

**The Giordano - Smeltz Residence  
Building Statistics**

<b>Dimensions</b>		
Footprint	32' x 26'	
Conditioned Space	1500 ft <sup>2</sup>	The mudroom and pantry can be closed off
Conditioned Volume	21054 ft <sup>3</sup>	
Number of Floors	2, slab on grade	There is a single third floor room.
Slab	6" Thick	Includes 1.25" of stone flooring
Stem wall	6" Thick	8" Above grade, 36" Below grade
Ceiling Height - 1st Floor	9'	All other ceiling heights vary

<b>Structure</b>			
Building Style	Saltbox		
Orientation	The 2-story, 32' long side is facing due south		
Walls	Double stud: 2x4, 2x4 connected by gussets	24" O.C.	Mixture of platform and balloon framing
Advanced framing strategies	Stack framing allowed for single top plates. 2 stud corners. Use of hardware hangers eliminated jack and queen studs around openings. Balloon framing minimized exterior band joists.		
Roof	Parallel chord trusses	Vented cathedral ceiling	24" O.C.
	Southern pitch: 45 degrees	Northern pitch: 35 degrees	

<b>Equipment</b>		<b>Make</b>	<b>Model</b>	<b>Notes</b>
(1) Air Source Heat Pump		Mitsubishi	MSZ-FE12NA	11.2kBtu/hr at 5 dgr F SEER of 23
Heat Recovery Ventilator (HRV)		Venmar	EKO 1.5	80% sensible heat recovery, 24 Watt ECM motor
(2) Bathroom Fans		Panasonic	FV-05K1	50 CFM, ECM motor, 5.9 Watts @ .1" static pressure
2 Panel Drainback Solar Hot Water System	Panels	Sunearth	EC-40	4' x 10'
	Tank	HTP	Contender	80 Gallons with Electric backup
18 Panel, 4.5 kW Photovoltaic Solar System	Panels	American Choice		250 Watts
	Microinverters	Enphase	M215	

<b>Envelope</b>			
Infiltration	.54 ACH50		
Air Barrier	Zip wall sheathing, low expansion foam around openings, wall to foundation connection: double layer of sill-seal, exterior ceiling: mix of air-tight drywall and tu-tuff vapor barrier		
	<i>Insulation</i>	<i>R Value</i>	<i>Notes</i>
Exterior Walls	12.5" Dense pack Cellulose	46	4# / ft <sup>3</sup>
Cathedral Roof North	26" Cellulose	96	2.5# / ft <sup>3</sup>
Cathedral Roof South	21" Cellulose	78	2.5# / ft <sup>3</sup>
Foundation Stem wall	6" XPS	30	2" exterior, 4" interior
Foundation Slab	4" XPS	20	

<b>Windows</b> <i>(Mix of Andersen, Marvin, Marvin Integrity, &amp; Serious. All double pane except Serious. Mostly double hung.)</i>		
U-Value Range	.17-.32	
Average U-Value	0.28	Average weighted by square feet of glass

<b>Doors</b>	<b>R-Value</b>
Thermatru fiberglass, XPS core	3
Simpson solid wood	2

<b>Exterior Wall Areas</b>	<b>Total Wall (S.F.)</b>	<b>Wall Only (S.F.) (excluding windows and doors)</b>	<b>Glass (S.F.)</b>	<b>Doors (S.F.)</b>	<b>% of wall that is glass</b>
Overall	2447	2136	277	34	11.3
South	602	453	149		24.8
East	709.5	639.5	53	17	7.5
West	710	632	61	17	8.6
North	428	411.5	16.5		3.9

<b>Roof Areas</b>	<b>(S.F.)</b>
North	707.5
South	340

<b>Building Materials</b>	
Sheathing	Zip wall and roof
Siding	Western Red Cedar, T&G, 1x6
Roof	Exposed fastener ribbed metal, ivory
Rain Screen	5/8" Vertical Strapping
Exterior Trim	Cypress, except for soffit which is pine
Interior walls	1/2" Lightrock drywall; interior side of exterior walls are horizontally strapped 16" O.C.
Interior trim	Clear Pine
Ceilings	Mix of 1/2" Lightrock drywall and 1x6, #3 grade, T&G pine
Flooring 1st floor	Scrap stone countertop
Flooring 2nd floor	Spruce, 2x6, T&G
Porch Deck	Pressure treated southern pine
Porch and entryway	Local black locust

<b>Plug Loads</b> <i>(House is 100% electric)</i>
Electric stove/oven, averages 1.3kW per day or about 13% of total load
Refrigerator
High Efficiency Bosch Dishwasher, used once/day
High Efficiency Bosch Laundry Machine, used every other day on cold
Lighting 95% LED, 5% CFL
12 Cubic foot chest freezer
2 Laptops

<b>Additional notable energy reducing strategies</b>
Passive solar design allows home to be 100% solar heated on sunny winter days
Indoor built-in laundry drying eliminates need for a dryer
Open floor plan with additional opening between floors hot air from heat pump to convect to second floor.
Large deciduous tree on west side of house reduces cooling load, but has minimal impact on wintertime solar gain or roof solar access
Air Intake for HRV on southern wall where, on sunny days, outdoor temperatures are 10 degrees higher than the north side of the building
Heat pump condenser located on the southwest corner also improves energy efficiency, as compared to a location on the north side of the house
White roof reduces cooling load
Advanced framing strategies reduced wood content of exterior walls to 8.3% (typical new construction is around 20% wood)
Mudroom and pantry are airsealed from the home, so with the door shut, the conditioned volume drops by about 550 cubic feet