

# Thank you



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# Set Yourself Apart: Certify to the National Green Building Standard

April 2013

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Steve Armstrong, ESG Testing



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# What Matters to Consumers: Top Three Benefits of Green

1. Healthy Place to Live
2. Lower Operating Costs
3. Part of a more sustainable lifestyle



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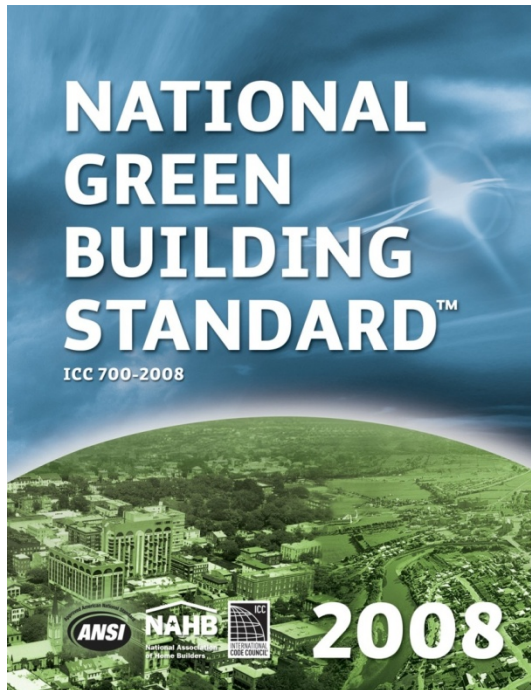
# Multifamily is Hot. Why Certify?

- Market Differentiation
- Institutional Investors
- Energy Price Volatility
- Corporate Reputation
- Streamlined Entitlement Process, Development Review, Public Participation
- BONUS REASON: Employee Retention



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# ICC-700 National Green Building Standard



- Approved by American National Institute of Standards (ANSI)
  - 2008 & 2012 version
- Provides green rating system for all residential buildings
- Sets four performance levels
- Designed to be voluntary, above-code program



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**Green Conference**

APRIL 15-17, 2013 | BALTIMORE, MD

Baltimore Marriott Waterfront Hotel

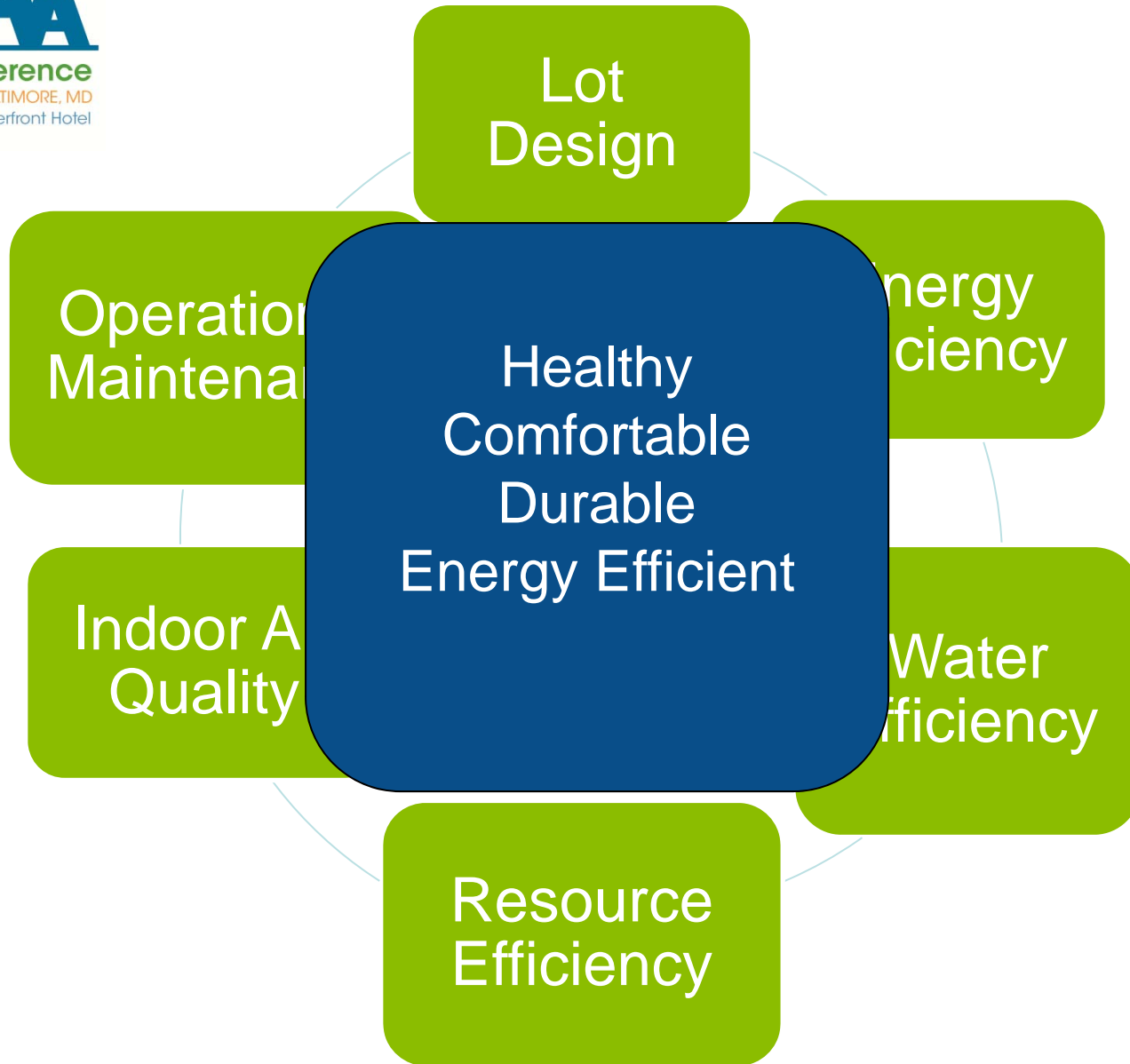
NGBS  
defines green  
home

100% project  
verification  
ensures  
compliance

National  
NGBS  
certification  
provides  
consistency



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# NGBS Performance Levels

| Green Building Categories |            |  | Performance Level Points <sup>(1) (2)</sup> |            |            |            |
|---------------------------|------------|--|---|------------|------------|------------|
|                           |            |  | BRONZE                                      | SILVER     | GOLD       | EMERALD    |
| 1.                        | Chapter 5  | Lot Design, Preparation, and Development             | 39  | 66         | 93         | 119        |
| 2.                        | Chapter 6  | Resource Efficiency                                  | 45  | 79         | 113        | 146        |
| 3.                        | Chapter 7  | Energy Efficiency                                    | 30  | 60         | 100        | 120        |
| 4.                        | Chapter 8  | Water Efficiency                                     | 14  | 26         | 41         | 60         |
| 5.                        | Chapter 9  | Indoor Environmental Quality                         | 36  | 65         | 100        | 140        |
| 6.                        | Chapter 10 | Operation, Maintenance, and Building Owner Education | 8   | 10         | 11         | 12         |
| 7.                        |            | Additional Points from any category                  | 50  | 100        | 100        | 100        |
| <b>Total Points:</b>      |            |  | <b>222</b>                                  | <b>406</b> | <b>558</b> | <b>697</b> |



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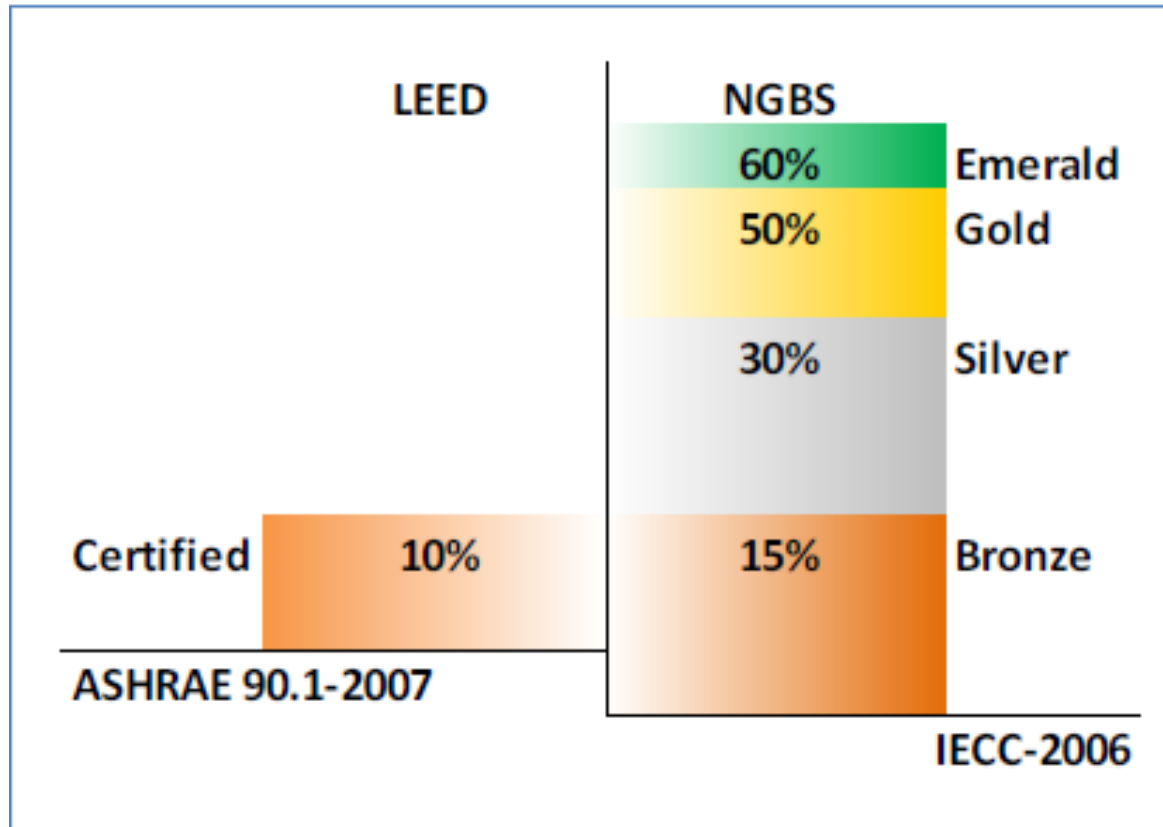


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**Table 1 – Minimum Energy Efficiency Requirements  
Percentage Improvement Above Code**



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AMERICA'S LEADING ADVOCATE FOR QUALITY RENTAL HOUSING  
WWW.NAAHQ.ORG

# Comparing Green Building Rating Systems

- ANSI-approved consensus standard
- Written in code language
- Few mandatory provisions
- Expansive, flexible point-based system
- Multiple paths for energy compliance
- All residential



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# Scope of NGBS

- Communities / Land Development
- Single Family Homes
  - New Construction
  - Renovations, additions, accessory structures
- Multifamily Buildings
  - New Construction – no height limit
  - Renovations, conversions
  - Mixed-use ok



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# Renovation /Remodeling

- 2012 NGBS: Separate chapter focused on renovation
- Similar to, but more comprehensive than, 2008 NGBS Green Remodel Path
- Applicable mandatory practices
- Energy & water reduction goals:
  - 15% Bronze, 25% Silver, 35% Gold, 45% Emerald
- Additional points required from other categories of green practices, but no minimum thresholds in each category



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# 100% Independent Verification

- Qualify, Train, & Test
  - Previous experience in residential construction and green building
  - Standardize inspection process for projects
- Accredit
  - Must have sufficient insurance, auto and liability
  - 100% review of all inspection reports
  - Routine site audits for quality assurance
- Nationwide verifier network
  - 400+
  - 50 state coverage



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Certification  
Fees

Practices and  
Products

Verification Costs

Technical Assistance



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NATIONAL APARTMENT  
ASSOCIATION

AMERICA'S LEADING ADVOCATE FOR QUALITY RENTAL HOUSING

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# Verification Costs

- Market Rate
- Inspections typically 1-2 hours each on SF homes (rough & final)
- Many verifiers provide other services
  - HERS raters, energy modeling
  - Design services
- Nationwide network



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# Certification Fees

|                  | <b>NAHB Member</b>    | <b>Non-member</b>     |
|------------------|-----------------------|-----------------------|
| Single Family    | \$200                 | \$500                 |
| Multi-Family     | \$200 + \$20 per unit | \$500 + \$20 per unit |
| Land Development | \$2,500               | \$2,500               |



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@mdesiderio



ICC-700 National Green Building Certification Group



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# Set Yourself Apart: Get Certified to the National Green Building Standard

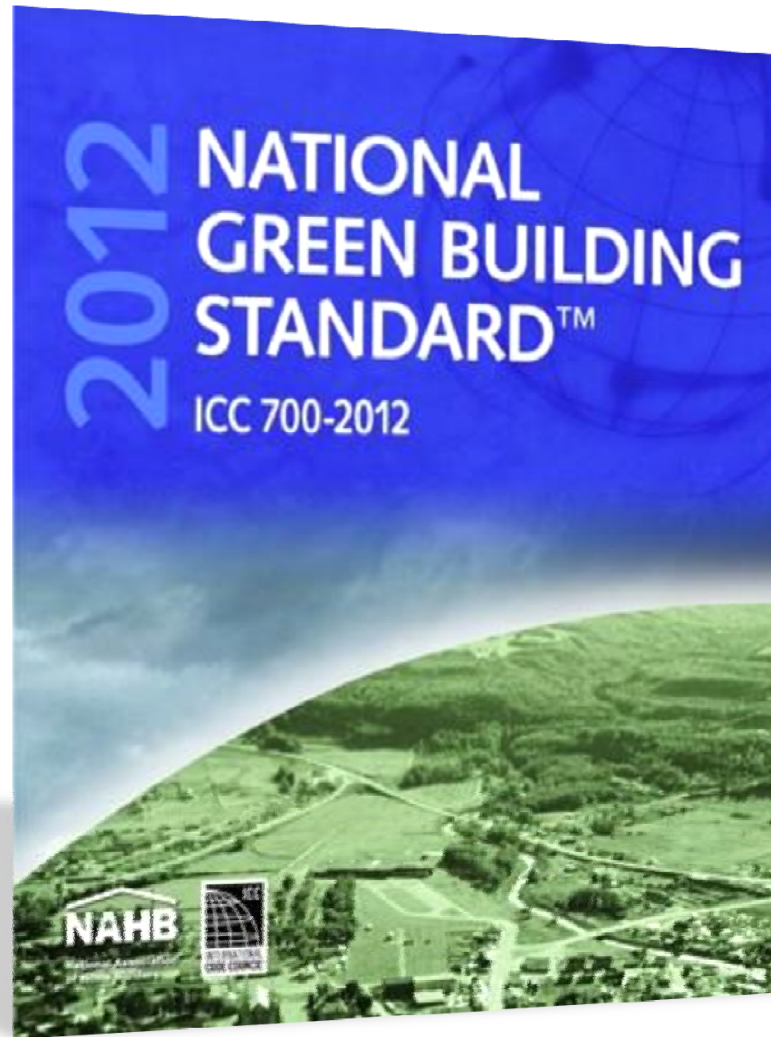


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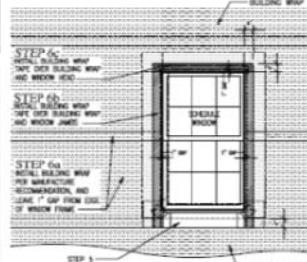
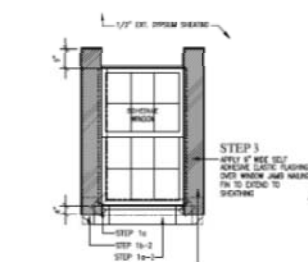
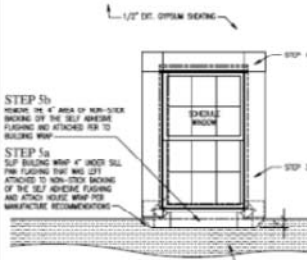
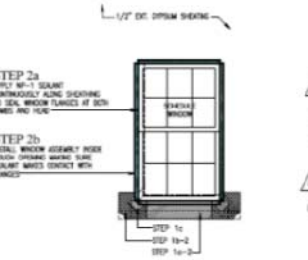
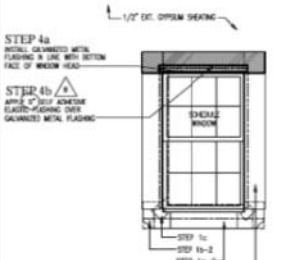
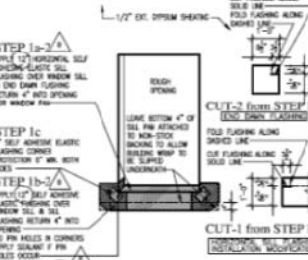
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# Details and Project Manual

|   |   |
|---|---|
|  <p><b>STEP 6a:</b> INSTALL BUILDING WRAP OVER SHEET METAL FLASHING AND WINDOW FRAME.<br/> <b>STEP 6b:</b> INSTALL BUILDING WRAP OVER SHEET METAL FLASHING AND WINDOW FRAME.<br/> <b>STEP 6c:</b> INSTALL BUILDING WRAP OVER MANUFACTURER RECOMMENDATION AND LEAVE 1" GAP FROM EDGE OF WINDOW FRAME.</p> <p><b>STEP 8:</b> INSTALL BUILDING WRAP AT JAMB AND HEAD OF WINDOW.<br/> <b>8a:</b> INSTALL BUILDING WRAP FOR MANUFACTURER RECOMMENDATION AND LEAVE 1" GAP FROM EDGE OF WINDOW FRAME TO BUILDING WRAP.<br/> <b>8b:</b> INSTALL BUILDING WRAP TAPE AT JAMB OVER BUILDING WRAP AND WINDOW FRAME, AND EXTEND BUILDING WRAP TAPE 4" FROM WINDOW HEAD.<br/> <b>8c:</b> INSTALL BUILDING WRAP TAPE AT HEAD OVER BUILDING WRAP AND WINDOW FRAME.</p> <p><b>WDW MOISTURE PROTECTION at SIDING &amp; STUCCO SEQ. 6</b><br/>     Scale: 1/2" = 1'-0"</p> |  <p><b>STEP 3:</b> APPLY 1/2" WIDE SELF-ADHESIVE ELASTIC FLASHING 6" FROM HEAD AND 4" FROM SILL.</p> <p><b>STEP 1a:</b><br/> <b>STEP 1a-2:</b><br/> <b>STEP 1a-3:</b><br/> <b>STEP 3:</b></p> <p><b>STEP 3:</b> APPLY 1/2" WIDE SELF-ADHESIVE ELASTIC FLASHING 6" FROM HEAD AND 4" FROM SILL.</p> <p><b>WDW MOISTURE PROTECTION at SIDING &amp; STUCCO SEQ. 3</b><br/>     Scale: 1/2" = 1'-0"</p>  |
|  <p><b>STEP 5a:</b> INSTALL BUILDING WRAP AT WINDOW SILL.<br/> <b>5a:</b> SLIP BUILDING WRAP 4" UNDER SILL FIN FLASHING THAT WAS LEFT ATTACHED TO NON-STICK BACKING OF THE SELF-ADHESIVE FLASHING AND ATTACHED HOUSE WRAP FOR MANUFACTURER RECOMMENDATION.<br/> <b>5b:</b> FORMER THE 4" WIDE OF NON-STICK BACKING OFF THE SELF-ADHESIVE FLASHING AND ATTACHED TO BUILDING WRAP.</p> <p><b>WDW MOISTURE PROTECTION at SIDING &amp; STUCCO SEQ. 5</b><br/>     Scale: 1/2" = 1'-0"</p>  |  <p><b>STEP 2a:</b> APPLY NO. 1 SEALANT CONTINUOUSLY ALONG SHEETING TO MAKE CONTACT WITH WINDOW FLANGES AT BOTH JAMB AND HEAD.<br/> <b>STEP 2b:</b> INSTALL WINDOW ASSEMBLY OVER WINDOW SHEETING MAKING SURE SEALANT CONTACTS WITH FLANGES.</p> <p><b>STEP 2a:</b> APPLY NO. 1 SEALANT CONTINUOUSLY ALONG SHEETING TO MAKE CONTACT WITH WINDOW FLANGES AT BOTH JAMB AND HEAD. MAKE SURE SEALANT MAKES CONTACT WITH FLANGES.</p> <p><b>WDW MOISTURE PROTECTION at SIDING &amp; STUCCO SEQ. 2</b><br/>     Scale: 1/2" = 1'-0"</p>   |
|  <p><b>STEP 4a:</b> INSTALL GALVANIZED METAL FLASHING IN ONE WITH BOTTOM FACE OF WINDOW HEAD.<br/> <b>STEP 4b:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER GALVANIZED METAL FLASHING.</p> <p><b>STEP 1a:</b><br/> <b>STEP 1a-2:</b><br/> <b>STEP 1a-3:</b><br/> <b>STEP 3:</b></p> <p><b>WDW MOISTURE PROTECTION at SIDING &amp; STUCCO SEQ. 4</b><br/>     Scale: 1/2" = 1'-0"</p>  |  <p><b>STEP 1a-2:</b> APPLY 1/2" HORIZONTAL SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL IN ONE WITH FLASHING SQUARE 4" INTO OPENING FOR WINDOW FIN.<br/> <b>STEP 1c:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING CORNER PROTECTION 6" WITH BOTH SIDES.<br/> <b>STEP 1b-2:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL &amp; SILL FLASHING RETURN 4" INTO OPENING.<br/> <b>STEP 1b-3:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL &amp; SILL FLASHING RETURN 4" INTO OPENING.<br/> <b>STEP 1:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW FIN.<br/> <b>1a:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL.<br/> <b>1b:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL.<br/> <b>1c:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING CORNER PROTECTION 6" WITH BOTH SIDES.<br/> <b>1d:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL &amp; SILL FLASHING RETURN 4" INTO OPENING.<br/> <b>1e:</b> APPLY 1/2" SELF-ADHESIVE ELASTIC FLASHING OVER WINDOW SILL &amp; SILL FLASHING RETURN 4" INTO OPENING.</p> <p><b>WDW MOISTURE PROTECTION at SIDING &amp; STUCCO SEQ. 1</b><br/>     Scale: 1/2" = 1'-0"<br/>     08003_dwwm101-SIDING_STUCCO-SEQ-01-05.DWG</p> |





|    | A   | B  | C  | D  | E | F | G | H | I | J | K | L   | M                       | N   | O  | P                        | Q            | R       |     |
|----|---|--|--|--|---|---|---|---|---|---|---|---|-------------------------|---|--|--------------------------|--------------|---------|-----|
| 1  |  |  |  | <b>NGBS Scoring for New Construction</b>   |   |   |   |   |   |   |   | <b>Current Status</b>   |                         | <b>Performance Level Minimums</b>   |  |                          |              |         |     |
| 2  |   |  |  | ICC 700-2008 National Green Building Standard™   |   |   |   |   |   |   |   | Score   |                         | Mandatory   | Bronze   | Silver                   | Gold         | Emerald |     |
| 3  |   |  |  | Revised October 13, 2010   |   |   |   |   |   |   |   | This Chapter  |                         | 100   | Met  | 45                       | 79           | 113     | 146 |
| 4  |   |  |  | <br><a href="#">2010 NAHB Research Center, Inc.</a> Use of this document is permitted solely for the purpose of participating in the NAHB Research Center's Green Building Certification. |   |   |   |   |   |   |   | This Project  |                         | 430   | Met  | 222                      | 406          | 558     | 697 |
| 5  |   |  |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 6  | <b>Practice #</b>   |  | <b>Chapter 6: Resource Efficiency</b>  |  |   |   |   |   |   |   |   |   | <b>Points Available</b> | <b>Points Claimed</b>   | <b>Required Documentation</b>  | <b>Approved Products</b> | <b>Notes</b> |         |     |
| 7  | <b>601 - Quality of Construction Materials and Waste</b>                          |  |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 8  | 601.0   | <b>INTENT.</b> Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.   |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 9  | 601.1   | <b>Conditioned floor area.</b> Conditioned floor area, as defined by ICC IRC and calculated in accordance with NAHBRC Z765, is limited. Dwelling unit size is to be calculated in accordance with NAHBRC Z765. Only the conditioned floor area for stories above grade plane is to be included in the calculation. |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 10 |   | <b>For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.</b>  |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 11 |   | <b>Claim points for only one from (1)-(4) below:</b>   |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 12 | (1)   | less than or equal to 1,000 square feet (93 m <sup>2</sup> )   |  |  |   |   |   |   |   |   |   | 15  |                         | Plans or other document by architect or designer showing square footage calculation per ANSI Z765 for all conditioned floor area above grade. |  |                          |              |         |     |
| 13 | (2)   | less than or equal to 1,500 square feet (139 m <sup>2</sup> )  |  |  |   |   |   |   |   |   |   | 12  | 12                      |   | Calculation showing weighted average unit size for multi-family buildings. |                          |              |         |     |
| 14 | (3)   | less than or equal to 2,000 square feet (186 m <sup>2</sup> )  |  |  |   |   |   |   |   |   |   | 9   |                         |   |  | --                       |              |         |     |
| 15 | (4)   | less than or equal to 2,500 square feet (232 m <sup>2</sup> )  |  |  |   |   |   |   |   |   |   | 6   |                         |   |  |                          |              |         |     |
| 16 |   | <b>**Your project is 900 square feet.**</b>  |  |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |
| 17 | 601.2   | <b>Material usage.</b> Building-code-compliant structural systems or advanced framing techniques are implemented that optimize material usage.   |  |  |   |   |   |   |   |   |   | <b>1 sys = 3 pts</b><br><b>2 sys = 6 pts</b><br><b>3+ sys = 9 pts</b> | 6                       | List of advanced framing features shown on plans. <a href="#">See Products</a>  |  |                          |              |         |     |
| 18 | <b>Additional Info:</b>   |  | <b>NOTE:</b> Indicate structural systems or framing techniques in the Additional Info box below.<br>Examples: floor, roof, exterior walls, interior walls, single top plate, no headers in non-bearing walls, ladder blocking at wall intersections, 2-stud corners, right-sized headers |  |   |   |   |   |   |   |   |   |                         |   |  |                          |              |         |     |



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**NGBS Scoring for New Construction**  
 ICC 700-2008 National Green Building Standard™

**This project has met all the BRONZE requirements**

Revised October 13, 2010

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**Bronze**

| Chapter  | Required Points | Claimed Points | Additional Claimed Points Above Bronze | Point Shortfall | Mandatory Status |
|--|-----------------|----------------|--|-----------------|------------------|
| Chapter 5: Lot Design, Preparation, & Development              | 39              | 139            | 100                                    |                 | N/A              |
| Chapter 6: Resource Efficiency                                 | 45              | 100            | 55                                     |                 | Met              |
| Chapter 7: Energy Efficiency                                   | 30              | 76             | 46                                     |                 | Met              |
| Chapter 8: Water Efficiency                                    | 14              | 17             | 3                                      |                 | N/A              |
| Chapter 9: Indoor Environmental Quality                        | 36              | 83             | 47                                     |                 | Met              |
| Chapter 10: Operation, Maintenance, & Building Owner Education | 8               | 15             | 7                                      |                 | Met              |
| <b>Section Totals</b>  | 172             | 430            | 258                                    | 0               |                  |
| <b>Additional Points Above Bronze</b>                          | 50              |                | 258                                    | 0               |                  |
| <b>Total Points</b>  | 222             | 430            |  | 0               |                  |

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**Silver**

| Chapter  | Required Points | Claimed Points | Additional Claimed Points Above Silver | Point Shortfall | Mandatory Status |
|--|-----------------|----------------|--|-----------------|------------------|
| Chapter 5: Lot Design, Preparation, & Development              | 66              | 139            | 73                                     |                 | N/A              |
| Chapter 6: Resource Efficiency                                 | 79              | 100            | 21                                     |                 | Met              |
| Chapter 7: Energy Efficiency                                   | 60              | 76             | 16                                     |                 | Met              |
| Chapter 8: Water Efficiency                                    | 26              | 17             |  | (9)             | N/A              |
| Chapter 9: Indoor Environmental Quality                        | 65              | 83             | 18                                     |                 | Met              |
| Chapter 10: Operation, Maintenance, & Building Owner Education | 10              | 15             | 5                                      |                 | Met              |
| <b>Section Totals</b>  | 306             | 430            | 133                                    | (9)             |                  |
| <b>Additional Points Above Silver</b>                          | 100             |                | 133                                    | 0               |                  |
| <b>Total Points</b>  | 406             | 430            |  | (9)             |                  |



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## COST OF GOING GREEN FOR DENSITY MULTIFAMILY



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# The Voyager at Space Center



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Baltimore Marriott Waterfront Hotel



National Association of Home Builders

July 12, 2010

# Nation's Building News

The Official Online Newspaper of NAHB

## Green Building

Font size: A A A

### Luxury Apartments Near Johnson Space Center Largest Project to Be Certified Green by NAHB

#### Multifamily Industry Pioneers: A First in Green Building

Green Building has swept the nation as the building industry makes strides in environmentally conscious technology and practices to live cleaner and "greener" — and the multifamily sector is proving to be ahead of the game.

The Voyager at the Space Center, in Nassau Bay, Texas, has pioneered the green building agenda and earned its LEED as a "first" in the certified green world.

Developed by Martin Fain Interests and designed by Steinberg Design Collaborative, LLC, both members of NAHB Multifamily, this 313-unit luxury apartment complex is the largest project to be certified by NAHB's National Green Building Standard, approved by the American National Standards Institute (ANSI).

The development met specific benchmarks in energy, water, and resource efficiency; indoor environmental quality; life cycle development, and operation and maintenance education.

The Voyager, located within walking distance of the Johnson Space Center in Houston, was built on the site of a former government office building, garnering points for the reuse of the parking lot to increase density and for its proximity to employment and retail centers.

"This certification is further evidence of the National Green Building Standard's flexibility in ensuring sustainable construction techniques for all kinds of housing," said NAHB Research Center President Mike Lutz.

This project is the 16th multifamily building to be certified to the standard, according to the NAHB Research Center. There are eight more currently awaiting certification.

[View the press release here.](#)

[View the article in Nation's Building News !\[\]\(291e070cef6c4d5e78fefe4696ef53be\_img.jpg\).](#)

For more information, contact Cali S. Smith, or call her at 800-368-5242 x8132.



# #NAAGreenCo



Space Center Plaza  
Preliminary Site  
SCALE 1" = 30'

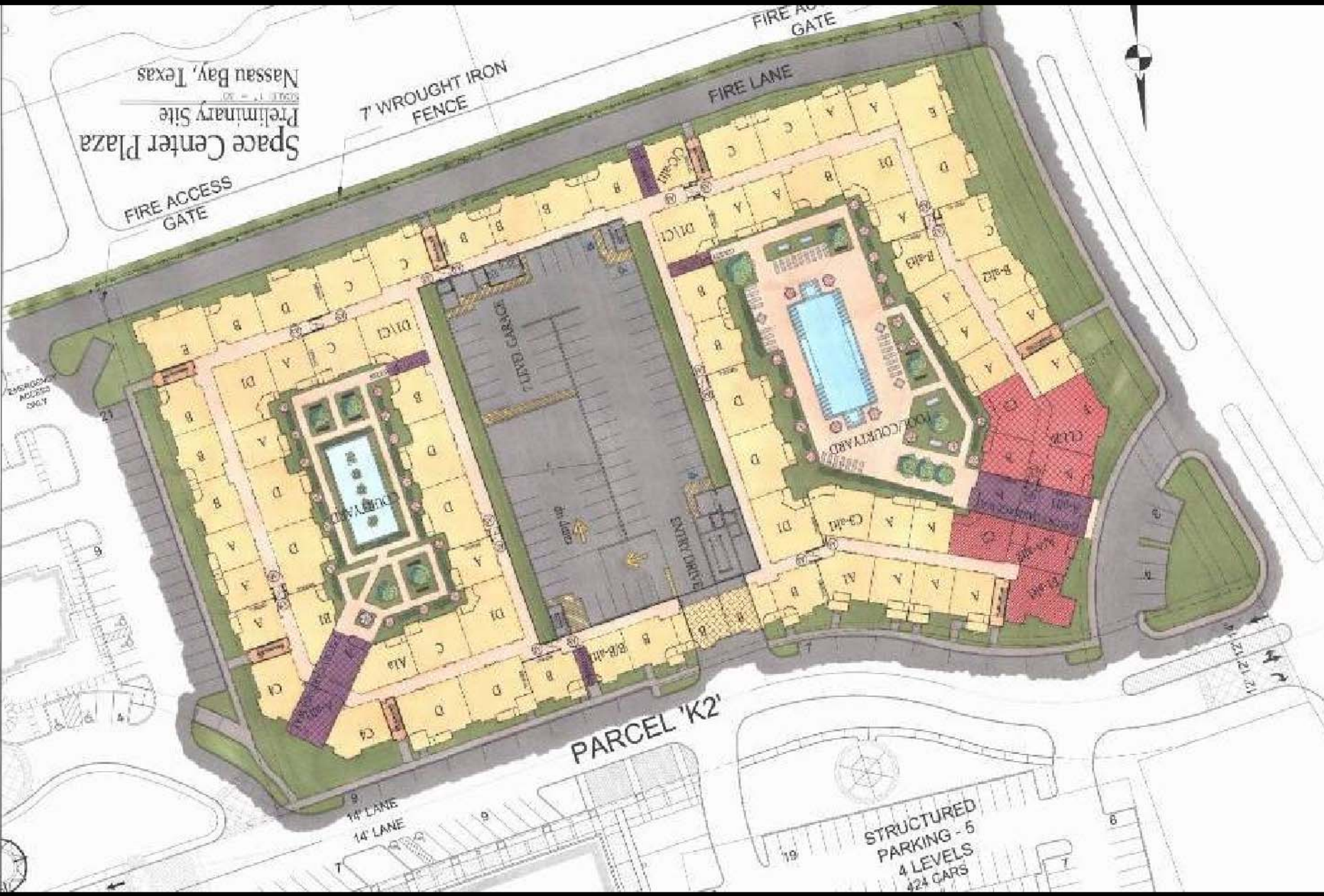
Nassau Bay, Texas

FIRE ACCESS  
GATE

7' WROUGHT IRON  
FENCE

FIRE LANE

FIRE ACCESS  
GATE



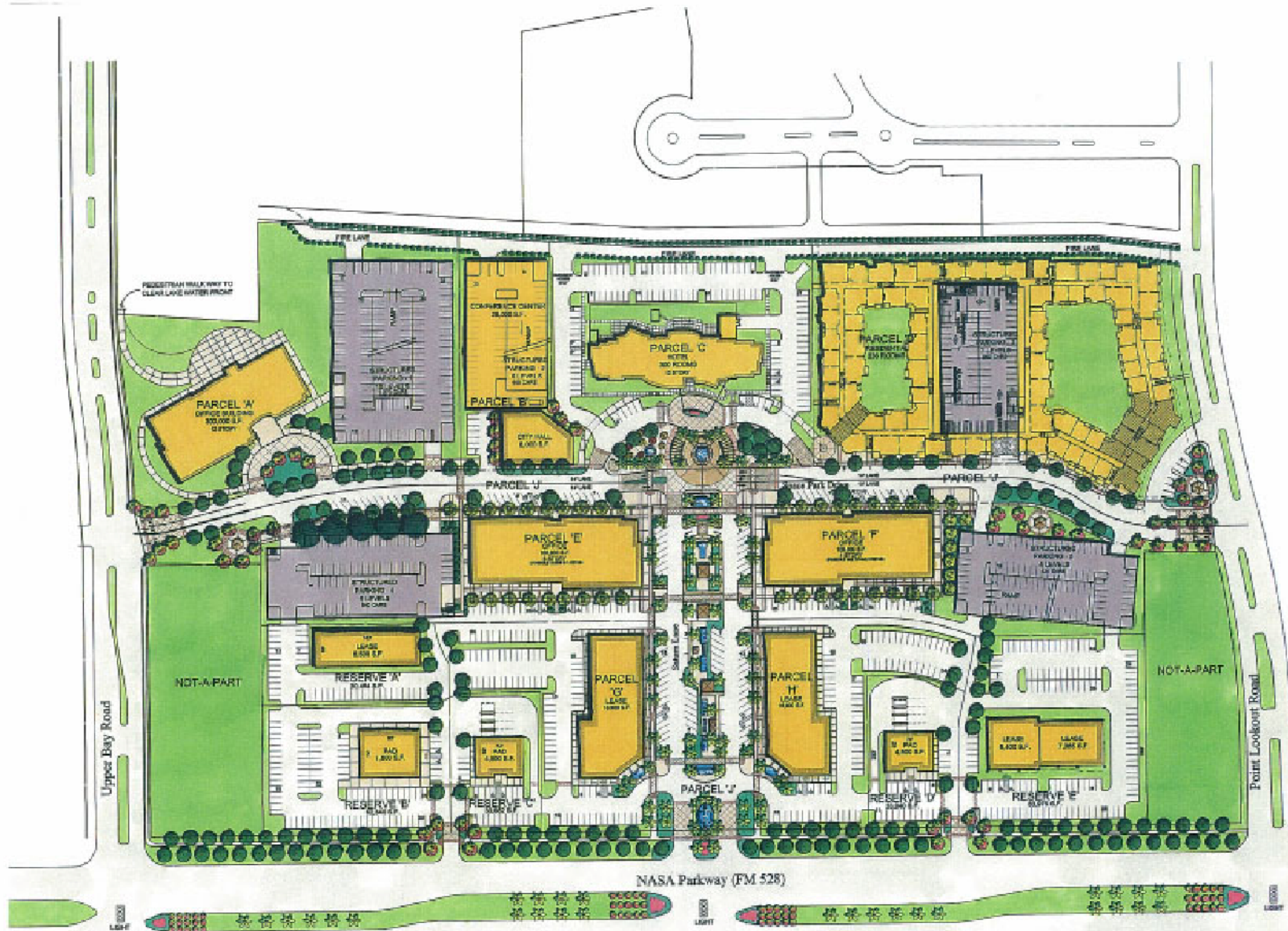
PARCEL 'K2'

STRUCTURED  
PARKING - 5  
4 LEVELS  
424 CARS

14' LANE  
14' LANE

22' 2 1/2"











# Voyager NGBS Verification Report

## Sign Off After FINAL Inspection

| Chapter | Topic               | TOTAL Designer Report Claimed | Points Awarded @ ROUGH | Points Awarded @ FINAL | TOTAL Points Awarded | GREEN LEVEL:       | BRONZE | SILVER | GOLD | EMERALD | Level Achieved For This Section |
|---------|---------------------|-------------------------------|------------------------|------------------------|----------------------|--------------------|--------|--------|------|---------|---------------------------------|
| 5       | Lot Design          | 96                            | 69                     | 27                     | 96                   | Points needed for: | 39     | 66     | 93   | 119     | GOLD                            |
| 6       | Resource Efficiency | 82                            | 56                     | 23                     | 79                   | Points needed for: | 45     | 79     | 113  | 146     | SILVER                          |
| 7       | Energy Efficiency   | 53                            | 23                     | 30                     | 53                   | Points needed for: | 30     | 60     | 100  | 120     | BRONZE                          |
| 8       | Water Efficiency    | 15                            | 2                      | 13                     | 15                   | Points needed for: | 14     | 26     | 41   | 60      | BRONZE                          |
| 9       | Indoor Quality      | 60                            | 20                     | 40                     | 60                   | Points needed for: | 36     | 65     | 100  | 140     | BRONZE                          |
| 10      | Operation           | 18                            |                        | 18                     | 18                   | Points needed for: | 8      | 10     | 11   | 12      | EMERALD                         |

Circle levels achieved in each Chapter & Total.

| TOTAL | 324 | 170 | 151 | 321 | GREEN LEVEL:       | BRONZE | SILVER | GOLD | EMERALD | OVERALL Level Achieved |
|-------|-----|-----|-----|-----|--------------------|--------|--------|------|---------|------------------------|
|       |     |     |     |     | Points needed for: | 222    | 406    | 558  | 697     | Bronze                 |



# The Verona



- Bronze
- NGBS



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# The Retreat at The Woodlands



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- Bronze NGBS

# Retreat NGBS Designers Report



**NGBS Scoring for New Construction**  
 ICC 700-2008 National Green Building Standard™

This project has met all the BRONZE requirements

Revised October 13, 2010

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## Bronze

| Chapter   | Required Points | Claimed Points | Additional Claimed Points Above Bronze | Point Shortfall | Mandatory Status |
|---|-----------------|----------------|--|-----------------|------------------|
| Chapter 5: Lot Design, Preparation, & Development | 39              | 126            | 87                                     |                 | N/A              |
| Chapter 6: Resource Efficiency                    | 45              | 87             | 42                                     |                 | Met              |
| Chapter 7: Energy Efficiency                      | 30              | 55             | 25                                     |                 | Met              |
| Chapter 8: Water Efficiency                       | 14              | 22             | 8                                      |                 | N/A              |
| Chapter 9: Indoor Environmental Quality           | 36              | 52             | 16                                     |                 | Met              |
| Education   | 8               | 15             | 7                                      |                 | Met              |
| <b>Section Totals</b>                             | <b>172</b>      | <b>357</b>     | <b>185</b>                             | <b>0</b>        |                  |
| <b>Additional Points Above Bronze</b>             | <b>50</b>       |                | <b>185</b>                             | <b>0</b>        |                  |
| <b>Total Points</b>                               | <b>222</b>      | <b>357</b>     |  | <b>0</b>        |                  |



# Retreat NGBS Verifier Rough Report

| Rough Summary |                     |                      |                      |                     |                     |        |        |      |         |                                 |
|---------------|---------------------|----------------------|----------------------|---------------------|---------------------|--------|--------|------|---------|---------------------------------|
| Chapter       | Topic               | Rough Points Claimed | ROUGH Points Awarded | Rough Points Denied | GREEN LEVEL:        | BRONZE | SILVER | GOLD | EMERALD | Level Achieved For This Section |
| 5             | Lot Design          | 95                   | 62                   | 33                  | Points needed for:  | 39     | 66     | 93   | 119     | BRONZE                          |
|               |                     |                      |                      |                     | Points above/below: | 23     | -4     | -31  | -57     |                                 |
| 6             | Resource Efficiency | 69                   | 57                   | 12                  | Points needed for:  | 45     | 79     | 113  | 146     | BRONZE                          |
|               |                     |                      |                      |                     | Points above/below: | 12     | -22    | -56  | -89     |                                 |
| 7             | Energy Efficiency   | 18                   | 10                   | 8                   | Points needed for:  | 30     | 60     | 100  | 120     | none                            |
|               |                     |                      |                      |                     | Points above/below: | -20    | -50    | -90  | -110    |                                 |
| 8             | Water Efficiency    | 0                    | 0                    | 0                   | Points needed for:  | 14     | 26     | 41   | 60      | none                            |
|               |                     |                      |                      |                     | Points above/below: | -14    | -26    | -41  | -60     |                                 |
| 9             | Indoor Quality      | 14                   | 13                   | 1                   | Points needed for:  | 36     | 65     | 100  | 140     | none                            |
|               |                     |                      |                      |                     | Points above/below: | -23    | -52    | -87  | -127    |                                 |
| 10            | Operation           | 0                    | 0                    | 0                   | Points needed for:  | 8      | 10     | 11   | 12      | none                            |
|               |                     |                      |                      |                     | Points above/below: | -8     | -10    | -11  | -12     |                                 |
| TOTAL         |                     | 357                  | 142                  | 54                  | GREEN LEVEL:        | BRONZE | SILVER | GOLD | EMERALD | OVERALL Level Achieved          |
|               |                     |                      |                      |                     | Points needed for:  | 222    | 406    | 558  | 697     | none                            |
|               |                     |                      |                      |                     | Points above/below: | -80    | -264   | -416 | -555    |                                 |



# Site Plan











# Arcadia's Edge



# Arcadia's Edge NGBS Designers Report

## Silver

| Chapter   | Required Points | Claimed Points | Additional Claimed Points Above Silver | Point Shortfall | Mandatory Status |
|---|-----------------|----------------|--|-----------------|------------------|
| Chapter 5: Lot Design, Preparation, & Development | 66              | 133            | 67                                     |                 | N/A              |
| Chapter 6: Resource Efficiency                    | 79              | 85             | 6                                      |                 | Met              |
| Chapter 7: Energy Efficiency                      | 60              | 72             | 12                                     |                 | Met              |
| Chapter 8: Water Efficiency                       | 26              | 30             | 4                                      |                 | N/A              |
| Chapter 9: Indoor Environmental Quality           | 65              | 74             | 9                                      |                 | Met              |
| Education   | 10              | 15             | 5                                      |                 | Met              |
| <b>Section Totals</b>                             | <b>306</b>      | <b>409</b>     | <b>103</b>                             | <b>0</b>        |                  |
| <b>Additional Points Above Silver</b>             | <b>100</b>      |                | <b>103</b>                             | <b>0</b>        |                  |
| <b>Total Points</b>                               | <b>406</b>      | <b>409</b>     |  | <b>0</b>        |                  |

### To achieve Silver:

- \* Reach required Silver score for each chapter *This requirement has been met.*
- \* Reach required Additional Points for this project *This requirement has been met.*
- \* Meet all mandatory items *This requirement has been met.*
- \* For Chapter 7: Energy Efficiency:
  - ~ Claim at least 30 points from Section 702 (Performance Path)  
 or Section 703 (Prescriptive Path) *You have met the Prescriptive Path minimum points requirement.*
  - ~ Select a minimum of 2 items from Section 704 *You have met the minimum 2 required items from Section 704.*



# Construction Details



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# Construction Details



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**Green Conference**  
APRIL 15-17, 2013 | BALTIMORE, MD  
Baltimore Marriott Waterfront Hotel



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# Green Communities under Construction

- The Vue – Lone Tree, Colorado
- Lakeshore Pearl – Austin, TX
- Broadstone Memorial – Houston, TX
- Broadstone Stonehaven – Round Rock, TX
- Springwoods Village – Houston, TX
- The Willowick – Houston, TX
- Domain at City Centre II – Houston, TX
- The Fairmont at Museum District – Houston, TX





# Green Communities on the Boards

- Vargos on the Lake – Houston, TX
- Broadstone Greenhouse – Houston, TX
- Fairway Manor – Memphis, TN
- Crabtree Place – Raleigh, NC
- Domain West – Houston, TX
- Domain Memorial – Houston, TX



# Green Building

## A Builder's Perspective



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# Construction Management Services Since 1948



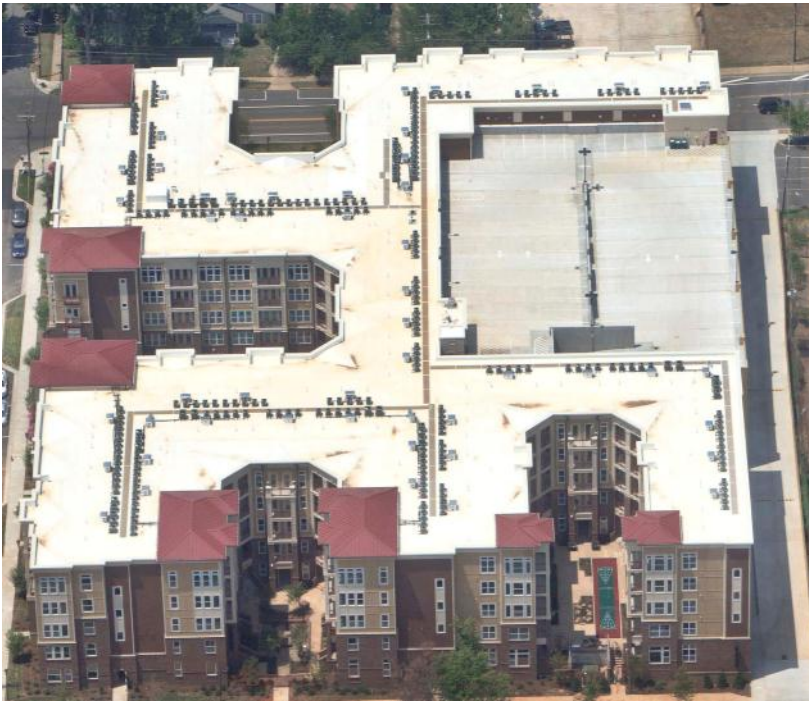
*"We build it like it's ours."*

- Headquartered in Orangeburg, SC
- Specialize in market-rate apartments, senior living, student housing & affordable housing communities
- Geographic reach: SC, NC, GA, TN, KY, VA
- More than 2,000 units constructed in 2012
- More than 1,500 units currently under construction
- [www.cfevans.com](http://www.cfevans.com)



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# Involvement with NAHB Green Building Program



- 1<sup>st</sup> project in SC certified to National Green Building Standard; 3<sup>rd</sup> largest building in U.S. certified to NGBS (at the time of certification)
- 1274 units certified to date
- 46 NAHB Certified Green Professionals on staff
- Member of NAHB Research Center's Consensus Committee for NGBS 2012 Update



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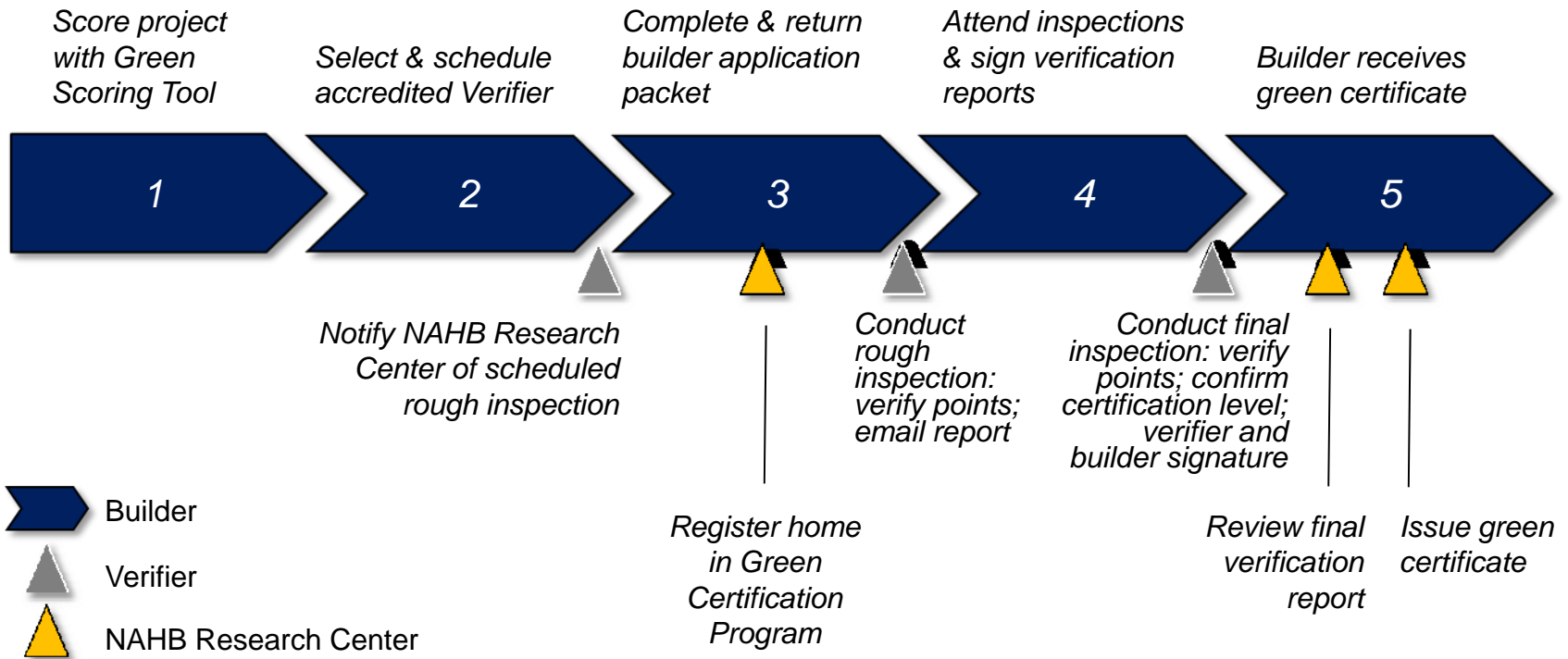
# Costs: Time to Bust the Myth!

|                           | <b>% Differential</b> |
|---------------------------|-----------------------|
| <b>Site Work</b>          | 0%                    |
| <b>Building</b>           | .15%                  |
| <b>Inspection Fees</b>    | 36%                   |
| <b>Certification Fees</b> | 100%                  |
| <b>TOTAL</b>              | 0.31%                 |



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# Implementation – Process Overview



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# Case in Point – Metro 808



- Charlotte, NC
- 237 units; 219,498 total heated SF
- Bronze level certification
- ~0.18% increased cost (as % of total)
- Examples of solutions/techniques used
  - Site selection of an infill lot that was previously developed
  - ENERGYSTAR® appliances
  - (CRI) Green Label Plus carpet and GREENGUARD Children & Schools Certified<sup>SM</sup> insulation
  - Low volume irrigation systems
  - Storm water management plan with underground detention systems



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# Case in Point – Verde Vista Apartment Homes



- Asheville, NC
- 252 units; 280,000 total heated SF
- Silver level certification and ENERGYSTAR®
- ~0.124% increased cost (as % of total) or \$79/unit for NAHB
- ~.62% increased cost (as % of total) or \$396/unit for ENERGYSTAR® certification
- Examples of solutions/techniques used
  - Upgrade from 13 SEER to 14 SEER split system units
  - Air sealing
  - Used low flow faucets and shower heads
  - Obtained ENERGYSTAR® Certification



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# Case in Point – Terry Village



- Orangeburg, SC
- 14 units; 10,475 total SF
- Bronze level certification
- ~0.24% increased cost (as % of total)
- Examples of solutions/techniques used
  - Water efficient landscaping
  - Natural irrigation
  - Preservation of wetlands
  - High performance windows
  - Increased insulation and air sealing



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# Case in Point – Whitehall Parc



- Charlotte, NC
- 298 units; 209,000 total SF
- Bronze level certification
- ~0.24% increased cost (as % of total)
- Examples of solutions/techniques used
  - ENERGYSTAR® refrigerators, dishwashers and exhaust fans
  - Low flow showerheads (2.5 gpm) and lavatory faucets (1.5 gpm)
  - Zoned irrigation system with rain sensors
  - Floor & Roof Trusses
  - GreenGuard certified insulation
  - Additional caulking for air infiltration



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# Takeaways – Before Construction



- Introduce program and its merits to Client/Developer
- Determine the level of certification owner wishes to achieve
- If possible, coordinate with the design team before design is completed (helps avoid redesign: some points may require design/specification changes to meet required performance levels)
- Determine who's hiring the Green Verifier – the owner or contractor
- Verifiers are like building inspectors: understand their expectations before the project begins



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# Takeaways – During Construction



- Ensure your superintendent & field team understand the requirements & quality expected
- Add language in contract scopes ensuring subcontractors are responsible for achieving relevant green points
- Meet with building inspectors to make sure they know what you're trying to achieve
- Work with subcontractors to ensure proper installation of relevant items
- Make sure verifier inspections are scheduled on time – once items/systems are covered up, you will be disqualified for those points



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# Takeaways – Post Construction



- Educate leasing agents on green features
- Highlight energy savings for residents (Energy Star appliances, sealed ductwork, etc.)
- Invite press to visit the project & write an article about green features
- Press releases



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# Community Goodwill

## GREEN TO BRONZE

### C.F. Evans builds first S.C. multifamily units to earn organization's award

By GENE ZALESKI  
 T&D Staff Writer

An Orangeburg-based construction company has gone green.  
 C.F. Evans Construction recently completed the first multiunit facility, Terry Village, to be certified to the National Green Building Standard as a Bronze Level Green Home. The National Association of Home Builders Research Center provided the certification.

It is the company's first green building project and the first multifamily building in the state to be certified to meet the NGBS.

The grand opening of the Bowman Street housing complex will be held Thursday, Sept. 1, at noon.

The four buildings at the Terry Village, which is an affordable housing community, incorporate green methods such as water-efficient landscaping, natural irrigation, preservation of wetlands, high-performance windows and increased insulation and air sealing.

Terry Village is a project of Mental Health America of South Carolina. MHASC provides affordable housing for low-income South Carolinians diagnosed as mentally ill.

Joy Jay, MHASC executive director, expressed

her excitement about the project.

"This is the first time we had the opportunity to go green," Jay said. "We felt like it was just so exciting to be able to do that and we will be leaving a smaller footprint for the residents. They are thrilled when we tell them."

"We hope their power bills will be lower," she said. "Everything we put in there we went green on."

Jay said the need for housing for the mentally ill is crucial as many suffering from mental illness currently reside in substandard housing.

"We have 14 units and we started out with 37 on the waiting list," Jay said. "We could have filled it up almost three times."

Jay said Terry Village occupancy is on a first-come, first-serve basis.

"People do have to be diagnosed with a mental illness and have to be willing to continue their services," she said. "It is so hard for folks to really get on the road to recovery when they are living in substandard housing."

Terry Village will be the third MHASC housing development in Orangeburg.

Currently, there is Enderly East and Allen Hearsh on Enderly Street near Kmart. Both these facilities have a total of 34 units.

Janet Bowler, C.F. Evans Construction director

of marketing and leadership in energy & environmental design green associate, touted the importance C.F. Evans has placed on the environment.

"C.F. Evans is dedicated to building awareness and embracing environmentally responsible practices both in the office and on the job site," Bowler said.

"We are committed to educating our employees and our partners on how to minimize impact on the environment and we will work to reinforce environmental stewardship and strive for continuous improvement."

Terry Village was completed in July 2011. There are a total of 14 one-bedroom units. Each is approximately 553 square feet. There is one handicap unit and one visual/hearing impaired unit, however all units are handicap adaptable.

The village has a gazebo, community center, mailboxes and EnergyStar appliances.

Founded in 1948, C.F. Evans & Co. is a construction management and a general construction firm specializing in preconstruction services, project management and construction of office buildings, health care facilities, churches, schools, and other commercial and industrial buildings.

■ Contact the writer: gzaleski@timesanddemocrat.com and 803-533-5551.



### C.F. Evans breaks new ground as NAHB bronze-level green building

C.F. Evans Construction has completed the first multiunit buildings to be certified to the National Green Building Standard as a Bronze Level Green Home by the National Association of Home Builders Research Center. The four buildings, located at Terry Village in Orangeburg, incorporate green methods such as water-efficient landscaping, natural irrigation, preservation of wetlands, high-performance windows, and increased insulation and air sealing. Terry Village is a project of Mental Health America of South Carolina, an organization whose mission is to improve the lives of people

a 100% recyclable, corrugated packaging product used in the food industry, at the facility. Miller-Valentine Group's design-build team is executing improvements to the office and manufacturing areas, including improvements in utilities, foundations and infrastructure in preparation to receive production equipment. The project is expected to be completed in time for fall 2011 occupancy. The building is located in the former Smurfit Stone building. The company investment, of more than \$13 million, is expected to generate 60 new jobs. Interstate Container is a subsidiary of Interstate Resources Inc., headquartered in Arlington, Va.



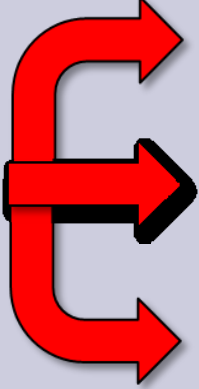



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 WWW.NAAHO.ORG

# Key Hurdles & Recommended Solutions

| HURDLE  |  | SOLUTION  |
|---|--|---|
| Getting owners on board   |    | Proactively educate owners  |
| Getting architects on board (may not be familiar with NAHB)   |    | Proactively educate architects<br>– e.g., Lunch ‘N Learns   |
| Controlling costs during construction   |   | <p>Make sure requirements are covered in subcontract scopes</p> <p>Ensuring proper installation &amp; quality</p> <p>Ensure field team understands expectations / quality verifier will require</p> |
| Project Management / Field Management don't see value of green – they want to build like they always have |  | Corporate buy-in / culture from the top & throughout entire organization  |



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# So What? Benefits in a Nutshell



- Higher installation quality standards
- Builds increased awareness regarding the costs of waste - & building a culture of recycling & sustainability
- For team members: Increased credibility in industry by holding yourself to higher standard & bringing solutions to the table
- Interest in community increases, utilize green features when meeting potential residents



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**Janet Bowler, Director of Marketing  
LEED Green Associate  
NAHB Certified Green Professional  
C.F. Evans Construction**

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**c: 843.814.4884**

**[www.cfevans.com](http://www.cfevans.com)**

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