

Project Documentation



Abstract



Edgewood Retirement Residence, Pittsburgh, PA USA

Data of building			
Year of construction	2023	Space heating	4.77 kBtu/(ft ² yr)
R-value external wall	31.3(hr-ft ² -F)/Btu		
R-value slab	1.2 (hr-ft ² -F)/Btu	Primary Energy Renewable (PER)	21.57 kBtu/(ft ² yr)
R-value roof	63.1 (hr-ft ² -F)/Btu	Generation of renewable energy	0 kBtu/(ft ² yr)
U-value window	0.181 Btu/(hr-ft ² -F)	Non-renewable Primary Energy (PE)	44.66 kBtu/(ft ² yr)
Heat recovery	73 %	Pressure test n ₅₀	0.43 h ⁻¹
Special features	Building will feature smart building infrastructure to monitor IAQ and specific electrical time in a time-series format		

Brief Description

Edgewood Retirement Residence is a 4 story retirement residence that is precertified for Passive House Classic certification. This project contains 52 dwelling units of affordable and market rate housing for seniors 62+. It will be the 1st affordable housing in Allegheny County within a retail center. Residents will be able to easily access banks, grocery and clothing stores, medical and dental care, phone providers, restaurants and more.

The main floor of this project has a large community room and a library room along with some offices. The upper floors contain smaller common areas such as an exercise room, beauty salon and common area laundry.

Each dwelling will be heated and cooled independently with a heat pump combined with heat recovery ventilation (compact heat pump from EPHOCA). The common areas and corridors is heated and cooled with a small VRF system and ventilation from a PHI Certified ERV from Ventacity.

The windows are also PHI certified with low solar heat gains to prevent overheating of the residents.

Along with Passive House Classic Certification, this project is also seeking Enterprise Green Community Certification

Responsible project participants

Architect	Avon Design Group https://avondg.com/
Building systems MEP	Staengl Engineering https://www.staenglengineering.com/
Structural engineering	Keystone Structural Solutions http://kss-eng.com/
Building physics	AUROS Group https://www.aurosgroup.com/
Passive House project planning	AUROS Group https://www.aurosgroup.com/
Construction management	Franjo Construction https://www.franjoconstruction.com/

Certifying body

Lois Arena, Steven Winter Associates <https://www.swinter.com/passive-house-services/>

Pre-Certified with Design Stage Assurance Letter

August 10, 2022

Certified Passive House Classic

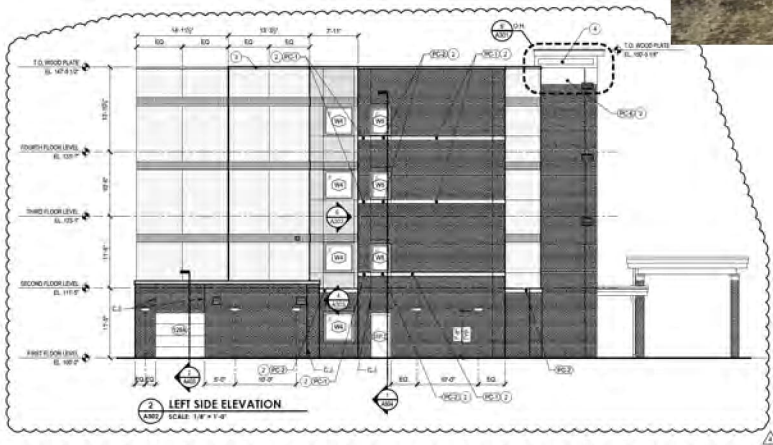
December 19, 2024

Author of project documentation

Matthew Bowers (AUROS Group)

Date	Signature
07/16/25	

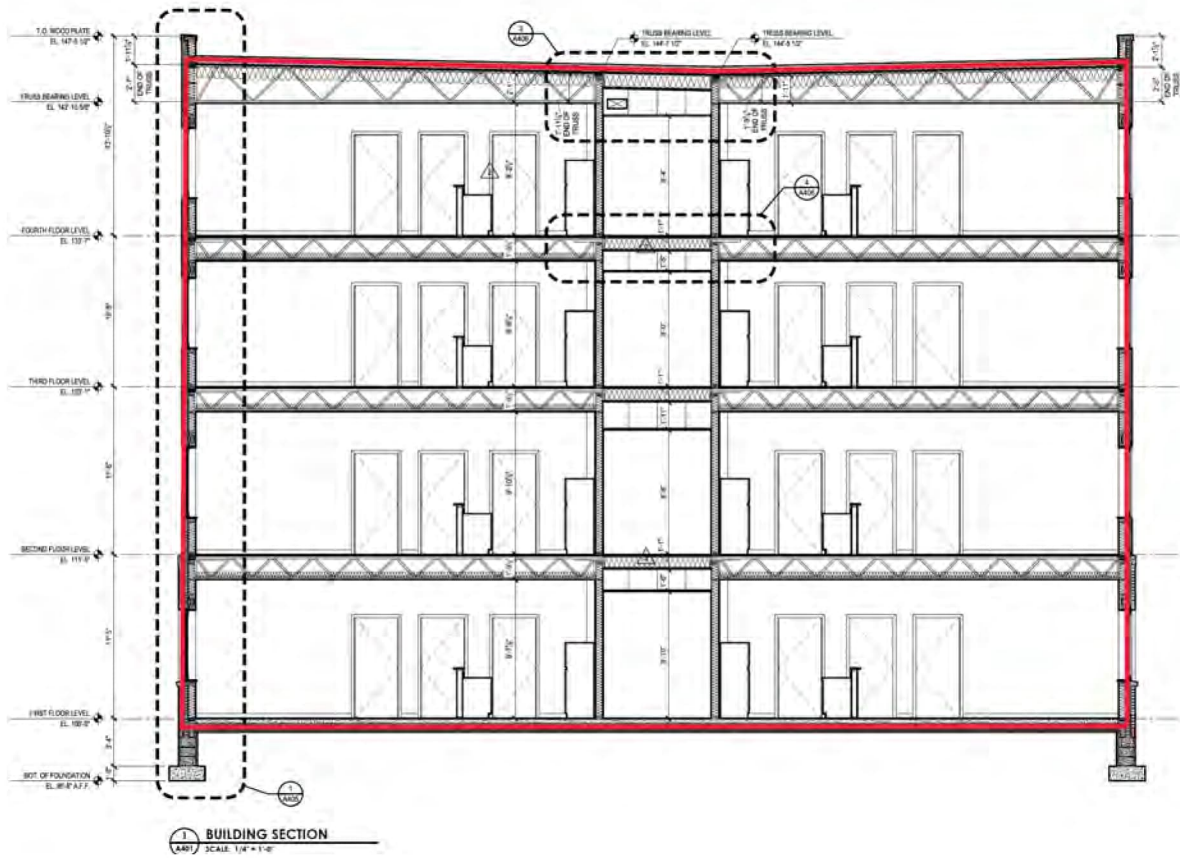
West/ Left Side



Interior Photo

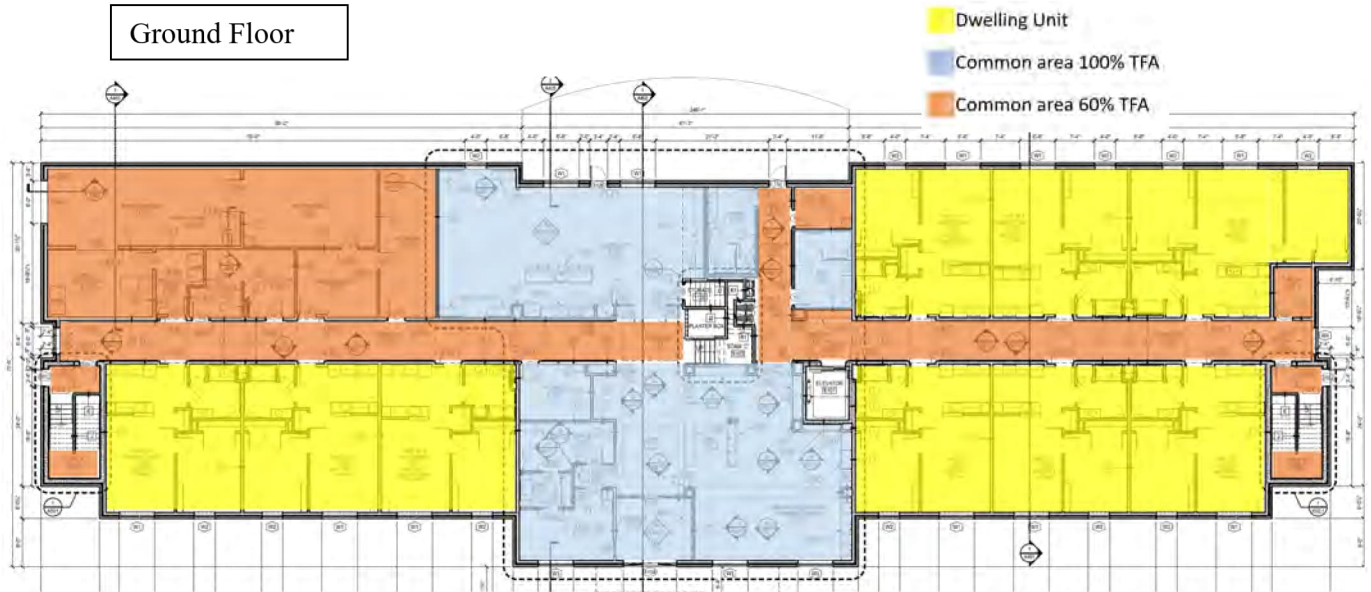


Section

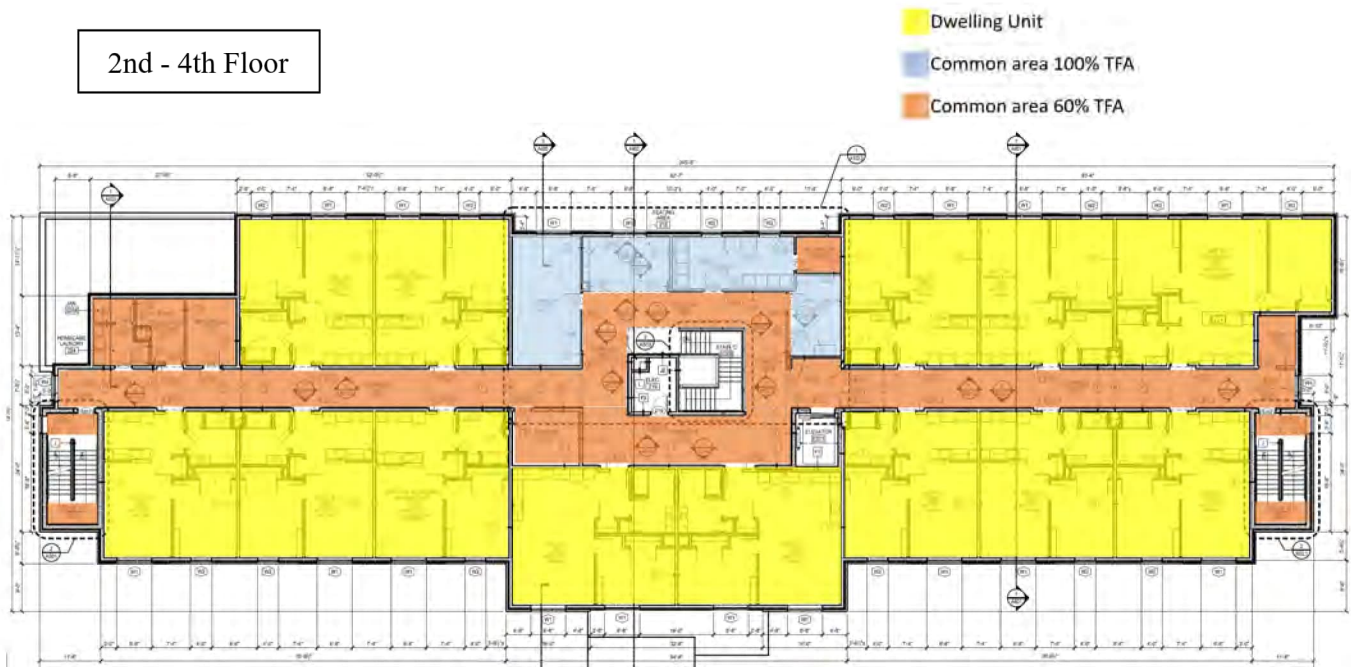


Floor Plans

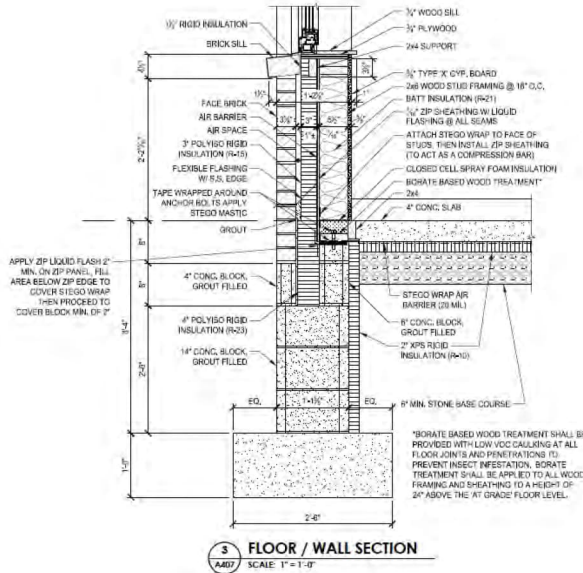
Ground Floor



2nd - 4th Floor



Floor Slab Construction



Description of construction
Poured concrete slab with 2" XPS horizontal sub slab insulation on 1st 8' around the perimeter.

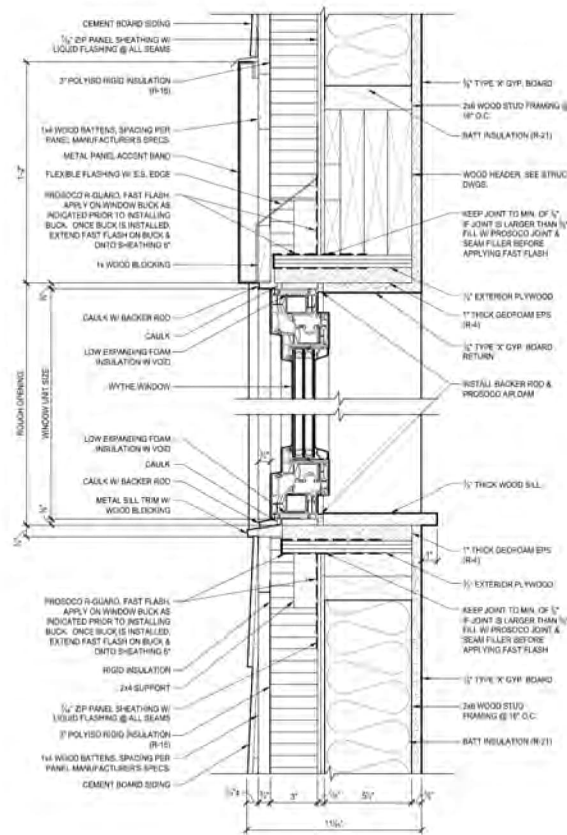
Assembly no.	Building assembly description	Interior insulation?
06ud	Main Slab 3-A407	<input type="checkbox"/>

Heat transmission resistance [hr. ft ² .F/BTU]			
Orientation of building element	3-Floor	interior R _{si}	0.97
Adjacent to	2-Ground	exterior R _{se}	0.00

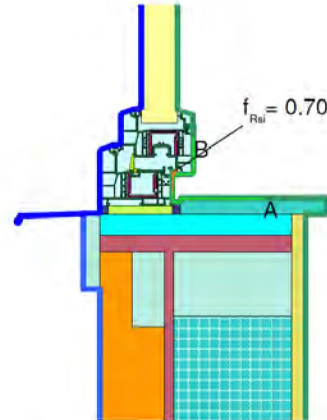
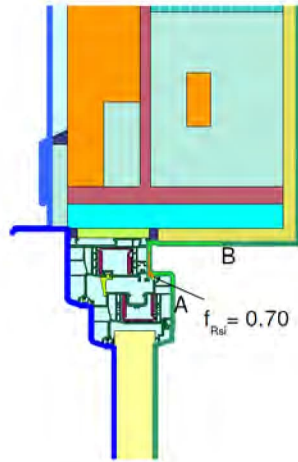
Area section 1	R per inch	Area section 2 (optional)	R per inch	Area section 3 (optional)	R per inch	Thickness [in]
Concrete	0.07					4.00
Percentage of sec. 1		Percentage of sec. 2		Percentage of sec. 3		Total
100%						4.00 in

U-value supplement BTU/hr. ft².°F R-value: **1.2** hr. ft².°F/BTU

Window Construction & Installation



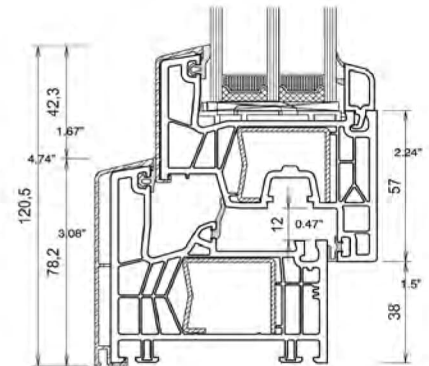
2 WINDOW HEAD & SILL DETAIL @ CEMENT BOARD SIDING
SCALE: 3/4\"/>



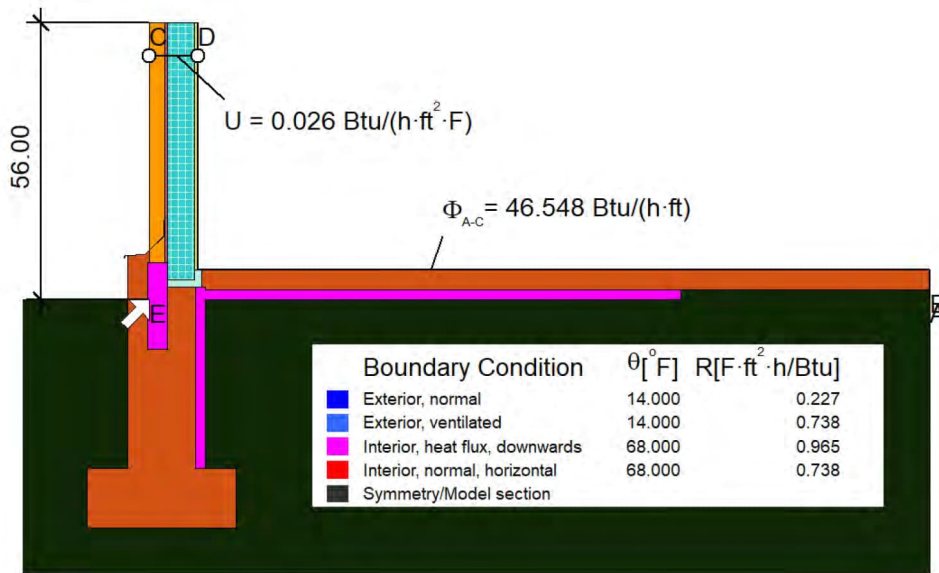
SAMPLE IGUs			
Description	SHGC	Ug-Value BTU/hr.ft ² F	VT
IGU COG U-value 0.10 BTU/hr.ft ² F	0.25	0.10	0.43
IGU COG U-value 0.11 BTU/hr.ft ² F	0.34	0.11	0.59
IGU COG U-value 0.12 BTU/hr.ft ² F	0.34	0.12	0.59
IGU COG U-value 0.13 BTU/hr.ft ² F	0.54	0.13	0.68
IGU COG U-value 0.14 BTU/hr.ft ² F	0.56	0.14	0.70
IGU COG U-value 0.20 BTU/hr.ft ² F	0.25	0.20	0.61
IGU COG U-value 0.25 BTU/hr.ft ² F	0.26	0.25	0.63
IGU COG U-value 0.26 BTU/hr.ft ² F	0.38	0.26	0.69

PLEASE NOTE: These are sample IGUs. We can design a glass package to suit your priorities.

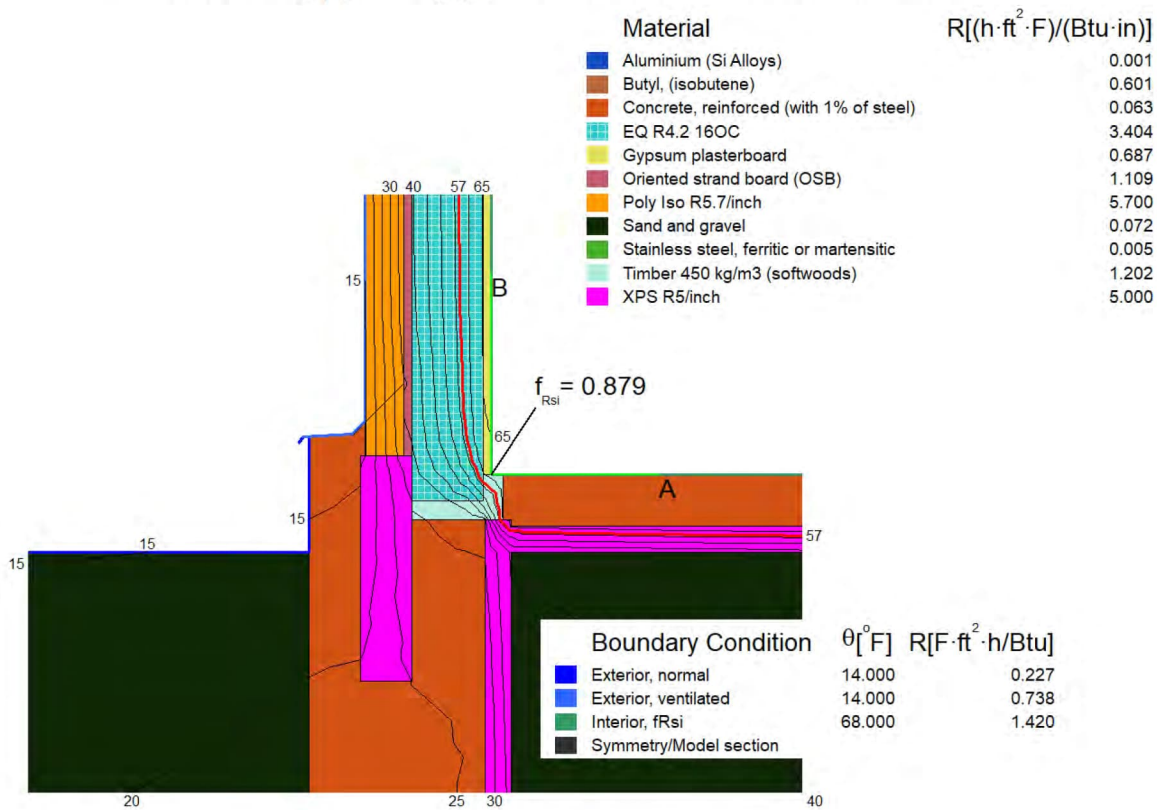
DOORS & WINDOWS												
Frame Values	left		right		bottom		above		eage		eage	
	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F	BTU/hr.ft ² F
Stuyvesant Fixed	0.167	0.167	0.167	0.167	3.08	3.08	3.08	3.08	0.018	0.018	0.018	0.018
Stuyvesant Tilt Turn	0.176	0.176	0.176	0.176	4.74	4.74	4.74	4.74	0.018	0.018	0.018	0.018
Stuyvesant Balcony Door	0.176	0.176	0.176	0.176	4.74	4.74	4.74	4.74	0.018	0.018	0.018	0.018



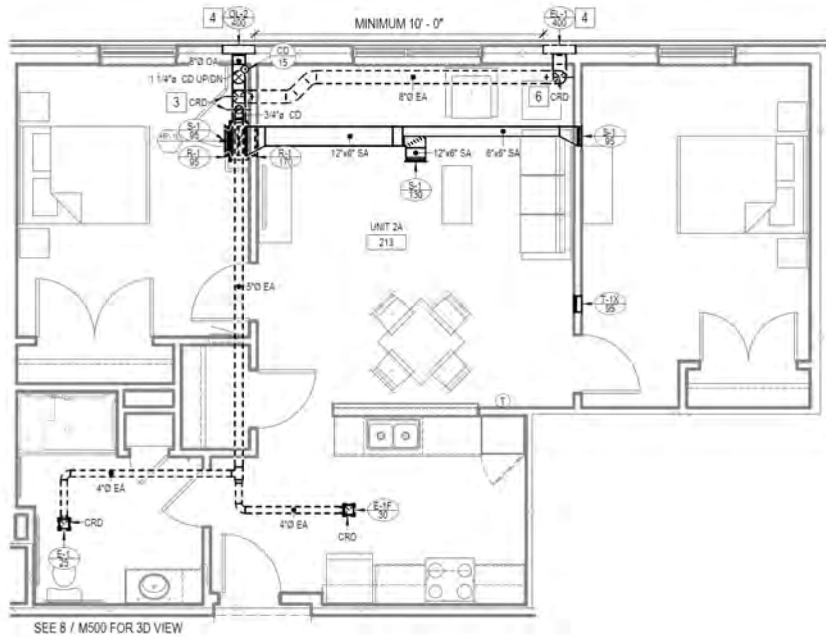
Eliminate Thermal Bridging



$$\Psi_{A-E-C,*} = \frac{46.548}{54.0} - \frac{81.606}{54.0} - 0.026 \cdot 4.667 = -0.771 \text{ Btu}/(\text{h}\cdot\text{ft}\cdot\text{F})$$



Ventilation System



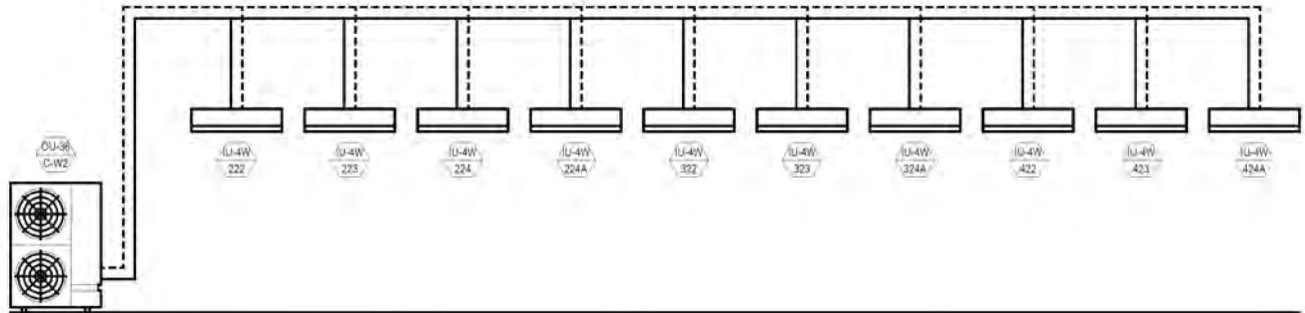
1
M102/M401
UNIT 2A MECHANICAL PLAN
SCALE: 1/4" = 1'-0"

ERV

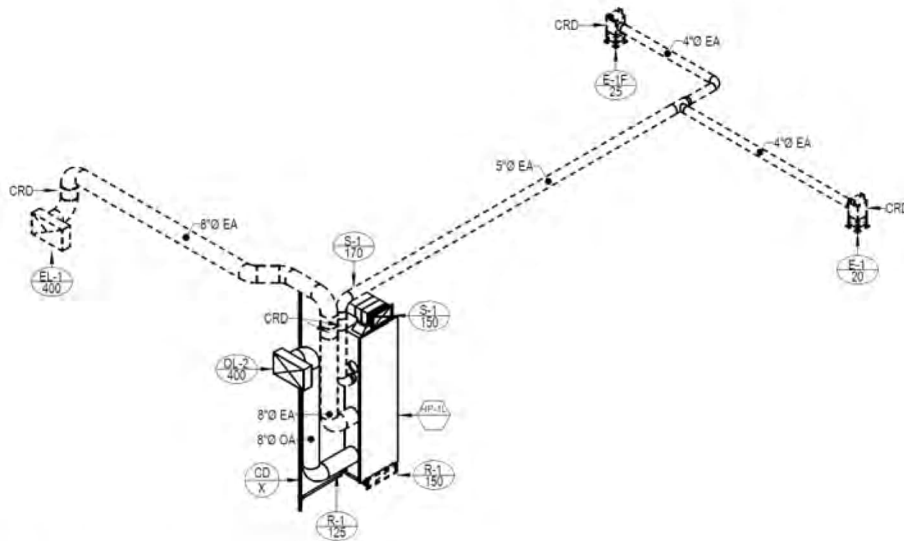
General		40 CFM	60 CFM	80 CFM
Flow type	Counterflow enthalpy exchanger			
Material	Mold and bacteria resistant, washable polymer membrane			
ASHRAE compliance	62.1 And 62.2 When used with the ERV module			
Efficiency of core in winter				
Sensible	%	86.7	85.2	83.1
Latent		72.5	65.1	60.3
Efficiency of core in summer				
Sensible	%	71.1	69.4	68.1
Latent		56.2	54.5	51.2
Filter				
Indoor air	MERV	MERV 3 / optional MERV 13		
Outside air		MERV 13		
Leakage				
Internal	WC	2.6% at 0.40"	2.4% at 0.40"	2.2% at 0.40"
External		2.8% at 1.0"	2.7% at 1.0"	2.5% at 1.0"

Description of Ventilation
Individual Dwellings have an EPHOCA Compact Heat Pump. Common areas have a PHI Certified Ventacity ERV.

Heating System



⑦ OU-36/C-W2 VRF SYSTEM SCHEMATIC
NTS



Description of heat supply
 Heating and cooling is supplied in each room with the EPHOCA Compact Heat Pump Unit. Common Areas have VRF system for heating and cooling

② UNIT 1B.1 3D VIEW (UNIT 1B.2 SIMILAR)

PHPP Results

Passive House Verification with a project-specific primary energy requirement

Version 2.1c, 2024



Building: Edgewood Town Center Retirement Residence
 Street: 200 Towne Centre Drive
 Postcode/City: 15218 Pittsburgh
 Province/Country: Pennsylvania US-United States of America
 Building type: Multi-Family
 Climate data set: US0065b-Pittsburgh
 Climate zone: 3: Cool-temperate Altitude of location: 281.0256 m

Home owner / Client: a.m. Rodriguez & Associates / Landmarks Building
 Street: 100 West Station Square Drive - Suite 350
 Postcode/City: 15219 Pittsburgh
 Province/Country: Pennsylvania US-United States of America

Architecture: Avon Design Group
 Street: 9800B McKnight Rd - Suite 104
 Postcode/City: 15237 Pittsburgh
 Province/Country: Pennsylvania US-United States of America

Mechanical engineer: Staengl Engineering
 Street: 1747 Allied Street Suite L
 Postcode/City: 22903 Charlottesville
 Province/Country: Virginia US-United States of America

Energy consultancy: AUROS Group
 Street: 243 East Main Street
 Postcode/City: 15106 Carnegie
 Province/Country: Pennsylvania US-United States of America

Certification: Lois B. Arena, Steven Winter Associates, Inc
 Street: 55 North Water Street
 Postcode/City: 06854 Norwalk
 Province/Country: CT US-United States of America

Specific building characteristics with reference to the treated floor area

			Criteria	Alternative criteria	Fulfilled? ²
Space heating	Treated floor area ft ²	48884			
	Heating demand kBTU/(ft ² yr)	4.77	≤ 4.75	-	yes
	Heating load BTU/(hr.ft ²)	3.79	≤ -	3.17	
Space cooling	Cooling & dehum. demand kBTU/(ft ² yr)	1.58	≤ 5.07	5.09	yes
	Cooling load BTU/(hr.ft ²)	2.12	≤ -	3.80	
	Frequency of overheating (> 25 °C) %	-	≤ 10		-
	Frequency of excessively high humidity (> 12 g/kg) %	0.2	≤ 10		yes
Airtightness	Pressurization test result n ₅₀ 1/h	0.4	≤ 0.6		yes
Non-renewable Primary Energy (PE)	PE demand kBTU/(ft ² yr)	44.66	≤ -		-
Primary Energy Renewable (PER)	PER demand kBTU/(ft ² yr)	21.57	≤ 23	23	yes
	Generation of renewable energy (in relation to projected building footprint area) kBTU/(ft ² yr)	0.00	≥ -	-	

² - No requirement

I confirm that the values given herein have been determined following the PHPP methodology and based on the characteristic values of the building. The PHPP calculations are attached to this verification.

Passive House Classic?

yes

Task: 2-Certifier First name: Lois Surname: Arena
 Certificate ID: Issued on: 2024.12.19 City: Norwalk

Signature:

This project is certified with a project-specific requirement for the primary energy demand, in line with the provision in the criteria for building uses with an extremely high electricity demand, and based on the evidence of an efficient use of all significant devices and systems. The calculation of the project-specific requirement is included in the following pages of this booklet.