FLORIDA BUILDING CODE, ENERGY CONSERVATION
Residential Building Thermal Envelope Approach
R-Value Computation Method

FORM R402—2020

Florida Climate Zone

PROJECT NAME AND ADDRESS: Lisa Ford 5766 C.R. 18 Ft. White, Fl	**BUILDER:** G-N Construction INC
OWNER: Lisa Ford	**PERMITTING OFFICE:**
PERMIT TYPE: Single Family	**JURISDICTION NUMBER:**
WORST CASE? No	**PERMIT NUMBER:**
	NUMBER OF UNITS:
	CONDITIONED FLOOR AREA:

Scope: Compliance with Section R402.1.2 of the *Florida Building Code, Energy Conservation*, shall be demonstrated by the use of Form R402 for single- and multiple-family residences of three stories or less in height, additions to existing residential buildings, alterations, renovations and building systems in existing buildings, as applicable. To comply, a building must meet or exceed all of the energy efficiency requirements and applicable mandatory requirements summarized on this form. If a building does not comply with this method, or by the UA Alternative method, it may still comply under Section R405 or R406 of the *Florida Building Code, Energy Conservation*.

General Instructions:

1. **Fill in all the applicable spaces of the "INSTALLED" row in the INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT table with the information requested. All "INSTALLED" values must be equal to or more efficient than the required levels. "AVG" indicates an area weighted average is allowed; "LOWEST" indicates the lowest *R*-value to be installed must be entered.**
2. **Complete the tables for air infiltration and installed equipment.**
3. **Read the MANDATORY REQUIREMENTS table and check each box to indicate your intent to comply with all applicable items.**
4. **Read, sign and date the "Prepared By" certification statement at the bottom of this form. The owner or owner's agent must also sign and date the form.**

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[1]

REQUIREMENTS	FENESTRATION *U*-FACTOR[2,3,4]	SKYLIGHT[2] *U*-FACTOR	GLAZED FENESTRATION SHGC[2,3]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[5]	MASS WALL *R*-VALUE[5,6]	FLOOR *R*-VALUE	BASEMENT WALL *R*-VALUE	SLAB[7] *R*-VALUE & DEPTH	CRAWL SPACE WALL *R*-VALUE
CLIMATE ZONE 1	NR	0.75	0.25	30	13	3/4	13	0	0	0
CLIMATE ZONE 2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
VALUE	AVG	AVG	AVG	LOWEST	LOWEST	LOWEST	LOWEST	LOWEST	LOWEST	LOWEST
INSTALLED:	.46	N/A	.26	38	13	4/6	N/A	N/A	0	N/A

***R*-Value Calculation Method - [PASS / FAIL]**

For SI: 1 foot = 304.8 mm; NR = No requirement.
(1) *R*-values are minimums. *U*-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed *R*-value of the insulation shall not be less than the *R*-value specified in the table.
(2) The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.
(3) For impact rated fenestration complying with Section R301.2.1.2 of the *Florida Building Code, Residential* or Section 1609.1.2 of the *Florida Building Code, Building*, the maximum U-factor shall be 0.65 in Climate Zone 2. An area-weighted average of *U*-factor and SHGC shall be accepted to meet the requirements, and up to 15 square feet of glazed fenestration area are exempted from the *U*-factor and SHGC requirement based on Section R402.3.1, R402.3.2 and R402.3.3.
(4) One side-hinged opaque door assembly up to 24 square feet is exempted from this *U*-factor requirement based on Section R402.3.4.
(5) *R*-values are for insulation material only as applied in accordance with manufacturer's installation instructions.
(6) The second R-value applies when more than half the insulation is on the interior of the mass wall.
(7) R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Climate Zones 1 through 3 for heated slabs.

Air infiltration:	Blower door test is required on the building envelope to verify leakage ≤ 7 ACH50; test report must be provided to code official before CO is issued. *Florida Building Code, Energy Conservation* Section R402.4.1.2 testing exception may apply for additions, alterations, or renovations.

(continued)

FORM R402—continued
EQUIPMENT REQUIREMENTS AND INSTALLED VALUES

Fill in the "INSTALLED EFFICIENCY LEVEL" column with the information requested. For multiple systems of the same type, indicate the minimum efficient system. All "INSTALLED" values must be equal to or more efficient than the required level. If a listed "SYSTEM TYPE" is not to be installed, write in "N/A" for not applicable.

SYSTEM TYPE	MINIMUM EFFICIENCY LEVEL REQUIRED	INSTALLED EFFICIENCY LEVEL
Air distribution system[1]	Not allowed in attic	Location: c/+sc+
Air handling unit Duct *R*-value	Factory Sealed = R-8 (Ducts in unconditioned attics, Diameter ≥ 3 in.) = R-6 (Ducts in unconditioned non attics, Diam. ≥ 3 in.) = R-6 (Ducts in unconditioned attics, Diameter < 3 in.) = R-4.2 (Ducts in unconditioned not attics, Diam. < 3 in.) All ducts are in conditioned space (No minimum)	Factory Sealed? (Y)/N *R*-Value (In unc. attic) = 8.0 *R*-Value (In unc. non attics) = *R*-Value (Small ducts in attic) = *R*-Value (Small ducts in unc) = All in conditioned space ? Y/N
Air leakage/Duct test	Air handler installed: Total leakage = 4 cfm/100 s.f. Air handler not installed: Total leakage = 3 cfm/100 s.f.	Total leakage = _____ cfm/100 s.f. Air handler installed? Y/N
Duct testing	Test not required if all ducts and AHU are within the building thermal envelope and for additions or alterations where ducts extended from existing heating and cooling system through unconditioned space are < 40 linear ft.	Test report required? Y(N)
Air conditioning systems: Central system ≤ 65,000 Btu/h PTAC Other:	Minimum federal standard required by NAECA[2]: SEER 14.0 EER [from Table C403.2.3(3)] See Tables C403.2.3(1)–(11)	SEER (Min)= 14.0 EER (Min)= Type = Effic. (min) =
Heating systems: Heat pump ≤ 65,000 Btu/h Gas furnace, non-weatherized Oil furnace, non-weatherized Other:	Minimum federal standard required by NAECA[2]: HSPF ≥ 8.2 AFUE ≥ 80% AFUE ≥ 83%	HSPF (Min) = 8.5 AFUE (Min) = AFUE (Min) = Type = Effic. (min) =
Water heating system (storage type): Electric[3, 5] Gas fired[4, 6] Other (describe)[5, 6]:	Minimum federal standard required by NAECA[2]: UEF 40 gal. 0.923; 50 gal.: 0.921; 60 gal.: 2.051 UEF 40 gal. 0.580; 50 gal.: 0.563; 60 gal.: 0.766	Capacity = UEF (Min) = .95 UEF (Min) = Type = Effic. (min) =

Equipment Efficiency—[PASS / FAIL]

(1) Ducts & AHU installed "substantially leak free" per Section R403.3.2. Test required by either individuals as defined in Section 553.993(5) or (7), *Florida Statutes*, or individuals licensed as set forth in Section 489.105(3)(f), (g), or (i), *Florida Statutes*. The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope, and for additions where ducts from an existing heating and cooling system extended to the addition through unconditioned space are less than 40 linear ft.
(2) Minimum efficiencies are those set by the *National Appliance Energy Conservation Act* of 1987 for typical residential equipment and are subject to NAECA rules and regulations. For other types of equipment, see Tables C403.2.3 (1-11) of the Commercial Provisions of the *Florida Building Code, Energy Conservation*.
(3) For electric storage volumes ≤ 55 gallons, minimum UEF = 0.9349 – (0.0001 * volume). For electric storage volumes > 55 gallons, minimum UEF = 2.2418 – (0.0011 * volume).
(4) For natural gas storage volumes ≤ 55 gallons, minimum UEF = 0.692 – (0.0013 * volume). For natural gas storage volumes > 55 gallons, minimum UEF = 0.8072 – (0.0003 * volume).
(5) For electric tankless, min. UEF = 0.92. For natural gas tankless, min. UEF = 0.81.
(6) Referenced UEFs shown are for medium draw pattern value provided by manufacturer.

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FORM R402—continued

MANDATORY REQUIREMENTS			
Component	Section	Summary of Requirements	Check
Air leakage	R402.4	To be caulked, gasketed, weatherstripped or otherwise sealed per Table R402.4.1.1. Recessed lighting IC-rated as having ≤ 2.0 cfm tested to ASTM E283. Windows and doors: 0.3 cfm/sq.ft (swinging doors: 0.5 cfm/sf) when tested to NFRC 400 or AAMA/WDMA/CSA 101/I.S. 2/A440. Fireplaces: Tight-fitting flue dampers & outdoor combustion air	
Programmable thermostat	R403.1.2	A programmable thermostat is required for the primary heating or cooling system.	
Air distribution system	R403.3.2 R403.3.4	Ducts shall be tested as per Section R403.3.2 by either individuals as defined in Section 553.993(5) or (7), *Florida Statutes*, or individuals licensed as set forth in Section 489.105(3) (f), (g) or (i), *Florida Statutes*. Air handling units are not allowed in attics.	
Water heaters	R403.5	Comply with efficiencies in Table C404.2. Hot water pipes insulated to ≥ R-3 to kitchen outlets, other cases. Circulating systems to have an automatic or accessible manual OFF switch. Heat trap required for vertical pipe risers.	
Cooling/heating equipment	R403.7	Sizing calculation performed & attached. Special occasion cooling or heating capacity requires separate system or variable capacity system.	
Swimming pools & spas	R403.10	Spas and heated pools must have vapor-retardant covers or a liquid cover or other means proven to reduce heat loss except if 70% of heat from site-recovered energy. Off/timer switch required. Gas heaters minimum thermal efficiency is 82%. Heat pump pool heaters minimum COP is 4.0.	
Lighting equipment	R404.1	Not less than 90% of the lamps in permanently installed luminaires shall have an efficacy of at least 45 lumens-per-watt or shall utilize lamps with an efficacy of not less than 65 lumens-per-watt.	

I hereby certify that the plans and specifications covered by this form are in compliance with the *Florida Building Code, Energy Conservation.*
PREPARED BY: Gary N — **Date** 5/17/22
I hereby certify that this building is in compliance with the *Florida Building Code, Energy Conservation.*
OWNER/AGENT: Gary N — **Date:** 5/17/22

Review of plans and specifications covered by this form indicate compliance with the *Florida Building Code, Energy Conservation*. Before construction is complete, this building will be inspected for compliance in accordance with Section 553.908, F.S.
CODE OFFICIAL: _____
Date: _____

pauls heating and air inc

158 paden place statenville ga 31648
Phone 2295598232 Fax 2295597533 E-mail paulshvac@att.net
cr108822

Heat Load Summary Report for G&N1762 sqft

Room Name	Square Ft.	Heating Loss BTUH	Hydronic Heat Linear Ft.	Latent / Sensible Gain BTUH	Cooling Gain BTUH	Cooling Tons	Cooling CFM
bed1	154	2923	4.87	355 / 3563	3918	0.33	131
bath	50	592	0.99	50 / 517	567	0.05	19
bed2	154	2923	4.87	355 / 3563	3918	0.33	131
dining	266	6820	11.37	968 / 3490	4458	0.37	149
living	308	8736	14.56	1015 / 7262	8277	0.69	276
kitchen	180	2241	3.73	201 / 2285	2486	0.21	83
laundry	80	4934	8.22	751 / 2278	3028	0.25	101
master bed	210	3845	6.41	411 / 4088	4499	0.37	150
master bath	100	1776	2.96	101 / 2177	2278	0.19	76
master walkin closet	64	734	1.22	57 / 611	668	0.06	22
TOTALS	**1566**	**35524**	**59.21**	**4264 / 29834**	**34096**	**2.84**	**1138**

3 ton

Disclaimer

These computed results should be treated as estimates only and should be viewed as only one of the many tools required for a professional installation. The installing contractor's experience and expert judgement are also major factors in sizing and installing a complete system. The weather, customer usage, duct installation, and structure design may vary on each estimate and should be taken into account. Correct system sizing is based on the systems ability to meet both latent and sensible heat requirements, not just total BTUs.

Prepared 5/11/2022 using O'Brien Quick Loads Pro - Version 1.01 - SN: QP-070101-42778