Commercial Energy Guidelines Structural

Course # 5009331

Instructor: Timothy De Carion

Requirements To Receive Credit

- **You Must Have Registered Online**
- **Your Class Link, Sent To Your Email Inbox, Must Be Used To Receive Credit**
- **You Cannot Use Other People's Email Link**
- **A Poll Question Will Be Asked During The Webinar**
- **If You Do Not Respond To The Poll, You Not Receive Credit**


Somewhere...
A ceiling is missing its insulation

Commercial Energy Guidelines Structural

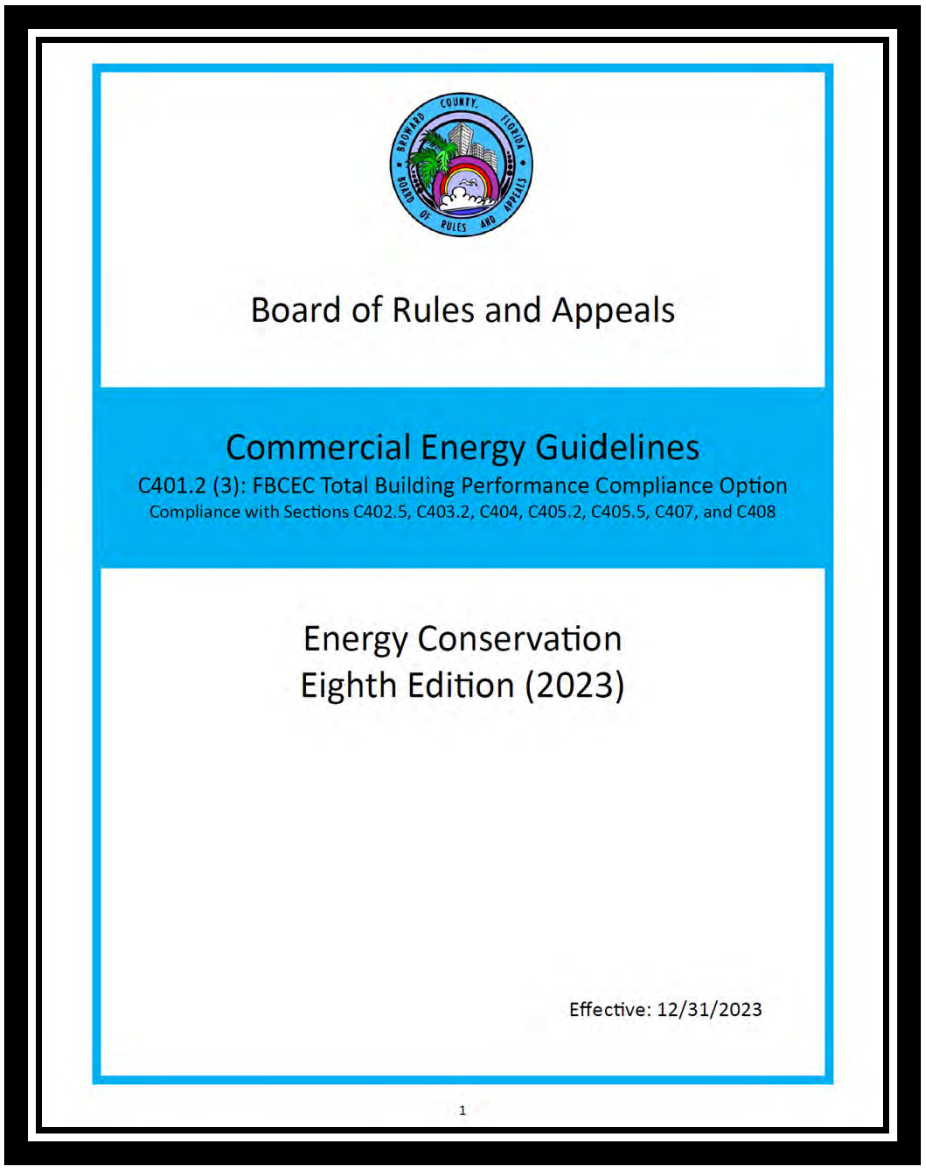
What Are We Going To Cover?

- Structural Guidelines Of Energy Plan Review
- Structural Guidelines Of Energy Inspections

Commercial Energy Guidelines Structural

Download the 2023 Commercial Guidelines
https://www.Broward.org/CodeAppeals

Voluntary Forms



Board of Rules and Appeals

Commercial Energy Guidelines

C401.2 (3): FBCEC Total Building Performance Compliance Option

Compliance with Sections C402.5, C403.2, C404, C405.2, C405.5, C407, and C408

Energy Conservation
Eighth Edition (2023)

Effective: 12/31/2023

1

Commercial Energy Guidelines Structural

Table Of Contents
Page 2

Building /Structural Checklist
Page 6-7

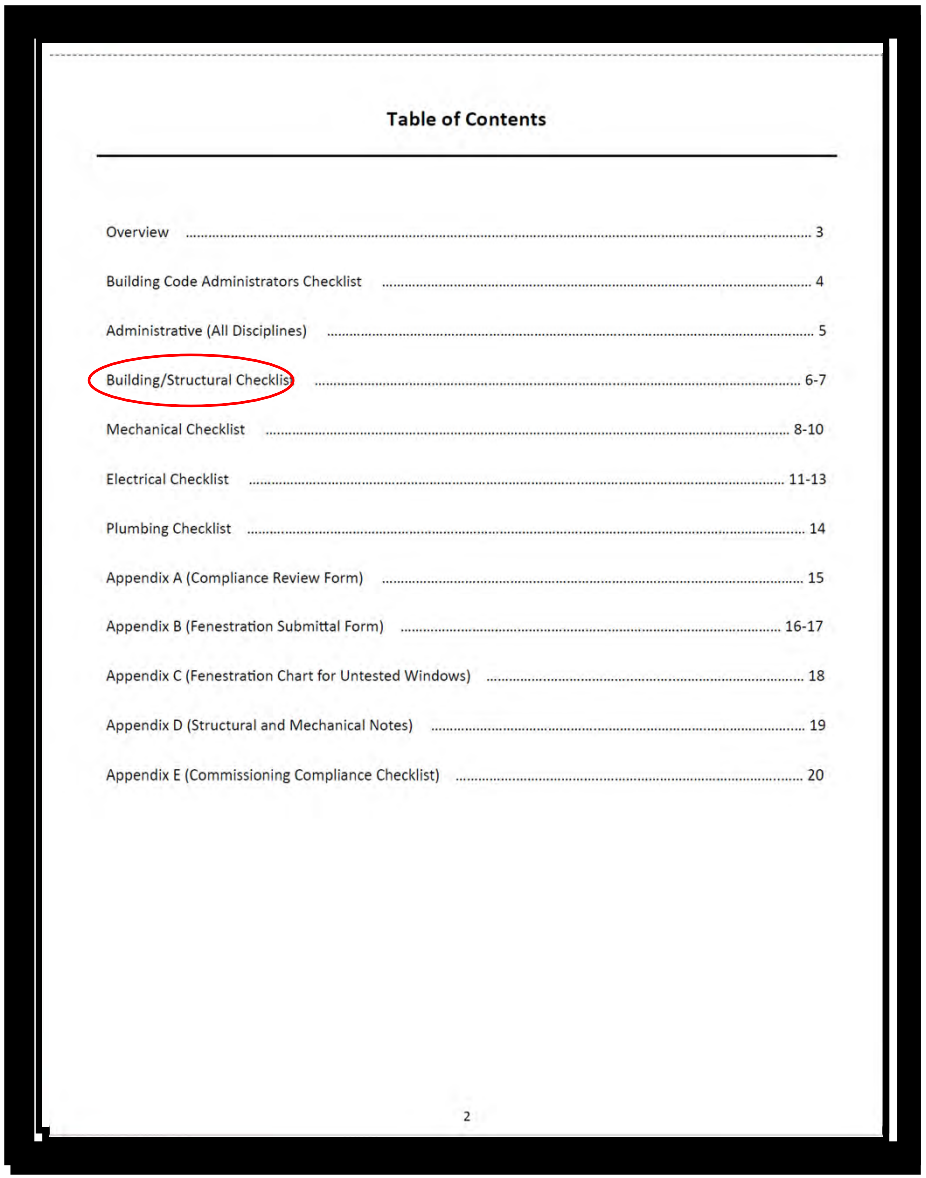


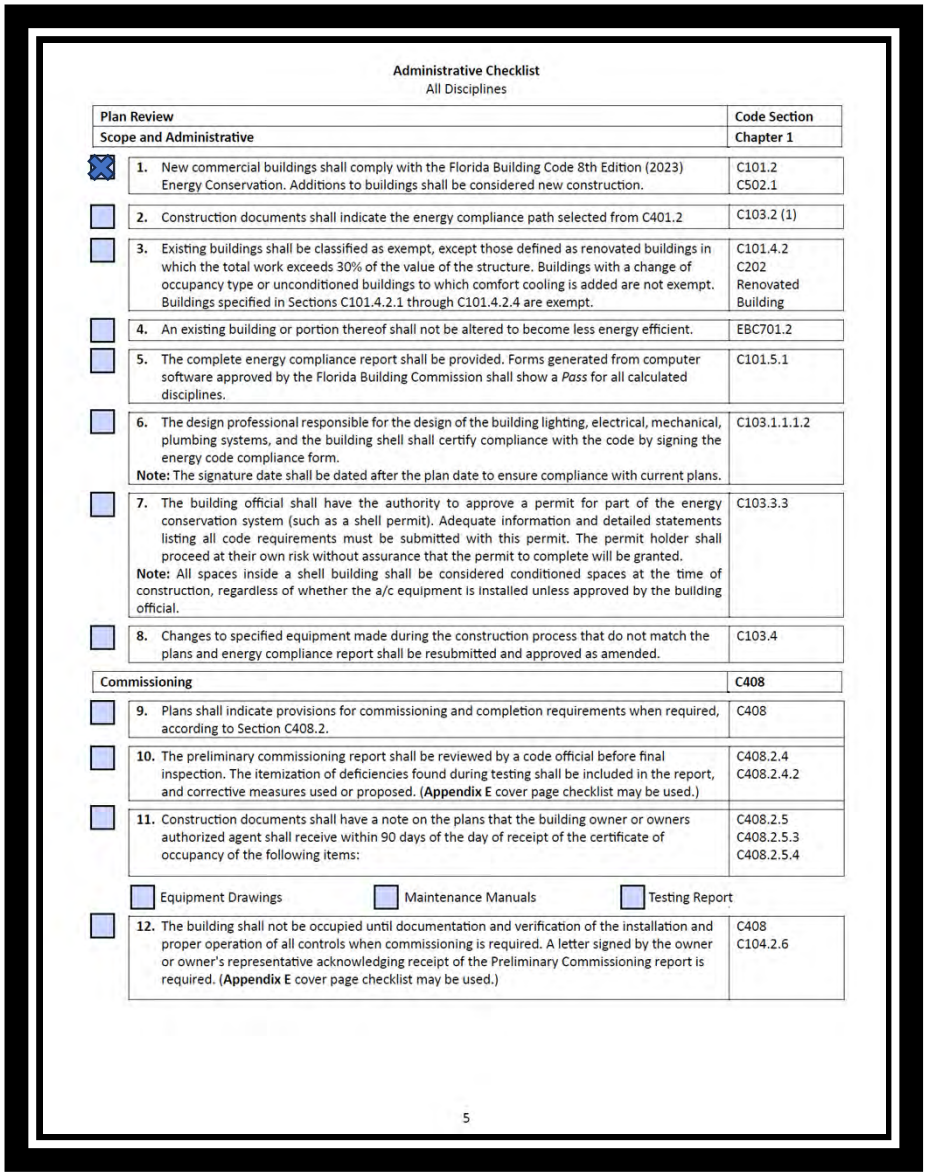
Table of Contents

Commercial Energy Guidelines Structural

Plan Review Item #1

Complete The Administrative Checklist On Page #5

Additional Class On Administrative Checklist

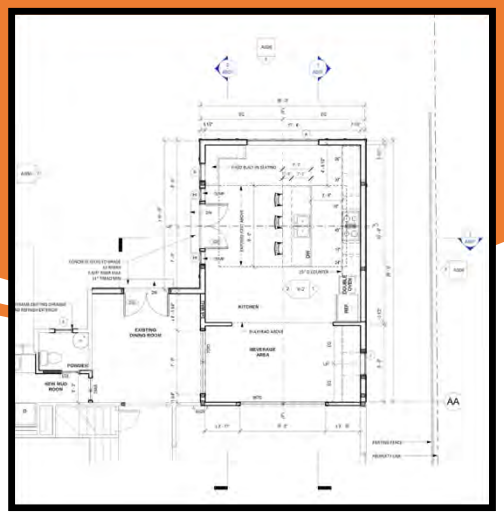


Administrative Checklist
All Disciplines

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ **1.** New commercial buildings shall comply with the Florida Building Code 8th Edition (2023) Energy Conservation. Additions to buildings shall be considered new construction.	C101.2 C502.1
☐ **2.** Construction documents shall indicate the energy compliance path selected from C401.2	C103.2 (1)
☐ **3.** Existing buildings shall be classified as exempt, except those defined as renovated buildings in which the total work exceeds 30% of the value of the structure. Buildings with a change of occupancy type or unconditioned buildings to which comfort cooling is added are not exempt. Buildings specified in Sections C101.4.2.1 through C101.4.2.4 are exempt.	C101.4.2 C202 Renovated Building
☐ **4.** An existing building or portion thereof shall not be altered to become less energy efficient.	EBC701.2
☐ **5.** The complete energy compliance report shall be provided. Forms generated from computer software approved by the Florida Building Commission shall show a *Pass* for all calculated disciplines.	C101.5.1
☐ **6.** The design professional responsible for the design of the building lighting, electrical, mechanical, plumbing systems, and the building shell shall certify compliance with the code by signing the energy code compliance form. **Note:** The signature date shall be dated after the plan date to ensure compliance with current plans.	C103.1.1.1.2
☐ **7.** The building official shall have the authority to approve a permit for part of the energy conservation system (such as a shell permit). Adequate information and detailed statements listing all code requirements must be submitted with this permit. The permit holder shall proceed at their own risk without assurance that the permit to complete will be granted. **Note:** All spaces inside a shell building shall be considered conditioned spaces at the time of construction, regardless of whether the a/c equipment is installed unless approved by the building official.	C103.3.3
☐ **8.** Changes to specified equipment made during the construction process that do not match the plans and energy compliance report shall be resubmitted and approved as amended.	C103.4
Commissioning	**C408**
☐ **9.** Plans shall indicate provisions for commissioning and completion requirements when required, according to Section C408.2.	C408
☐ **10.** The preliminary commissioning report shall be reviewed by a code official before final inspection. The itemization of deficiencies found during testing shall be included in the report, and corrective measures used or proposed. (**Appendix E** cover page checklist may be used.)	C408.2.4 C408.2.4.2
☐ **11.** Construction documents shall have a note on the plans that the building owner or owners authorized agent shall receive within 90 days of the day of receipt of the certificate of occupancy of the following items: ☐ Equipment Drawings ☐ Maintenance Manuals ☐ Testing Report	C408.2.5 C408.2.5.3 C408.2.5.4
☐ **12.** The building shall not be occupied until documentation and verification of the installation and proper operation of all controls when commissioning is required. A letter signed by the owner or owner's representative acknowledging receipt of the Preliminary Commissioning report is required. (**Appendix E** cover page checklist may be used.)	C408 C104.2.6

5

Commercial Energy Guidelines Structural Plan Review Requirements



Item #2

The Plans Shall Show In Detail All The Pertinent Energy Data And Features Of The Building Including But Not Limited To The Following:

BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ **1.** The administrative checklist on page #5 has been completed.	
☒ **2.** The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
☐ Insulation materials and their R-values. ***(S-1)***	
☐ Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
☐ Air leakage sealing details.	
General Requirements	**Chapter 3**
☐ **3.** The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
☐ **4.** Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
☐ **5.** Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
☐ **6.** The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
☐ **7.** Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
☐ **8.** Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
☐ **9.** The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
☐ **10.** The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
☐ **11.** The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
☐ **12.** Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2

C103.2
Construction Documents Shall Be Of Sufficient Clarity To Indicate The Location, Nature And Extent Of The Work Proposed, And Show In Sufficient Detail Pertinent Data And Features Of The Building.

C103.2

2. Insulation materials and their *R*-values.
3. Fenestration *U*-factors and solar heat gain coefficients (SHGCs).
4. Area-weighted *U*-factor and solar heat gain coefficient (SHGC) calculations.
5. Mechanical system design criteria.
6. Mechanical and service water heating system and equipment types, sizes and efficiencies.
7. Economizer description.
8. Equipment and system controls.
9. Fan motor horsepower (hp) and controls.
10. Duct sealing, duct and pipe insulation and location.
11. Lighting fixture schedule with wattage and control narrative.
12. Location of *daylight* zones on floor plans.
13. Air sealing details.

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2a

Insulation Materials And Their R-Values

BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ **1.** The administrative checklist on page #5 has been completed.	
☒ **2.** The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
☒ Insulation materials and their R-values. ***(S-1)***	
☐ Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
☐ Air leakage sealing details.	
General Requirements	**Chapter 3**
☐ **3.** The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
☐ **4.** Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
☐ **5.** Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
☐ **6.** The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
☐ **7.** Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
☐ **8.** Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
☐ **9.** The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
☐ **10.** The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
☐ **11.** The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
☐ **12.** Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

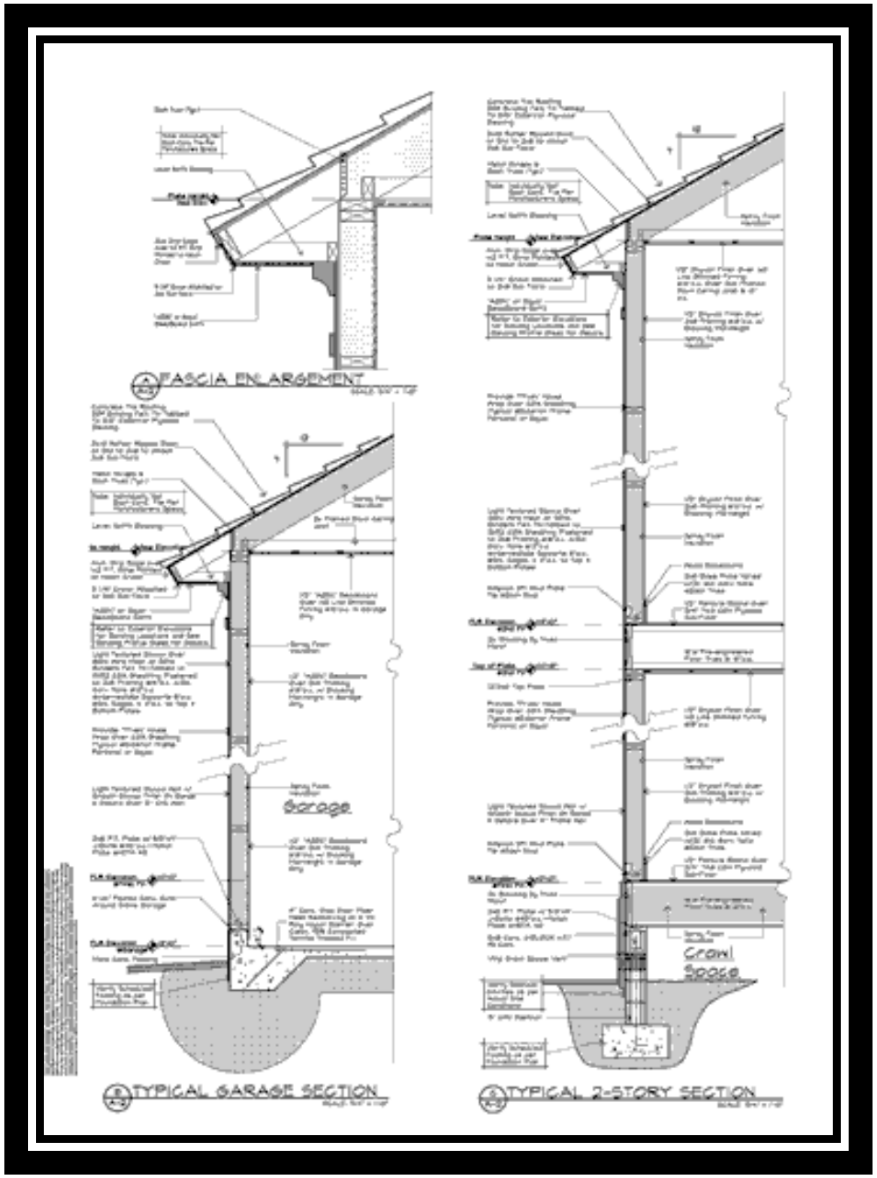
Commercial Energy Guidelines Structural Plan Review Requirements

Item #2a

Plans Must Show Specified R-Values

Unacceptable Information:

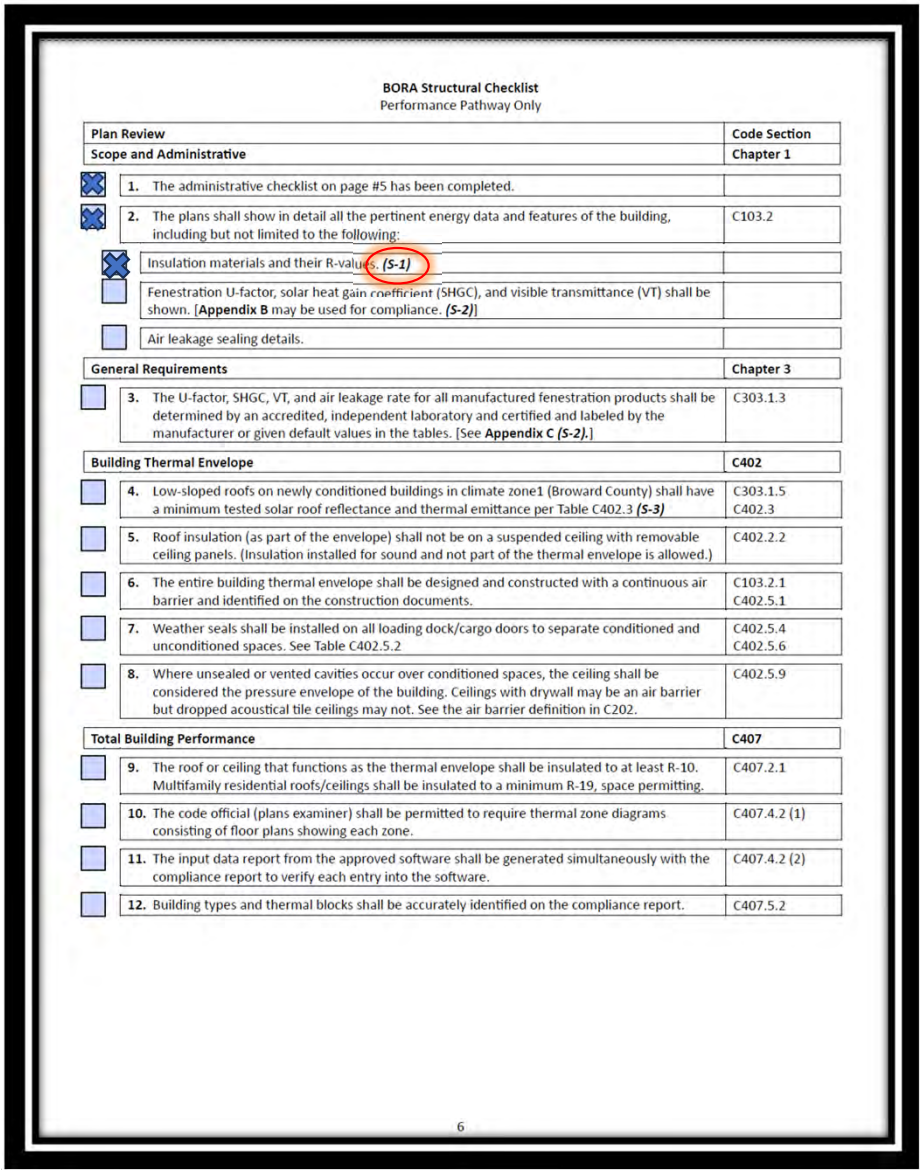
- Notes That Only Say “See Energy Calc’s
- Insulation That Is Shown In Inches Only And Not In Total R-Value



Commercial Energy Guidelines Structural Plan Review Requirements

Item #2a

- What Does The (S-1) Mean?



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2).***]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

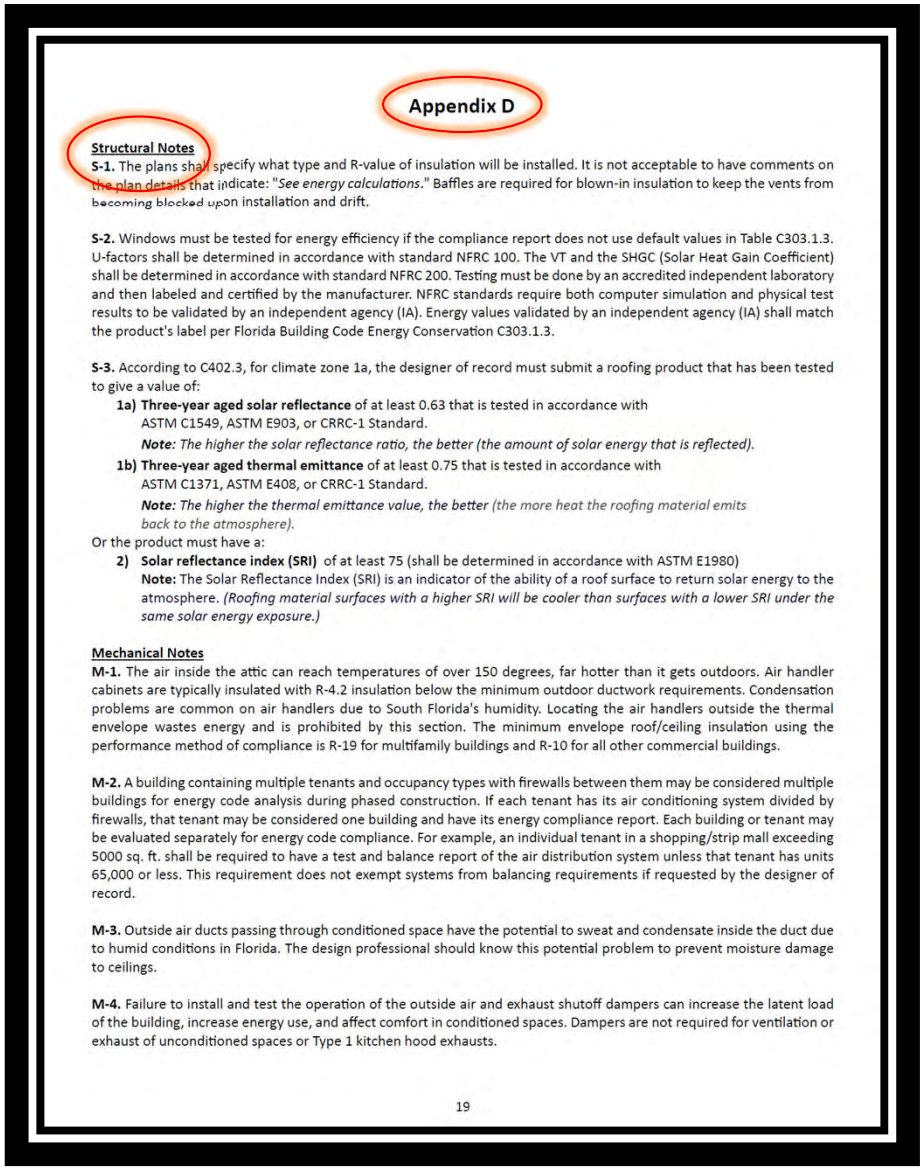
6

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2a

Appendix “D” Contains Informational Notes

Find The Note That Applies



Appendix D

Structural Notes

S-1. The plans shall specify what type and R-value of insulation will be installed. It is not acceptable to have comments on the plan details that indicate: "*See energy calculations*." Baffles are required for blown-in insulation to keep the vents from becoming blocked upon installation and drift.

S-2. Windows must be tested for energy efficiency if the compliance report does not use default values in Table C303.1.3. U-factors shall be determined in accordance with standard NFRC 100. The VT and the SHGC (Solar Heat Gain Coefficient) shall be determined in accordance with standard NFRC 200. Testing must be done by an accredited independent laboratory and then labeled and certified by the manufacturer. NFRC standards require both computer simulation and physical test results to be validated by an independent agency (IA). Energy values validated by an independent agency (IA) shall match the product's label per Florida Building Code Energy Conservation C303.1.3.

S-3. According to C402.3, for climate zone 1a, the designer of record must submit a roofing product that has been tested to give a value of:

1a) Three-year aged solar reflectance of at least 0.63 that is tested in accordance with ASTM C1549, ASTM E903, or CRRC-1 Standard.

Note: *The higher the solar reflectance ratio, the better (the amount of solar energy that is reflected).*

1b) Three-year aged thermal emittance of at least 0.75 that is tested in accordance with ASTM C1371, ASTM E408, or CRRC-1 Standard.

Note: *The higher the thermal emittance value, the better (the more heat the roofing material emits back to the atmosphere).*

Or the product must have a:

2) Solar reflectance index (SRI) of at least 75 (shall be determined in accordance with ASTM E1980)
Note: The Solar Reflectance Index (SRI) is an indicator of the ability of a roof surface to return solar energy to the atmosphere. *(Roofing material surfaces with a higher SRI will be cooler than surfaces with a lower SRI under the same solar energy exposure.)*

Mechanical Notes

M-1. The air inside the attic can reach temperatures of over 150 degrees, far hotter than it gets outdoors. Air handler cabinets are typically insulated with R-4.2 insulation below the minimum outdoor ductwork requirements. Condensation problems are common on air handlers due to South Florida's humidity. Locating the air handlers outside the thermal envelope wastes energy and is prohibited by this section. The minimum envelope roof/ceiling insulation using the performance method of compliance is R-19 for multifamily buildings and R-10 for all other commercial buildings.

M-2. A building containing multiple tenants and occupancy types with firewalls between them may be considered multiple buildings for energy code analysis during phased construction. If each tenant has its air conditioning system divided by firewalls, that tenant may be considered one building and have its energy compliance report. Each building or tenant may be evaluated separately for energy code compliance. For example, an individual tenant in a shopping/strip mall exceeding 5000 sq. ft. shall be required to have a test and balance report of the air distribution system unless that tenant has units 65,000 or less. This requirement does not exempt systems from balancing requirements if requested by the designer of record.

M-3. Outside air ducts passing through conditioned space have the potential to sweat and condensate inside the duct due to humid conditions in Florida. The design professional should know this potential problem to prevent moisture damage to ceilings.

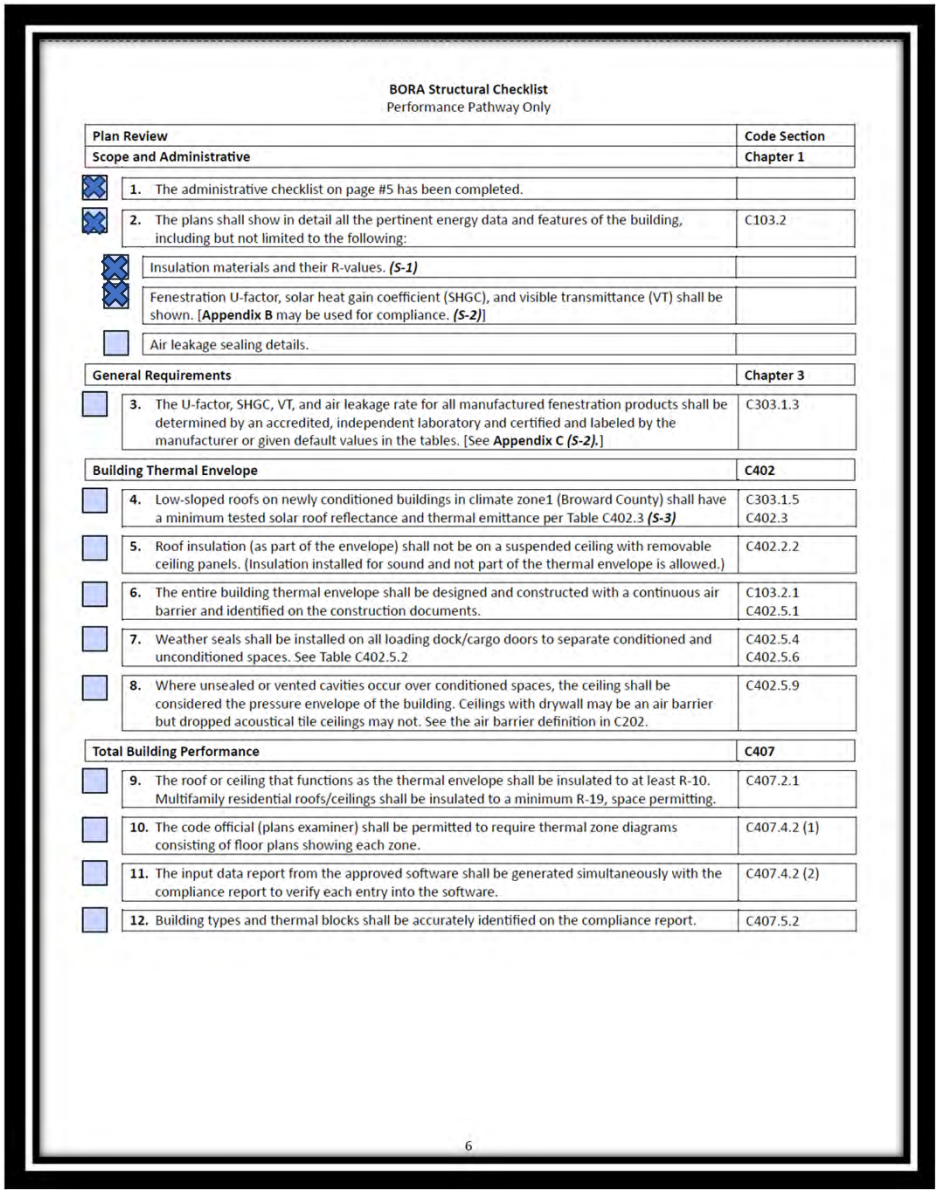
M-4. Failure to install and test the operation of the outside air and exhaust shutoff dampers can increase the latent load of the building, increase energy use, and affect comfort in conditioned spaces. Dampers are not required for ventilation or exhaust of unconditioned spaces or Type 1 kitchen hood exhausts.

19

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2b

Fenestration (Windows) U-factor, Solar Heat Gain Coefficient (SHGC), And Visible Transmittance (VT) Shall Be Shown



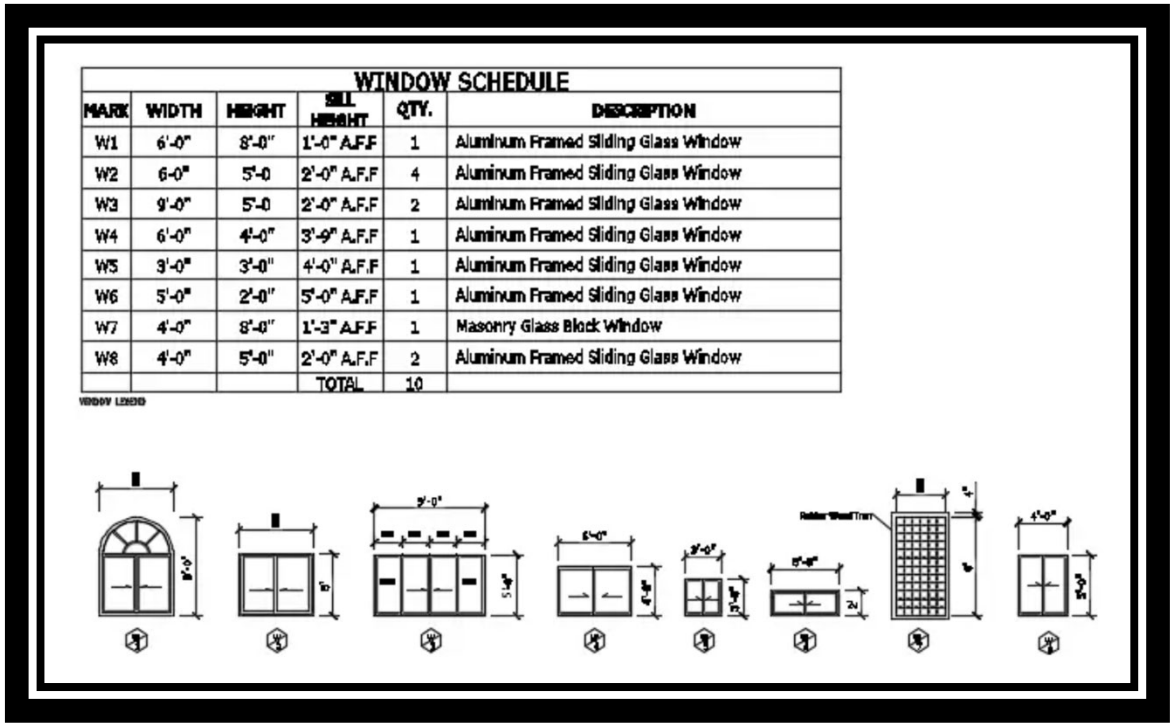
BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2).***]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2b



WINDOW SCHEDULE

MARK	WIDTH	HEIGHT	SILL HEIGHT	QTY.	DESCRIPTION
W1	6'-0"	8'-0"	1'-0" A.F.F	1	Aluminum Framed Sliding Glass Window
W2	6-0"	5'-0	2'-0" A.F.F	4	Aluminum Framed Sliding Glass Window
W3	9'-0"	5'-0	2'-0" A.F.F	2	Aluminum Framed Sliding Glass Window
W4	6'-0"	4'-0"	3'-9" A.F.F	1	Aluminum Framed Sliding Glass Window
W5	3'-0"	3'-0"	4'-0" A.F.F	1	Aluminum Framed Sliding Glass Window
W6	5'-0"	2'-0"	5'-0" A.F.F	1	Aluminum Framed Sliding Glass Window
W7	4'-0"	8'-0"	1'-3" A.F.F	1	Masonry Glass Block Window
W8	4'-0"	5'-0"	2'-0" A.F.F	2	Aluminum Framed Sliding Glass Window
			TOTAL	10	

WINDOW LEGEND

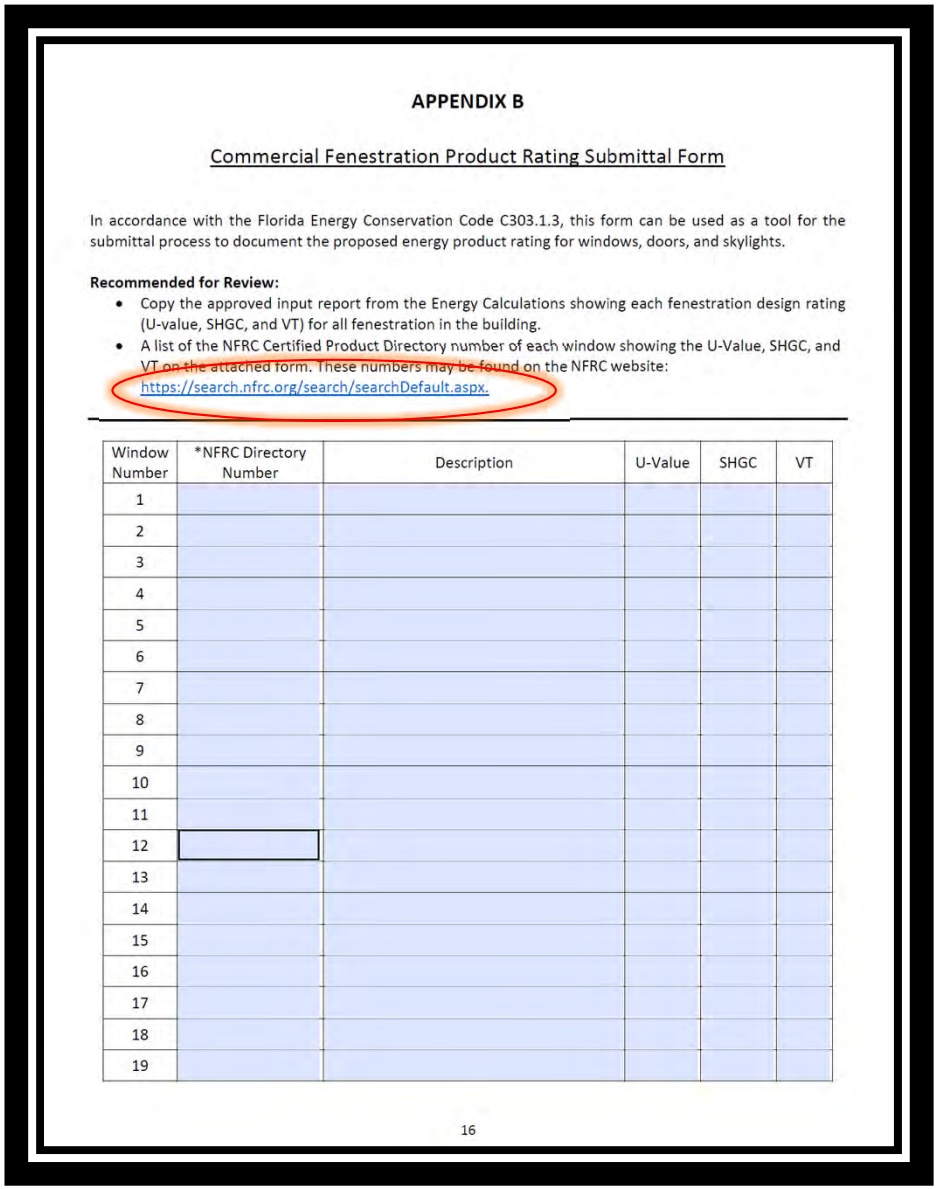
Fenestration (Windows) U-Factor, Solar Heat Gain Coefficient (SHGC), and Visible Transmittance (VT) Shall Be Shown

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2b

Appendix B May Be Used For Submission

NFRC Directory Can Be Used To Verify



APPENDIX B

Commercial Fenestration Product Rating Submittal Form

In accordance with the Florida Energy Conservation Code C303.1.3, this form can be used as a tool for the submittal process to document the proposed energy product rating for windows, doors, and skylights.

Recommended for Review:

- Copy the approved input report from the Energy Calculations showing each fenestration design rating (U-value, SHGC, and VT) for all fenestration in the building.
- A list of the NFRC Certified Product Directory number of each window showing the U-Value, SHGC, and VT on the attached form. These numbers may be found on the NFRC website: https://search.nfrc.org/search/searchDefault.aspx.

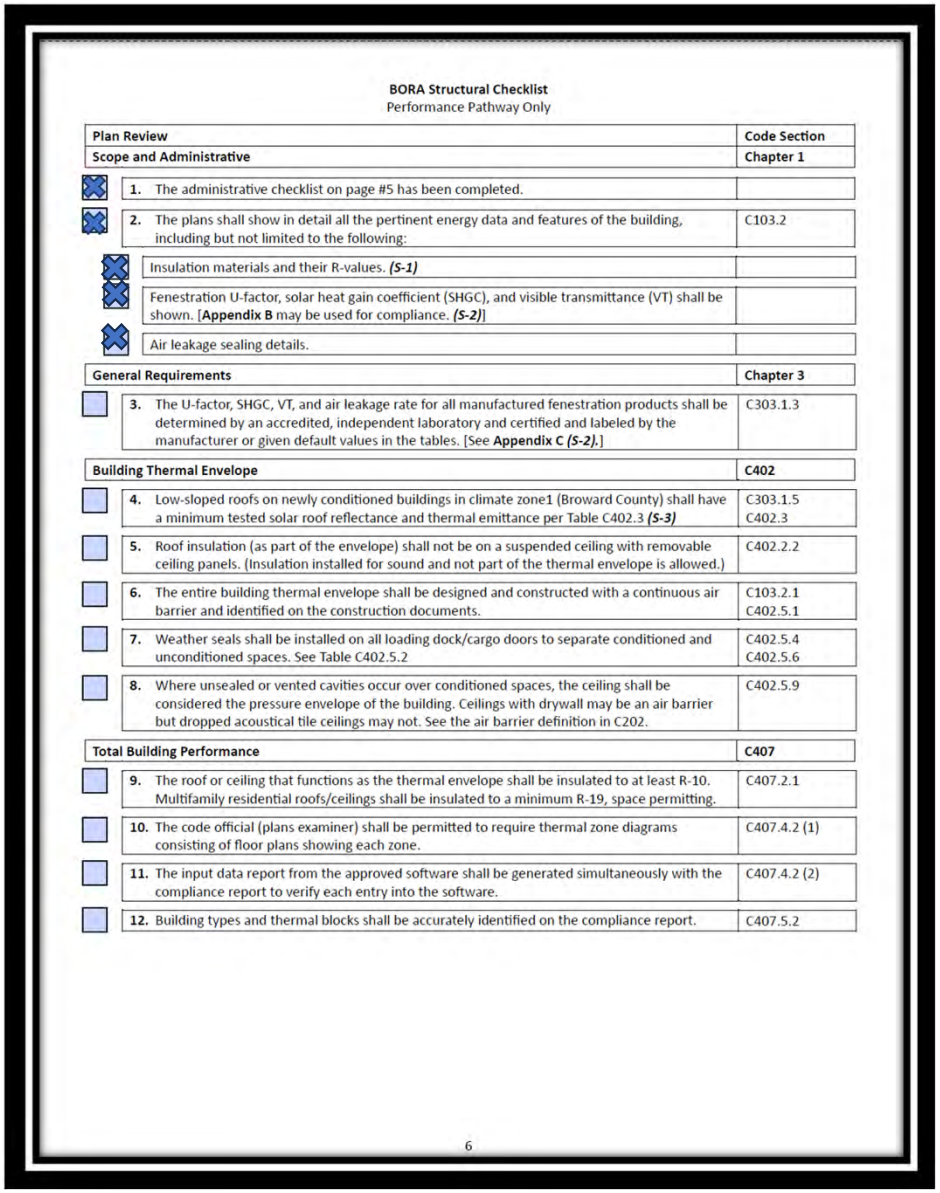
Window Number	*NFRC Directory Number	Description	U-Value	SHGC	VT
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					

16

Commercial Energy Guidelines Structural Plan Review Requirements

Item #2c

Air Leakage Sealing Details



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2).***]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

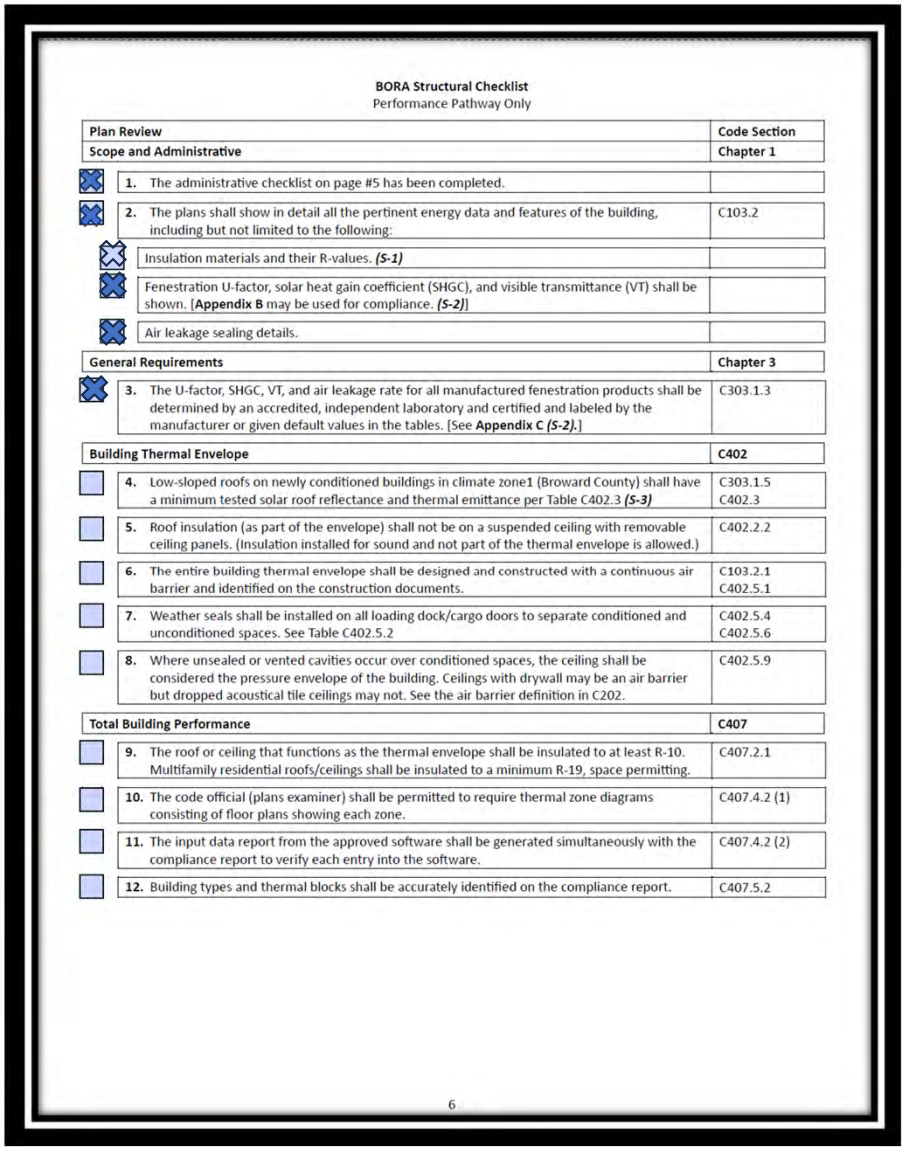
Item #2c

Air Leakage Sealing Methods Shall Be Specified On The Plan Per C103.2

Commercial Energy Guidelines Structural Plan Review Requirements

Item #3

The U-Factor, SHGC, VT, And Air Leakage Rate For All Manufactured Fenestration Products Shall Be Determined By An Accredited, Independent Laboratory And Certified And Labeled By The Manufacturer Or Given Default Values In The Tables. (See Appendix C (S-2).)



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C *(S-2).***]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

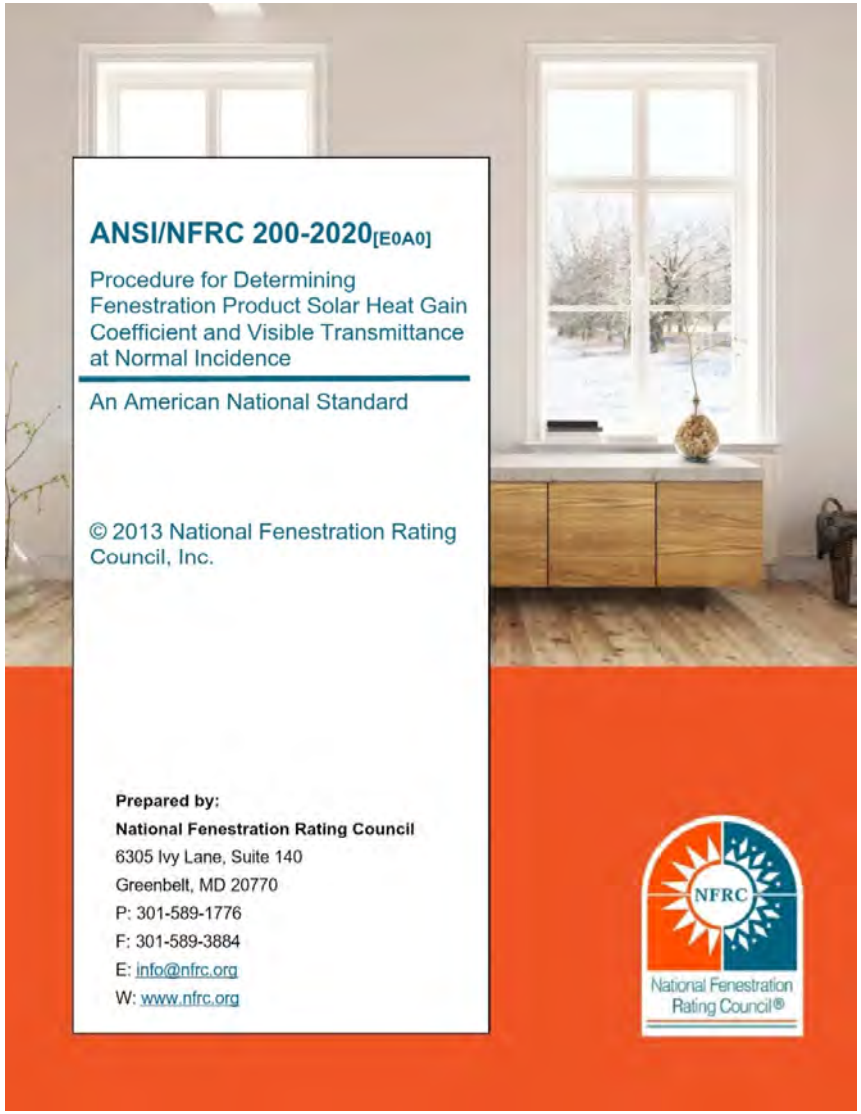
Item #3

C303.1.3 Fenestration Product Rating.
U-Factors Of Fenestration Products Shall Be Determined as Followed:
1. For Windows, Doors And Skylights, U-Factor Ratings Shall Be Determined In Accordance With NFRC 100.....

Commercial Energy Guidelines Structural Plan Review Requirements

Item #3

C303.1.3 Fenestration Product Rating.
The Solar Heat Gain Coefficient (SHGC) And Visible Transmittance (Vt) Of Glazed Fenestration Products (Windows, Glazed Doors And Skylights) Shall Be Determined In Accordance With NFRC 200 By An Accredited, Independent Laboratory.....



Commercial Energy Guidelines Structural Plan Review Requirements

Item #3

TABLE C303.1.3(1) DEFAULT GLAZED FENESTRATION *U*-FACTORS

FRAME TYPE	SINGLE PANE	DOUBLE PANE	SKYLIGHT	
			Single	Double
Metal	1.20	0.80	2.00	1.30
Metal with Thermal Break	1.10	0.65	1.90	1.10
Nonmetal or Metal Clad	0.95	0.55	1.75	1.05
Glazed Block	0.60			

TABLE C303.1.3(2) DEFAULT OPAQUE DOOR *U*-FACTORS

DOOR TYPE	*U*-FACTOR
Uninsulated Metal	1.20
Insulated Metal (Rolling)	0.90
Insulated Metal (Other)	0.60
Wood	0.50
Insulated, nonmetal edge, max 45% glazing, any glazing double pane	0.35

TABLE C303.1.3(3) DEFAULT WINDOW, GLASS DOOR AND SKYLIGHT SHGC AND VT

	SINGLE GLAZED		DOUBLE GLAZED		GLAZED BLOCK
	Clear	Tinted	Clear	Tinted	
SHGC	0.8	0.7	0.7	0.6	0.6
VT	0.6	0.3	0.6	0.3	0.6

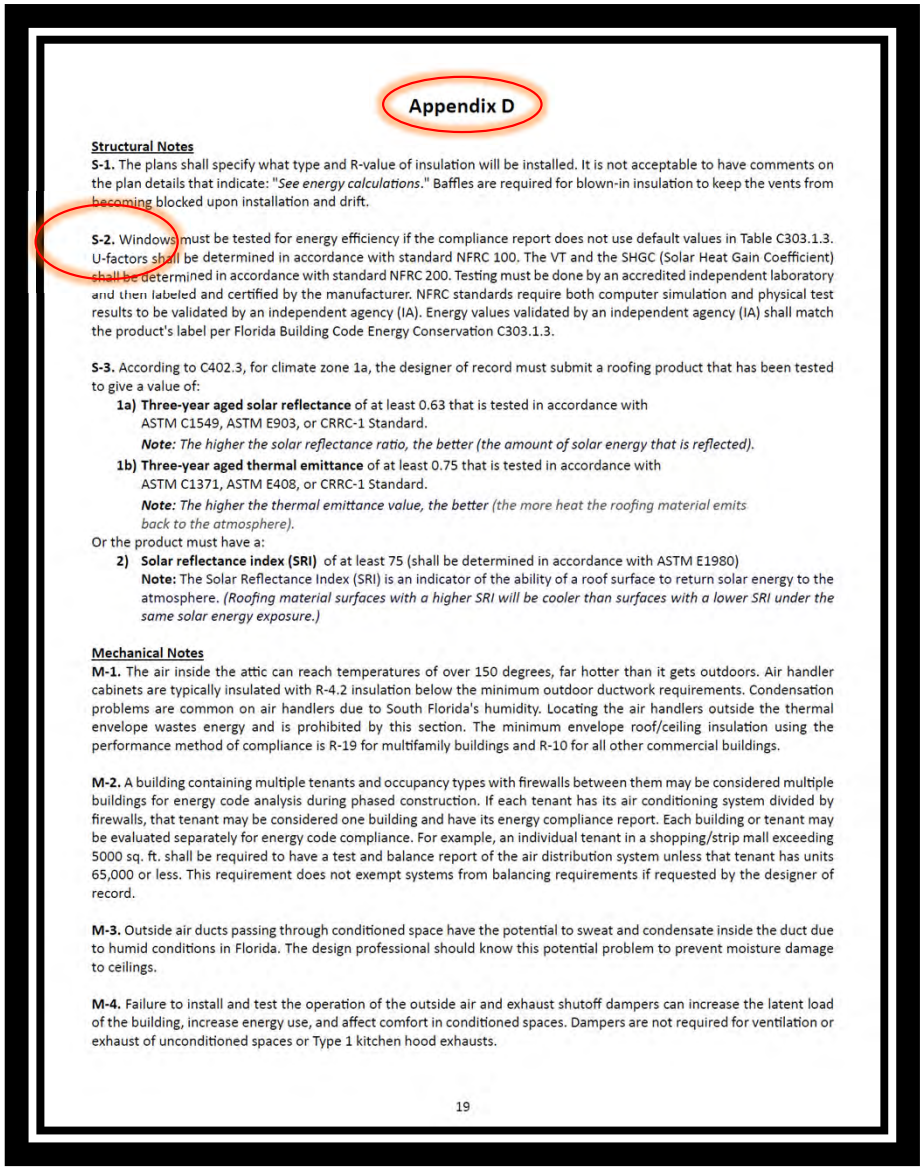
C303.1.3 Fenestration Product Rating.
*Products Lacking Such A Labeled *U-Factor, SHGC, VT* Shall Be Assigned A Default *Values* From Table C303.1.3 *(1) (2) (3)*

**Summary*

Commercial Energy Guidelines Structural Plan Review Requirements

Item #3

Appendix "D" Note S-2 Contains Informational Information



Appendix D

Structural Notes

S-1. The plans shall specify what type and R-value of insulation will be installed. It is not acceptable to have comments on the plan details that indicate: "*See energy calculations*." Baffles are required for blown-in insulation to keep the vents from becoming blocked upon installation and drift.

S-2. Windows must be tested for energy efficiency if the compliance report does not use default values in Table C303.1.3. U-factors shall be determined in accordance with standard NFRC 100. The VT and the SHGC (Solar Heat Gain Coefficient) shall be determined in accordance with standard NFRC 200. Testing must be done by an accredited independent laboratory and then labeled and certified by the manufacturer. NFRC standards require both computer simulation and physical test results to be validated by an independent agency (IA). Energy values validated by an independent agency (IA) shall match the product's label per Florida Building Code Energy Conservation C303.1.3.

S-3. According to C402.3, for climate zone 1a, the designer of record must submit a roofing product that has been tested to give a value of:

1a) Three-year aged solar reflectance of at least 0.63 that is tested in accordance with ASTM C1549, ASTM E903, or CRRC-1 Standard.

Note: *The higher the solar reflectance ratio, the better (the amount of solar energy that is reflected).*

1b) Three-year aged thermal emittance of at least 0.75 that is tested in accordance with ASTM C1371, ASTM E408, or CRRC-1 Standard.

Note: *The higher the thermal emittance value, the better (the more heat the roofing material emits back to the atmosphere).*

Or the product must have a:

2) Solar reflectance index (SRI) of at least 75 (shall be determined in accordance with ASTM E1980)
Note: The Solar Reflectance Index (SRI) is an indicator of the ability of a roof surface to return solar energy to the atmosphere. *(Roofing material surfaces with a higher SRI will be cooler than surfaces with a lower SRI under the same solar energy exposure.)*

Mechanical Notes

M-1. The air inside the attic can reach temperatures of over 150 degrees, far hotter than it gets outdoors. Air handler cabinets are typically insulated with R-4.2 insulation below the minimum outdoor ductwork requirements. Condensation problems are common on air handlers due to South Florida's humidity. Locating the air handlers outside the thermal envelope wastes energy and is prohibited by this section. The minimum envelope roof/ceiling insulation using the performance method of compliance is R-19 for multifamily buildings and R-10 for all other commercial buildings.

M-2. A building containing multiple tenants and occupancy types with firewalls between them may be considered multiple buildings for energy code analysis during phased construction. If each tenant has its air conditioning system divided by firewalls, that tenant may be considered one building and have its energy compliance report. Each building or tenant may be evaluated separately for energy code compliance. For example, an individual tenant in a shopping/strip mall exceeding 5000 sq. ft. shall be required to have a test and balance report of the air distribution system unless that tenant has units 65,000 or less. This requirement does not exempt systems from balancing requirements if requested by the designer of record.

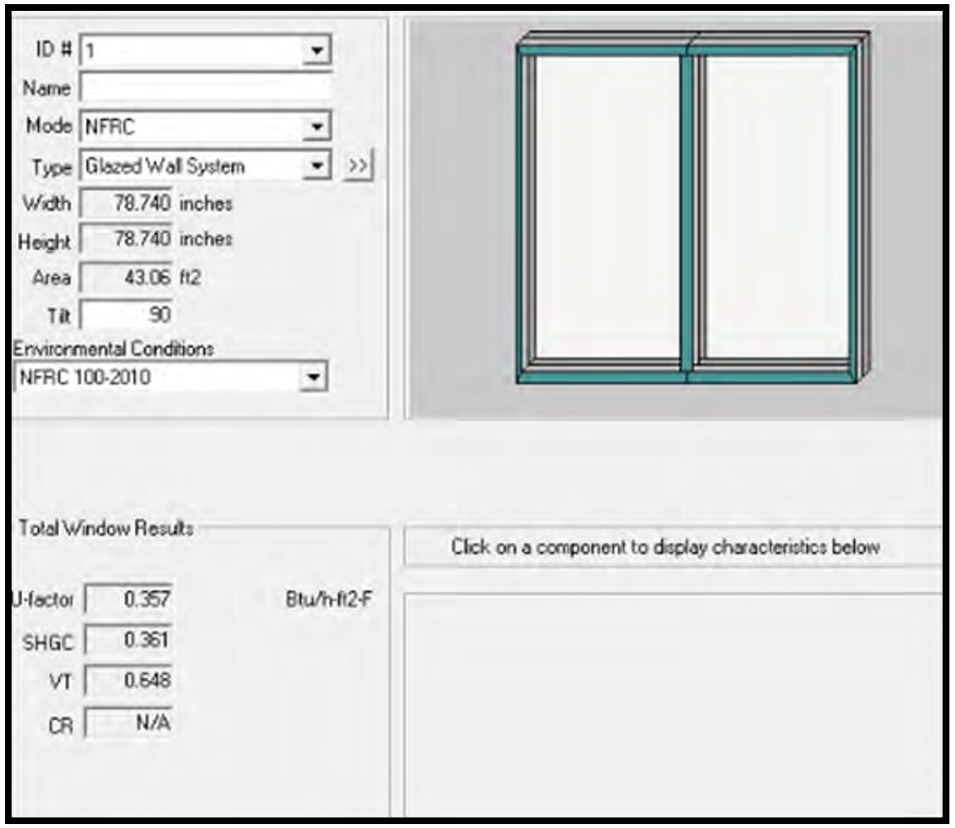
M-3. Outside air ducts passing through conditioned space have the potential to sweat and condensate inside the duct due to humid conditions in Florida. The design professional should know this potential problem to prevent moisture damage to ceilings.

M-4. Failure to install and test the operation of the outside air and exhaust shutoff dampers can increase the latent load of the building, increase energy use, and affect comfort in conditioned spaces. Dampers are not required for ventilation or exhaust of unconditioned spaces or Type 1 kitchen hood exhausts.

19

Commercial Energy Guidelines Structural Plan Review Requirements

Computer Simulation



Step #1

Commercial Energy Guidelines
Structural Plan Review
Requirements

Step #2

Physical Performance Test In a Laboratory

Commercial Energy Guidelines Structural Plan Review Requirements

NFRC Licensed Independent Certification And Inspection Agencies (IA's) Validate The Tests

Step #3

NFRC Licensed Inspection Agencies (IAs)	Licensed To Provide Review Per NFRC 700 (PCP)	Licensed To Provide Review Per NFRC 705 (CMA PCP)
Window and Door Manufacturers Association (WDMA) / Administrative Management Systems, Inc. (AMS)	X	X
National Accreditation & Management Institute (NAMI)	X	X
Keystone Certifications, Inc.	X	X
Fenestration & Glazing Industry Alliance (FGIA) / Associated Laboratories	X	X
Contact		
Window and Door Manufacturers Association (WDMA) 330 North Wabash Avenue, Suite 2200 Chicago, IL 60611 Telephone: (312) 673-4828 Primary Contact: John McFee		

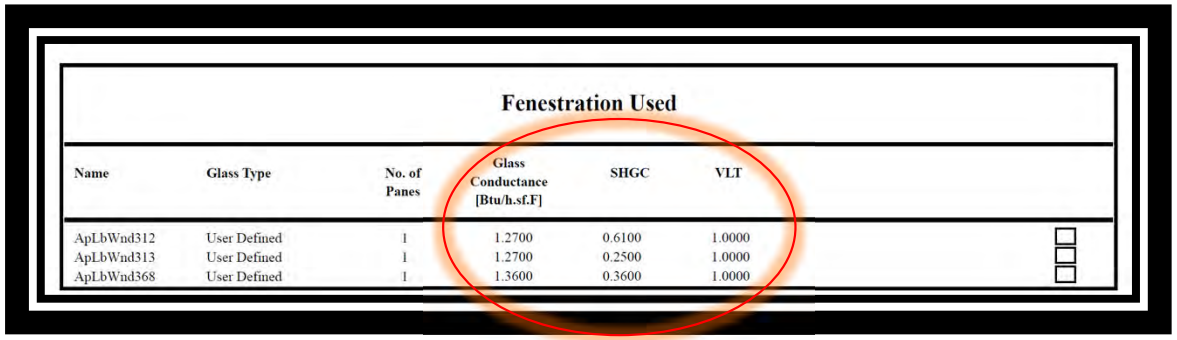
Commercial Energy Guidelines Structural Plan Review Requirements

Step #3

IA's Review Label Format And Content, Conduct In-Plant Inspections For Quality Assurance In Accordance With The Requirements Of The NFRC 702, And Issue A Product Certification Authorization Report (CAR), Or Approve For Issuance An NFRC Label Certificate For Site-Built Or Component Modeling Approach (CMA)

The IA Is Also Responsible For Investigation

Commercial Energy Guidelines Structural Plan Review Requirements



Fenestration Used

Name	Glass Type	No. of Panes	Glass Conductance [Btu/h.sf.F]	SHGC	VLT
ApLbWnd312	User Defined	1	1.2700	0.6100	1.0000
ApLbWnd313	User Defined	1	1.2700	0.2500	1.0000
ApLbWnd368	User Defined	1	1.3600	0.3600	1.0000

Item #3

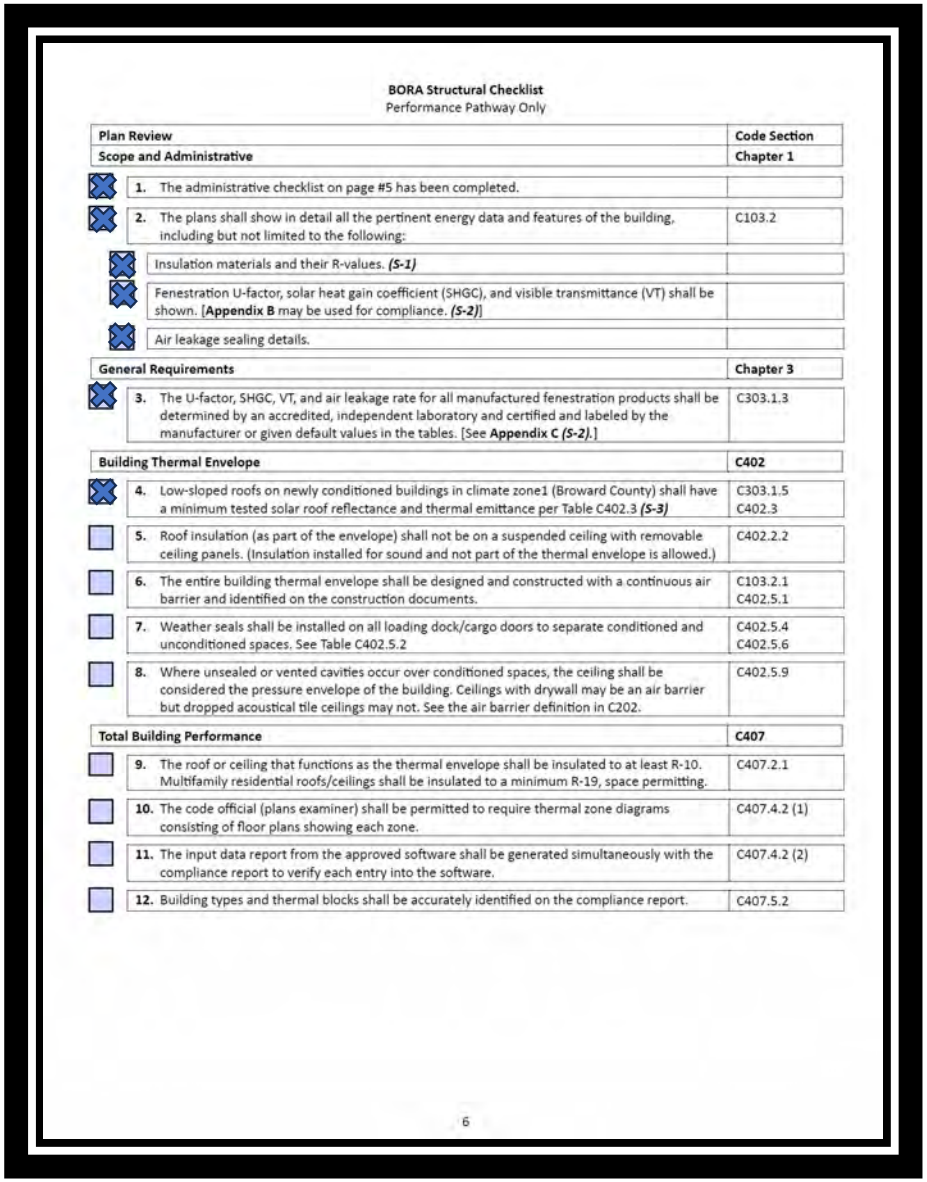
The Energy Calculation Input Report Should Show Actual Tested Values Of The Windows

Or Show The Default Values

Commercial Energy Guidelines Structural Plan Review Requirements

Item #4

Low Sloped Roofs On New Conditioned Buildings In Climate Zone1 (Broward County) Shall Have A Minimum Tested Solar Roof Reflectance And Thermal Emittance Per Table C402.3 (S-3)



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ 1. The administrative checklist on page #5 has been completed.	
☒ 2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
☒ Insulation materials and their R-values. ***(S-1)***	
☒ Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
☒ Air leakage sealing details.	
General Requirements	**Chapter 3**
☒ 3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
☒ 4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
☐ 5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
☐ 6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
☐ 7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
☐ 8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
☐ 9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
☐ 10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
☐ 11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
☐ 12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

S-3. According to C402.3, for climate zone 1a, the designer of record must submit a roofing product that has been tested to give a value of:

1a) Three-year aged solar reflectance of at least 0.63 that is tested in accordance with ASTM C1549, ASTM E903, or CRRC-1 Standard.

Note: *The higher the solar reflectance ratio, the better (the amount of solar energy that is reflected).*

1b) Three-year aged thermal emittance of at least 0.75 that is tested in accordance with ASTM C1371, ASTM E408, or CRRC-1 Standard.

Note: *The higher the thermal emittance value, the better (the more heat the roofing material emits back to the atmosphere).*

Or the product must have a:

2) Solar reflectance index (SRI) of at least 75 (shall be determined in accordance with ASTM E1980)

Note: The Solar Reflectance Index (SRI) is an indicator of the ability of a roof surface to return solar energy to the atmosphere. *(Roofing material surfaces with a higher SRI will be cooler than surfaces with a lower SRI under the same solar energy exposure.)*

See Note S-3

Item #4

TABLE C402.3 MINIMUM ROOF REFLECTANCE AND EMITTANCE OPTIONS[a]

Three-year aged solar reflectance[b] of 0.55 (0.63 **for Climate Zone 1A)** and 3-year aged thermal emittance[c] of 0.75
Three-year-aged solar reflectance index[d] of 64 (75 **for Climate Zone 1A)**

a. The use of area-weighted averages to comply with these requirements shall be permitted. Materials lacking 3-year-aged tested values for either solar reflectance or thermal emittance shall be assigned both a 3-year-aged solar reflectance in accordance with Section C402.3.1 and a 3-year-aged thermal emittance of 0.90.

b. Aged solar reflectance tested in accordance with ASTM C1549, ASTM E903 or ASTM E1918 or CRRC-1 Standard.

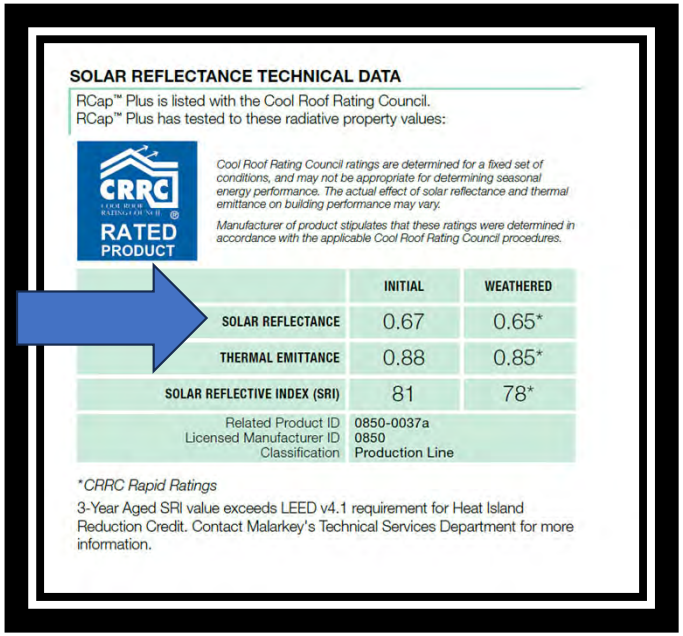
c. Aged thermal emittance tested in accordance with ASTM C1371 or ASTM E408 or CRRC-1 Standard.

d. Solar reflectance index (SRI) shall be determined in accordance with ASTM E1980 using a convection coefficient of 2.1 Btu/h · ft^2 ·°F (12W/m^2 · K). Calculation of aged SRI shall be based on aged tested values of solar reflectance and thermal emittance.

Commercial Energy Guidelines Structural Plan Review Requirements

Item #4

Ask For The Tested Cool Roof Rating If Not Submitted



SOLAR REFLECTANCE TECHNICAL DATA

RCap™ Plus is listed with the Cool Roof Rating Council.
RCap™ Plus has tested to these radiative property values:

CRRC COOL ROOF RATING COUNCIL RATED PRODUCT

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.

	INITIAL	WEATHERED
SOLAR REFLECTANCE	0.67	0.65*
THERMAL EMITTANCE	0.88	0.85*
SOLAR REFLECTIVE INDEX (SRI)	81	78*
Related Product ID	0850-0037a	
Licensed Manufacturer ID	0850	
Classification	Production Line	

**CRRC Rapid Ratings*

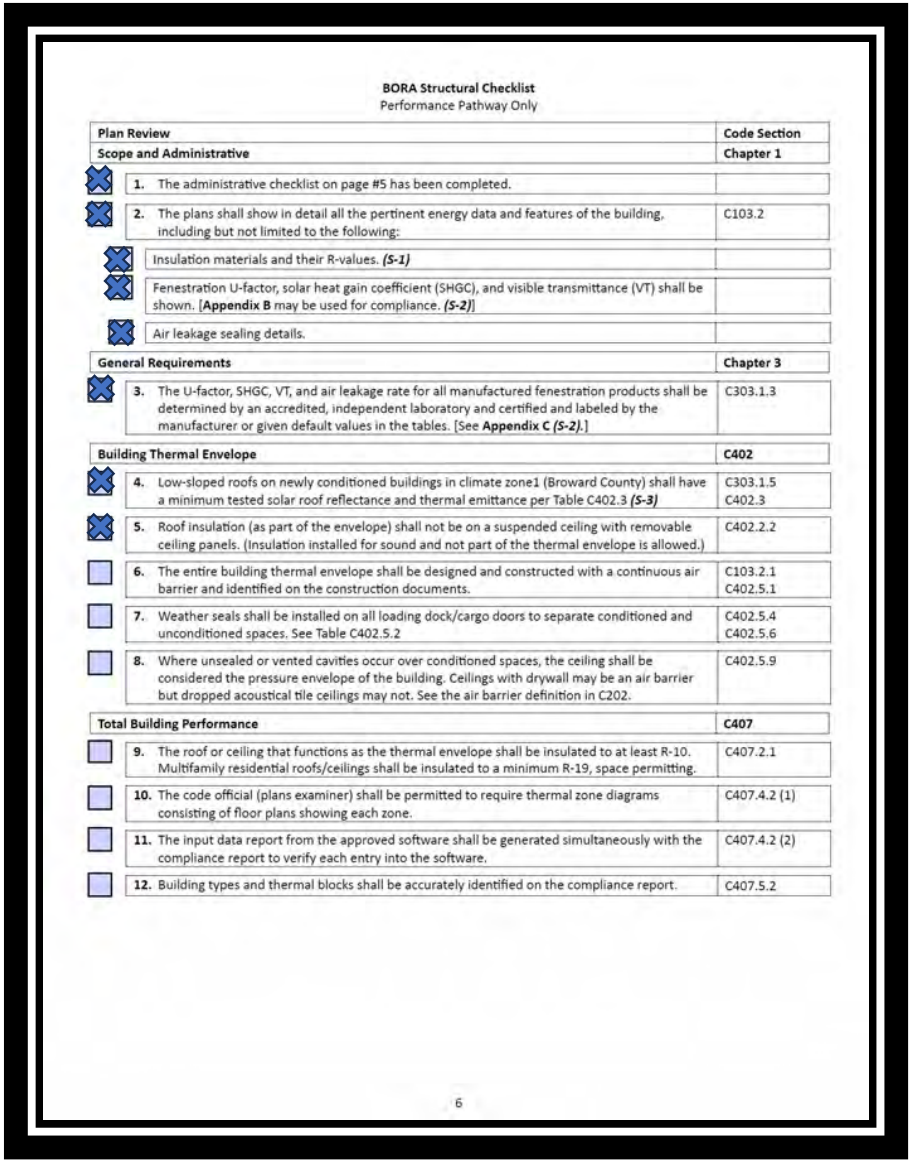
3-Year Aged SRI value exceeds LEED v4.1 requirement for Heat Island Reduction Credit. Contact Malarkey's Technical Services Department for more information.

Locate The Tested Values On The Specifications

Commercial Energy Guidelines Structural Plan Review Requirements

Item #5

Roof Insulation (As Part Of The Envelope) Shall Not Be On A Suspended Ceiling With Removable Ceiling Panels. (Insulation Installed For Sound And Not Part Of The Thermal Envelope Is Allowed.)



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C *(S-2)*.**]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

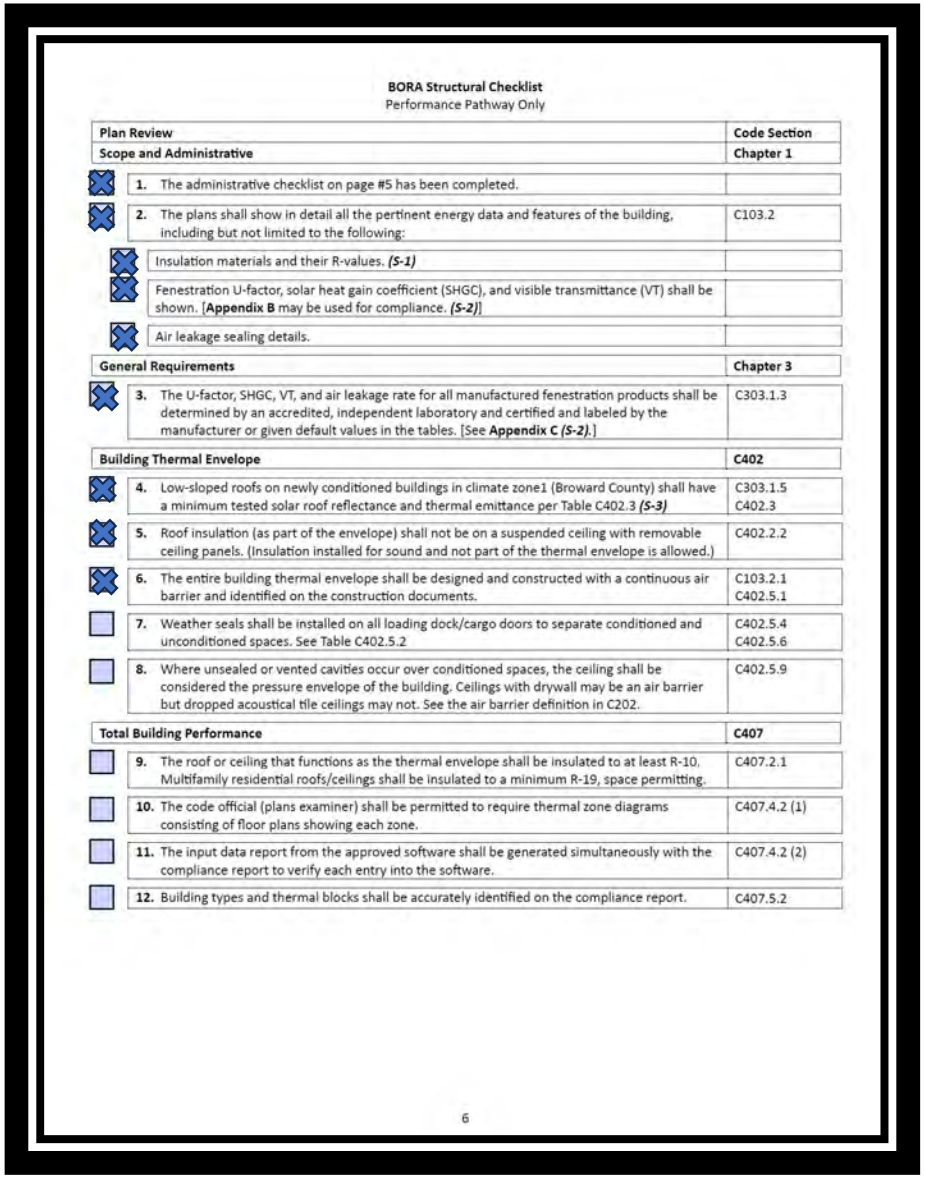
Item #5

C402.2.2 Roof Assembly
Insulation Installed On A Suspended Ceiling With Removable Ceiling Tiles Shall Not Be Considered Part Of The Minimum Thermal Resistance Of The Roof Insulation.

Commercial Energy Guidelines Structural Plan Review Requirements

Item #6

The Entire Building Thermal Envelope Shall Be Designed And Constructed With A Continuous Air Barrier And Identified On The Construction Documents.



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ 1. The administrative checklist on page #5 has been completed.	
☒ 2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
☒ Insulation materials and their R-values. ***(S-1)***	
☒ Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
☒ Air leakage sealing details.	
General Requirements	**Chapter 3**
☒ 3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
☒ 4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
☒ 5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
☒ 6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
☐ 7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
☐ 8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
☐ 9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
☐ 10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
☐ 11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
☐ 12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

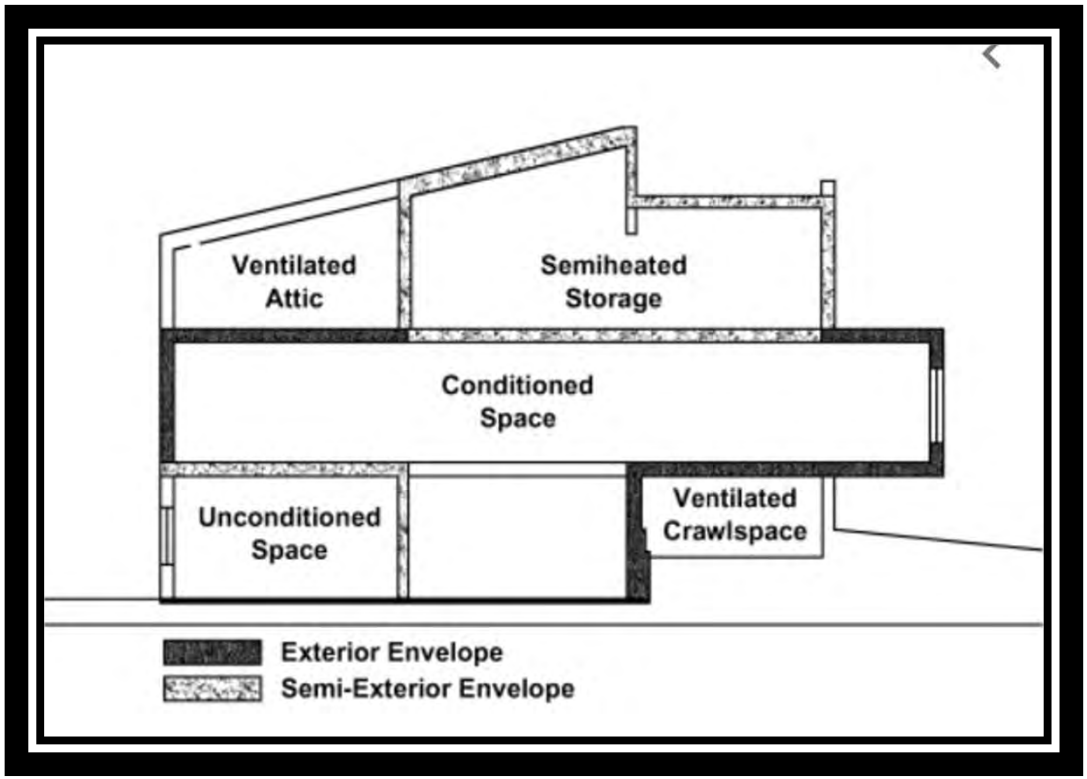
Commercial Energy Guidelines Structural Plan Review Requirements

Item #6

C402.5.1 Air Barriers
A Continuous Air Barrier Shall Be Provided Throughout The Building's Thermal Envelope. The Air Barriers Shall Be Located On The Inside Or Outside Of The Building Envelope...

Commercial Energy Guidelines Structural Plan Review Requirements

Item #6

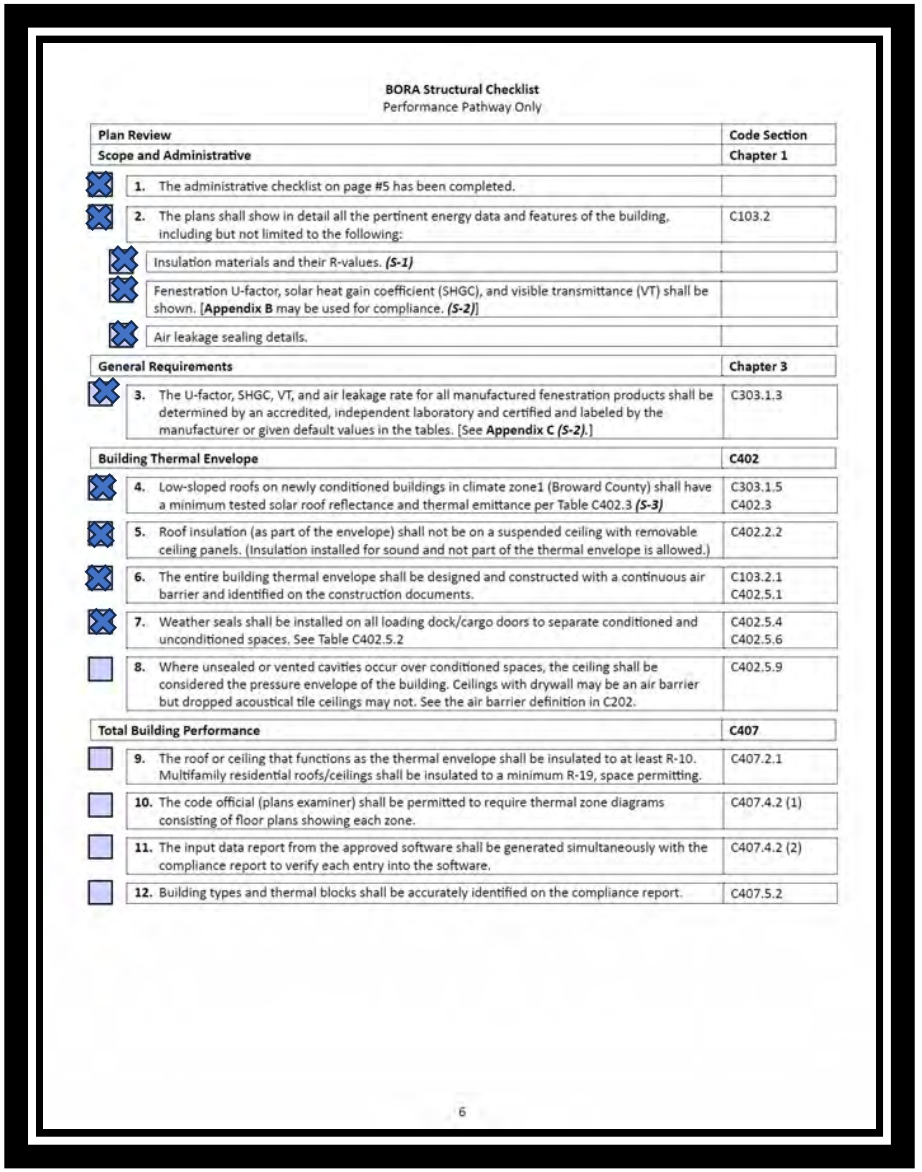


C103.2.1 Building Thermal Envelope Depiction.
The Building's Thermal Envelope Shall Be Represented On The Construction Drawings.

Commercial Energy Guidelines Structural Plan Review Requirements

Item #7

Weather Seals Shall Be Installed On All Loading Dock/Cargo Doors To Separate Conditioned And Unconditioned Spaces. See Table C402.5.2



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ 1. The administrative checklist on page #5 has been completed.	
☒ 2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
☒ Insulation materials and their R-values. ***(S-1)***	
☒ Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
☒ Air leakage sealing details.	
General Requirements	**Chapter 3**
☒ 3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C *(S-2)*.**]	C303.1.3
Building Thermal Envelope	**C402**
☒ 4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
☒ 5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
☒ 6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
☒ 7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
☐ 8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
☐ 9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
☐ 10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
☐ 11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
☐ 12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

Item #7

C402.5.6 Loading Dock Weatherseals. Cargo Doors And Loading Dock Door Openings Shall Be Equipped With Weatherseals That Restrict Infiltration And Provide Direct Contact Along The Top And Sides Of Vehicles Parked In The Doorway

Commercial Energy Guidelines Structural Plan Review Requirements

Table C402.5.2

Maximum Tested Leakage Rate For Windows Are:

- 0.2 CFM Per Square Foot @ 1.57 psf
- 0.3 CFM Per Square Foot @ 6.24 psf

Except:

1) Unless The Window Is Field Fabricated & Sealed
2) Unless The Building Area Is Tested For Leakage Per C402.5

TABLE C402.5.2
MAXIMUM AIR LEAKAGE RATE FOR FENESTRATION ASSEMBLIES

FENESTRATION ASSEMBLY	MAXIMUM RATE (CFM/FT²)	TEST PROCEDURE
Windows	0.20 [a]	AAMA/WDMA/ CSA101/I.S.2/A440 or NFRC 400 1.57psf
Sliding doors	0.20 [a]	
Swinging doors	0.20 [a]	
Skylights – with condensation weepage openings	0.30	
Skylights – all other	0.20 [a]	
Curtain walls	0.06	NFRC 400 or ASTM E283 at 1.57 psf (75 Pa)
Storefront glazing	0.06	
Power-operated sliding doors and power-operated folding doors, Commercial glazed swinging entrance doors	1.00	
Revolving doors	1.00	
Garage doors	0.40	ANSI/DASMA 105, NFRC 400, or ASTM E283 at 1.57 psf (75 Pa)
Rolling doors	1.00	
High-speed doors	1.30	

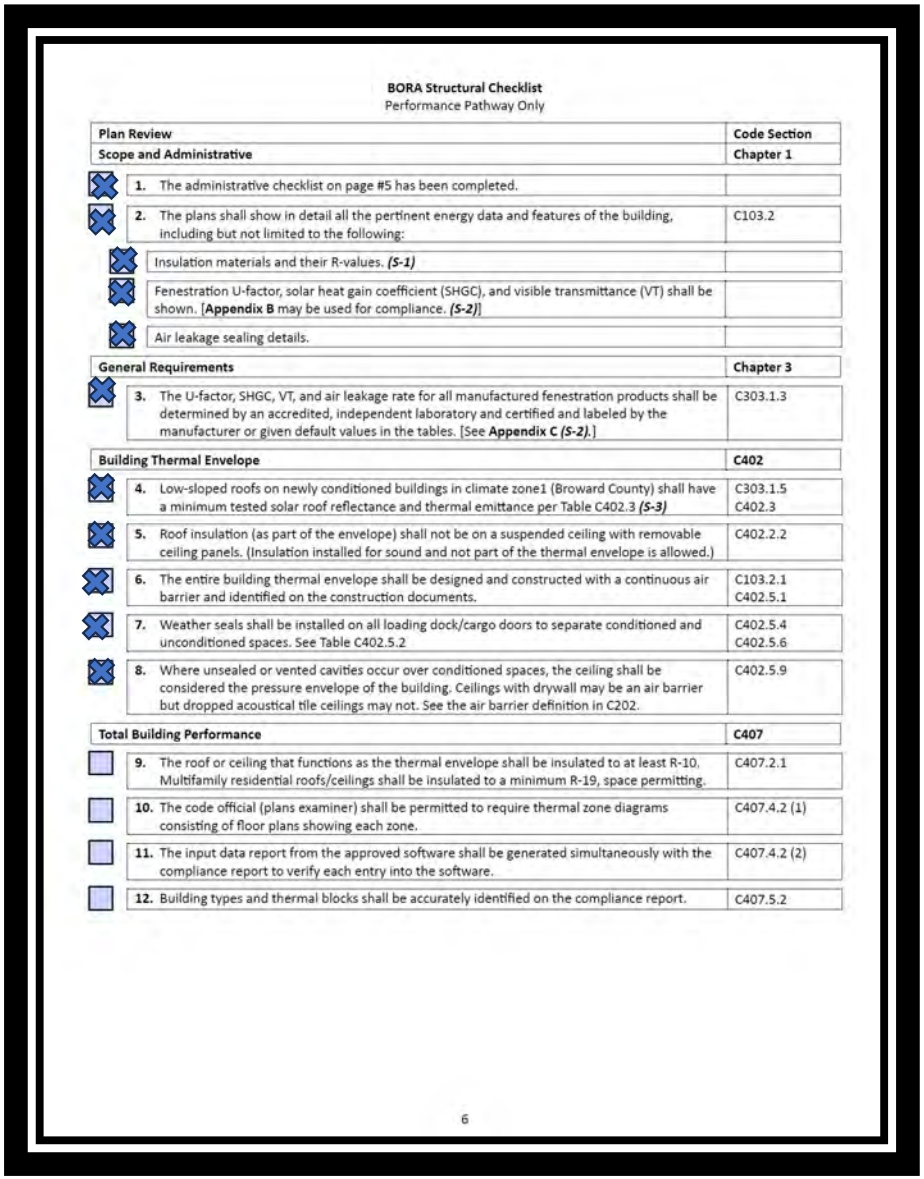
For SI: 1 cubic foot per minute = 0.47 L/s, 1 square foot = 0.093 m^2.

a. The maximum rate for windows, sliding and swinging doors, and skylights is permitted to be 0.3 cfm per square foot of fenestration or door area when tested in accordance with AAMA/WDMA/CSA101/I.S.2/A440 at 6.24 psf (300 Pa).

Commercial Energy Guidelines Structural Plan Review Requirements

Item #8

Where Unsealed Or Vented Cavities Occur Over Conditioned Spaces, The Ceiling Shall Be Considered The Pressure Envelope Of The Building. Ceilings With Drywall May Be An Air Barrier But Dropped Acoustical Tile Ceilings May Not.



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

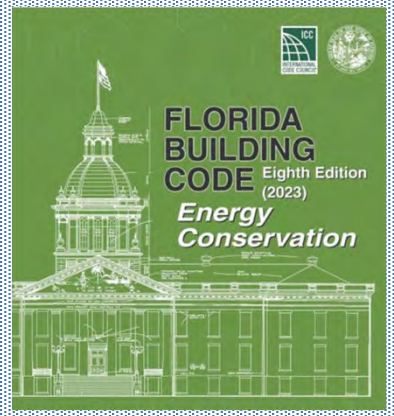
6

Commercial Energy Guidelines Structural Plan Review Requirements

Item #8

C402.5.9.1 Vented Dropped Ceiling Cavities.
Where Vented Dropped Ceiling Cavities Occur Over Conditioned Spaces, The Ceiling Shall Be Considered To Be Both The Upper Thermal Envelope And Pressure Envelope Of The Building And Shall Contain A Continuous Air Barrier Between The Conditioned Space And The Vented Unconditioned Space That Is Also Sealed To The Air Barrier Of The Walls.
See The Definition Of Air Barrier In Section C202.

Commercial Energy Guidelines Structural Plan Review Requirements



Section C202 Definitions: Air Barrier

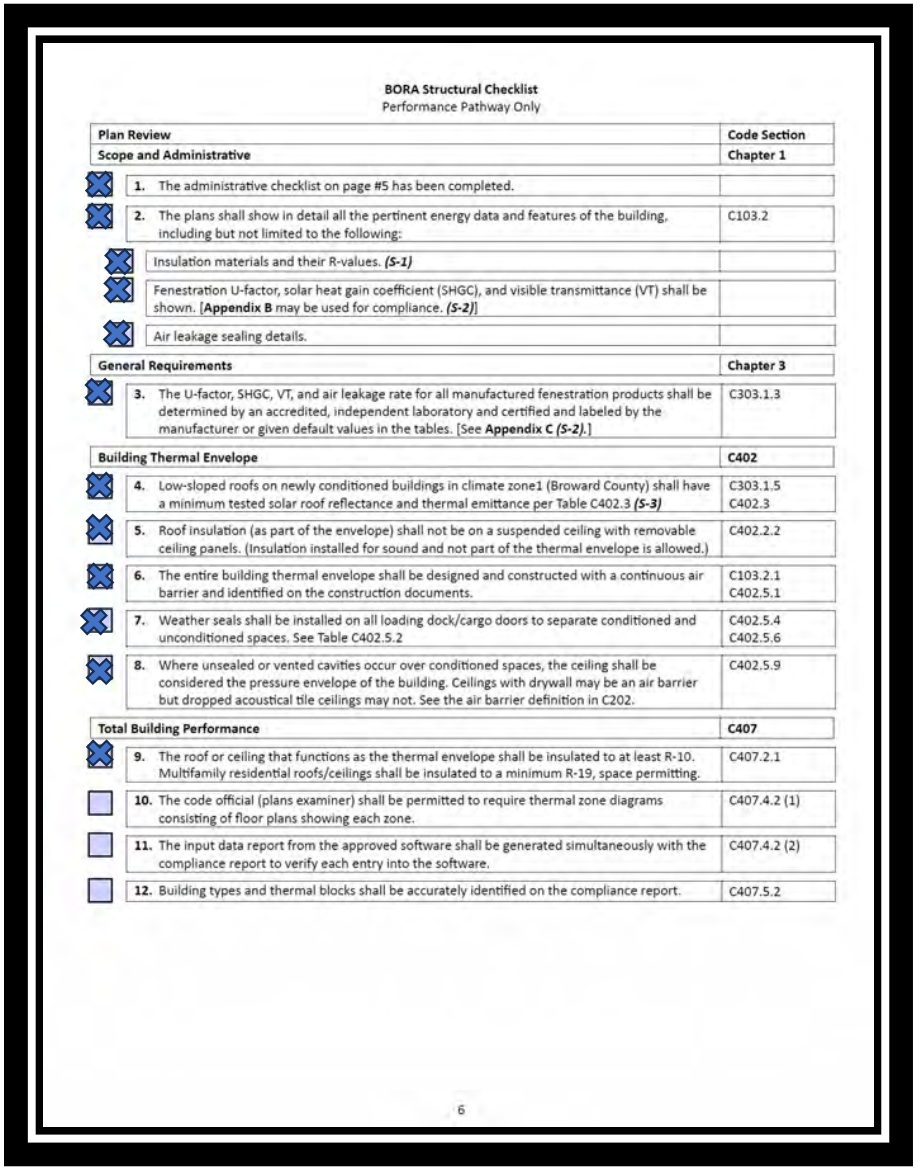
Relating To The Building Envelope, Air Barriers Comprise The Planes Of Primary Resistance To Airflow Between The Interior Spaces Of A Building And The Outdoors And The Planes Of Primary Airflow Resistance Between Adjacent Air Zones Of A Building, Including Planes Between Adjacent Conditioned And Unconditioned Air Spaces Of A Building. To Be Classed As An Air Barrier, A Building Plane Must Be Substantially Leak Free; That Is, It Shall Have An Air Leakage Rate Not Greater Than 0.5 Cfm/Ft2 When Subjected To An Air Pressure Gradient Of 25 Pascal. In General, Air Barriers Are Made Of Durable, Nonporous Materials And Are Sealed To Adjoining Wall, Ceiling Or Floor Surfaces With A Suitable Long-Life Mastic. House Wraps And Taped And Sealed. Drywall May Constitute An Air Barrier, But Dropped Acoustical Tile Ceilings (T-bar Ceilings) May Not. Batt Insulation Facings and Asphalt Impregnated Fiberboard And Felt Paper Are Not Considered Air Barriers.

Commercial Energy Guidelines Structural Plan Review Requirements

Item #9

Performance Method Minimum

The Roof Or Ceiling That Functions As The Thermal Envelope Shall Be Insulated To At Least R-10. Multifamily Residential Roofs/Ceilings Shall Be Insulated To A Minimum R-19, Space Permitting



BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

Item #9

Performance Method Minimum

C407.2.1 Roof/Ceiling Thermal Envelope. The Roof Or Ceiling That Functions As The Building's Thermal Envelope Shall Be Insulated To An R-Value Of At Least R-10. Multiple-Family Residential Roofs/Ceilings Shall Be Insulated To An R-Value Of At Least R-19, Space Permitting. Where Cavities Beneath A Roof Deck Are Ventilated, The Ceiling Shall Be Considered The Envelope Component Utilized In The Commission Approved Compliance Software Tools.

Commercial Energy Guidelines Structural Plan Review Requirements

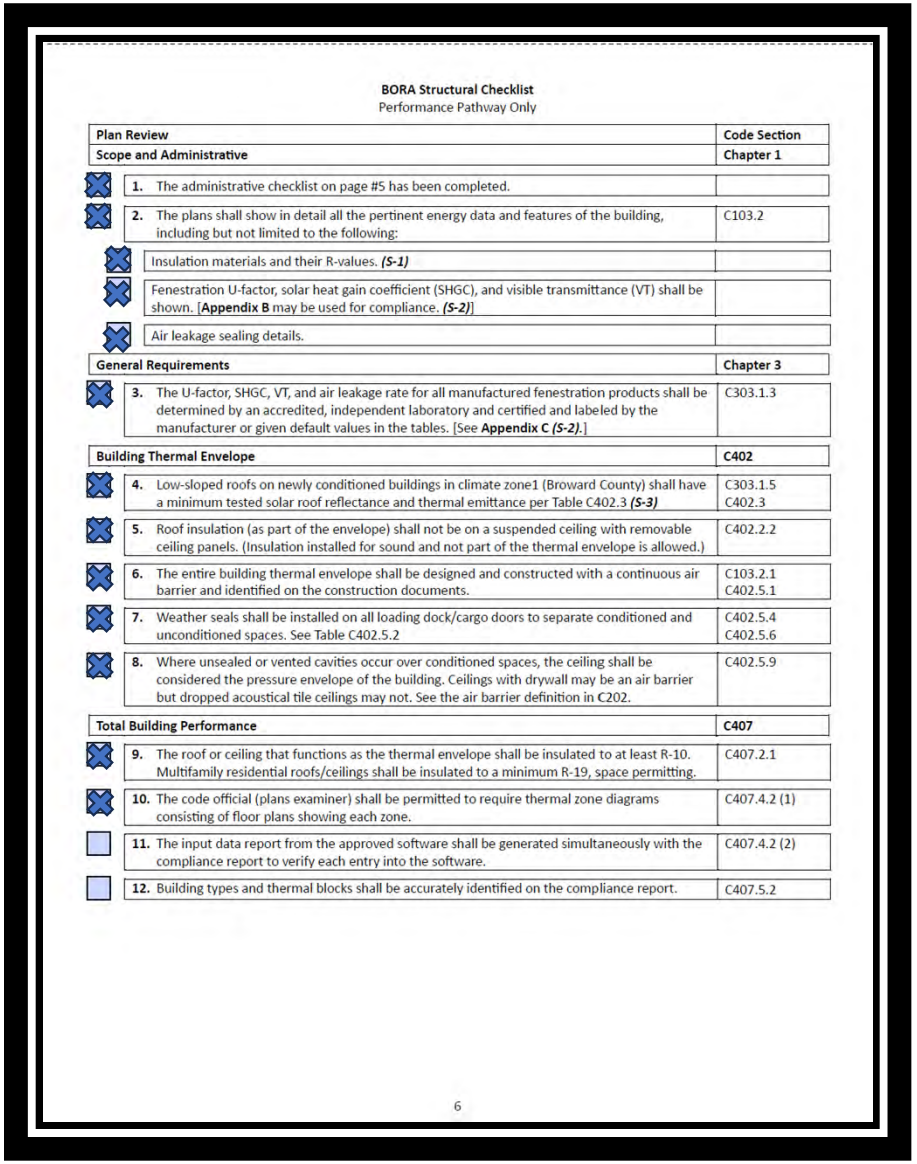
Where Is The Thermal Envelope And The Air Barrier Located?

- At The Drop Ceiling?
- At The Trusses?
- On The Roof?

Commercial Energy Guidelines Structural Plan Review Requirements

Item #10

The Code Official (Plans Examiner) Shall Be Permitted To Require Thermal Zone Diagrams Consisting Of Floor Plans Showing Each Zone.

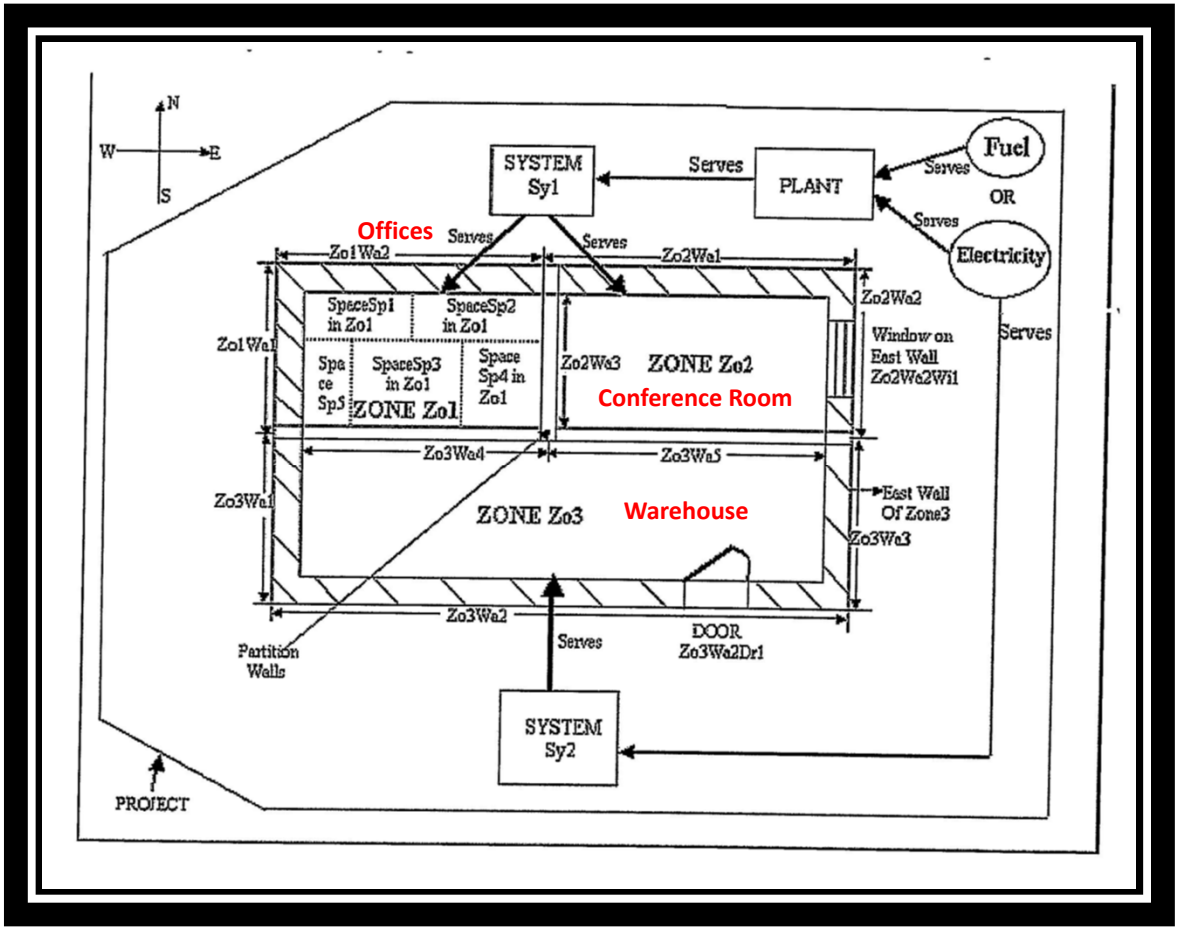


BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

Commercial Energy Guidelines Structural Plan Review Requirements

Item #10



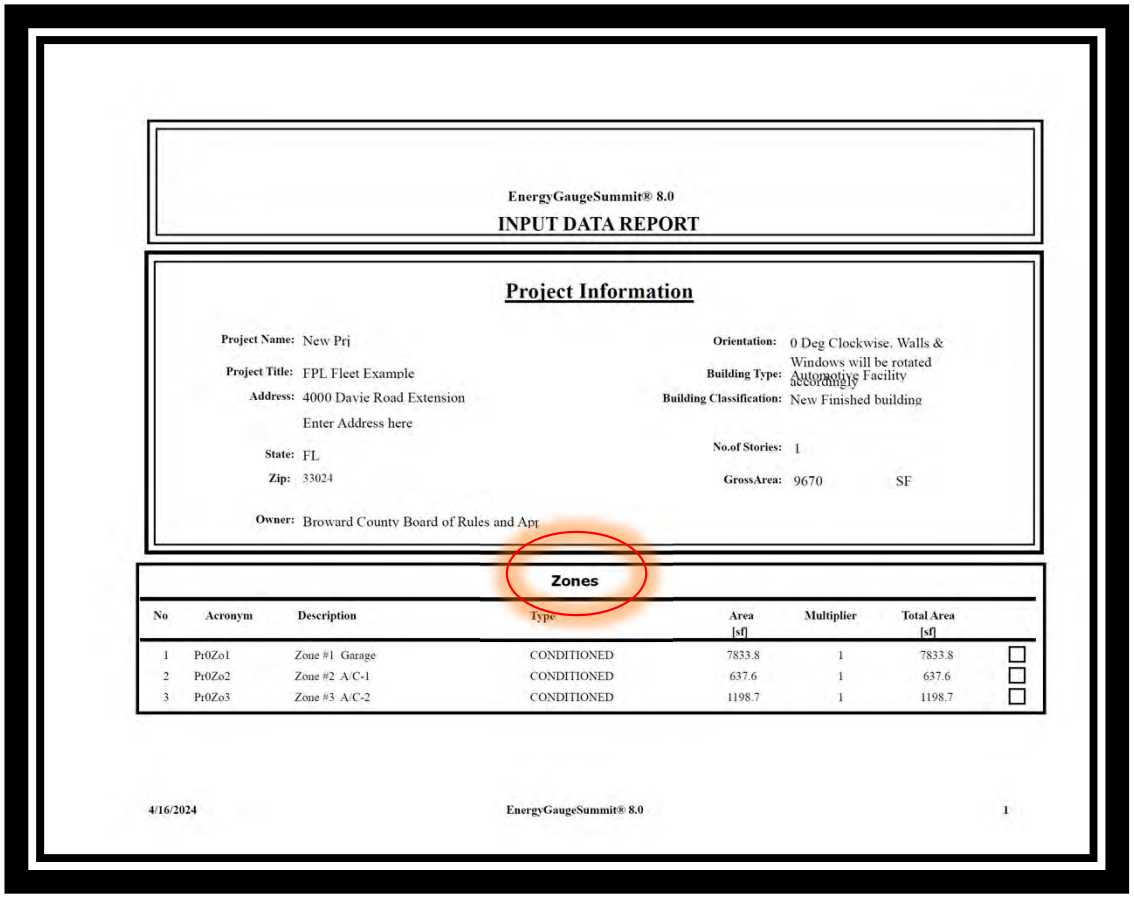
C407.4.2 Additional Documentation.

The Code Official Shall Be Permitted To Require The Following Documents:

1. Thermal Zoning Diagrams Consisting Of Floor Plans Showing The Thermal Zoning Scheme For Standard Reference Design And Proposed Design;

Commercial Energy Guidelines Structural Plan Review Requirements

Item #10



EnergyGaugeSummit® 8.0

INPUT DATA REPORT

Project Information

Project Name:	New Prj	**Orientation:**	0 Deg Clockwise, Walls & Windows will be rotated accordingly
Project Title:	FPL Fleet Example	**Building Type:**	Automotive Facility
Address:	4000 Davie Road Extension Enter Address here	**Building Classification:**	New Finished building
State:	FL	**No.of Stories:**	1
Zip:	33024	**GrossArea:**	9670 SF
Owner:	Broward County Board of Rules and Apr		

Zones

No	Acronym	Description	Type	Area [sf]	Multiplier	Total Area [sf]	
1	PrOZo1	Zone #1 Garage	CONDITIONED	7833.8	1	7833.8	☐
2	PrOZo2	Zone #2 A/C-1	CONDITIONED	637.6	1	637.6	☐
3	PrOZo3	Zone #3 A/C-2	CONDITIONED	1198.7	1	1198.7	☐

4/16/2024 EnergyGaugeSummit® 8.0 1

The Input Data Report Will List The Zones

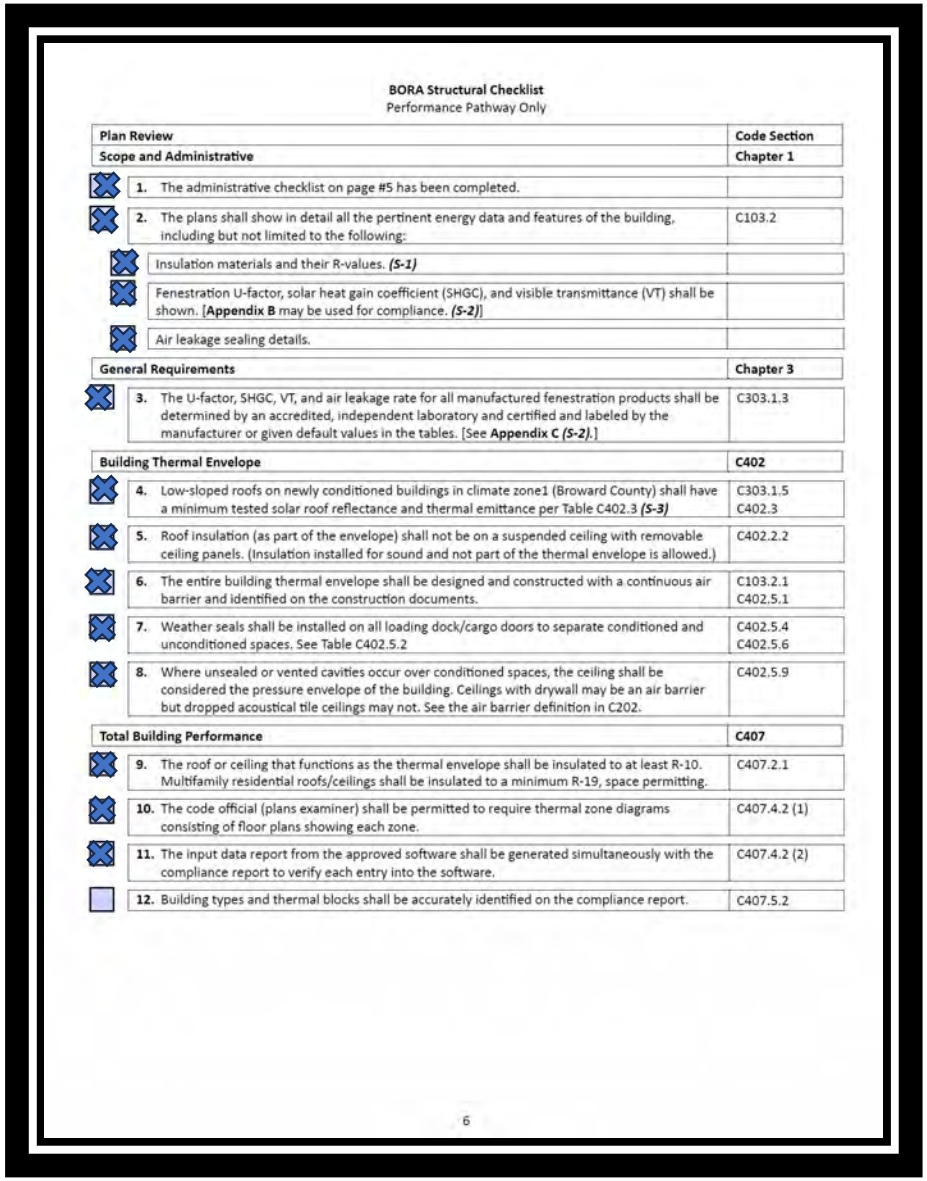
Commercial Energy Guidelines
Structural Plan Review
Requirements

Poll Question

Commercial Energy Guidelines Structural Plan Review Requirements

Item #11

The Input Data Report From The Approved Software Shall Be Generated Simultaneously With The Compliance Report To Verify Each Entry Into The Software.



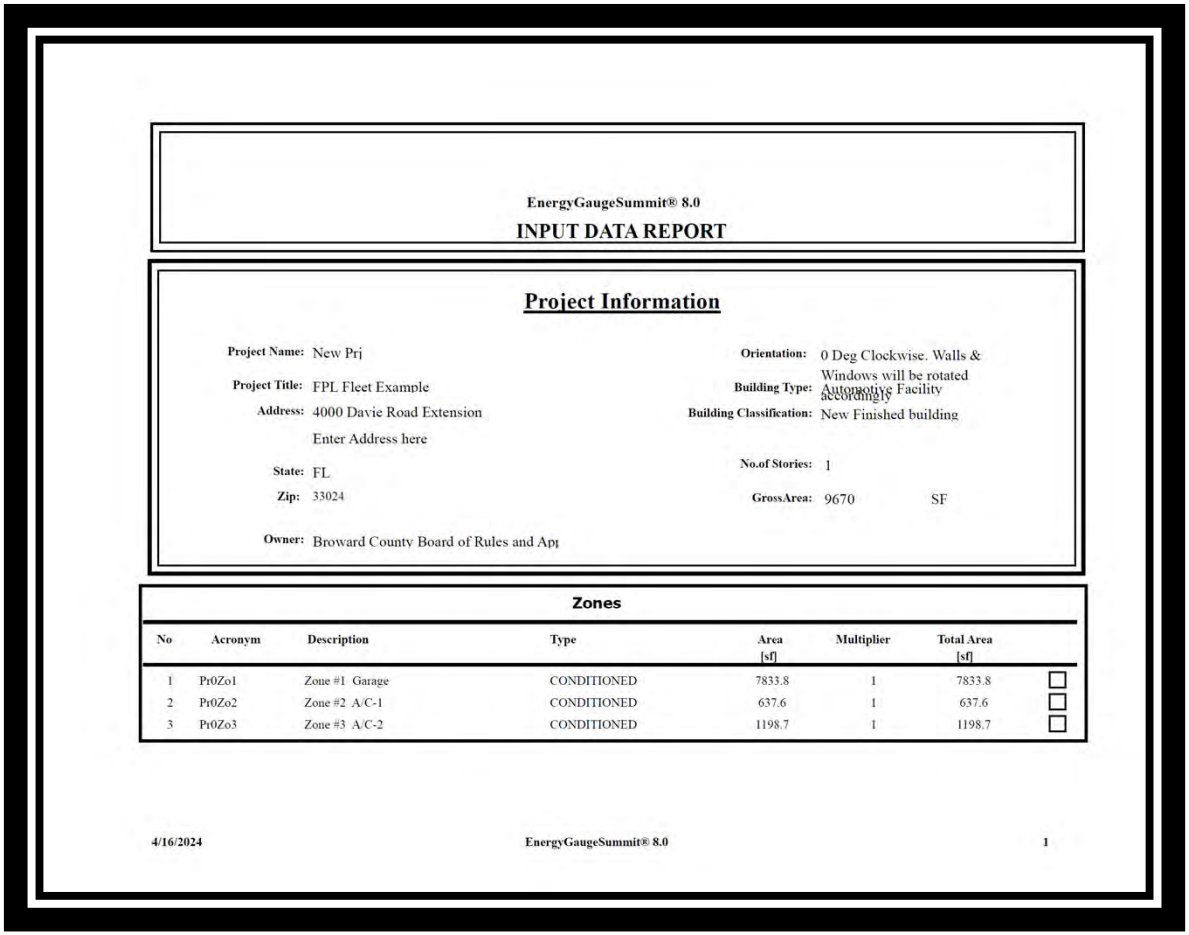
BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
☒ 1. The administrative checklist on page #5 has been completed.	
☒ 2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
☒ Insulation materials and their R-values. ***(S-1)***	
☒ Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
☒ Air leakage sealing details.	
General Requirements	**Chapter 3**
☒ 3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
☒ 4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
☒ 5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
☒ 6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
☒ 7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
☒ 8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
☒ 9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
☒ 10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
☒ 11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
☐ 12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

6

Commercial Energy Guidelines Structural Plan Review Requirements

Item #11



EnergyGaugeSummit® 8.0

INPUT DATA REPORT

Project Information

Project Name:	New Prj	**Orientation:**	0 Deg Clockwise. Walls & Windows will be rotated accordingly
Project Title:	FPL Fleet Example	**Building Type:**	Automotive Facility
Address:	4000 Davie Road Extension Enter Address here	**Building Classification:**	New Finished building
State:	FL	**No.of Stories:**	1
Zip:	33024	**GrossArea:**	9670 SF
Owner:	Broward County Board of Rules and Apt		

Zones

No	Acronym	Description	Type	Area [sf]	Multiplier	Total Area [sf]	
1	Pr0Zo1	Zone #1 Garage	CONDITIONED	7833.8	1	7833.8	☐
2	Pr0Zo2	Zone #2 A/C-1	CONDITIONED	637.6	1	637.6	☐
3	Pr0Zo3	Zone #3 A/C-2	CONDITIONED	1198.7	1	1198.7	☐

4/16/2024 EnergyGaugeSummit® 8.0 1

C407.4.2 Additional Documentation.

The Code Official Shall Be Permitted To Require The Following Documents:

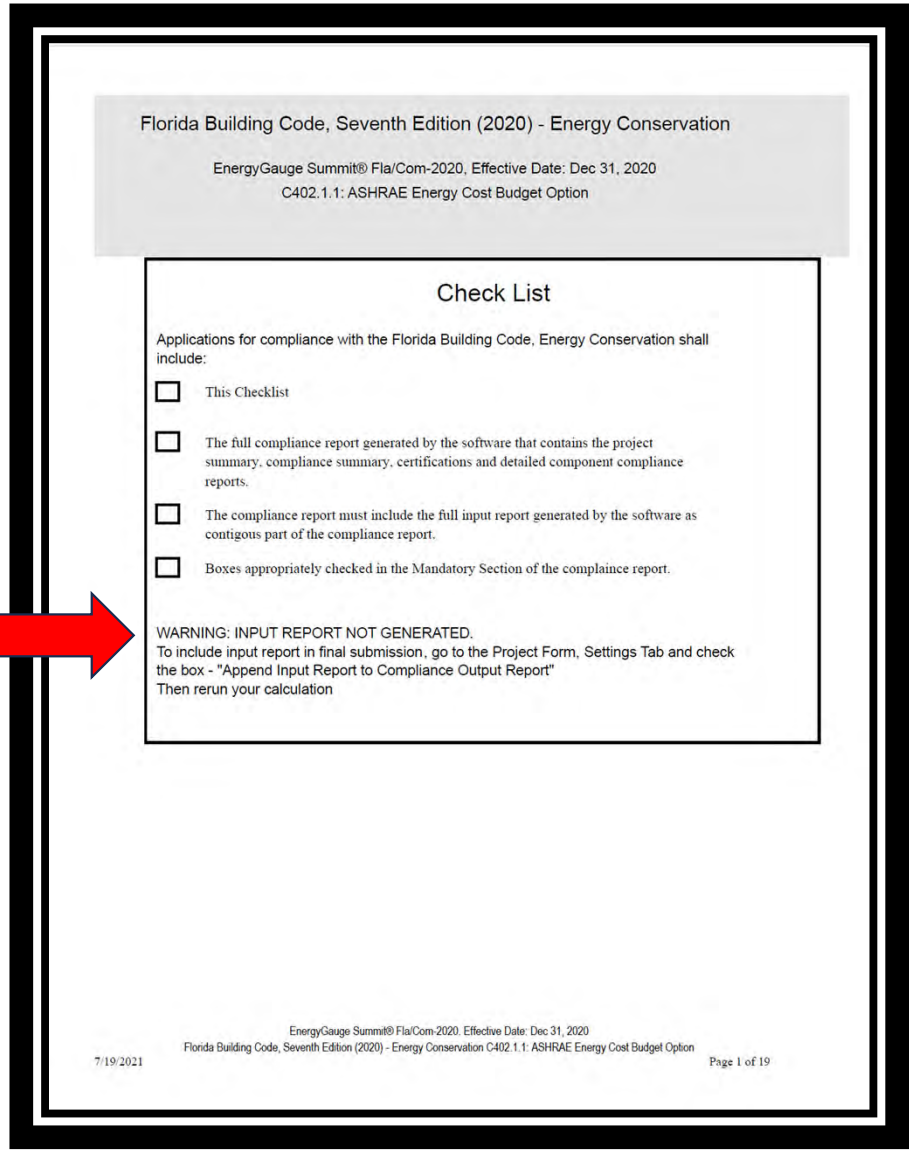
2. Input And Output Reports From The Energy Analysis Simulation Program Containing The Complete Input And Output Files, As Applicable.

Commercial Energy Guidelines Structural Plan Review Requirements

Item #11

Look For Warning On Energy Calculation

WARNING: INPUT REPORT NOT GENERATED



Florida Building Code, Seventh Edition (2020) - Energy Conservation

EnergyGauge Summit® Fla/Com-2020, Effective Date: Dec 31, 2020
C402.1.1: ASHRAE Energy Cost Budget Option

Check List

Applications for compliance with the Florida Building Code, Energy Conservation shall include:

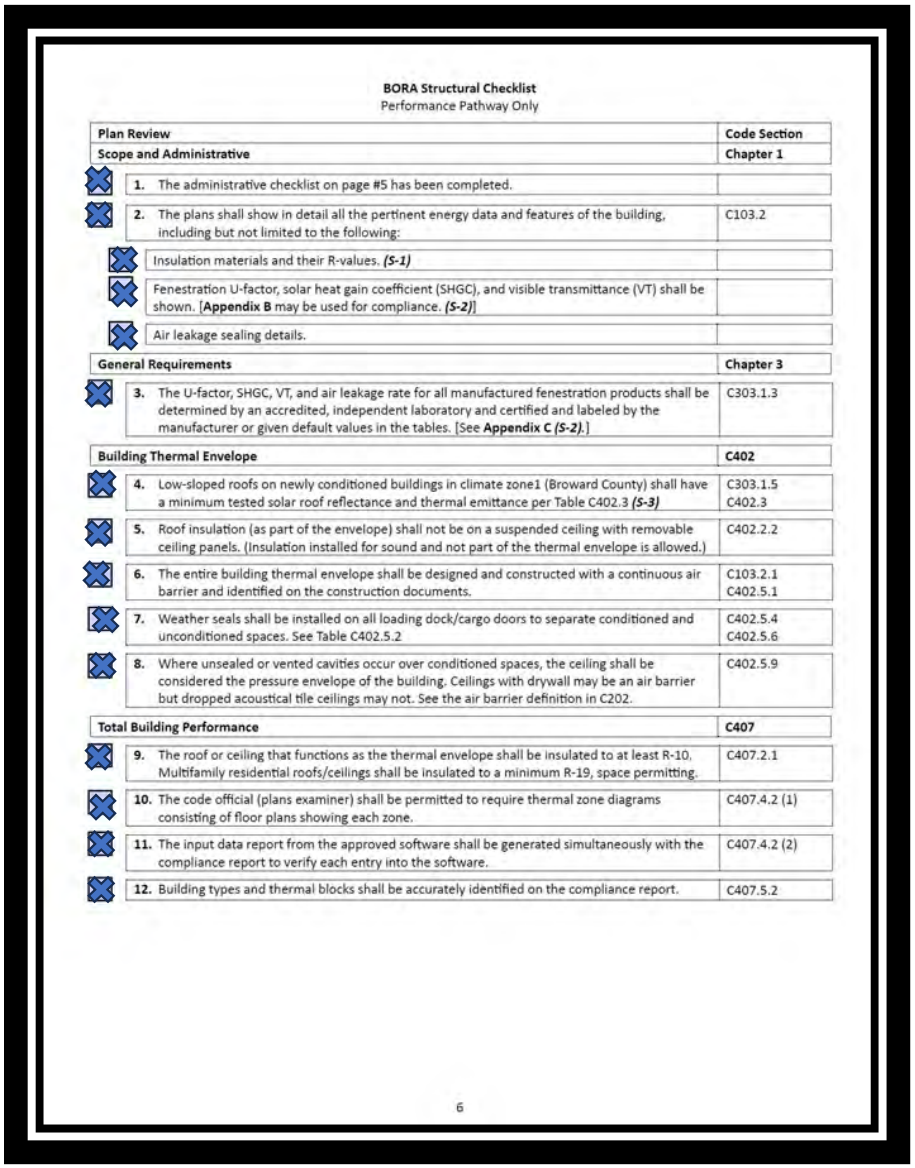
- ☐ This Checklist
- ☐ The full compliance report generated by the software that contains the project summary, compliance summary, certifications and detailed component compliance reports.
- ☐ The compliance report must include the full input report generated by the software as contigous part of the compliance report.
- ☐ Boxes appropriately checked in the Mandatory Section of the complaince report.

WARNING: INPUT REPORT NOT GENERATED.
To include input report in final submission, go to the Project Form, Settings Tab and check the box - "Append Input Report to Compliance Output Report"
Then rerun your calculation

Commercial Energy Guidelines Structural Plan Review Requirements

Item #12

Building Types And Thermal Blocks Shall Be Accurately Identified On The Compliance Report

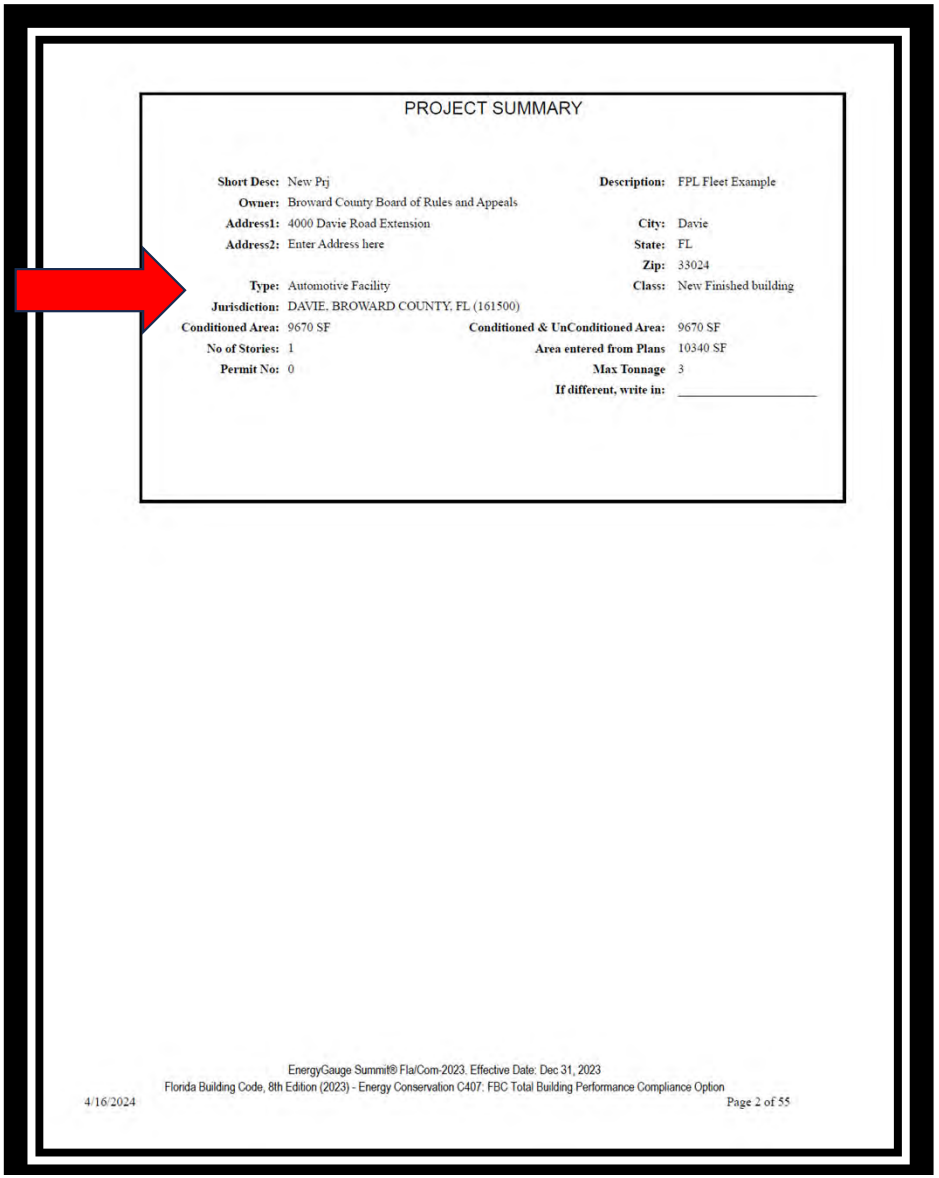


BORA Structural Checklist
Performance Pathway Only

Plan Review	Code Section
Scope and Administrative	**Chapter 1**
1. The administrative checklist on page #5 has been completed.	
2. The plans shall show in detail all the pertinent energy data and features of the building, including but not limited to the following:	C103.2
Insulation materials and their R-values. ***(S-1)***	
Fenestration U-factor, solar heat gain coefficient (SHGC), and visible transmittance (VT) shall be shown. [**Appendix B** may be used for compliance. ***(S-2)***]	
Air leakage sealing details.	
General Requirements	**Chapter 3**
3. The U-factor, SHGC, VT, and air leakage rate for all manufactured fenestration products shall be determined by an accredited, independent laboratory and certified and labeled by the manufacturer or given default values in the tables. [See **Appendix C** ***(S-2)***.]	C303.1.3
Building Thermal Envelope	**C402**
4. Low-sloped roofs on newly conditioned buildings in climate zone1 (Broward County) shall have a minimum tested solar roof reflectance and thermal emittance per Table C402.3 ***(S-3)***	C303.1.5 C402.3
5. Roof insulation (as part of the envelope) shall not be on a suspended ceiling with removable ceiling panels. (Insulation installed for sound and not part of the thermal envelope is allowed.)	C402.2.2
6. The entire building thermal envelope shall be designed and constructed with a continuous air barrier and identified on the construction documents.	C103.2.1 C402.5.1
7. Weather seals shall be installed on all loading dock/cargo doors to separate conditioned and unconditioned spaces. See Table C402.5.2	C402.5.4 C402.5.6
8. Where unsealed or vented cavities occur over conditioned spaces, the ceiling shall be considered the pressure envelope of the building. Ceilings with drywall may be an air barrier but dropped acoustical tile ceilings may not. See the air barrier definition in C202.	C402.5.9
Total Building Performance	**C407**
9. The roof or ceiling that functions as the thermal envelope shall be insulated to at least R-10. Multifamily residential roofs/ceilings shall be insulated to a minimum R-19, space permitting.	C407.2.1
10. The code official (plans examiner) shall be permitted to require thermal zone diagrams consisting of floor plans showing each zone.	C407.4.2 (1)
11. The input data report from the approved software shall be generated simultaneously with the compliance report to verify each entry into the software.	C407.4.2 (2)
12. Building types and thermal blocks shall be accurately identified on the compliance report.	C407.5.2

Commercial Energy Guidelines Structural Plan Review Requirements

Building Type



PROJECT SUMMARY

Short Desc:	New Prj	**Description:**	FPL Fleet Example
Owner:	Broward County Board of Rules and Appeals		
Address1:	4000 Davie Road Extension	**City:**	Davie
Address2:	Enter Address here	**State:**	FL
		Zip:	33024
Type:	Automotive Facility	**Class:**	New Finished building
Jurisdiction:	DAVIE, BROWARD COUNTY, FL (161500)		
Conditioned Area:	9670 SF	**Conditioned & UnConditioned Area:**	9670 SF
No of Stories:	1	**Area entered from Plans**	10340 SF
Permit No:	0	**Max Tonnage**	3
		If different, write in:	_____

EnergyGauge Summit® Fla/Com-2023. Effective Date: Dec 31, 2023
Florida Building Code, 8th Edition (2023) - Energy Conservation C407: FBC Total Building Performance Compliance Option
4/16/2024 Page 2 of 55

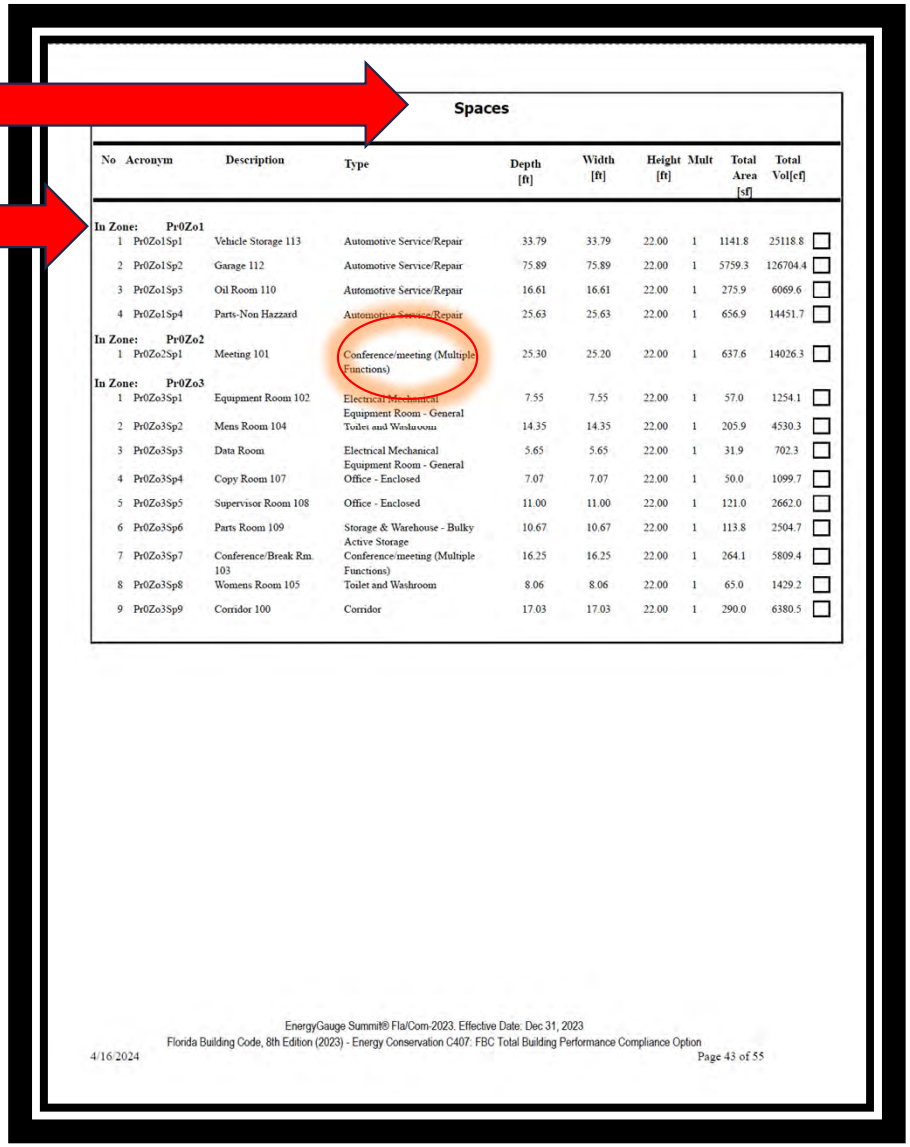
Item #12

C407.5.2 Thermal Blocks
The Standard Reference Design And The Proposed Design Shall Be Configured And Analyzed.....

Commercial Energy Guidelines Structural Plan Review Requirements

Spaces/Rooms

Zones



Spaces

No	Acronym	Description	Type	Depth [ft]	Width [ft]	Height [ft]	Mult	Total Area [sf]	Total Vol[cf]	
In Zone:	Pr0Zo1									
1	Pr0Zo1Sp1	Vehicle Storage 113	Automotive Service/Repair	33.79	33.79	22.00	1	1141.8	25118.8	☐
2	Pr0Zo1Sp2	Garage 112	Automotive Service/Repair	75.89	75.89	22.00	1	5759.3	126704.4	☐
3	Pr0Zo1Sp3	Oil Room 110	Automotive Service/Repair	16.61	16.61	22.00	1	275.9	6069.6	☐
4	Pr0Zo1Sp4	Parts-Non Hazzard	Automotive Service/Repair	25.63	25.63	22.00	1	656.9	14451.7	☐
In Zone:	Pr0Zo2									
1	Pr0Zo2Sp1	Meeting 101	Conference/meeting (Multiple Functions)	25.30	25.20	22.00	1	637.6	14026.3	☐
In Zone:	Pr0Zo3									
1	Pr0Zo3Sp1	Equipment Room 102	Electrical Mechanical Equipment Room - General	7.55	7.55	22.00	1	57.0	1254.1	☐
2	Pr0Zo3Sp2	Mens Room 104	Toilet and Washroom	14.35	14.35	22.00	1	205.9	4530.3	☐
3	Pr0Zo3Sp3	Data Room	Electrical Mechanical Equipment Room - General	5.65	5.65	22.00	1	31.9	702.3	☐
4	Pr0Zo3Sp4	Copy Room 107	Office - Enclosed	7.07	7.07	22.00	1	50.0	1099.7	☐
5	Pr0Zo3Sp5	Supervisor Room 108	Office - Enclosed	11.00	11.00	22.00	1	121.0	2662.0	☐
6	Pr0Zo3Sp6	Parts Room 109	Storage & Warehouse - Bulky Active Storage	10.67	10.67	22.00	1	113.8	2504.7	☐
7	Pr0Zo3Sp7	Conference/Break Rm. 103	Conference/meeting (Multiple Functions)	16.25	16.25	22.00	1	264.1	5809.4	☐
8	Pr0Zo3Sp8	Womens Room 105	Toilet and Washroom	8.06	8.06	22.00	1	65.0	1429.2	☐
9	Pr0Zo3Sp9	Corridor 100	Corridor	17.03	17.03	22.00	1	290.0	6380.5	☐

Item #12

Building Types And Thermal Blocks Shall Be Accurately Identified On The Compliance Report

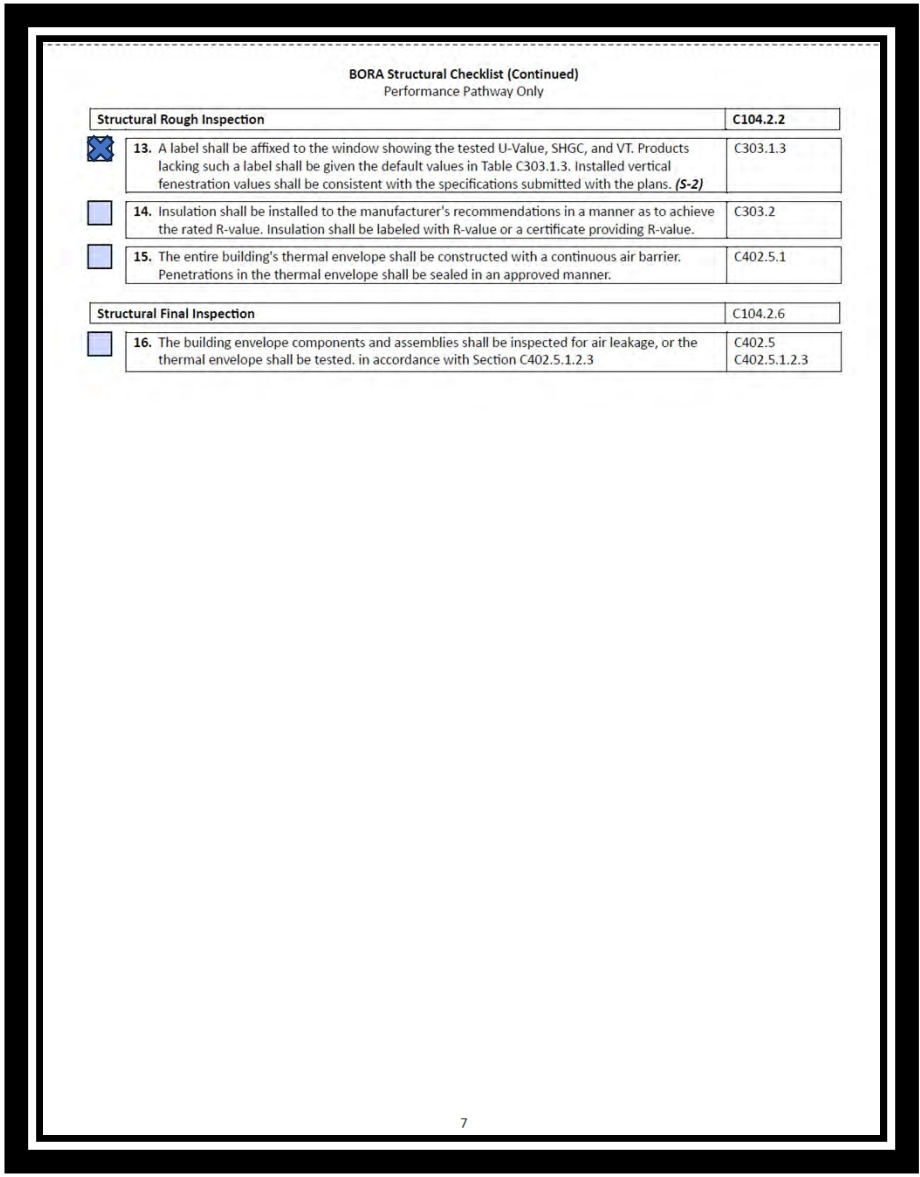
Commercial Energy Guidelines Structural Inspection Requirements

Structural Rough Inspections

Commercial Energy Guidelines Structural Inspection Requirements

Item #13

A Label Shall Be Affixed To The Window Showing The Tested U-value, SHGC, And VT. Products Lacking Such A Label Shall Be Given The Default Values In Table C303.1.3. Installed Vertical Fenestration Values Shall Be Consistent With The Specifications Submitted With The Plans. (S-2)



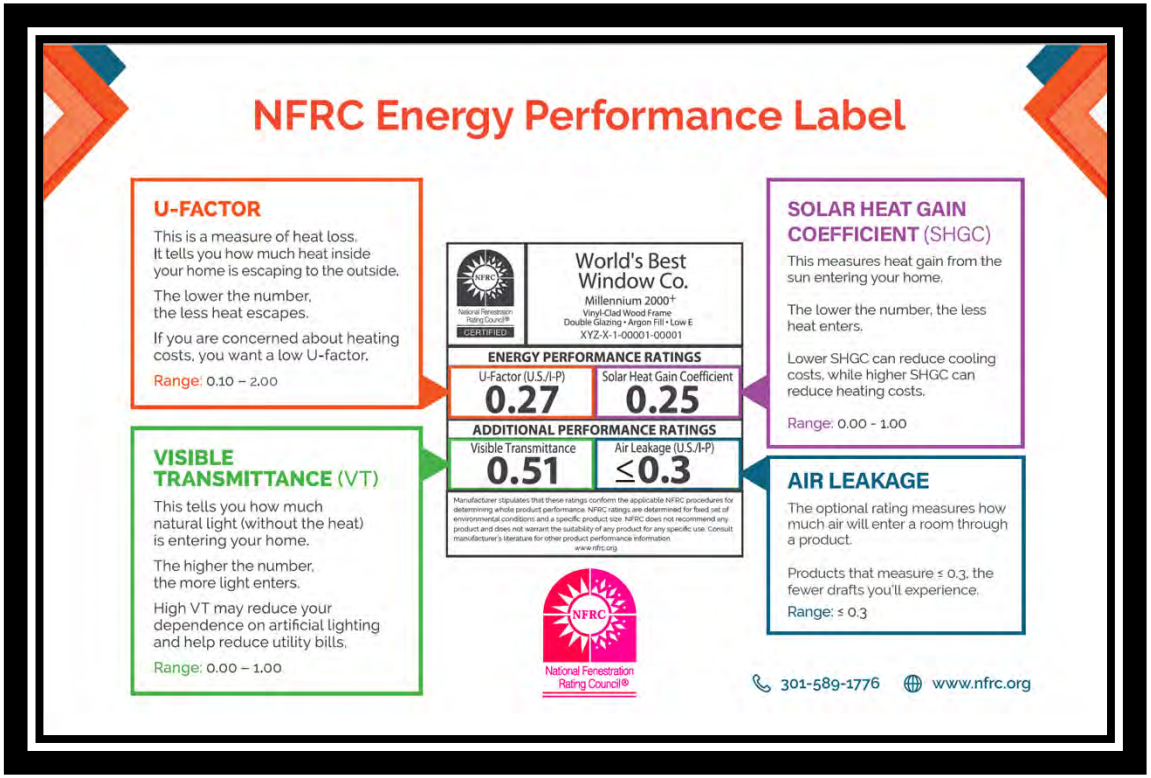
BORA Structural Checklist (Continued)
Performance Pathway Only

Structural Rough Inspection		C104.2.2
☒	**13.** A label shall be affixed to the window showing the tested U-Value, SHGC, and VT. Products lacking such a label shall be given the default values in Table C303.1.3. Installed vertical fenestration values shall be consistent with the specifications submitted with the plans. ***(S-2)***	C303.1.3
☐	**14.** Insulation shall be installed to the manufacturer's recommendations in a manner as to achieve the rated R-value. Insulation shall be labeled with R-value or a certificate providing R-value.	C303.2
☐	**15.** The entire building's thermal envelope shall be constructed with a continuous air barrier. Penetrations in the thermal envelope shall be sealed in an approved manner.	C402.5.1
Structural Final Inspection		C104.2.6
☐	**16.** The building envelope components and assemblies shall be inspected for air leakage, or the thermal envelope shall be tested. in accordance with Section C402.5.1.2.3	C402.5 C402.5.1.2.3

7

Commercial Energy Guidelines Structural Inspection Requirements

Item #13



C303.1.3 Fenestration Product Rating.
.....Shall Be Determined ... By An Accredited, Independent Laboratory, And *Labeled* and Certified By The Manufacturer. (See *Labeled* Definition)

Commercial Energy Guidelines Structural Inspection Requirements

Item #14

Insulation Shall Be Installed To The Manufacturer's Recommendations In A Manner As To Achieve The Rated R-Value. Insulation Shall Be Labeled With R-Value Or A Certificate Providing R-Value.

BORA Structural Checklist (Continued)
Performance Pathway Only

Structural Rough Inspection		C104.2.2
☒	**13.** A label shall be affixed to the window showing the tested U-Value, SHGC, and VT. Products lacking such a label shall be given the default values in Table C303.1.3. Installed vertical fenestration values shall be consistent with the specifications submitted with the plans. ***(S-2)***	C303.1.3
☒	**14.** Insulation shall be installed to the manufacturer's recommendations in a manner as to achieve the rated R-value. Insulation shall be labeled with R-value or a certificate providing R-value.	C303.2
☐	**15.** The entire building's thermal envelope shall be constructed with a continuous air barrier. Penetrations in the thermal envelope shall be sealed in an approved manner.	C402.5.1
Structural Final Inspection		C104.2.6
☐	**16.** The building envelope components and assemblies shall be inspected for air leakage, or the thermal envelope shall be tested. in accordance with Section C402.5.1.2.3	C402.5 C402.5.1.2.3

Commercial Energy Guidelines Structural Inspection Requirements

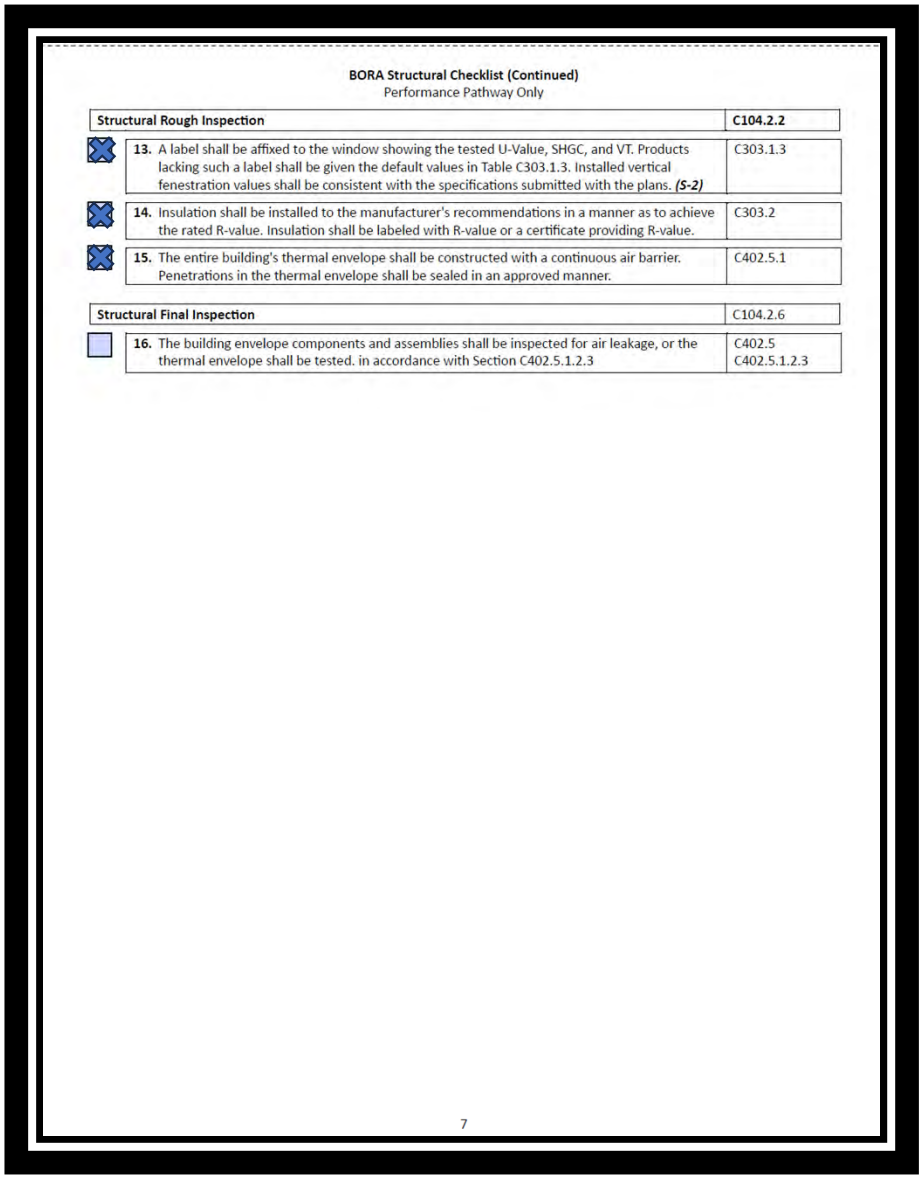
Item #14

C303.2 Installation. Materials, Systems And Equipment Shall Be Installed In Accordance With The Manufacturer's Instructions And The Florida Building Code, Building.

Commercial Energy Guidelines Structural Inspection Requirements

Item #15

The Entire Building's Thermal Envelope Shall Be Constructed With A Continuous Air Barrier. Penetrations In The Thermal Envelope Shall Be Sealed In An Approved Manner.

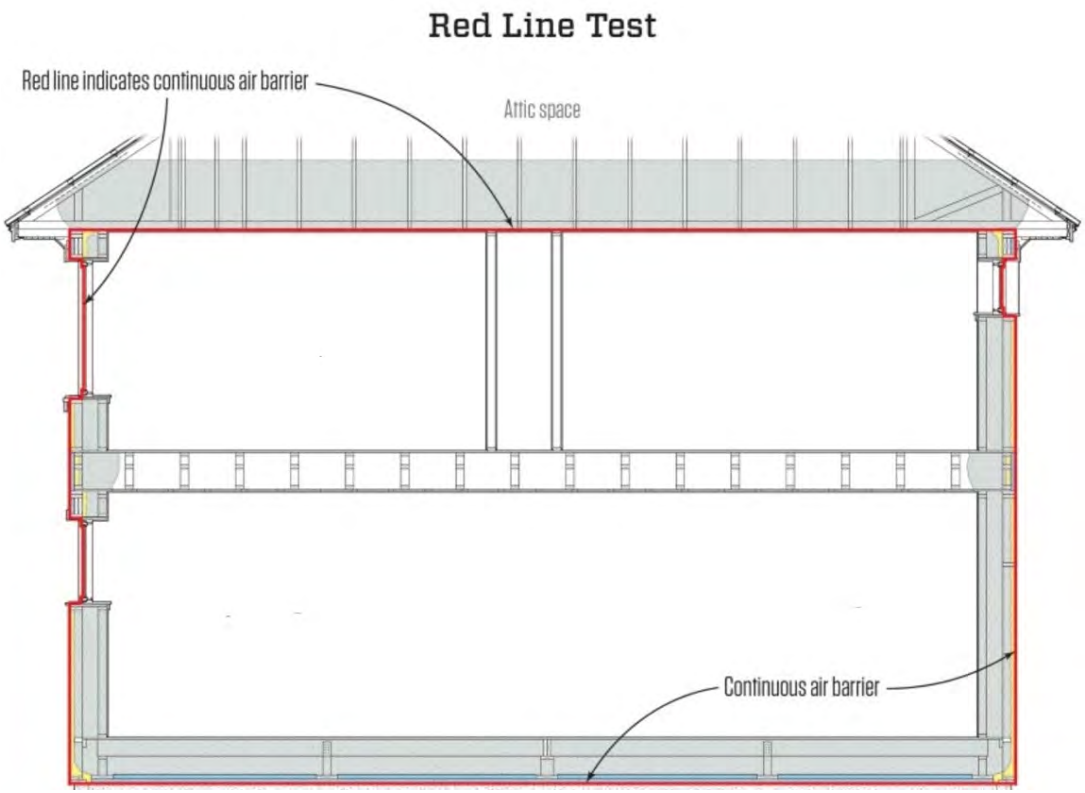


BORA Structural Checklist (Continued)
Performance Pathway Only

Structural Rough Inspection		C104.2.2
☒	**13.** A label shall be affixed to the window showing the tested U-Value, SHGC, and VT. Products lacking such a label shall be given the default values in Table C303.1.3. Installed vertical fenestration values shall be consistent with the specifications submitted with the plans. ***(S-2)***	C303.1.3
☒	**14.** Insulation shall be installed to the manufacturer's recommendations in a manner as to achieve the rated R-value. Insulation shall be labeled with R-value or a certificate providing R-value.	C303.2
☒	**15.** The entire building's thermal envelope shall be constructed with a continuous air barrier. Penetrations in the thermal envelope shall be sealed in an approved manner.	C402.5.1
Structural Final Inspection		C104.2.6
☐	**16.** The building envelope components and assemblies shall be inspected for air leakage, or the thermal envelope shall be tested. in accordance with Section C402.5.1.2.3	C402.5 C402.5.1.2.3

7

Commercial Energy Guidelines Structural Inspection Requirements



Item #15

C402.5.1 Air Barriers.
A Continuous Air Barrier Shall Be Provided Throughout The Building Thermal Envelope The Air Barriers Shall Be Located On The Inside Or Outside Of The Building Envelope, Located Within The Assemblies Composing The Envelope, Or Any Combination Thereof.

Commercial Energy Guidelines Structural Inspection Requirements

Item #15

C402.5.1 Air Barriers.
A Continuous Air Barrier Shall Be Provided Throughout The Building Thermal Envelope. The Air Barriers Shall Be Located On The Inside Or Outside Of The Building Envelope, Located Within The Assemblies Composing The Envelope, Or Any Combination Thereof.

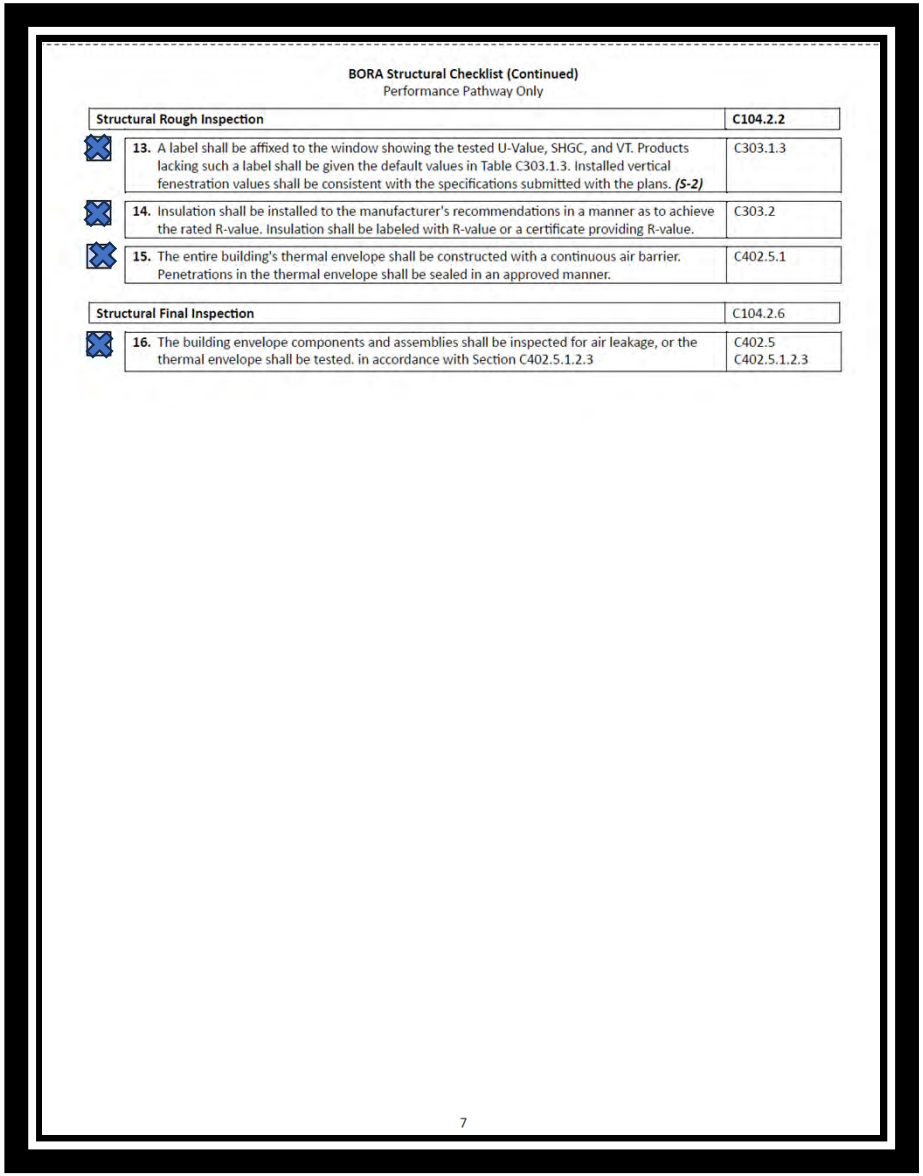
Commercial Energy Guidelines
Structural Inspection
Requirements

Structural Final Inspections

Commercial Energy Guidelines Structural Inspection Requirements

Item #16

The Building Envelope Components And Assemblies Shall Be Inspected For Air Leakage, Or The Thermal Envelope Shall Be Tested. In Accordance With Section C402.5.1.2.3



BORA Structural Checklist (Continued)
Performance Pathway Only

Structural Rough Inspection		C104.2.2
☒	**13.** A label shall be affixed to the window showing the tested U-Value, SHGC, and VT. Products lacking such a label shall be given the default values in Table C303.1.3. Installed vertical fenestration values shall be consistent with the specifications submitted with the plans. ***(S-2)***	C303.1.3
☒	**14.** Insulation shall be installed to the manufacturer's recommendations in a manner as to achieve the rated R-value. Insulation shall be labeled with R-value or a certificate providing R-value.	C303.2
☒	**15.** The entire building's thermal envelope shall be constructed with a continuous air barrier. Penetrations in the thermal envelope shall be sealed in an approved manner.	C402.5.1

Structural Final Inspection		C104.2.6
☒	**16.** The building envelope components and assemblies shall be inspected for air leakage, or the thermal envelope shall be tested. in accordance with Section C402.5.1.2.3	C402.5 C402.5.1.2.3

7

Commercial Energy Guidelines Structural Inspection Requirements

Item #16

Every Trade Is Responsible For Sealing The Envelope

Commercial Energy Guidelines Structural Inspection Requirements

Item #16

C402.5 Air Leakage—Thermal Envelope (Mandatory). The Building Thermal Envelope Shall Comply With Sections C402.5.1 Through C402.5.11, Or The Building Thermal Envelope Shall Be Tested In Accordance With Section C402.5.1.2.3. Where Compliance Is Based On Such Testing, The Building Shall Also Comply With Sections C402.5.5, C402.5.6 And C402.5.7.

Commercial Energy Guidelines Structural Inspection Requirements

Item #16

C402.5 Air Leakage—Thermal Envelope (Mandatory).

The Continuous Air Barrier Shall Be Constructed To Comply With The Following:

- The Air Barrier Shall Be Continuous For All Assemblies That Are The Thermal Envelope Of The Building And Across The Joints And Assemblies.

Commercial Energy Guidelines Structural Inspection Requirements

Item #16

C402.5 Air Leakage—Thermal Envelope (Mandatory).

The Continuous Air Barrier Shall Be Constructed To Comply With The Following:

- Air Barrier Joints And Seams Shall Be Sealed, Including Sealing Transitions In Places And Changes In Materials. The Joints And Seals Shall Be Securely Installed In Or On The Joint For Its Entire Length So As Not To Dislodge, Loosen Or Otherwise Impair Its Ability To Resist Positive And Negative Pressure From Wind, Stack Effect And Mechanical Ventilation.

Commercial Energy Guidelines Structural Inspection Requirements

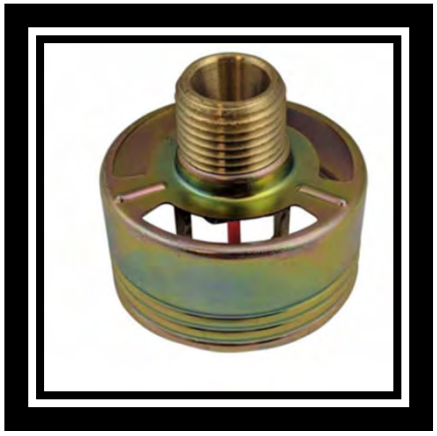
Item #16

C402.5 Air Leakage—Thermal Envelope (Mandatory).

The Continuous Air Barrier Shall Be Constructed To Comply With The Following:

- Penetrations Of The Air Barrier Shall Be Caulked, Gasketed Or Otherwise Sealed In A Manner Compatible With The Construction Materials And Location. Joints And Seals Associated With Penetrations Shall Be Sealed In The Same Manner Or Taped Or Covered With Moisture Vapor-permeable Wrapping Material.

Commercial Energy Guidelines Structural Inspection Requirements



Item #16

Beware!

C402.5 Air Leakage—Thermal Envelope (Mandatory).

The Continuous Air Barrier Shall Be Constructed To Comply With The Following:

- Sealing Materials Shall Be Appropriate To The Construction Materials Being Sealed And Shall Be Securely Installed Around The Penetration So As Not To Dislodge, Loosen Or Otherwise Impair The Penetrations' Ability To Resist Positive And Negative Pressure From Wind, Stack Effect And Mechanical Ventilation. Sealing Of Concealed Fire Sprinklers, Where Required, Shall Be In A Manner That Is Recommended By The Manufacturer. Caulking Or Other Adhesive Sealants Shall Not Be Used To Fill Voids Between Fire Sprinkler Cover Plates And Walls Or Ceilings.

Commercial Energy Guidelines
Structural Inspection
Requirements

Questions?