the Sustainable Furniture Council that advocates using only wood certified by the Forest Stewardship Council (FSC), glues and adhesives that don’t emit harmful chemicals,

and “green” or soy-based foams. “All of the furniture is environmentally friendly and user-friendly,” says Upton. “What we are trying to achieve is everyday comfort, yet with a certain amount of sophistication.”

While the passive solar approach to the VISION House could have made the interior seem too dark, the architect used clerestory windows, a cupola, and transoms to bring more natural light into the interior as well as promote natural ventilation. “A great design feature that EDI came up with was to put a bank of skylights into the corridor of the staircase so that sunlight shoots down into the basement,” says Carrion.

“You have features like the transoms and the interior windows that enlarge the space,” says Jones. “It creates a certain aesthetic value that’s coupled with a sense of mystery. Even though a door is closed, you’re drawn around the next corner to see what’s there. I like to say that architecture is the three-dimensional manipulation of light.”



Throughout the main level of the house are antique oak floors from Carlisle Wide Plank Floors that came from an old dairy barn in New Philadelphia, Ohio. Cypress detailing under the porches and on the interior engineered trusses are from a local plantation.

The Neil Kelly Cabinets in the kitchen and bathrooms are green as well, with formaldehyde-free PureBond panels manufactured

by Columbia Forest Products, which use only FSC-certified wood and Agriboard, which is a straw-based green material.

The soy flour-based binders in the cabinets were developed using biomimicry research by Oregon State University on shellfish (basically, it imitates how barnacles and mussels adhere to rocks). "Neil Kelly is the undisputed champion of sustainable millwork in the residential field," says Jones.

The state-of-the-art kitchen also features Jenn-Air and KitchenAid appliances that save energy and water. Dupont Zodiac surfaces ensure durability. An InSinkErator garbage disposal, specifically designed to work with septic systems, pulverizes food scraps to be handled by the Hoot Aerobic Treatment System, a wastewater process that captures and treats all of the home's water to re-use for irrigation.

Keeping interior of the house clean is made easy with the Beam Central Vacuum System, which removes more dirt and allergens than regular vacuum cleaners. The VISION House also has the new Whirlpool Duet Steam washer and dryer, which can wash up to 16 pairs of jeans in a single load and uses up to 73 percent less water and 77 percent less energy compared to traditional top-load washers. This appliance pair also includes a folding table that locks into the top of the washer and dryer.

A design feature that many people don't think of when it comes to indoor air quality is



Neil Kelly Cabinets  
[www.neilkellycabinets.com](http://www.neilkellycabinets.com)



Westmont Green Homes  
[www.westmontgreenhomes.com](http://www.westmontgreenhomes.com)



Whirlpool  
[www.whirlpool.com](http://www.whirlpool.com)



Carlisle Wide Plank Flooring  
<http://wideplankfloors.com>

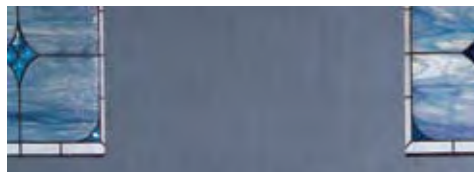


Florida Tile  
[www.floridatile.com](http://www.floridatile.com)



No-VOC blue paint and organic bedding from Indika Organics creates a tranquil retreat in the master bedroom (above and right). Stained glass windows made by a local artist finish the look.

The house includes the latest low-flow fixtures from Kohler (opposite page), including a urinal that will save thousands of gallons of water each year.



separating cars from people. In the case of the VISION House, a detached garage with doors by Clopay Corp. will keep dangerous exhaust fumes from entering the house. Tri-Star Electric Fireplaces are another smart choice to limit combustion air inside the house.

#### **Client Checklist: Work and Play Space**

Like millions of Americans, Carrion works from home. He needed something more than a desk in the corner for his job in telecommunication sales, so a built-in executive suite with a spectacular view of Lake Apopka was included in the house. "He can be proud to work here and bring clients to his office, but it's also a comfortable space to work in," says Jones. "We tried to keep in mind a balance between luxury and practicality."

Carrion's wife needed her own workspace,

but it required a different approach. "My wife Cyndi is a yoga instructor," Carrion says. "She sees our meditation room as an area where she can get away and do some deep meditating, but it's also large enough for her to hold a yoga class."

When the Carrions are done with work, there's a media room, recreational dock, and an outdoor kitchen. The full kitchen includes a built-in dumbwaiter. On cooler nights, the couple can still enjoy the outdoors, thanks to a ventless Lennox Hearth fireplace.

Across from the kitchen, the focal point of the backyard is an infinity edge swimming pool. Designed by American Pools and Spas, the pool will use salt chlorine sanitation by Pentair IntelliChlor, oversized cartridge filter and piping, Superior Solar's solar heat technology, and high-performance, variable-speed pumps to make it extremely energy-efficient.

The Pentair IntelliFlo pump uses an advanced motor and microprocessor to ensure the pump operates at the exact power level needed resulting in energy savings up to 90 percent compared to a conventional pool. The





pool will also use the Paramount Clear O3 water purification system that uses a cleaning approach similar to what's used for bottle water.

The tiles around the pool and throughout the house are from Florida Tile and are certified by the Greenguard Environmental Institute to be environmentally-friendly and to be free of chemical emissions.

#### **Client Checklist: Watertight and Weather-Resistant**

It's appropriate that the 2008 VISION House should be in the town of Monteverde, which translates to "green mountain." Sited on the edge of a hill, the home includes a basement, a rarity in Florida. Special care was taken to construct a foundation that would keep the lower level of the house dry.

"We installed Delta-MS to keep it water-proofed," says Jim Rahman. "This membrane provides a thick layer of plastic impermeable protection to prevent water from touching the outer surfaces of the basement's walls. If water gets past this first layer, the membrane's dimpled structure allows it to freely drain via gravity down to a drainage pipe installed around the base of the basement." He says they used Delta-Dry House Wrap on the upper stories of the house to keep it dry as well.

"Here in central Florida, most people can remember the hurricanes that hit in '04 and '05," says Carrion. "One of the things that was important to me is that the home be designed so that we don't have to worry about any water intrusion because of a hurricane."

Other products in the VISION House that help it stand up to severe conditions is the Huber Zip Roof System, which anchors the roof to the house in a storm, and WinDoor sliding glass doors along with MI BetterBilt windows, both of which are designed to protect against flying debris and hurricane-force winds. These measures along with the inherent strength of the structural insulated panels will help to qualify the VISION House for The Institute for Business & Home Safety's Fortified...For Safer Living program. The national program specifies construction, design, and landscaping guidelines to increase a new home's resistance to natural disaster from the ground up.

#### **Client Checklist: The World Outside**

What may be the most striking feature of the 2008 VISION House is the setting on Lake Apopka. "It really is a wow factor when you're looking out over the lake. The relationship that the site and the building have with that body of water is what makes it special," says Jones. Tragically, years of chemicals seeping into the lake from local "muck" farms and waste dumped from orange processing plants turned Lake Apopka into one of the most polluted sites in the state. A massive cleanup is underway, and Carrion says water conditions are slowly beginning to improve.

"Protecting Lake Apopka is one of VISION House 2008's primary concerns," says Rahman. "A swale below the house will prevent any chemical run-off from fertilizer and occasional pesticides from going into the water. The lake-front is also being restored with replanting of native littoral and aquatic plants and trees."

Pest-resistant native landscaping for the



DuPont Solid Surfaces  
[www.zodiaq.com](http://www.zodiaq.com)



Westmont Green Homes  
[www.westmontgreenhomes.com](http://www.westmontgreenhomes.com)



Kährs  
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Carls Furniture  
[www.carls.com](http://www.carls.com)



Cosella-Dorken's Delta Dry House Wrap, Delta MS Foundation Wrap  
[www.cosella-dorken.com](http://www.cosella-dorken.com)



FischerSIPs  
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Huber Advantech and Zip Roof System  
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Lennox HVAC and fireplace  
[www.lennox.com](http://www.lennox.com)



MI BetterBilt Windows  
[www.miwindows.com](http://www.miwindows.com)



WinDoor  
[www.window.com](http://www.window.com)



rest of the site and non-toxic Bora-Care termite treatment by Nisus for the structure of the house will further limit the amount of chemicals that could enter the lake.

Equally important is the home's water conserving and collecting strategy. "Our resources are running low, and we need to find ways to transition from using potable water for irrigation," says Carrion. Kohler provided low-flow showerheads, dual-flush toilets, and even a waterless urinal in the bathroom that serves the game room. Tankless hot water heaters and Energy Star appliances further conserve water in the VISION House at its point of use.

Because the house isn't connected to a municipal sewer, the Averett Septic Tank Co. installed a Hoot closed aerobic wastewater treatment system to capture and store the home's wastewater to be treated and then

The wide, wrap around porches of the VISION House emulate the vernacular style found in Florida that is designed to shade the house while catching the natural breeze off the lake

released safely underground to irrigate the landscape. Cistern tanks capable of capturing and storing 7,000 gallons of rain from the rooftop of the VISION House will also supply water for irrigation and keep the swimming pool full.

"Our multi-pronged approach certainly demonstrates water conservation and reclamation principles that everyone in Central Florida should take note of," says Rahman. "In fact, the total water reclamation we expect to achieve from the cisterns and the Hoot system alone amount to more than 300,000 gallons of re-used water per year."

Ironically, the native and drought-toler-



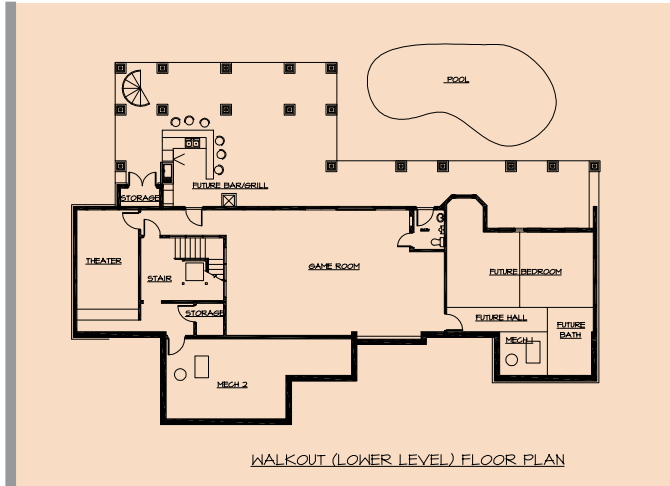
Whirlpool's new designer color for its Duet Steam washer and dryer match the vivid green of the VISION House laundry room.

ant landscape for the house may not need that much water. "The VISION House 2008's landscape is unique because the owner put some thought into it before the first shovel was placed in the ground," says Teresa Watkins, environmental landscaping consultant. "Roberto attended one of my Florida Yards & Neighborhoods seminars and wanted to protect not only the environment, but Lake Apopka. The landscape palette selected is site-appropriate, low maintenance, and will have little to no impact on the water quality of Lake Apopka and the aquifer."

Watkins says the VISION House will be Florida Water Star-certified thanks to its water-conserving landscaping, irrigation system, and indoor plumbing.

Carrion says he's excited to see his dream house become a reality and he and his wife are eager to move in following the tours for IBS and the local Parade of Homes.

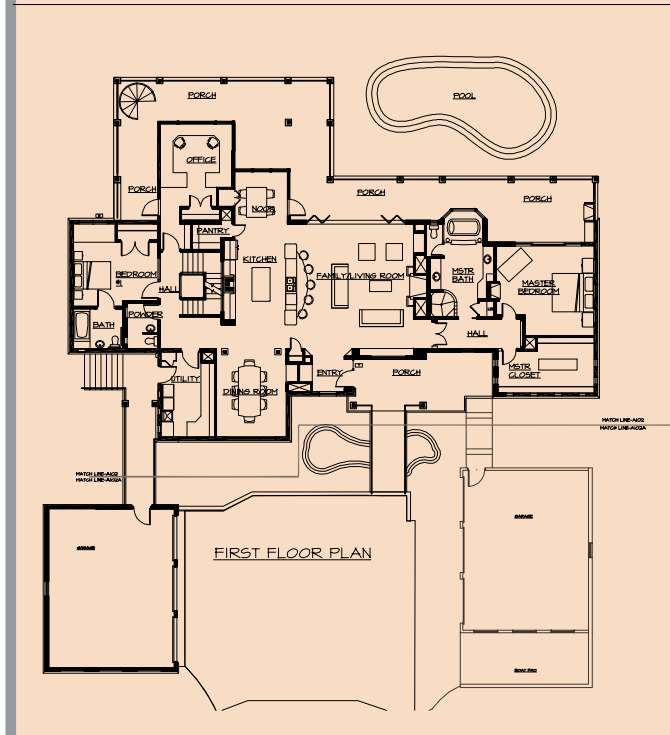
"My hope is that we're creating the momentum to change the way homes are built in Lake County," he says. "Builders really need to embrace the concept of green building and set aside the belief that consumers don't care. As long as you can intelligently explain the benefits, they'll be willing to pay for it." GB



## THE ROOM DIMENSIONS

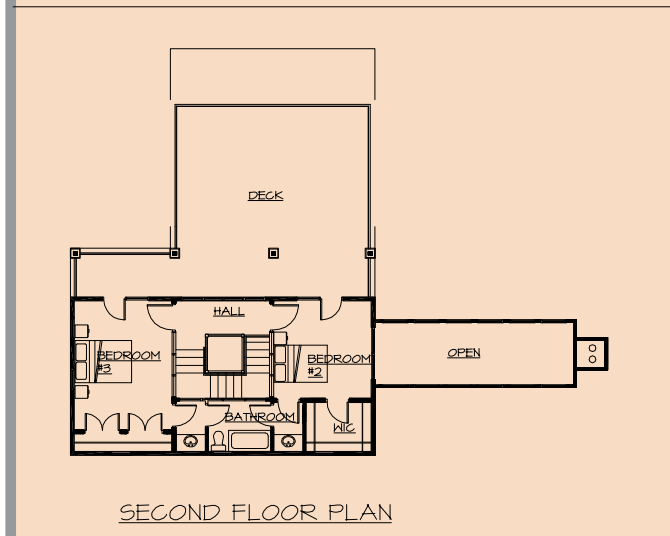
### Walkout Level

- Game Room 23'x40'
- Theater 11'4"x22' 4"
- Future Bedroom Area 28'x26'
- Mechanical Room 14'x30'



### First Floor

- Master Bedroom 16'4"x17'8"
- Master Closet 17'6"x10'
- Master Bath 11'8"x16'10"
- Kitchen 15'10"x13'8"
- Living Room 21'2"x22'8"
- Dining Room 12'8"x16'
- Utility Room 15'4"x15'
- Bedroom 15'4"x15'
- Office 13'x15'
- Nook 9'6"x9'-6"



### Second Floor

- Bedroom 3 15'3"x11'6"
- Bedroom 2 11'6"x11'6"

The 5,500-square-foot home gives the owners everything they need to work, entertain, and relax in an ultra-sustainable lakefront retreat.

Environmental Dynamics Inc.

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WinDoor



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Insinkerator



Lennox Hearth Products



Nisus Bora-Care



Twin-Star Electric Fireplaces



Velux Skylights



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- > Air Tight Spray Foam of Florida (closed cell insulation)
- > All American Screens (fixed screens)
- > American Pools and Spas (swimming pool)
- > Andreyev Engineering (geotechnical)
- > Aquatic Systems & Resources (koi pond equipment)
- > Artistic Masonry (stone installation)
- > Averett Septic Tanks (cisterns and Hoot closed aerobic system)
- > Baxter Engineering (structural engineering)
- > Better Living Systems (home security, audio, central vacuum install)
- > Biosphere Consulting (Plants, lakeshore maintenance, consulting)
- > Blackburn Surveying
- > Blair Custom Coatings (painting and stain work)
- > Bluworld (fountains)
- > Booth's Cobblestones (Apian stone pavers and installation)
- > Calcs-Plus (HVAC design and testing)
- > Central Florida Yards & Neighborhoods (Florida-friendly landscape consultation)
- > Coronado Stone (manufactured stone)
- > Countrywide Home Loans (construction financing)
- > Department of Environmental Protection (lakeshore restoration permitting)
- > Designs by Bernadette (faux painting artist)
- > Designs In Closets (closets and garage storage systems)
- > Detailed Solutions (Home Design Function Analyst)
- > DRCore (basement subfloor system)
- > Environmental Services (boat dock permitting)
- > Florida Dock
- > Florida Nurserymen Growers & Landscapers Association (2008 Plants of the Year)
- > Florida Solar Energy Center (HVAC consultation and ongoing data gathering)
- > Forever Green Intelligent Design (American Clay installation)
- > Gerlach + Staudt Studios (landscape architecture)
- > Glass Addicts (stained glass windows)
- > Holloway Tree Farm (trees)
- > Institute of Building and Home Safety (Fortified ... for safer living program)
- > Izzzi Bath & Spa Manufacturing (spa)
- > Jax-N-Tile (tile installation)
- > JB Aerial Photography
- > Jolly Green Planet (electric compost bin)
- > Kichler Landscape Lighting
- > Lake Brantley Plant Corp. (plants)
- > Lake Conway Landscaping (transplanting of palm trees)
- > Lake County (construction permits and variances)
- > Lake Jem Farms (Empire zoysia)
- > LEA International (electrical surge protection)
- > Lightstyle (interior and exterior lighting consultants)
- > Metro Environmental (Hoot closed aerobic system installation)
- > Mike Burgess Irrigation (irrigation installation)
- > Mike's Drywall of Orlando
- > Miller's Landscaping and Nursery (plants)
- > Minka Group (interior and exterior lighting)
- > Mr. Landscaper (Maxijet irrigation)
- > Outdoor Expressions (landscape installation and design)
- > Par Enterprises (outdoor spiral staircase)
- > Paramount Pool & Spa Systems (PV3 cleaning/circulation and Clear O3 water purification systems)
- > Paver Systems (Aqua-Bric driveway pavers)
- > Pebble Junction (koi pond and landscaping stone)
- > Pebble Tec (interior pool finish)
- > Pentair (IntelliTouch, IntelliChlor, IntelliFlo, DE filter, SAM/SAL lighting)
- > Perez Outdoor Services (lakeshore maintenance)
- > Plastpro (exterior doors)
- > Precise Irrigation Design & Consulting
- > Prestige AB Block (masonry block)
- > Progress Lighting (interior lighting)
- > Rain Bird (irrigation sprinklers)
- > Reel Screens (motorized retractable screens)
- > Resource Recovery (cistern design, pump, and installation)
- > Rinnai Tankless Water Heaters
- > Savoy House (interior lighting)
- > Schwenn Mechanical (HVAC contractor)
- > Sea Coast Drywall
- > Southern Cypress Manufacturers Association (ceiling tongue and groove)
- > St. Johns River Water Management District (Florida Water Star Program)
- > Stair Masterz (staircase engineering and install)
- > Stock Building Supply (trusses)
- > Summit Lifts/Elevator Solutions (dumbwaiter)
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- > Sunshine Roofing (roof installation)
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- > Supress Products (sound suppression drywall)
- > Thermo-Tru Doors (front exterior door)
- > Timberland Door (interior doors)
- > Tinajeros Lath and Stucco (stucco installation)
- > Tip Top Roofing (gutters)
- > TM Landscape Lighting Concepts (landscape lighting installation)
- > Total Building Consultants & Inspectors (home inspection)
- > Town and Country Countertops (solid surface installation)
- > Trex Co. (composite decking and railing)
- > Twin-Star International (Classic Flame indoor electric fireplaces)
- > University of Florida/IFAS (landscape and lakeshore restoration consulting) and Theresa Watkins
- > Weathermatic (irrigation control system)
- > West Orange Lumber (building supplies) and Ross Bitterling
- > Williams, Smith, and Summers, P.A. (title company)
- > Wise Landscaping (koi pond design and installation)