## 2027 Renovations / Additions

Architects designing small additions (residential or commercial) for buildings prepare the permit documents showing only the new addition or renovations – architectural drawings don't usually show enough information to perform the code (FECC 103.2) required calculations for HVAC design and energy calculations. Renovations and small additions usually are served by an existing hvac system – in most cases new duct work serving the new addition or renovation is connected to the existing hvac system – and in some cases, with larger additions, the addition may also be served by a new dedicated hvac system.

Information showing the geometry and building envelope component make up is required for all rooms served by the hvac system – whether the rooms are new, existing, or renovated. Most small additions served by an existing hvac system will require a field sketch of the existing building showing the geometry and envelope component materials. All rooms served by the existing hvac system (new and existing) require a room by room heat load calculation to determine if the existing equipment capacity will meet the new demand associated with combining both the existing rooms with the new / renovated rooms. This heat load calculation will also determine the room by room air balance for the building – there will be a shift in airflow that affects every room served by the hvac system – so a correctly designed hvac system for small additions or renovations served from an existing hvac system requires a full energy study of the building.

The existing residential "kit" is used by the builder / building owner / or hvac contractor to provide this code required site information – the architect's drawings are combined with the "kit" information to make up the entire hvac "thermal zone" (thermal zone = all rooms that are served by the hvac system). The kit provides both a sample sketch and a sample building questionnaire, sketch up your building on the graph paper provided (match the same information format shown on the sample drawing) and complete the questionnaire form for each phase of construction showing the envelope component materials for your particular building.

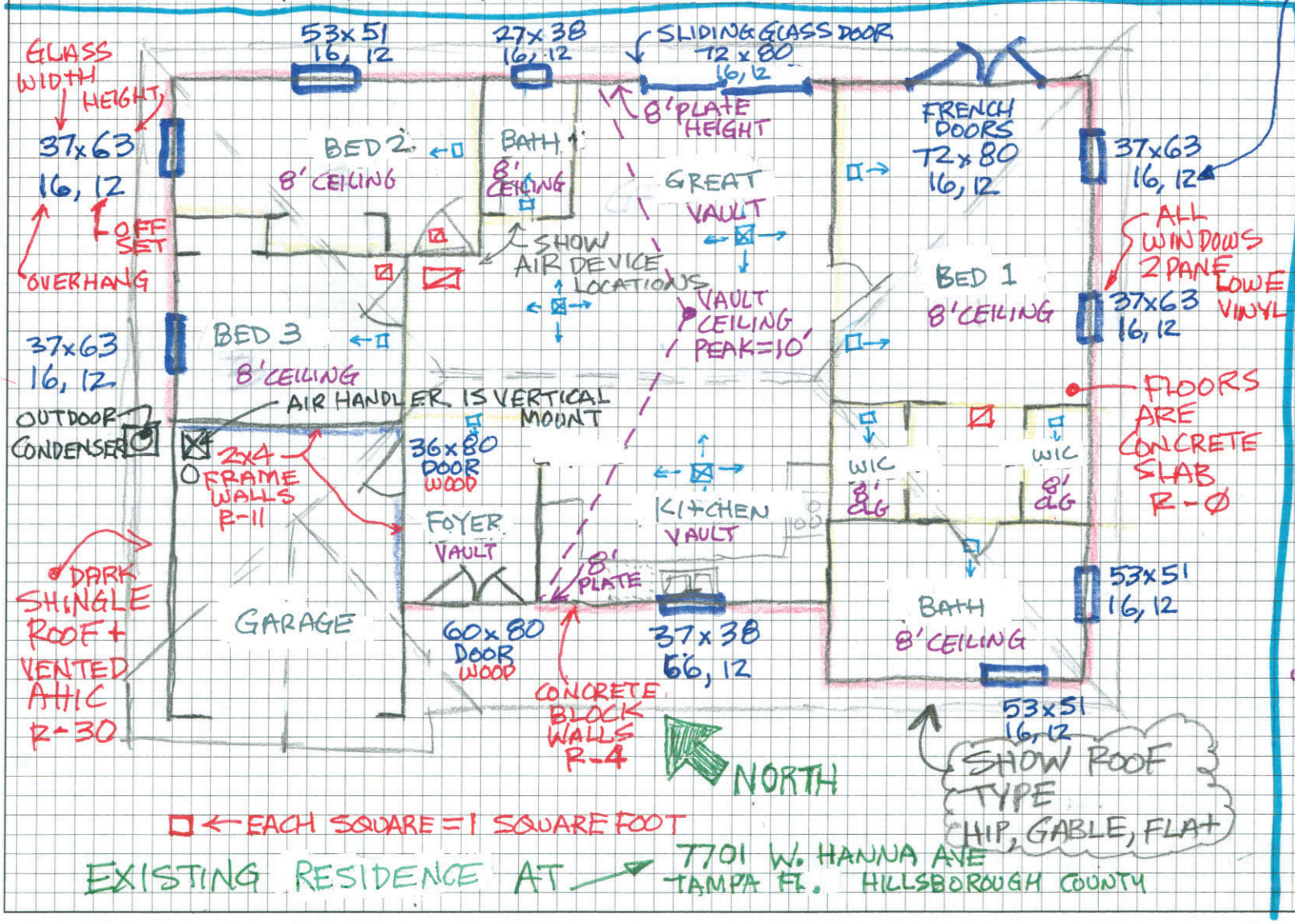
Our building codes effective 12/31/2023 require this math be performed to ensure the building owner has a properly designed hvac system, codes no longer allow the hvac contractor to simply "guess" that the existing hvac equipment capacity will meet the new calculated demands. See the Florida study available from the FSEC http://www.fsec.ucf.edu/en/publications/html/FSEC-PF-328-97/ showing that about 60% of the hvac contractor's grossly oversize hvac equipment. Some hvac contractors performed no math at all, the few that did perform heat loads padded the math with unreasonable allowances, and only a very few hvac contractors actually performed the heat loads properly (ACCA Manuals J,D,S,T,ZR, and Adequate Exposure Diversity).

This study shows that many small additions can easily be served by the existing hvac equipment capacity because the existing hvac equipment is already oversized – and it's a simple task of adding new ducts for the addition / renovation and performing a whole building air flow balance that meet the new heat load demands.

# SAMPLE

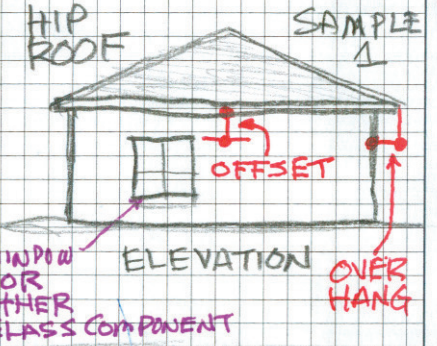
**NOTES:**

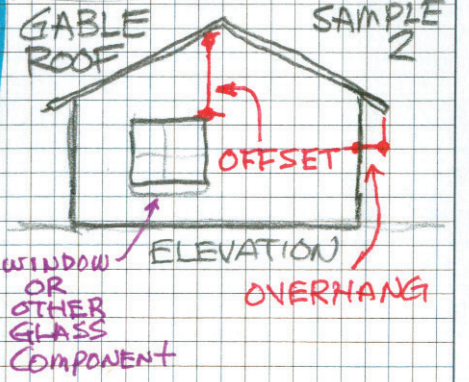
1) SHOW CEILING HEIGHTS FOR EACH ROOM
2) SHOW WIDTH AND HEIGHT OF EACH GLASS COMPONENT (WINDOWS, SLIDING GLASS DOORS, FRENCH DOORS)
3) DRAW EACH ROOM TO SCALE, ROOM NAME, AND SHOW ROOF TYPE (HIP, GABLE, FLAT)
4) IDENTIFY EACH BUILDING ENVELOPE COMPONENT TYPE AND ADDED INSULATION "R" VALUE
5) SHOW COMPASS ORIENTATION, LIST ADDRESS + PERMIT JURISDICTION
6) LIST OVERHANG PROJECTION RATIO FOR EACH GLASS COMPONENT – (2) NUMBERS
7) COMPLETE Residential Information Form, HOME SKETCH – EMAIL TO NEIL@HVACDESIGNS.COM + LIST CONDITIONED AREA




EXISTING RESIDENCE AT → 7701 W. HANNA AVE TAMPA FL. HILLSBOROUGH COUNTY

OVERHANG RATIO
OVERHANG, OFFSET



# 2027 FECR 103.2 ENERGY AND HVAC INFORMATION FORM / BUILDING ENVELOPE AND SYSTEM(S) DATA

**INFO REQUIRED**

PROVIDE THIS FORM AND COPYRIGHT FREE PDF PERMIT READY ARCHITECTURAL DRAWINGS INCLUDING: SITE PLAN or NORTH ARROW, SCALED BUILDING FLOOR PLAN AND ROOM NAMES, ELEVATIONS, WALL SECTION, CONDITIONED LIVING AREA SQUARE FEET FOR EACH BUILDING LEVEL, GARAGE AREA SQUARE FEET, STRUCTURAL FLOOR FRAMING PLANS FOR MULTI-LEVEL BUILDINGS. SHOW OUTDOOR HVAC EQUIPMENT AND AIR HANDLER LOCATIONS ON DRAWINGS.

EXISTING BUILDING : PROVIDE YEAR OF CONSTRUCTION, DUCT SKETCH OF SYSTEM(s), SHOW SUPPLY, RETURN, EXHAUST, AND HVAC EQUIP. MODEL #'s.
WHEN BUILDING DRAWINGS ARE NOT AVAILABLE, VISIT OUR WEBSITE FOR A SAMPLE SKETCH SHOWING DATA REQUIRED.
USE NOTES SECTION AT FORM BOTTOM FOR ADDITIONAL INFORMATION.

**HVAC DESIGN**

HVAC CAD DESIGN PROVIDED INCLUDES ACCA MANUALS AND ENERGY CODE FORMS BASED ON VALUES REQUIRED TO PASS THE ENERGY CODE.
FECC BASELINE "RECOMMENDED" VALUES WILL BE USED WHEN FORM DATA IS NOT SELECTED OR DATA IS NOT SHOWN ON PERMIT DRAWINGS.
DESIGN ASSUMPTIONS: BLOWER DOOR TEST SCORE OF 5.0 (ACH50) USED UNLESS NOTED BELOW; 55 GALLON MAXIMUM STORAGE WATER HEATER(S);
MASTIC SEALED R8 DUCTS EXTERIOR / R6 DUCTS INTERIOR; SEMI-TIGHT BUILDING ENVELOPE CONSTRUCTION PRACTICE; MECHANICAL VENTILATION AIR;
WALL COLOR ABSORPTANCE FACTORS: WHITE .30, LIGHT .35, MEDIUM .45, DARK .65; VENTED ATTIC VENT RATE 1/300; AND PROGRAMMABLE THERMOSTAT.
DURING CONSTRUCTION BUILDER MUST MEET OR EXCEED ENVELOPE COMPONENT VALUES AND EQUIP. EFFICIENCIES SHOWN ON THE ENERGY FORM(S).

**CLIENT**

| | |
|---|---|
| COMPANY NAME: | |
| CONTACT PERSON: | |
| CONTACT PHONE: | |
| CONTACT E MAIL: | |
| BUILDER NAME: | |

**PROJECT**

| | |
|---|---|
| NAME: | |
| *ADDRESS: | |
| CITY: | |
| *COUNTY: | |
| *PERMIT OFFICE: | |

| *SITE | DIRECTION FRONT DOOR FACES: | N | NE | E | SE | S | SW | W | NW | FLOOD ZONE BFE = | FEET |
|---|---|---|---|---|---|---|---|---|---|---|---|

**WINDOWS AND DOORS**

| | ENVELOPE COMPONENT | FRAME MATERIAL | | | GLASS PANES | | GLASS COATING | | | IMPACT | | NFRC RATED | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | METAL | WOOD | VINYL | SINGLE | DOUBLE | CLEAR | TINT | LOW E | YES | NO | U VALUE | SHGC |
| 1 | EXISTING REUSED WINDOW + GLASS DOORS | | | | | | | | | | | 1.08 | .75 |
| 2 | OPERABLE WINDOW | | | ✔ | | ✔ | | | ✔ | | | .4 | .25 |
| 3 | FIXED GLASS WINDOW | | | ✔ | | ✔ | | | ✔ | | | .4 | .25 |
| 4 | SLIDING GLASS DOOR | | | ✔ | | ✔ | | | ✔ | | | .4 | .25 |
| 5 | FRENCH / GLASS SWING DOOR | | | ✔ | | ✔ | | | ✔ | | | .4 | .25 |
| 6 | SKYLIGHT | | | | | | | | | | | .46 | 0.27 |
| 7 | SOLARTUBE | | | | | | | | | | | .28 | .25 |
| 8 | SOLID WOOD DOOR | | | | | | | | | | | .39 | |
| 9 | INSULATED METAL OR FIBERGLASS DOOR | | | | | | | | | | | .35 | |
| | FECC BASELINE GLASS VALUES: | VINYL | | | DOUBLE | | LOW E | | | NO | | 0.4 | 0.25 |

**FLOORS**

| | ENVELOPE COMPONENT | % TILE | % WOOD | % CARPET | INSULATION "R" | FECC BASELINE VALUES |
|---|---|---|---|---|---|---|
| 1 | CONCRETE SLAB ON GRADE | 40 | 40 | 20 | 0 | SLAB ON GRADE = NO INSUL. |
| 2 | RAISED WOOD OR CONCRETE (MUST INSULATE) | | | | 13 | RAISED FLOORS = R-13 INSUL. |
| 3 | (OTHER) | | | | | TILE/WOOD/CARPET .4 .4 .2 |

**WALLS**

| | ENVELOPE COMPONENT (COLOR CHART) | *EXTERIOR COLOR | | | INSULATION LOCATION | | | INSUL. | FECC BASELINE VALUES |
|---|---|---|---|---|---|---|---|---|---|
| | | LIGHT | MEDIUM | DARK | INTERIOR | EXTERIOR | CORE FILL | "R" | |
| 1 | EXISTING UNINSULATED CONCRETE BLOCK | | | | | | | 0 | FRAME = R-13 INSUL. |
| 2 | INSULATED CONCRETE BLOCK | | | | | | | 4 | BLOCK CONTINUOUS = R-6 |
| 3 | WOOD FRAME 2x4 | | | | | | | 13 | EXTERIOR WALL COLOR |
| 4 | WOOD FRAME 2x6 | | | | | | | 19 | ABSORPTANCE FACTOR =.45 |
| 5 | INSULATED CONCRETE BLOCK + CORE INSULATION | | | | | | | 12 | |

**ROOFS**

| | ENVELOPE COMPONENT | *SLOPE | *EXTERIOR COLOR TEST | | | | ROOF COVER MATERIAL | | | | | | FECC BASELINE VALUES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PITCH(S) | WHITE | LIGHT | MEDIUM | DARK | SHINGLE | METAL | BARREL TILE | FLAT TILE | TPO MEMB | GRAVEL | |
| 1 | HIP | 6/12 | | | | | | | | | | | ON ROOF DECK = R-38 |
| 2 | GABLE OR SHED | 6/12 | | | | | | | | | | | SINGLE ASSEMBLY = R-38 ROOF=.79 |
| 3 | FLAT NO SLOPE | | | | | | | | | | | | ABSOR .92 EMITT |

**CEILINGS**

| | ENVELOPE COMPONENT | TRUSS MATERIAL | | INSULATION LOCATION | | INSULATION TYPE | | | INSUL. | FECC BASELINE VALUES |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WOOD | METAL | AT CEILING | AT ROOF | BATTS | BLOWN | FOAM | "R" | |
| 1 | HOT VENTED ATTIC | | | | | | | | 38 | CEILINGS = R-38 INSUL. |
| 2 | HOT VENTED ATTIC KNEE WALL | | | | | | | | 38 | ATTIC KNEE WALL = R-38 INSUL. |
| 3 | WARM UNVENTED ATTIC + BREAK WALLS | | | | | | | | 20 | ROOF DECK = R-38 INSUL. |
| 4 | SINGLE ASSEMBLY / 2x6 FRAME | | | | | | | | 19 | ATTIC BREAK WALL = R-38 INSUL. |

**BUILDING SYSTEMS**

| WATER HEATER FUEL | | | WATER HEATER LOCATION | | | | TANK TYPE | | STORAGE TANK | EFFICIENCY | FECC BASELINE VALUES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ELECTRIC | NATURAL GAS | PROPANE | GARAGE | INTERIOR | ATTIC | EXTERIOR | TANKLESS | TANK | GALLONS (55 MAX) | UEF | TANK ELECTRIC / GAS = .92 UEF |
| | | | | | | | | | | | TANKLESS ELECTRIC = .96 UEF |

| | HVAC SYSTEM(S) | OUTSIDE EQUIP. LOCATION | | | AIR HANDLER LOCATION | | | | FECC BASELINE VALUES |
|---|---|---|---|---|---|---|---|---|---|
| | | ON GRADE | RAISED > BFE | ROOF | GARAGE | INTERIOR | ATTIC | EXTERIOR | |
| 1 | SPLIT HEAT PUMP | | | | | | | | ENERGY CALC'S DETERMINE EFFICIENCIES REQUIRED |
| 2 | SPLIT HEAT PUMP | | | | | | | | ACCA CALC'S DETERMINE EQUIPMENT AND DUCT SIZING |
| 3 | SPLIT HEAT PUMP | | | | | | | | |
| 4 | SPLIT HEAT PUMP | | | | | | | | |

**CREDIT**

| VENTED ATTIC | COOL ROOF | CEILING FAN | THERMOSTAT(S) | DUCT TEST | WATER HEATER | R-8 DUCTS | VERIFIED ENVELOPE TEST |
|---|---|---|---|---|---|---|---|
| RADIANT BARRIER | REFLECTANCE > 4% | BEDS + PRIM. LIVING | PROGRAMMABLE | 4% MAX LEAK | HEAT PUMP | (REQ. 402 METHOD) | BLOWER DOOR ACH50 SCORE |
| | | | ✔ | | | | |

**NOTES**

PLACE ENERGY FORM SIGNATURE INSIDE BOX BELOW

SAVE COMPLETED FORM, THEN MAIL TO: NEIL@HVACDESIGNS.COM NEIL (813) 885 2258