

THE GREENEST BUILDING IS THE ONE ALREADY BUILT.

HISTORIC GREEN

 Tocknell Planning Services

POND
Architects ■ Engineers ■ Planners




BREAKING GROUND
HOMES

Riverside Avondale: A Great Neighborhood

What Makes it Sustainable?

INTRODUCTIONS

Stephen Tocknell, AICP

Manager

Tocknell Planning Services LLC

Phone: 904-638 6629

Email: stevetock@clearwire.net



INTRODUCTIONS

Corie Baker, AIA, LEED® AP

Architect

Pond & Company, Inc.

Phone: 904-778-5952

Email: bakerc@pondco.com



INTRODUCTIONS

Mary Tappouni, CGC, LEED® AP

President

Breaking Ground Contracting

Phone: 904-388-1350

Email: mary@breakinggroundcontracting.com



INTRODUCTIONS

Leslie Olson

Assistant Planning Director

City of Ft. Pierce

Phone: 772 – 460 2200 x237

Email: lolson@city-ftpierce.com



APA GREAT PLACES IN AMERICA

- ✓ Began in 2007
- ✓ Recognizes 30 Great Places Each Year
 - ✓ 10 Great Public Places
 - ✓ 10 Great Streets
 - ✓ 10 Great Neighborhoods

- ✓ What Makes a Place a Great Place?
 - ✓ Balances the Needs of Different Users
 - ✓ Vibrant Places for Residents and Visitors
 - ✓ Strong Sense of Place

Florida Designees

- ✓ Ocean Drive - Miami Beach
2007 Great Street
- ✓ 7th Avenue - Ybor City
2008 Great Street
- ✓ Plaza Real – Boca Raton
2010 Great Public Place
- ✓ Riverside Avondale – Jacksonville
2010 Great Neighborhood

RIVERSIDE - AVONDALE

- ✓ First APA Great Neighborhood in FL
- ✓ Other 2010 Great Neighborhoods
 - ✓ LoDo in Denver
 - ✓ Back Bay in Boston
 - ✓ Frank Lloyd Wright District in Illinois

RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



RIVERSIDE - AVONDALE



- ✓ Established in 1974 to Fight
 - ✓ Inappropriate Zoning
 - ✓ Freeways
- ✓ Achievements
 - ✓ National Historic District Designation
 - ✓ Historic Preservation Element in Comp Plan
 - ✓ Historic District Zoning Overlay
 - ✓ Riverside Arts Market (RAM)

RIVERSIDE – AVONDALE PRESERVATION



- ✓ Times Union – 2 stories + Editorial
- ✓ Metro Jacksonville
- ✓ All Local TV Stations
- ✓ Forbes
- ✓ New Tang Dynasty (NTD) Television !

Florida Times Union – 10-14-2010

- ✓ “You can get to so much and do so much and enjoy your entire day just in this area. Between the shops and the parks and the weather – everybody’s out walking.”
- ✓ – Amy Kaplan, 28

Florida Times Union – 10-14-2010

- ✓ “You’ve got a lot of old people and young people that are hanging out in the same bars and cafés...Everybody kind of gets to know each other around here.”
- ✓ – Chelsea Vandevender, 20

Do They

- Promote or protect air and water quality?
- Protect groundwater resources?
- Respond to the threat of climate change ?
- Protect or enhance local biodiversity or the local environment?

What forms of "green infrastructure" are used ?
(e.g., local tree cover mitigating heat gain)

LESSONS FOR SUSTAINABILITY

- Long Term Grass Roots Involvement
- Preserve – Don't Destroy
- Provide Range of Housing Options and Meeting Places
- Orient Places to People Not to Cars
- Jobs Housing Balance
- Location Efficiency

Dense Network of Local Streets - Icing on the Cake!



American Planning Association (APA) Great Places in America

For more information:

<http://www.planning.org/greatplaces/>



THE RELATIONSHIP BETWEEN GREEN AND HISTORIC



WHAT MAKES HISTORIC NEIGHBORHOODS AND HISTORIC BUILDINGS GREEN?

The Numbers

- Building a 50,000 sf commercial building requires the same amount of **energy** needed to drive a car 20,000 miles a year for 730 years.
- The operation of buildings accounts for 43% of carbon **emissions** in the United States (Pew Center on Climate Change)
- Construction of an average 2,000 sf home generates 3,000 pounds of wood **waste**, 2,000 pounds of drywall **waste** and 600 pounds of cardboard **waste**.
- The construction of an average single family home generates four pounds of **waste** per square foot.



The Numbers

- It is estimated that by 2030 we will have demolished and replaced nearly 1/3 of our current building stock (82 billion square feet).
- It will take as much energy to demolish and replace 82 billion square feet as it would to power the entire state of California for 10 years.
- Demolishing 82 billion square feet would create enough waste to fill 2,500 NFL stadiums.
- To rehab even 10% of the 82 billion square feet would save enough energy to power the state of New York for a year.

The Brookings Institution



Historic Green

- We need to stop thinking of our buildings as disposable and start thinking of them as a renewable resource.
- We already embrace recycling paper, aluminum and plastic, why not apply the same theory to our buildings?



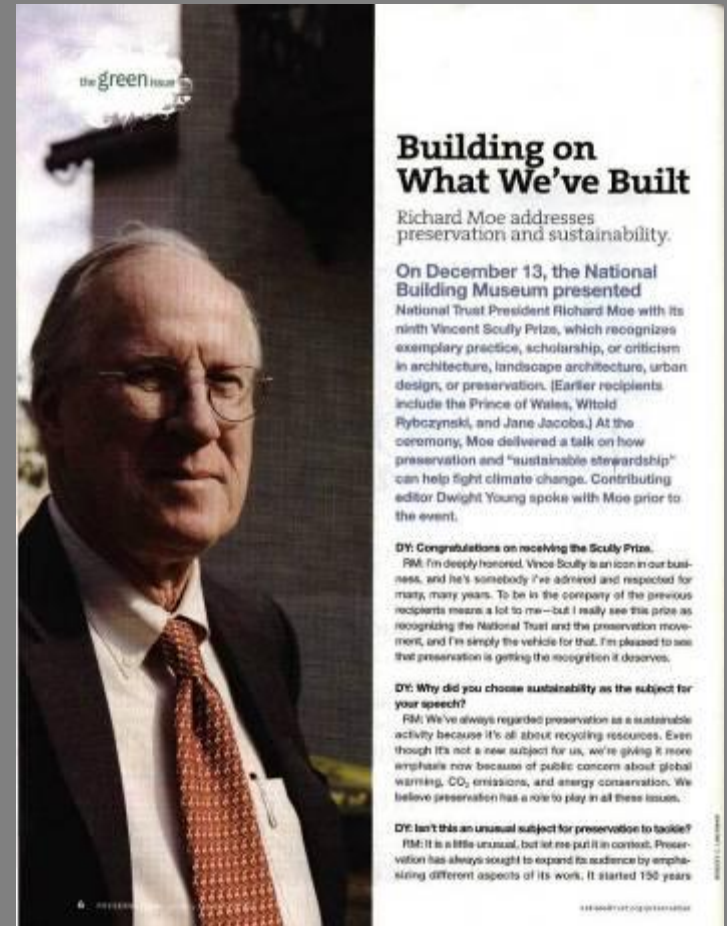
“Historic preservation can – and should – be an important component of any effort to promote sustainable development. The conservation and improvement of our existing built resources, including re-use of historic and older buildings, greening the existing building stock, and reinvestment in older and historic communities, is crucial to combating climate change.”

- National Trust for Historic Preservation

National Trust for Historic Preservation

“Any new building, no matter how much green technology it incorporates, represents a new impact on the environment. An older building represents a heavy prior investment of resources and energy. If you tear that building down, that investment is wasted-but if you keep the building in use, you’re saving energy and conserving resources. That’s what people mean when they call preservation the ultimate recycling.”

-Vincent Scully Prize recipient and National Trust Past President, Richard Moe



WHY REUSE HISTORIC BUILDINGS?

Reinvest in Historic Communities

- The way our communities are laid out is just as important as the quality of our buildings.
- Preservation reduces sprawl and allows for growth without the consumption of new land.



WHY REUSE HISTORIC BUILDINGS?

Reinvest in Historic Communities

- Promotes efficient land use patterns including mixed use, compact development.
- Makes use of existing infrastructure.



WHY REUSE HISTORIC BUILDINGS?

Reinvest in Historic Communities

- Tend to be centrally located, dense, walkable and often mass transit accessible.
- Reduces auto dependency.



WHY REUSE HISTORIC BUILDINGS?

Reinvest in Historic Communities

- Orientation for sun exposure and summer breezes.



WHY REUSE HISTORIC BUILDINGS?

Site Sensibility

- Shaded porches, overhanging eaves and other features to reduce solar gain.



WHY REUSE HISTORIC BUILDINGS?

Site Sensibility

- Careful siting and landscaping as tools for maximizing sun exposure in the winter and minimizing it in the summer.



WHY REUSE HISTORIC BUILDINGS?

Quality of Construction

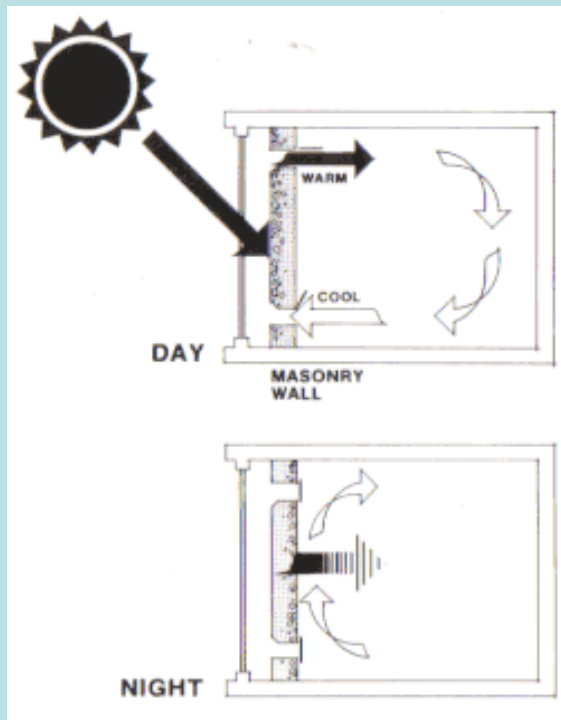
- Durability and Repairability
- Long lasting, low maintenance materials
- Craftsmanship



WHY REUSE HISTORIC BUILDINGS?

Passive Heating and Cooling

- Thick, solid walls, resulting in greater thermal mass
- Reduces the amount of energy needed for heating and cooling



WHY REUSE HISTORIC BUILDINGS?

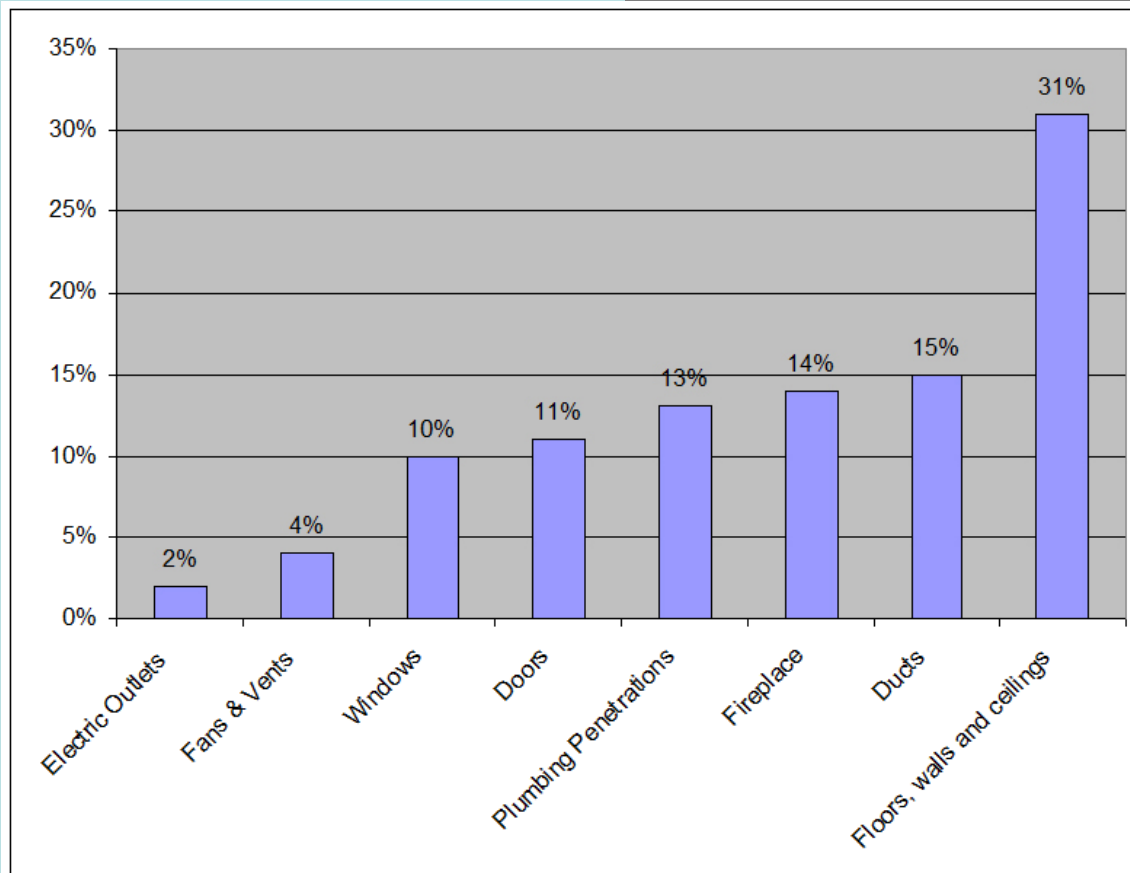
Natural Light and Ventilation

- Big, operable windows
- Transoms
- High ceilings



Energy Loss in Average U.S Home

(Source: Department of Energy)



CHALLENGES OF HISTORIC BUILDINGS?

Air Infiltration

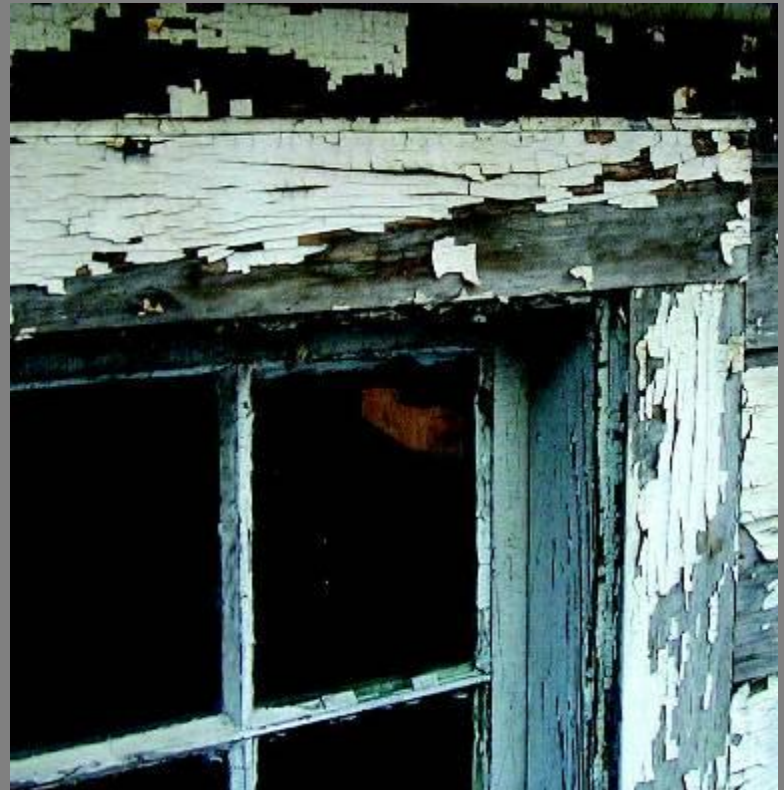
- Windows
- Roofs
- Walls
- Leaks



CHALLENGES OF HISTORIC BUILDINGS?

Toxic Substances

- Asbestos
- Mold
- Lead



CHALLENGES OF HISTORIC BUILDINGS?

Plumbing Fixtures

- Toilets
- Faucets



CHALLENGES OF HISTORIC BUILDINGS?

Equipment

- HVAC
- Water Heater



HOW TO WE OVERCOME THE CHALLENGES?

Windows

- Seal all leaks
- Consider storm windows



HOW TO WE OVERCOME THE CHALLENGES?

Insulation

- Roof
- Floor
- Walls



HOW TO WE OVERCOME THE CHALLENGES?

Leaks

- At windows
- In duct work
- At doorways

- Roofs
- Floors





HOW TO RENOVATE A HISTORIC BUILDING SUSTAINABLY

A Case Study

- Products and Processes



A Case Study



A Case Study



A Case Study



RETROFITTING A HISTORIC HOME

A Case Study



A Case Study

- Additions



A Case Study



A Case Study

- Materials Re-Use and Durability



A Case Study

- Restore and Preserve



A Case Study

- Restore and Preserve



A Case Study

- Remove and Restore
- Stains and Paints



A Case Study

- Remove and Restore



A Case Study

- Remove and Restore



A Case Study

- Remove and Restore
- Inspiration



A Case Study

- Energy and Water Conservation/Efficiency
- On-site re-use



RETROFITTING A HISTORIC HOME

A Case Study

- Energy Conservation



A Case Study

- Introduction of new materials



A Case Study

- Introduction of new materials



A Case Study

- Introduction of new materials



A Case Study

- Introduction of new materials



A Case Study

- Products and Processes
 - caulks
 - sealants
 - adhesives
 - thinset, grout
 - wood fillers
 - Paint/stain removal
 - New paints and stains
 - waste diversion
 - epa (hazardous waste removal/disposal)

A Case Study

- Historic LEED, Pursuing Platinum



A Case Study



A Case Study



Vegetative Roofs

- Combine with other strategies



Vegetative Roofs

- Florida specific challenges



Solar

- PV for Historic Homes



Wastewater Treatment

- Living/Eco-Machines



Pervious Paving

- Pavers and concrete



Vertical Green

- Living walls and vertical gardens



Wind

- Location matters



Rainwater Catchment

- Rain barrels and tanks



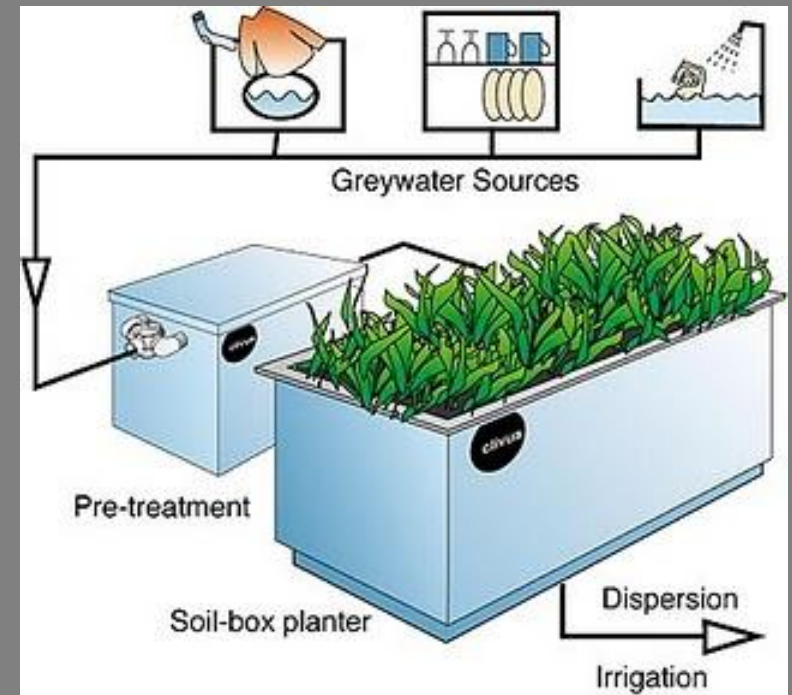
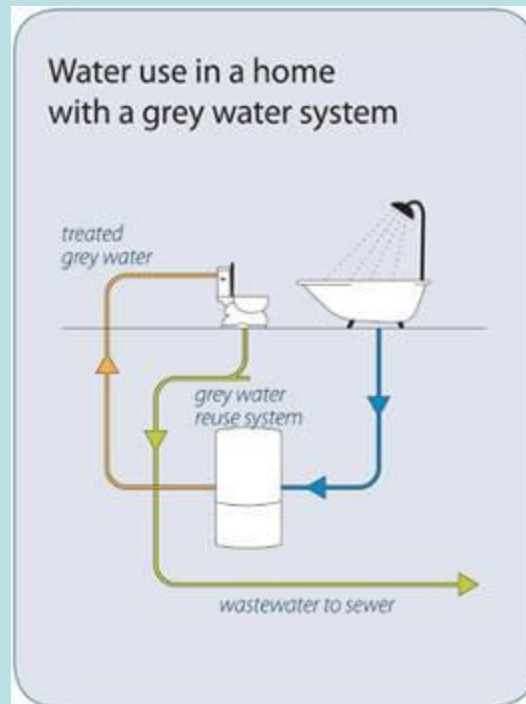
Rainwater Catchment

- Rain barrels and tanks



Greywater

- Location matters





WHY HISTORIC PRESERVATION IS VITAL TO THE BIG PICTURE



Preservation

Why Historic Preservation is vital to the big picture



- ✓ Mixed Use
- ✓ Close Proximity to Multi-Modal Transit

1/4 to 1/2 mile from a transit stop
Pedestrian and Bicycle infrastructure

- ✓ Residential within walking distance of shopping and offices
- ✓ Limited parking
- ✓ Narrow streets



Transit Oriented Developments

Perception: Large projects, single developer





- ✓ Mixed Use
- ✓ Close Proximity to Multi-Modal Transit

1/4 to 1/2 mile from a transit stop

Pedestrian and Bicycle infrastructure

- ✓ Residential within walking distance of shopping and offices
- ✓ Limited parking
- ✓ Narrow Streets

Urban Core Historic Districts

Historic Districts are TODs

Small projects can re-create real mixed use sustainability



Location Efficiency: Household and Transportation Energy Use by Location

■ Transportation Energy Use ■ W/ Green Automobiles ■ Home Energy Use ■ W/ Green Buildings



Urban Core vs. LEED-Certified Sprawl

EPA says: Urban Core TODs/Historic neighborhoods greener than LEED Suburbs

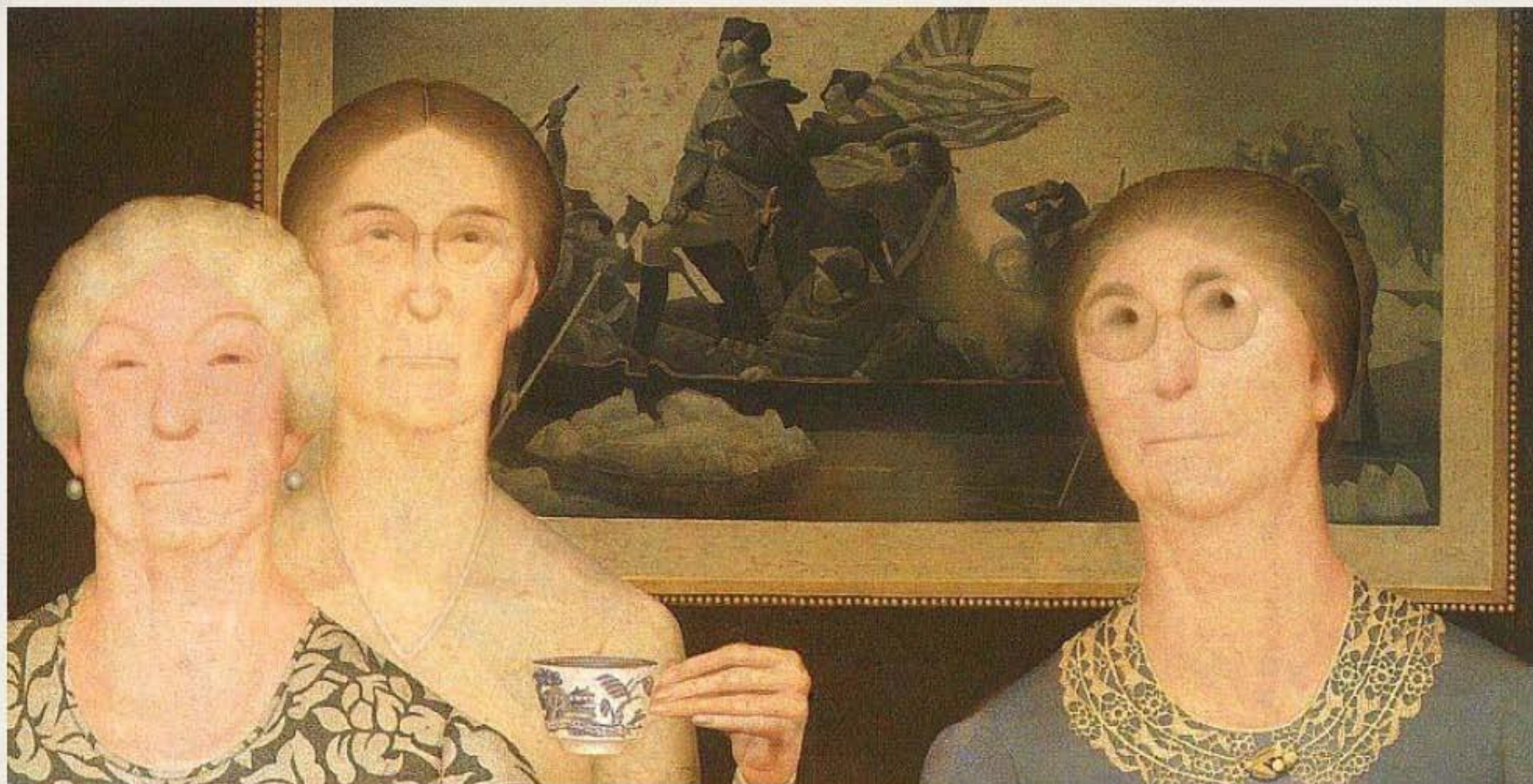




Historic Preservation Board

Grumpy old guys commenting on your shingle color





Historic Preservation Board

"That shade of taupe you're proposing for the trim is a bit intense, I think."



Sustainable Historic Preservation

Assessment & Design Tool

Identify Sustainable
Historic Design Components
& Plan Sustainability Upgrades
For Historic Structures & Districts





Step One: Assess Historic Components

Sustainable Historic Components			Present?	Lost/Missing?	Function	Maintenance/Repair	
					1=Not working 5=Functioning as designed	1=Major repair required 5=Well-maintained, in good repair	
Walls	Windows	Double Hung			1 2 3 4 5	1 2 3 4 5	
		Single Hung			1 2 3 4 5	1 2 3 4 5	
	Wall Fabric	Wood Siding			1 2 3 4 5	1 2 3 4 5	
		Stucco			1 2 3 4 5	1 2 3 4 5	
		Brick			1 2 3 4 5	1 2 3 4 5	
	Porch	Open			1 2 3 4 5	1 2 3 4 5	
Closed				1 2 3 4 5	1 2 3 4 5		
Roof	Roof Design	Sloped			1 2 3 4 5	1 2 3 4 5	
		Wide Eaves			1 2 3 4 5	1 2 3 4 5	
		Gables			1 2 3 4 5	1 2 3 4 5	
		Roof Vents			1 2 3 4 5	1 2 3 4 5	
		Flat Roof			1 2 3 4 5	1 2 3 4 5	
	Roof Material	Metal Roof			1 2 3 4 5	1 2 3 4 5	
Light Color				1 2 3 4 5	1 2 3 4 5		
Interior	Ceilings	8' High or more			1 2 3 4 5	1 2 3 4 5	
	Doors	Transom windows			1 2 3 4 5	1 2 3 4 5	
	Ventilation	Attic Fan			1 2 3 4 5	1 2 3 4 5	
		Skylights			1 2 3 4 5	1 2 3 4 5	
Yard	Shade Trees	South			1 2 3 4 5	1 2 3 4 5	
		East			1 2 3 4 5	1 2 3 4 5	
		West			1 2 3 4 5	1 2 3 4 5	
	Irrigation	Rain Barrels			1 2 3 4 5	1 2 3 4 5	
District	Sidewalks	Present?					
	Bike Paths	Present?					
	Goods & Services	Within .5 mi					



HOW TO USE THIS ASSESSMENT TOOL (using windows as an example)

1. Are the windows wood? Do both sashes move, or just one?
2. Can you see evidence that windows were removed and blocked in?

Function: Window opens easily & hangs in place:	5	Maintenance: Painted, glazed, intact glass:	5
Window opens, but must be propped:	3	Peeling paint, missing glazing:	3
Window does not open	1	Rotten wood, inoperable:	1

Step Two: Maintenance & Upgrades

The following design standards should be implemented starting at the first tier, then the second tier improvements should be explored. Only if the implementation of tiers one and two are not effective, should tier three alterations be considered.

Tier One :

Look into these options first. These are primarily interior changes or exterior maintenance to keep historic surfaces in good working order.

Tier One options do not require Historic Preservation approval.

Roof/Attic:

- Maintain: ☐ Insulate in attic spaces with a high R-value insulation
- ☐ Caulk around all soffits and exposed rafters to seal any drafts into the attic
- Upgrade: ☐ If re-roofing (*which does require Historic Preservation review*), add a vented, multi-layer radiant barrier between the sheathing and the finished roofing material. This doubles as both radiant heat shield and ventilation. This can reduce heat gains through the roof by about 25%.
- ☐ If working roof vents are present, install an interior attic fan to enhance "the chimney effect" for cooling.
- ☐ Flat roofs: Paint roof white with LEED Certified paint to reflect heat
- ☐ Flat roofs: Add solar panels if not visible from the right of way

Walls: Wood Clapboard and thick stucco are traditional, local exterior wall fabric choices, and are beneficial for their naturally insulating features.

- Maintain: ☐ Keep exterior walls painted. Consider LEED certified or similar paints for heat load reduction.
- ☐ Replace any rotten wood with either salvaged wood of the same species and dimension, or a high-quality, termite-resistant wood, like cypress or pressure treated. Salvaged, historic woods are much more termite-resistant than commercially available woods.
- ☐ Caulk seams on original clapboard before painting.

Windows: Historic, operable, double-hung windows are vital for taking advantage of reducing energy



consumption on temperate, breezy days. Lowering the top sash allows hotter air near the ceiling to vent from the house. (New, single-hung windows do not have this sustainable, natural-venting option.)

Maintain: ☐ Keep panes glazed.

☐ Carefully paint all wood surfaces without allowing paint into the seams where the sash meets frame, (thus freezing the sash and making it inoperable.)

☐ Replace deteriorated wood

☐ Repair sash weights.

For detailed information on historic window maintenance, contact the City of Fort Pierce Planning I for a detailed brochure.

☐ Caulk between all window trim and wall fabric to seal potential leaks.

Upgrade: ☐ Install weather stripping.

☐ Install interior window treatments to block direct sunlight, reducing heat load.

☐ If original windows are inoperable, remove sashes, sand all meeting parts, paint and let thoroi re-hang sash weights, re-install.

For detailed information on historic window repair, contact the City of Fort Pierce Planning Departn detailed brochure.

Doors: *Historic wooden doors are a character-defining feature of historic structures. Wood is a good insulator.*

Maintain: ☐ Caulk any seams or cracks, and keep door painted or finished with polyurethane

☐ Maintain door frame for good fit: Replace rotten frame material with either salvage wood, cy pressure-treated wood

Upgrade: ☐ Add weather stripping and door sweeps

Floors: *Many local historic homes have original dade county pine hardwood floors. Wood is a good insulator.*

Upgrade: ☐ Add fiberglass insulation under the floor between the floor joists in the crawl space

Fixtures:

Upgrade: ☐ Replace appliances with energy efficient models and plumbing fixtures with low-flow models

Interior Doors: Transoms



Some historic structures have operable transom windows above interior doors. Maintaining or repairing these to make them operable assists in extending the "no A/C season," allowing how air near ceilings to be vented out through the "Chimney effect."

Maintain: ☐ Maintain or repair transom windows to allow them to be easily operable

Interior Walls:

Upgrade: ☐ When repainting, use low-VOC paints to reduce environmental hazards

☐ Install sensors and timers to control temperature and lighting

☐ Insulate interior walls only if the wall is open due to remodeling.

*It is not recommended to remove original plaster walls to insulate, as plaster walls are not only a defining feature of a historic interior, they are also much more resilient than drywall in hurricane. Simply wipe up the water if water intrudes through the windows or roof. If should be noted that a g water in a ceiling will cause it to fall, regardless of the material. **

Landscape/Yard:

Upgrade: ☐ Plant shade trees to the south, west, and east of the structure. Ensure that adequate room is in for the tree to reach its full crown at maturity without endangering the structure. Shading a l reduce a structure's indoor temperature by as much as 20 degrees.

☐ Install rain barrels under rain gutter downspouts and the A/C condenser drip line, reclaimi for garden and landscape irrigation.

Behavior Modification:

☐ Adjust the air conditioning to a warmer temperature when structure is empty

☐ Slowly adjust the air conditioning to a warmer temperature over time, perhaps one degree per week, during the summer.

☐ Plug TV and related electronics into power strip, switching off at night to reduce power drain

☐ Close off portions of the structure, closing vents in the area as well

☐ Close window coverings against direct sun to reduce heat load



Tier Two:

These sustainability options impact the exterior, but may be appropriate, depending on the design of the structure, its historic designation, the way it is sited, what surrounds it, and the proposed type, material, design, and color of the alteration. Administrative review and approval is required for these alterations.

Administrative Certificates of Appropriateness:

Fee: \$10.00

Review Time: Three (3) days, average

Roof:

- Upgrades: ☐ Solar panels not viewable from the right of way on sloped roofs
- ☐ Replace non-original roof with appropriate mill-finish metal roof (usually either standing seam shingle may be appropriate.) Add radiant barrier underneath, as noted in Tier One
- ☐ Replace deteriorated original metal roof with metal roof of the same design, material and color radiant barrier as noted in Tier One
- ☐ Add working roof vents to gable ends. Critical component of "chimney effect" natural cooling
- ☐ When re-roofing, integrate solar shingles into roofing shingles seamlessly on slopes facing the way
- ☐ Install skylights on roofs not visible from the right of way, and which will not impact original roofing.

Walls:

- Upgrades: ☐ When original wall fabric is not present, insulating prior to replacement of wall fabric. Using an efficient, termite-resistant product such as hardi-plank may be appropriate in such a circumstance.

Windows, Original

- Upgrades: ☐ Awnings: Add awnings on south, east, or west elevations to reduce heat load – different awning types are appropriate for different architectural styles. Staff can assist.
- ☐ If original "wavy" glass is no longer present, remove single pane glass from sashes and replace with low-tint, low-e glass
- ☐ Shutters: Operable, colonial-style shutters can be used for both hurricane protection and mid-day sun.



Windows, Non-Original

- Upgrades: ☐ Replace inappropriate replacement windows with more historically appropriate, low e, impact resistant windows. On a contributing structure, installation method and window trim are crucial for historic appropriateness. The Historic Preservation Officer will assist you in these design details in the Certificate of Appropriateness process.
- ☐ Re-open historic window opening(s) that have been blocked in to add natural light and ventilation.

Doors:

- Upgrades: ☐ Original doors with windows: If original glass is not present, remove replacement glass and install low-tint, low-e glass.
- ☐ Non-original replacement doors: Remove and replace with an historically-appropriate design with higher insulation factor and/or fit.

Front or Back Porches: Open porches provide a number of sustainable benefits: they shade the enclosed structure from sun, draw in breezes, reducing heat gain, and they create an "outdoor room" for temperate days, extending the "no-A/C season."

- Upgrades: ☐ Remove alterations enclosing a once-open porch

Landscape/Yard:

- Upgrade: ☐ Install solar PV panels and small wind turbines not visible from the right of way



Tier Three

These propose invasive changes to an historic structure or district, are frequently not consistent with *The Secretary of the Interior's Standards for Rehabilitation* and, as such, are not recommended. Tier Three options require approval through a Certificate of Appropriateness issued by the Historic Preservation Board. Options listed under this tier shall not receive a staff recommendation for approval unless all reasonable efforts have been made to address sustainability with maintenance and upgrades found under tier one and tier two.

Board Certificate of Appropriateness:

Fee: \$50.00

Review Time: 1-2 Months (requires public hearing)

Roof/Attic:

- Upgrades: ☐ Remove original, functioning roof to replace with more energy-efficient roof, or to replace with solar shingles
- ☐ Sloped roofs: Painting with reflective paint to reduce heat load
- ☐ Install photo voltaic (PV) solar panels or wind turbines on roof slopes visible from the right of way
- ☐ Install new skylights on roofs which are visible from the right of way.

Walls: *Wood Clapboard and thick stucco are traditional, local exterior wall fabric choices, and are beneficial for their naturally insulating features.*

- Upgrades: ☐ Remove original exterior wall fabric to add insulation
- ☐ Cover original exterior wall fabric with insulation and sheathing structure with non-original material, such as vinyl, aluminum or hardi-plank

Windows: *Historic, operable, double-hung windows are vital for taking advantage of reducing energy consumption on temperate, breezy days. Lowering the top sash allows hotter air near the ceiling to vent from the house. (New, single-hung windows do not have this sustainable, natural-venting option.)*

- Upgrade: ☐ Remove original windows in order to install impact-rated, low-e replacement windows. *Incidentally,*



replacement windows are generally not “repairable” like original wood windows. When they fail they must be replaced, placing more burden on landfills, non-renewable resources, and your wallet. “The reason they call them ‘replacement windows’ is because you’ve got to keep replacing them!”

- ☐ Install solar screens over original wood windows, obscuring windows.

Doors: Historic wooden doors are a character-defining feature of historic structures. Wood is a good insulator.

- Upgrade: ☐ Remove original exterior door to replace with insulated doors

Floors: Many local historic homes have original dade county pine hardwood floors. Wood is a good insulator.

- Upgrade: ☐ Remove original wood floors to install insulation and/ or to install a different energy-efficient floor



QUESTIONS?

Stephen Tocknell, AICP

Manager

Tocknell Planning Services LLC

Phone: 904-638-6629

Email: stevetock@clearwire.net

Mary Tappouni, CGC, LEED® AP

President

Breaking Ground Contracting

Phone: 904-388-1350

Email: mary@breakinggroundcontracting.com

Corie Baker, AIA, LEED® AP

Architect

Pond and Company

Phone: 904-778-5952

Email: bakerc@pondco.com

Leslie Olson

Assistant Planning Director

City of Ft. Pierce

Phone: 904-460-2200x237

Email: lolson@city-ftpierce.com

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POND

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