

Sample Permit Package

Sunset Cooling Services | Remote HVAC permit paperwork

FORMAT SAMPLE - production jobs run in ACCA-approved software

This is an anonymized example of the deliverable format. Owner, address, contractor and license details were removed. The load numbers come from an in-house Manual J 8th-edition procedure engine and are NOT ACCA-approved software output. Paid jobs are run in ACCA-approved software and are reviewed by a licensed HVAC contractor before delivery.

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Inner pages show their own "Package page X of 11" numbering from the original package layout.

Residential Load Calculation, Equipment Selection and Duct Sizing

ACCA Manual J (8th ed. procedure) · Manual S · Manual D — split heat pump with 5 kW supplemental electric heat. **Proposed construction per revised plans.**

Project name (as on plans)	Sample Residence
Owner	Sample Owner
Site address	[Site address removed], Tampa Bay area, FL
Builder	To be determined
Permit no.	_____ (assigned by the permitting office)
Code / climate zone	Florida Building Code 2023 (8th ed.), Energy Conservation; Climate Zone 2 (Pinellas County, Table R301.1)
Building	One story, masonry (CMU) and 2x4 frame walls, slab on grade, 8 ft ceilings, vented attic. Conditioned floor area 1,290 sf.
Design basis (proposed)	Proposed construction per revised plans: ceiling R-38; frame walls R-13; masonry walls R-6 interior insulation; existing ducts to remain, R-6, modelled leakage 5% supply + 5% return (untested); air handler in the attic (as drawn); windows and glazed doors U 0.65 / SHGC 0.25 (maximum values, NFRC certificates to be provided); envelope leakage <= 7 ACH50.
HVAC contractor	Sample Contractor, licensed HVAC contractor, license no. [License No.]

Result	Value
Design cooling load (block, peak hour)	28,364 Btu/h = 2.36 tons (sensible 23,201 + latent 5,162, SHR 0.82)
Design heating load (39 F outdoor, 70 F indoor)	22,281 Btu/h
Proposed equipment	Trane XR14 5TWR4036A1000A, or equal + Trane 5TEM4D05AC41S, or equal; 33,000 Btu/h total cooling at AHRI 95 F, 14.3 SEER2 / 7.5 HSPF2 (AHRI ref. 215610867); 5 kW supplemental/emergency electric heat; Honeywell Home T6 Pro (or equal) programmable thermostat.
Selection check (Manual S)	Total capacity at design 31,515 Btu/h = 111.1% of the cooling load; sensible 114.1%; latent 5,042 vs load 5,162 Btu/h. Next size up (3.5 ton): 125.9% of load. Capacities at design conditions are estimates until the manufacturer's expanded performance data are attached.

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Prepared for review and signature by licensed contractor		
Name: Sample Contractor, licensed HVAC contractor	License no.: [License No.]	Date: _____
Signature: _____		

Method: peak-hour block load, room by room (ACCA Manual J 8th-edition procedure, hour-by-hour sum of simultaneous gains), Manual S selection and Manual D friction-rate duct sizing. This calculation was produced with an in-house engine, **not ACCA-approved software output**; the code official may ask for approved-software output (R403.7.1).

MANUAL J / S / D - RESIDENTIAL LOAD CALCULATION, EQUIPMENT SELECTION AND DUCT SIZING

1. Design conditions

Condition	Value	Basis
Location	Tampa Bay area, FL - latitude 27.9 N, elevation about 9 ft	Tampa Intl. Airport design data used (nearest tabulated station)
Summer outdoor	92 F dry bulb / 77 F mean coincident wet bulb; daily range 17 F (medium)	0.4% design values, Tampa
Winter outdoor	39 F (99%)	ASHRAE Tampa
Indoor - cooling	75 F, 50% RH	FBC-EC R302.1: not below 75 F for cooling
Indoor - heating	70 F	FBC-EC R302.1: not above 72 F for heating
Humidity difference	51 grains/lb (outdoor 116 - indoor 65)	Computed from the above
Peak hour	Solar hour 15 (about 4 PM EDT), July; outdoor 92 F, vented-attic air about 120 F	Hour-by-hour block load
Infiltration	Cooling 0.35 ACH (60 cfm); heating 0.50 ACH (86 cfm)	Design basis: 7 ACH50 (FBC-EC R402.4.1.2, CZ 2): 7/20 = 0.35 and 7/14 = 0.50 ACH natural (approx. LBL N-factors 20 / 14); blower-door test report to be provided
Occupants / internal gains	6 persons (230 sens. + 200 latent Btu/h each); kitchen 1,200 + plug loads 400 Btu/h	6 occupants (design basis); Manual J default kitchen

Shading: none credited. Interior shading: none (bare glass). Orientation per elevation labels on A4. Ventilation: none (no mechanical ventilation included).

2. Plan take-off by room (A3 floor plan, approximate allocation; whole-house totals govern)

Room	Area sf	Exterior walls (orientation: length ft, type)	Openings	Window sf	Door sf	Occ.	Appl. Btu/h
Family Room (+closet)	335	N:32.7 FRAME; E:12 FRAME	B-Nx1; C-Nx1; F-Nx1; A-Ex1	38	64	2	0
Bath 2	55	N:7.55 FRAME; W:7 FRAME	B-Nx1	14	0	0	0
Dining Room	175	W:22 CMU; S:10.3 CMU	A-Wx2; D-Wx1; B-Sx1	55	0	0	0
Kitchen	135	interior	-	0	0	0	1200
Living Room	190	S:13.9 CMU	F-Sx1; E-Sx1	4	64	0	400
Bath 1	45	interior	-	0	0	0	0
Bedroom 1 (+2 closets)	165	E:13.5 CMU; S:16.05 CMU	A-Ex1; B-Ex1; C-Sx1	38	0	1	0
Bedroom 2	120	E:12 CMU	A-Ex1	12	0	1	0
Hall / WH closet / AHU closet	70	W:8.5 CMU	-	0	0	0	0
TOTAL	1,290	155.5 ft perimeter (62% CMU / 38% frame)	13 windows + 2 glazed door units	161	128	6	1,600

Net opaque wall 955 sf; fenestration 289 sf. Window marks (A6): A 31 x 55-1/2 (x5), B 37 x 55-1/2 (x4), C 35 x 47 (x2), D 52 x 47 (x1), E 17-1/8 x 37 (x1), single-hung vinyl low-E impact-rated windows. Door F = pair 3080 with two 12-in. sidelights (8 ft x 8 ft overall, about 60% glass), fiberglass/glass. Mark designations: A.. = plan marks A..E; rooms are assigned from the A3 floor plan.

Building envelope U-values used (proposed construction)

Assembly	Construction (proposed)	U-factor	R-value
Masonry walls (about 62% of perimeter)	8-in. hollow CMU, 7/8-in. stucco, 1x2 furring with R-6 interior insulation (foil-faced board), 1/2-in. gypsum	0.115	8.69
Frame walls (about 38%)	2x4 at 16 in. o.c. with R-13 batt, 23% framing	0.086	11.7
Ceiling / attic floor	R-38 insulation, vented attic, dark shingles	0.030	38
Windows and glazed doors	Impact-rated; design basis at the maximum values U 0.65, SHGC 0.25 (NFRC certificates to be provided)	0.65	-
Slab edge	Slab on grade, F = 0.73 Btu/h-ft-F, no cooling load	-	-

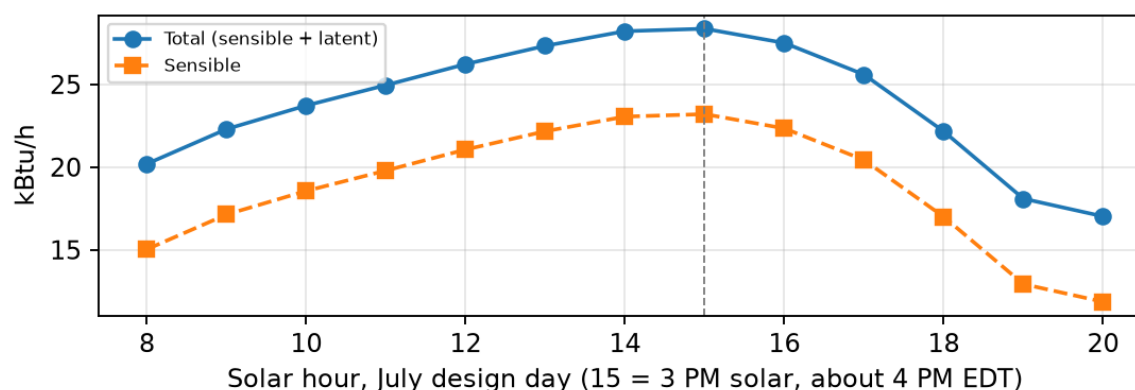
3. Manual J cooling - peak-hour block, room by room (solar hour 15; outdoor 92 F, attic 120 F; Btu/h)

Room	Glass solar	Glass cond.	Walls	Ceiling	Infil.	People	Appl.	Ducts	SENS.	LAT.	TOTAL
Family Room (+closet)	736	1,014	562	450	292	920	0	2,010	5,984	1,826	7,810
Bath 2	140	158	382	74	48	0	0	405	1,207	186	1,394
Dining Room	2,337	609	451	235	153	0	0	1,914	5,700	743	6,442
Kitchen	0	0	0	181	118	0	1,200	758	2,257	401	2,658
Living Room	420	647	91	255	166	0	400	1,000	2,978	548	3,527
Bath 1	0	0	0	60	39	0	0	50	150	85	235
Bedroom 1 (+2 closets)	348	416	553	222	144	230	0	967	2,879	700	3,578
Bedroom 2	107	132	314	161	105	230	0	530	1,580	522	2,102
Hall / WH closet / AHU closet	0	0	155	94	61	0	0	157	466	151	617
WHOLE HOUSE	4,088	2,976	2,508	1,733	1,126	1,380	1,600	7,791	23,201	5,162	28,364

Whole-house block load **28,364 Btu/h = 2.36 tons** (sensible 23,201, latent 5,162, SHR 0.82). The sum of each room at its own worst hour is 24,947 Btu/h sensible; that figure is used only to split airflow among rooms (Manual D). Latent load = infiltration, 6 occupants and return-leakage moisture. Ducts column includes conduction of the R-6 attic supply/return ducts (existing ducts to remain) plus supply/return leakage (5% + 5%, untested); air handler in the attic (as drawn).

Orientation	Net wall sf	Glass solar	Glass/door cond.	Wall (sol-air, lagged)	Envelope total
North	218	769	1,040	483	2,291
East	250	450	554	801	1,805
South	228	671	931	482	2,085
West	259	2,198	452	742	3,391
Total	955	4,088	2,976	2,508	9,572

Component at peak hour	Btu/h	% of total
Glass solar	4,088	14%
Glass/door conduction	2,976	10%
Walls	2,508	9%
Ceiling / attic	1,733	6%
Infiltration (sensible)	1,126	4%
People + appliances	2,980	11%
Duct conduction (R-6 attic ducts, existing)	4,037	14%
Duct leakage (sensible)	3,754	13%
Latent (infiltration, people, return leakage)	5,162	18%
TOTAL	28,364	100%



Hourly whole-house cooling load on the design day. The sizing load is the peak of the simultaneous sum (hour 15), not a day average.

4. Manual J heating - room by room (39 F outdoor, 70 F indoor, dT 31 F; Btu/h)

Room	Windows	Doors	Walls	Ceiling	Slab edge	Infiltration	Ducts	TOTAL
Family Room (+closet)	758	1,091	680	261	1,012	762	1,806	6,369
Bath 2	287	0	271	43	329	125	418	1,473
Dining Room	1,111	0	725	136	731	398	1,227	4,328
Kitchen	0	0	0	105	0	307	163	575
Living Room	89	1,091	153	148	315	432	881	3,109
Bath 1	0	0	0	35	0	102	54	192
Bedroom 1 (+2 closets)	758	0	709	129	669	375	1,045	3,684
Bedroom 2	241	0	300	93	272	273	466	1,645
Hall / WH closet / AHU closet	0	0	243	55	192	159	257	905
WHOLE HOUSE	3,244	2,182	3,080	1,005	3,519	2,933	6,318	22,281

Design heating load 22,281 Btu/h with existing R-6 attic ducts (modelled 5% + 5% leakage, untested; duct loss 6,318 Btu/h). Building heat-loss coefficient UA = 719 Btu/h-F. The compressor of the heat pump carries the load at the 39 F design temperature (balance point about 34 F, Section 5); electric strip heat is supplemental/emergency only.

Heating load summary by component

Component	Btu/h	%
Windows	3,244	15%
Doors	2,182	10%
Walls	3,080	14%
Ceiling	1,005	5%
Slab edge	3,519	16%
Infiltration	2,933	13%
Duct conduction and leakage (existing R-6 attic ducts)	6,318	28%
TOTAL	22,281	100%

5. Manual S - equipment selection: heat pump with 5 kW supplemental/emergency electric heat

Nominal	Design total (92 F / 62.5 F EWB)	Design sens.	Design latent	Total % of load	Sens. % of load	Latent OK?	HP heat @39 F (% of load)	Balance pt	Result
2 ton (22.8k AHRI cert.)	21,774	18,290	3,484	76.8%	78.8%	67% of load	20,063 (90%)	41 F	76.8% of load (not selected)
2.5 ton (27.8k AHRI listing)	26,549	22,301	4,248	93.6%	96.1%	82% of load	23,568 (106%)	38 F	93.6% of load (not selected)
3 ton (33.0k AHRI listing)	31,515	26,473	5,042	111.1%	114.1%	98% of load	27,867 (125%)	34 F	SELECTED - total 111.1% of load; latent 98% of load

Loads to meet: total 28,364, sensible 23,201, latent 5,162 Btu/h (SHR 0.82). **Code basis (FBC-EC R403.7.1, R403.7.1.1, R403.7.1.2.1):** equipment sized by ACCA Manual S on Manual J loads; total cooling capacity not less than the load and not more than 1.15 x the load (here 28,364 to 32,618 Btu/h), "or the closest available size provided by the manufacturer's product lines"; latent capacity not less than the latent load; no safety factors; manufacturer's expanded performance data (not nominal AHRI capacity) to be used. **Selected 3 ton:** 31,515 Btu/h at design = 111.1% of the load; sensible 26,473 (114.1%); latent 5,042 vs 5,162 required. The 2.5 ton size (26,549 Btu/h) is 93.6% and the next size up (3.5 ton, 35,717 Btu/h) is 125.9% of the load. Latent capacity of the selected size at design is 98% of the estimated latent load (generic sensible heat ratio 0.84 at 400 cfm/ton); expanded performance data to be attached. Airflow 400 cfm/ton = 1,200 cfm.

Heating and supplemental heat. Heat pump output at the 39 F design temperature is about 27,867 Btu/h (125% of the 22,281 load); balance point about 34 F, so the compressor carries the design load. **5 kW supplemental/emergency heat = 17,060 Btu/h = 77% of the 22,281 load;** in emergency-heat mode (compressor out) it holds about 63 F indoors at 39 F outdoors. Electric resistance is not the primary heat (R403.7.2) and strip operation is limited to defrost, malfunction or when the compressor cannot satisfy the thermostat (R403.1.3).

Efficiency. Heat pump rated SEER2 14.3 and HSPF2 7.5, the current federal minimums for split-system heat pumps (Form R402).

Load basis. Loads are for the proposed construction: ceiling R-38, frame walls R-13, masonry walls with R-6 interior insulation, existing R-6 attic ducts to remain (modelled 5% + 5% leakage, untested), air handler in the attic (as drawn), glass U 0.65 / SHGC 0.25, 7 ACH50 envelope. Capacity data: rated total capacity at AHRI 95 F (2 ton: AHRI certificate copy; 2.5, 3 and 3.5 ton: published AHRI listings) x 0.955 for 92 F outdoor and 75 F / 50% indoor (estimate); heat pump output interpolated between 47 F and 17 F, with the 17 F values estimated. **The manufacturer's expanded performance data for the matched system are to be attached.**

Equipment data (R403.7.1: manufacturer, model numbers and sensible/total capacities at design conditions)

Item	Entry
Outdoor unit manufacturer / model	Trane XR14 5TWR4036A1000A, or equal (3 ton, single-stage, 208-230 V / 1 ph, R-454B)
Indoor unit (air handler / coil) manufacturer / model	Trane 5TEM4D05AC41S, or equal - multi-position ECM air handler with TXV coil, located in the attic (as drawn)
AHRI certificate no. / matched-system reference	AHRI ref. 215610867. An equal substitute must carry its own AHRI certificate at or above these ratings
Total / sensible cooling capacity at 92 F db, indoor 75 F / 62.5 F wb	AHRI 95 F rating 33,000 Btu/h. At design (estimate): 31,515 / 26,473 Btu/h. Expanded performance data to be attached.
SEER2 / HSPF2	14.3 / 7.5 (EER2 11.7)
Heating capacity at 47 F / 17 F (rated), supplemental heat	31,167 Btu/h (estimate, scaled; not in the published listing) / 18,792 Btu/h (estimate); 5 kW electric heat kit (Trane BAYHTR1505BRK or equal - kit model to be confirmed for the selected air handler) - supplemental/emergency only
Air handler leakage (<= 2%, ASHRAE 193) / factory sealed	2% or less per Trane product data (AHR-PSD006C-EN) / Y
Thermostat (R403.1.2 programmable)	Honeywell Home T6 Pro, or equal (7-day programmable; TH6320U2008 hard-wired or T6 Pro Smart Wi-Fi series); heat-pump auxiliary-heat lockout/staging per R403.1.3
Refrigerant	R-454B (A2L): installed per manufacturer instructions.

6. Manual D - duct sizing (3 ton, 1,200 cfm at 400 cfm/ton; air handler in the attic (as drawn); existing R-6 attic ducts to remain; sizes are reference values for the design airflow)

Friction rate: rated external static pressure 0.50 in.wc minus filter 0.10, supply register 0.03, return grille 0.03, balancing damper 0.03 = **available static pressure 0.31 in.wc**. Total effective length = supply 42 ft straight + 100 ft fittings + return 72 ft = **214 ft**. Design friction rate = $0.31 \times 100 / 214 = 0.145 \text{ in.wc per 100 ft}$. Run lengths below are design assumptions (single central return at the hall ceiling grille; west / north / east supply trunks), to be verified against the actual duct layout.

Room	Own-peak sens. (Btu/h)	Cool cfm	Heat cfm	Design cfm	Trk	No.	cfm/reg	Reg size	Branch TEL ft	Branch FR	Flex dia. (in)	Vel. fpm
Family Room (+closet)	6,361	306	236	306	N	3	102	6x10	196	0.158	6	519
Bath 2	1,207	58	55	58	N	1	58	4x10	214	0.145	5	426
Dining Room	5,911	284	160	284	W	3	95	6x10	208	0.149	6	483
Kitchen	2,371	114	21	114	W	1	114	6x12	188	0.165	6	581
Living Room	3,276	158	115	158	W	2	79	4x12	196	0.158	6	401
Bath 1	159	8	7	25	E	1	25	4x10	186	0.167	4	286
Bedroom 1 (+2 closets)	3,386	163	136	163	E	2	81	6x10	204	0.152	6	415
Bedroom 2	1,739	84	61	84	E	1	84	6x10	196	0.158	6	426
Hall / WH closet / AHU closet	536	26	34	34	E	1	34	4x10	180	0.172	4	384
TOTAL	24,947	1200	825	1225		15						

Room cfm = system cfm x room own-peak sensible share (minimum 25 cfm); heating cfm = $Q / (1.08 \times 25 \text{ F rise})$ for a 95 F heat-pump supply, so cooling governs. Flex branches are sized at 80% of their branch friction rate (flex roughness); round diameter $D = (0.109136 Q^{1.9} / FR)^{(1/5.02)}$, rounded up to the next stock size.

Section	cfm	Round equiv. (in)	Velocity (fpm)	Rect. 8 in. deep	Rect. 10 in. deep
Supply plenum (all)	1200	13.8	1150	21 x 8	16 x 10
North trunk before Family Room (+closet)	364	8.8	860	8 x 8	10 x 10
North trunk before Bath 2	58	4.4	551	5 in. round	5 in. round
West trunk before Kitchen	556	10.3	954	11 x 8	10 x 10
West trunk before Living Room	442	9.5	902	9 x 8	10 x 10
West trunk before Dining Room	284	8.0	810	8 x 8	10 x 10
East trunk before Hall / WH closet / AHU closet	305	8.2	824	8 x 8	10 x 10
East trunk before Bath 1	272	7.9	801	8 x 8	10 x 10
East trunk before Bedroom 2	247	7.6	783	8 x 8	10 x 10
East trunk before Bedroom 1 (+2 closets)	163	6.5	708	7 in. round	7 in. round
Return trunk/plenum (600 fpm max)	1,200	19.1 -> 20 in. round	550	-	-

Return and code notes. A single central ceiling return needs about 4.0 sq ft of filter grille (1,200 cfm / 300 fpm), plus transfer grilles or jump ducts for closed bedroom and family-room doors (0.72 sq in. free area per cfm). Ducts: existing attic ducts to remain, R-6; the load calculation models 5% supply and 5% return leakage (not tested). Air handler: factory sealed, leakage $\leq 2\%$ per manufacturer data, located in the attic (as drawn).

7. Inputs and design basis

Input	Value used	Source / basis
Conditioned floor area	1,290 sf	Conditioned floor area used for the calculation.
Ceiling height	8'-0"	A4: all elevations show 'EL 8'-0" top of wall'.
Design temperatures	92 F / 77 F summer, 39 F winter	Tampa design data (nearest tabulated station).
Orientation / shading	Per A4 elevation labels; no shading credit	Soffits not credited.
Windows	13 windows = 161 sf: A 31x55.5 x5, B 37x55.5 x4, C 35x47 x2, D 52x47 x1, E 17-1/8x37 x1	A6 schedule and A4 elevations; rooms assigned from A3.
Glazed door units F	2 units, pair 3080 + two 12-in. sidelights = 8 ft x 8 ft (64 sf each), 60% glass	A6 door schedule; N and S elevations.
Glass U / SHGC	U 0.65 / SHGC 0.25, bare glass (no interior shading)	Design basis: maximum values for impact-rated glass in Zone 2 (Table R402.1.2). impact-rated low-E vinyl windows and glazed doors; NFRC certificates to be provided.
Masonry walls	8-in. hollow CMU, stucco, furring with R-6 interior insulation, 1/2-in. gypsum: R-8.69, U 0.115	Proposed construction per revised plans.
Frame walls	About 38% of perimeter: 2x4 with R-13 batt, R-11.7 effective, U 0.086	Proposed construction per revised plans.
Wall solar absorptance	0.60 (medium stucco); CMU thermal lag 5 h, damping 0.45	Colour not specified.
Roof / attic	Dark asphalt shingle (absorptance 0.90), 3/12 slope, vented attic, R-38 ceiling insulation, ceiling U 0.030	A4 shingles/slope; ceiling insulation proposed per revised plans; no radiant barrier.
Slab	Slab on grade, edge F = 0.73, no cooling load	A5 (4-in. slab, 6-mil poly).
Infiltration	Cooling 0.35 ACH, heating 0.50 ACH	Design basis 7 ACH50 (FBC-EC 2023 R402.4.1.2, Climate Zones 1-2): ACH natural = ACH50 / N, 7/20 = 0.35 (cooling), 7/14 = 0.50 (heating). Blower-door test report to be provided.
Occupants / gains	6 persons; kitchen 1,200 Btu/h + 400 plug load	6 occupants (design basis); Manual J default kitchen.
Air handler / ducts	Air handler in the attic (as drawn); ducts in vented attic, existing ducts to remain, R-6, modelled leakage 5% supply + 5% return (untested), 348 sf supply + 65 sf return	Existing ducts to remain, R-6.
Ventilation	None	No mechanical ventilation included.

Proposed construction per revised plans. The Form R402 entries use the same proposed values: fenestration U 0.65 and SHGC 0.25 (impact-rated glass, Zone 2), ceiling R-38, frame wall R-13, masonry wall R-6 interior, existing attic ducts to remain at R-6, envelope leakage 7 ACH50 with a blower-door test, heat pump SEER2 14.3 / HSPF2 7.5 per the AHRI certificate, programmable thermostat.

Sources: FBC-Energy Conservation 2023 (8th ed.) Tables R301.1, R402.1.2 and Sections R302.1, R402.2, R402.3, R402.4, R403.1, R403.3, R403.7; Form R402-2023 (floridabuilding.org); ASHRAE climatic design data, Tampa; ACCA Manuals J, S and D (8th ed. procedures).

FLORIDA BUILDING CODE, ENERGY CONSERVATION

Residential Building Thermal Envelope Approach

***R*-Value Computation Method**

FORM R402—2023

Florida Climate Zone 2

PROJECT NAME Sample Residence

AND ADDRESS: [Site address removed], Tampa Bay area, FL

OWNER: Sample Owner

PERMIT TYPE:

WORST CASE?

BUILDER: To be determined

PERMITTING OFFICE:

JURISDICTION NUMBER:

PERMIT NUMBER:

NUMBER OF UNITS:

CONDITIONED FLOOR AREA: 1,290 sf (conditioned)

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 COMPONENT¹

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:	0.65*	N/A	0.25*	R-38	R-13	R-6 +	N/A	N/A	R-0	N/A

R-Value Calculation Method - [PASS / FAIL] Proposed values meet Table R402.1.2

* Design basis: maximum U and SHGC for impact-rated glass; NFRC certificates to be provided. + R-6 interior insulation on the masonry wall (proposed).

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)

DESIGN BASIS NOTES (not part of the printed Florida form)

Proposed construction per revised plans.

Project: Sample Residence, [Site address removed], Tampa Bay area, FL. Owner: Sample Owner. Conditioned floor area 1,290 sf.

Proposed values: ceiling R-38; wood-frame wall R-13; mass (CMU) wall R-6 interior insulation; slab R-0; fenestration U 0.65 / SHGC 0.25 (impact rated, footnote 3).

Air infiltration: design target ≤ 7 ACH50 (FBC-EC R402.4.1.2, Climate Zone 2); blower-door test report to be provided before CO.

Climate Zone 2 = Pinellas County.

APPENDIX RD — FORMS

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 Air handling unit Duct R-value Air leakage/Duct test Duct testing	Not allowed in attic 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) Air handler installed: Total leakage = 4 cfm/100 s.f. Air handler not installed: Total leakage = 3 cfm/100 s.f. 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.	Location: Attic (as drawn) Factory Sealed? Y/N Y - Trane, or equal R-Value (In unc. attic) = R-6 (existing) R-Value (In unc. non attics) = N/A R-Value (Small ducts in attic) = N/A R-Value (Small ducts in unc) = N/A All in conditioned space ? Y/N N Total leakage = _____ cfm/100 s.f. Air handler installed? Y/N Test report required? Y/N
Air conditioning systems: Central system < 45,000 Btu/h Central system ≥ 45,000 Btu/h Central heat pump PTAC, PTHP, SPVAC or SPVHP Other	Minimum federal standard required by NAECA ² : SEER2 = 14.3 SEER2 = 13.8 SEER2 = 14.3 EER [from Table C403.2.3(3)] See Tables C403.2.3(1)–(11)	Cap. (Btu/h) = N/A - heat pump SEER2 (Min) = N/A - heat pump SEER2 (Min) = 14.3 (Trane, or equal) Cap. 33,000 Btu/h (2.8 ton) rated - see Equipment summary page Type = N/A Cap. (Btu/h) = EER (Min) = Type = N/A Effic. (min) =
Heating systems: Electric resistance Heat pump Gas furnace, non-weatherized Oil furnace, non-weatherized PTHP or SPVHP Other:	Minimum federal standard required by NAECA ² : Not allowed in Climate Zone 2 HSPF2 ≥ 7.5 AFUE ≥ 80% AFUE ≥ 83% COP _H [from Table C403.2.3(3)] See Tables C403.2.3(1)–(16)	Supplemental/emergency only: 5 kW (17,060 Btu/h) HSPF2 (Min) = 7.5 (Trane, or equal) AFUE (Min) = N/A AFUE (Min) = N/A Type = N/A Cap. (Btu/h) = COP _H (Min) = Type = N/A Effic. (min) =
Water heating system (storage type): Electric ^{3, 6} Gas fired ^{4, 6} Other (describe) ^{5, 6} :	Minimum federal standard required by NAECA ² : UEF: 40 gal.: 0.931; 50 gal.: 0.930; 60 gal.: 2.176 UEF: 40 gal.: 0.64; 50 gal.: 0.627; 60 gal.: 0.789	Capacity = N/A - no water heater in scope UEF (Min) = N/A UEF (Min) = N/A Type = N/A Effic. (min) =

Equipment Efficiency—[PASS / FAIL] Entries shown are the design basis values

- 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.
- 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*.
- 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).
- 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).
- For electric tankless, min. UEF = 0.92. For natural gas tankless, min. UEF = 0.81.
- Referenced UEFs shown are for high draw pattern value provided by manufacturer.

(continued)

DESIGN BASIS NOTES (not part of the printed Florida form)

Proposed construction per revised plans.
Equipment: Trane XR14 5TWR4036A1000A, or equal + Trane 5TEM4D05AC41S, or equal; 33,000 Btu/h, 14.3 SEER2, 7.5 HSPF2, AHRI ref. 215610867. An equal substitute must carry its own AHRI certificate at or above these ratings. AHRI certificate to be attached.
The form has no cooling/heating capacity field for a heat pump (its Cap. field is for central air conditioners); capacities are on the Equipment summary page that follows the form.
Heat pump ratings are the current-standard minimums: SEER2 14.3 and HSPF2 7.5. Programmable thermostat: Honeywell Home T6 Pro (or equal), 7-day programmable (R403.1.2).
Proposed: split heat pump with 5 kW electric strip as supplemental/emergency heat only (R403.1.3, R403.7.2); the heat pump is the primary heat source.
Air handler: factory sealed (<= 2% leakage per manufacturer data), located in the attic (as drawn).
Ducts: existing attic ducts to remain, R-6. The load calculation models 5% supply + 5% return leakage; the existing ducts have not been tested, so the leakage fields are left blank.
Water heater: none in scope; N/A.

APPENDIX RD — FORMS

FORM R402—continued

OTHER 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), <i>Florida Statutes</i> , or individuals licensed as set forth in Section 489.105(3) (f), (g) or (i), <i>Florida Statutes</i> . Air handling units are not allowed in attics.	
Water heaters	R403.5	Comply with efficiencies in Table C404.2. Hot water pipes insulated to $\geq R-3$ 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	All permanently installed luminaires, excluding those in kitchen appliances, 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 <i>Florida Building Code, Energy Conservation</i>. PREPARED BY: <u>Sample Contractor [License No.]</u> Date: _____ PREPARED BY SIGNATURE: _____ I hereby certify that this building is in compliance with the <i>Florida Building Code, Energy Conservation</i>. OWNER/AGENT: _____ Date: _____ OWNER/AGENT SIGNATURE: _____		Review of plans and specifications covered by this form indicate compliance with the <i>Florida Building Code, Energy Conservation</i>. Before construction is complete, this building will be inspected for compliance in accordance with Section 553.908, F.S. CODE OFFICIAL: _____ Date: _____ CODE OFFICIAL SIGNATURE: _____	

DESIGN BASIS NOTES (not part of the printed Florida form)

Proposed construction per revised plans.

All check boxes, signatures and dates are left blank for the signer. Only the printed preparer name and license no. are entered.

The Manual J/S/D sizing calculation for R403.7 is attached to this package.

Prepared for review and signature by licensed contractor Sample Contractor, licensed HVAC contractor, license no. [License No.]. Signature and date lines are intentionally blank.

EQUIPMENT SUMMARY

Added page following Florida Form R402-2023 - not part of the printed Florida form. Proposed construction per revised plans.

Item	Entry
Project / owner / site	Sample Residence / Sample Owner / [Site address removed], Tampa Bay area, FL
Equipment make / model	Trane, or equal. Trane XR14 5TWR4036A1000A, or equal (3 ton, single-stage, 208-230 V / 1 ph, R-454B); Trane 5TEM4D05AC41S, or equal - multi-position ECM air handler with TXV coil, located in the attic (as drawn). AHRI ref. 215610867. An equal substitute must carry its own AHRI certificate at or above these ratings.
Nominal size	3 ton (36,000 Btu/h nominal)
Cooling capacity - rated	33,000 Btu/h = 2.75 tons (AHRI rating at 95 F outdoor)
Cooling capacity - at design conditions	31,515 Btu/h total (26,473 sensible / 5,042 latent) at 92 F outdoor, 75 F / 62.5 F wb indoor, 1,200 cfm (estimate: rating x 0.955; manufacturer expanded performance data to be attached)
Design loads (Manual J)	Cooling 28,364 Btu/h; heating 22,281 Btu/h. Cooling capacity at design = 111.1% of the cooling load.
Heating capacity - rated	31,167 Btu/h at 47 F (estimate, scaled; not in the published listing); 18,792 Btu/h at 17 F (estimate); about 27,867 Btu/h at the 39 F design temperature (estimate)
SEER2 / EER2 / HSPF2	14.3 / 11.7 / 7.5
Auxiliary (supplemental/emergency) heat	5 kW = 17,060 Btu/h electric heat kit (Trane BAYHTR1505BRK, or equal)
Thermostat	Honeywell Home T6 Pro (or equal), 7-day programmable (R403.1.2)
Air handler / ducts	Air handler in the attic (as drawn), factory sealed (leakage 2% or less); existing ducts to remain, R-6 (modelled leakage 5% supply + 5% return, untested)
Where this appears on Form R402	Page 2 (Equipment requirements): Central heat pump SEER2 and Heat pump HSPF2 lines; capacity noted beside the heat-pump line

The printed Form R402 has Cap. (Btu/h) fields only for central air conditioners, PTAC/PTHP and similar equipment, and none on the central heat pump or heat pump heating lines. Capacities for the selected heat pump are therefore stated here.

