

FGBC FLORIDA GREEN BUILDING COALITION
A Green Florida for a Blue Planet

Rebuild Florida

Irma Disaster Recovery
Certified Green Home Requirement

www.floridagreenbuilding.org

1

Trifecta - Sustainability

- Certified over 10 Million Square Feet of FGBC 3rd party certified single and multi-family residential
- Over 2 Million Square Feet of certified LEED Projects
- Over 4 Million Square Feet of Green Globes or FGBC Commercial
- Over 30,000 acres of certified Green Developments
- Active Board and Standard Committees
 - USGBC, FGBC, NAHB
- Host Discovery Channel's PROJECT EARTH
- Florida Contractor #1330049
- LEED AP BD+C, NGBS Verifier, Energy Rater, FGBC Certifying Agent, NGBS Accredited Professional, FGBC Designated Professional, Green Globes, WELL

Discovery CHANNEL
ENERGY STAR
ULI Urban Land Institute
fhba

FGBC FLORIDA GREEN BUILDING COALITION
A GREEN FLORIDA FOR A BLUE PLANET

2

Discovery CHANNEL

FGBC FLORIDA GREEN BUILDING COALITION
A GREEN FLORIDA FOR A BLUE PLANET

3

FGBC FLORIDA GREEN BUILDING COALITION

About FGBC

- Non-profit organization formed in 2000
- Consensus based Standards development process
- Breadth of Expertise includes people from:
 - Construction & Development
 - Design & Analysis
 - Academic & Research
 - Product Development
 - Real Estate & Finance
 - Government & Public Advocates

FGBC FLORIDA GREEN BUILDING COALITION
A GREEN FLORIDA FOR A BLUE PLANET

4

FGBC's Success Story

FGBC Standards are endorsed by:

- The Florida Legislature
- The Florida League of Cities
- Florida League of Mayors
- The Florida Home Builders Association

FLORIDA LEAGUE OF CITIES, INC.
FLORIDA LEAGUE OF MAYORS, INC.
fhba Florida Home Builders Association

FGBC FLORIDA GREEN BUILDING COALITION
A GREEN FLORIDA FOR A BLUE PLANET

5

Florida Green Building Coalition

Homes	Developments	Local Governments (for Cities and Counties)	Commercial	High-Rise Residential
C: 23,922	R: 31 C: 14	R: 2 C: 36	R: 53 C: 42	R: 45 C: 59

FGBC FLORIDA GREEN BUILDING COALITION
A GREEN FLORIDA FOR A BLUE PLANET

6

Residential



FGBC FLORIDA GREEN BUILDING COALITION

A GREEN FLORIDA FOR A BLUE PLANET

7

Commercial



FGBC FLORIDA GREEN BUILDING COALITION

A GREEN FLORIDA FOR A BLUE PLANET

8

Midrise



FGBC FLORIDA GREEN BUILDING COALITION

A GREEN FLORIDA FOR A BLUE PLANET

9

High Rise

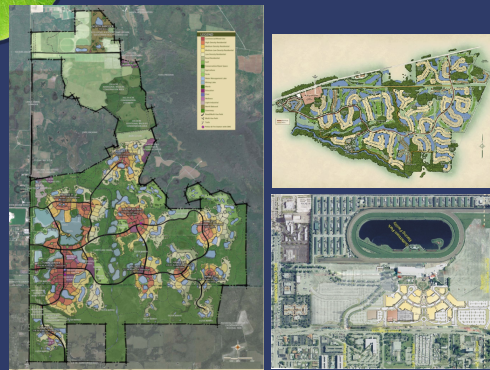


FGBC FLORIDA GREEN BUILDING COALITION

A GREEN FLORIDA FOR A BLUE PLANET

10

Land Development



FGBC FLORIDA GREEN BUILDING COALITION

A GREEN FLORIDA FOR A BLUE PLANET

11

What is Green Building?

A "Noun"



FGBC FLORIDA GREEN BUILDING COALITION

A GREEN FLORIDA FOR A BLUE PLANET

12

A "Verb" What is Green Building?

89.4°F FLIR

FGBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

13

Natural Disaster

50%-70% of existing FL homes NOT TO CODE
25% of Keys homes IRMA destroyed (FEMA estimate)

FGBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

14

Green Home Certification

- A home is only green when it has been:
 - Certified by an independent third party
 - To an accepted standard
- What are the standards in Florida?
 - Florida Green Building Coalition (FGBC)
 - LEED for Homes (USGBC)
 - Green Building Standard (NAHB)
 - ENERGY STAR®

FGBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

15

Green Home Certification

FGBC FLORIDA GREEN BUILDING COALITION

herby certifies that the home located at
2484 Ladoga Drive, in Lakeland, Florida 33805

Submitted by
William Ryan Homes

Has successfully attended to energy efficiency, resource conservation, health, and durability.
This home has successfully met the Green Building Standards to become a

Certified Florida Green Home

2292 Certificate # 186 Score

Joseph A. Reynolds 2/4/2010 Date

President, Florida Green Building Coalition Certifying Agent, Florida Green Building Coalition

FGBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

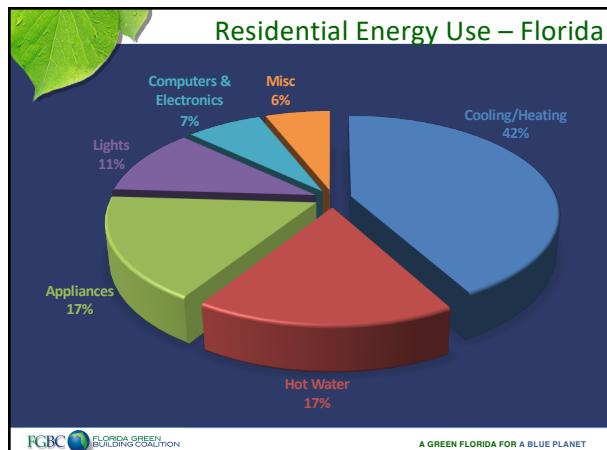
16

FGBC Green Home Certification

- Category 1: Energy
- Category 2: Water
- Category 3: Lot Choice
- Category 4: Site
- Category 5: Health
- Category 6: Materials
- Category 7: Disaster Mitigation
- Category 8: General

FGBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

17



18

Performance Based Code

- Floors/Foundation
- Walls
- Roof/Ceiling
- Doors/Garage
- Mechanical
- Hot Water
- Appliances
- Windows
- Lighting/Controls

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

19

EnergyGauge Software

EnergyGauge USA - CA Class Energy Calc from Builder

Project ID: 60

Project Info:
 Title: CA Class Energy Calc from Builder
 Owner: TBD
 Builder: Trifecta
 Rater: Trifecta
 Comment:

Building Info:
 Status: New (Confirmed)
 Rotate Building: 180
 Total Number of Bedrooms: 3
 Number of Bathrooms: 2
 Total Number of Stories: 1
 Conditioned Area: 2083 x 9.33
 Average Wall Height: 9.33
 Conditioned Volume: 19434.39

Property Location:
 Address Type: Street Address
 Street:
 City: Hillsborough
 County: Hillsborough
 Zip: 35569
 State: FL
 Florida Climate Zone: Central

Right-click for page help, or place cursor in any field and press F1 for context sensitive help.

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

20

Energy Code Compliance

Florida Department of Community Affairs Residential Performance Method A

FROM BUILDER

- 5 page report
- Used to permit home
- Code officials look for "PASS"

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

21

HERS – Home Energy Rating System

- 280
- 270
- 260
- 250
- 240
- 230 ← Typical New Home 1979
- 220
- 210
- 200
- 190
- 180
- 170
- 160
- 150
- 140
- 130
- 120
- 110 ← Typical New Home 1982
- 100 ← Typical New Home 1997
- 90 ← Typical New Home 2004
- 80
- 70 ← Florida Code
- 60 ← Energy Star HI = Varies
- 50
- 40
- 30
- 20
- 10
- 0 → ZERO Energy Use

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

22

HERS – Home Energy Rating System

- 100
- 90
- 80
- 70
- 60 ← Florida Code
- 50 ← Energy Star HI = Varies
- 40
- 30
- 20
- 10
- 0

HERS DEO Homes 53 - 59

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

23

What is a HERS Index?

Confirmed Rating
 RESNET Registration No. 791676037

15330 Saw Palms Creek Trail
 Bradenton, FL 34211

HOME ENERGY RATING GUIDE
 \$0 to \$190
 Reference \$1790

Annual Energy Cost	This Home	Savings	Annual Energy Use	This Home	Savings
Electricity	\$1,070	\$950	10,500 kWh	10,500 kWh	0 kWh
Natural Gas	\$110	\$100	1,000 Therms	1,000 Therms	0 Therms
Water	\$10	\$10	100 Gallons	100 Gallons	0 Gallons
Oil/Gas Propane	\$0	\$0	0 Gallons	0 Gallons	0 Gallons
Total	\$1,190	\$960	11,600	11,600	0

HERS® Index: 62

Reference Home: 100
 This Home: 62



HERS DEO Homes 53 - 59

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

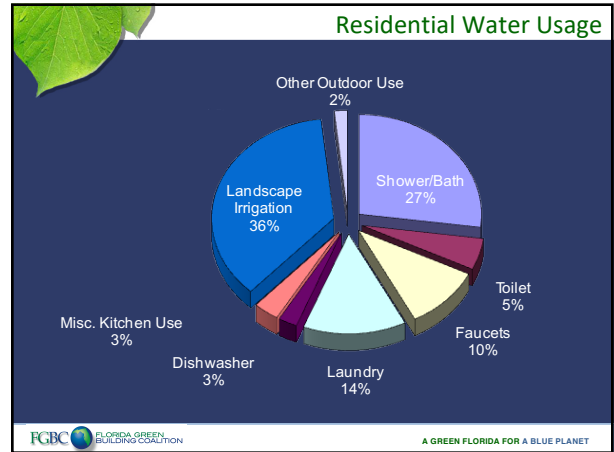
24

Prelim HERS - Calcs Plus

1 BR Gainesville - HERS 57	755 SF
1 BR Miami - HERS 53	
2 BR Gainesville - HERS 59	1251 SF
2 BR Miami - HERS 54	
3 BR Gainesville - HERS 58	1612 SF
3 BR Miami - HERS 53	
4 BR Gainesville - HERS 57	1992 SF
4 BR Miami - HERS 53	
5 BR Gainesville - HERS 58	2058 SF
5 BR Miami - HERS 53	



A GREEN FLORIDA FOR A BLUE PLANET

25



26

Water efficient fixtures



WaterSense
EPA
APF 1.6



WaterSense
EPA
APF 1.2



WaterSense
EPA
APF 1.5

Replacing inefficient toilets with **WATERSENSE MODELS** can save up to **13,000 GALLONS** per year.

WaterSense toilets use 1.6 gallons per flush (GPF) or less.

\$180 PER YEAR in water and energy savings.

Just 1 WaterSense showerhead saves:

2,900 GALLONS of water

\$70 per YEAR on water and energy bills.

www.epa.gov/WaterSense




A GREEN FLORIDA FOR A BLUE PLANET

27

Indoor Environmental Quality

- Healthy indoor environmental
- Air
- Lighting
- Thermal comfort
- Moisture control










A GREEN FLORIDA FOR A BLUE PLANET

28

Contaminates - Inside and Outside

- Bacteria
- Viruses
- Insect feces & parts
- Cat and dog dander
- Dust Mites
- Molds
- Fungal spores
- Pollen
- Tobacco smoke
- Asbestos fibers
- Moisture
- Combustible appliances
- Cleaning Products
- Candles & Incense
- Refrigerators
- Perfume
- House Plants
- Computers
- Printers
- Radon
- Asbestos
- Pesticides
- Fertilizers
- Formaldehyde
- Carbon Monoxide



A GREEN FLORIDA FOR A BLUE PLANET

29















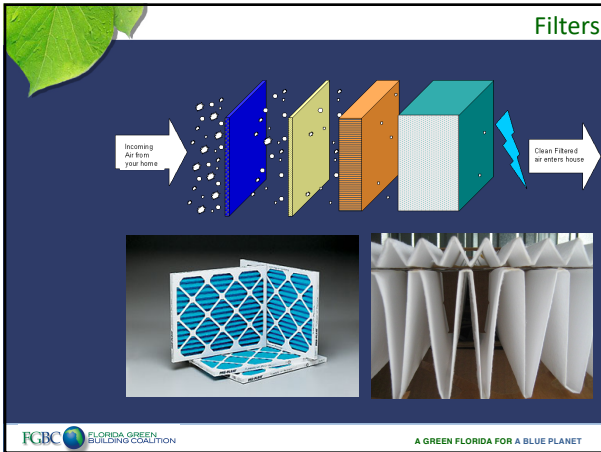






A GREEN FLORIDA FOR A BLUE PLANET

30



31



32

CATEGORY 1: ENERGY			
1.01	65	1-75	Confirm Florida code being 2 points for each HERS index point below 65 No Does the home have a confirmed HERS index Confirmed HERS index Required for Certification
2 ENERGY - DESIGN, FIELD TESTING AND INSPECTIONS, FINISHES, AMENITIES			
2.01	1	1	Energy Star Qualified Fixtures
2.02	1	1	Ductwork joints sealed with mastic on plans, page 11
2.05	1	1	Roofed porch. Min 100%? AND meets cross-ventilation requirements 4 BR does not
2.11	1	1	Floor joint perimeter insulated and sealed we do not have paint selections
2.12	1	1	Light colored exterior walls (80% minimum) white, on plans, page 1
2.13	2	1-2	Light colored interior walls, ceilings, carpet/floors Yes all major living spaces wall and ceiling surfaces have a reflectance of at least 50% 55.0 (Enter the Light Reflectance Value (LRV) of floor Yes bedrooms and all major living spaces have floors, that are light colored 55.0 (Enter the Light Reflectance Value (LRV) of floor
2.14	1	1	Maximum 100w Fixtures in Bathrooms
2.18	1	1	Energy efficient clothes dryers on plans, page 1, 6
2.19	1	1	Energy efficient oven/range on plans, page 6
2.20	1	1	Energy Star® clothes washers on plans, page 1, 6
2.21	1	1	Efficient well pumping achieved based on plans
2.23	1	1	Efficient storage volume 1638.8 Total Gross Wall Area 2058 Conditional Square Footage
2.25	3	3	Energy Star® Advanced Lighting Package 1 Number of fixtures if you purchase Energy Star Ceiling fans
2.26	2	2	Ballast lights are energy efficient. on plans, Page 8
56		112	Total Possible Points
56 Total points for Category 1 30 min / 75 min			

33

34

35



36

FGBC Water

CATEGORY 2: WATER				Revised 7-30-2020
Category Minimum 15 / Category Maximum 40				
Points Achieved	Points Possible	Criteria	Notes	
W1. Fixtures and Appliances				
W1.01	3	Water saving clothes washer	on plans - Energy Star also has water savings, page 1.6	
W1.02	1	Low flow shower heads (must be < 2.0 gpm)	2.0 gpm on plans, Page 9	
W1.03	1	All showers equipped with only 1 showerhead (1/2" allowed)	per plans	
W1.04	1	All lavatory sink faucets have flow rates of < 1.5 gpm (all < 1.0 gpm = 2 pts)	1.5 gpm on plans, Page 9	
W1.05	2	High efficiency Water Closets, Dual Flush or Single-Flush toilets (3 points if all WC's 1.1 gpf)	1.28 gpf on plans, Page 9	
W1.07	1	Water Closet with UNAR MAP Rating of 600 gpf or greater	on plans, page 9	
W1.07	1	Compact Hot Water Distribution	1BR and 2BR comply	
W5. Installed Landscape				
W5.01	2	No turf on drought-tolerant turf installed	on plans, page 1 ASSUMED Sod only	
W5.02	0	60%, 80%, 100% of plants/trees from drought-tolerant list		
W5.03	2	All plants/trees selected to be compatible with their location in the landscape		
W5.04	3	Turf less than 50% of landscape		
W5.05	2	No turf in densely shaded areas		
W5.06	2	Plants with similar sun and water requirements grouped together		
W5.07	1	Mulch applied 3-4 inches deep around plants (no volcanic mulch)		
W5.08	1	Non-cypress mulch used		
W6. Installed Irrigation				
W6.01	10	No permanent in-ground irrigation system	OUTSIDE PROJECT SCOPE	
	56	Total Possible Points		
12 Total points for Category 2 (15 min / 40 max)				
Certifying Agent Category 2				
Landscape Auditor				
Contractor of Auditor				

37

Example

Page 1

5. SLOPE ALL FINAL GRADING AWAY FROM BUILDING TO ENSURE POSITIVE DRAINAGE.

6. LAY NEW SOD TO COVER ALL AREAS OF YARD DISTURBED BY CONSTRUCTION ACTIVITIES. SOD MUST BE BAHIA, ZOYSIA, OR BERMUUDA

Page 9

6. INSULATE PIPES WITH MIN. R-4 PIPE INSULATION

USE WATER-CONSERVING FIXTURES MEETING THE FOLLOWING REQUIREMENTS:

- A. TOILETS 1.28 GPF
- B. SHOWERHEADS 2.0 GPM
- C. KITCHEN FAUCETS 2.0 GPM
- D. BATHROOM FAUCETS 1.5 GPM
- E. ALL PLUMBING FIXTURES SHALL BE WATERSENSE. WATER CLOSETS MUST HAVE A MINIMUM MAP RATING OF 600.

38

FGBC Lot Choice

Points Achieved	Points Possible	Criteria	Notes
L1. Lot Choice			
L1.01	0	100% of lots within designated FGBC green land development	Name of FGBC Green Development
L1.02	2	Home within a certified green local government	
L1.03	2	Built on an FRII site	
L1.04	2	Site within 1/2 mile of existing infrastructure	
L1.05	2	Site within 1/4 mile to mass transit	
L1.06	2	Site within 1/2 mile of public open space	
L1.07	0	1-5: Site within 1/2 mile of EXISTING local Community Resources	
<ul style="list-style-type: none"> Fire and emergency services Library Police Station Day Center Community Center Senior center Recreation center Day Care Daycare Fire station Police station or gpc Law enforcement Library Local Government Facility Medical or dental office Pharmacy Place of worship Public center Post office Recreation School Senior Care Facility Homebased Other neighborhood-serving retail Theater Other office building or major employment center 			
L1.08	2	Site located in area for future development	
L1.09	2	Designated lot	
8 Total points for Category 1 (0 min / 10 max)			
Certifying Agent Category 1			

39

FGBC Site

CATEGORY 4: SITE				Revised 7-30-2020														
Category Minimum 5 / Category Maximum 30																		
Points Achieved	Points Possible	Criteria	Notes															
S1. Native Tree and Plant Preservation																		
S1.01	2	Develop and implement an Erosion Control Site Plan	likely required by local jurisdiction															
S1.02	1	Control sediment runoff during construction	Site Specific															
S1.05	1	Save and Reuse All Removed Topsoil																
S4. Drainage / Retention																		
S4.01	1	1-4 Maintain pervious surface area (if not taking points input 1 for Total Lot Area)	Assumed 70% impervious surface as worst case															
<table border="1"> <thead> <tr> <th>Partial Pervious</th> <th>% Pervious Material Coverage Area (sq. ft.)</th> <th>100 Total Lot Area (sq. ft.)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>30 100% Pervious sq. ft.</td> </tr> <tr> <td>1</td> <td>1</td> <td>20 Equivalent Pervious Area (semi-pervious)</td> </tr> <tr> <td colspan="3">1 Total points for pervious area</td> </tr> <tr> <td colspan="3">34 Total Possible Points</td> </tr> </tbody> </table>				Partial Pervious	% Pervious Material Coverage Area (sq. ft.)	100 Total Lot Area (sq. ft.)	0	0	30 100% Pervious sq. ft.	1	1	20 Equivalent Pervious Area (semi-pervious)	1 Total points for pervious area			34 Total Possible Points		
Partial Pervious	% Pervious Material Coverage Area (sq. ft.)	100 Total Lot Area (sq. ft.)																
0	0	30 100% Pervious sq. ft.																
1	1	20 Equivalent Pervious Area (semi-pervious)																
1 Total points for pervious area																		
34 Total Possible Points																		
1 Total points for Category 4 (5 min / 30 max)																		
Certifying Agent Category 4																		

40

FGBC Health

CATEGORY 5: HEALTH				Revised 7-30-2020			
Category Minimum 15 / Category Maximum 35							
Points Achieved	Points Possible	Criteria	Notes				
C1. Combustion							
C1.01	3	Detached or Air Sealed Garage or Carport or "NO" Garage	on plans				
C1.03	1	Direct Vent, Sealed Combustion Interior Fireplace with Electronic Ignition, Factory Built Wood Burning Fireplace, OR No Fireplace	on plans				
C1.04	2	No unvented space or water heating combustion located inside the conditioned area - or electric	Water Heating				
<table border="1"> <tr> <td>Yes</td> <td>Electric</td> </tr> <tr> <td>Yes</td> <td>Electric</td> </tr> </table>				Yes	Electric	Yes	Electric
Yes	Electric						
Yes	Electric						
C3. Moisture Control							
C3.04	1	Seal Slab on grade Penetrations					
C3.07	1	No vapor barrier on inside of quantities					
C3.08	1	Mold/moisture control for tub/shower and shower surrounds					
C5. Source Control							
C5.01	1	No exposed area formaldehyde wood products	on plans, Page 6				
C5.03	1	Low VOC Paints, Stains, and Finishes	on plans, Page 6				
C5.04	1	Low VOC Sealants and Adhesives	on plans, Page 6				
C5.05	1	Minimum Carpet Use	on plans, Page 6				
C5.06	1	Healthy Flooring	on plans, page 11				
C5.07	1	Healthy Insulation	on plans, page 11				
C5.08	1	Protect ducts, range hood, and bath exhaust fans during construction					
C9. Universal Design							
C9.01	1	Universally designed living area	each plan has ADA option				
H6. Ventilation							
H6.01	2	1-4 Controlled mechanical ventilation	on plans, page 11				
H6.02	1	Radon/Soil gas vent system installed	elevated homes will comply - slab on grade				
H6.03	1	Floor Drains Sealed	on plans, page 9				
H6.05	1	Roofing ridge hood vented to exterior	on plans/code				
H6.06	1	Laundry rooms inside conditioned space must have a make-up air source	on plans, page 11				
H6.08	1	1-2-2 Efficient HVAC Filter	on plans, page 11				
H6.09	1	1-2-2 Efficient HVAC Filter	on plans, page 11				
H6.11	1	1-2-2 Efficient HVAC Filter	on plans, page 11				
20 Total points for Category 5 (15 min / 35 max)							
Certifying Agent Category 5							

41

Example

Page 6

VOC LIMITS:

PAINTS APPLIED TO INTERIOR WALLS:
 FLATS: 50 G/L NONFLATS: 100 G/L
 GREEN SEAL STANDARD GS-11, PAINTS & COATINGS, 3RD EDITION, AUGUST 17, 2011

ANTI CORROSIVE AND ANTI RUST PAINTS:
 250 G/L GREEN SEAL STANDARD GS-11, PAINTS & COATINGS, 3RD EDITION, AUGUST 17, 2011

CLEAR WOOD FINISHES:
 VARNISH: 250 G/L LACQUER: 550 G/L SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1113, ARCHITECTURAL COATINGS

FLOOR COATINGS: 100 G/L

SEALERS:
 WATERPROOFING: 250 G/L
 SANDING: 275 G/L
 ALL OTHERS: 200 G/L


SHELLAC CLEAR: 730 G/L PIGMENTED: 550 G/L

STAINS: 250 G/L

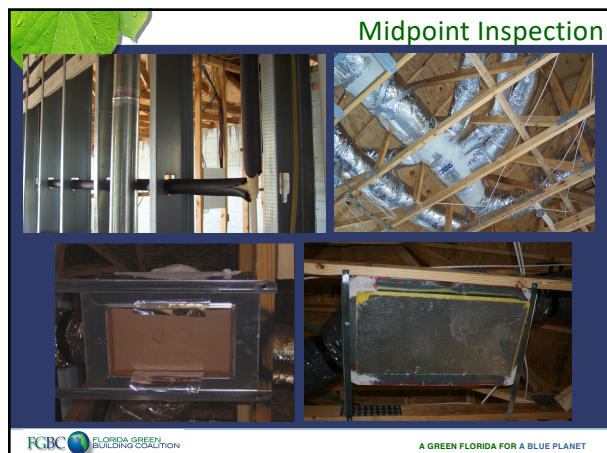
42

FGBC Score

FGBC Home Score			Version 11 Rev 1.0
Category	Your Score	Required Min - Max	
Category 1: Energy	56	30 - 75	
Category 2: Water	12	15 - 40	
Category 3: Lot Choice	0	0 - 15	
Category 4: Site	1	5 - 30	
Category 5: Health	20	15 - 35	
Category 6: Materials	9	10 - 35	
Category 7: Disaster Mitigation	5	5 - 30	
Category 8: General	6	0 - 40	
Total:	109		
Total Need:	108	The Total Need number will automatically adjust as points are earned for each criteria in the checklist.	
Certified Home Score	101		
Certification Level:	Bronze	Home Address	
		5 BR Prototype - DED FL	
		0	
		HERS 65 (note worst case is 59)	


A GREEN FLORIDA FOR A BLUE PLANET

49



50



51



52



53



54



55



56

Final Inspection

- If you are also coordinating the Energy Rating – we like notice around HVAC start up
- Power must be on at site
- Everything installed – doors, medicine cabinets, appliances,...
- Blower Door Test During Punch List
- Final Inspection upon home completion – Beauty Shots

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

57



58

Duct Leakage Testing

Page 9

4. DUCT LEAKAGE TO OUTSIDE: 4 CFM/100 FT² OF CONDITIONED FLOOR AREA

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

59

Confirmed HERS

Confirmed Rating: RESNET Registration No. 791674037

Address: 1300 Deer Palm Court, Titusville, FL 32781

Year: 2016

Home Energy Rating Guide

Reference \$1790

Annual Energy Cost: \$1190

HERS Index: 62

FCBC FLORIDA GREEN BUILDING COALITION A GREEN FLORIDA FOR A BLUE PLANET

60



61



62



- Access to DEO specific FGBC Checklist
- Access to highlighted plan
- Access to training videos

63