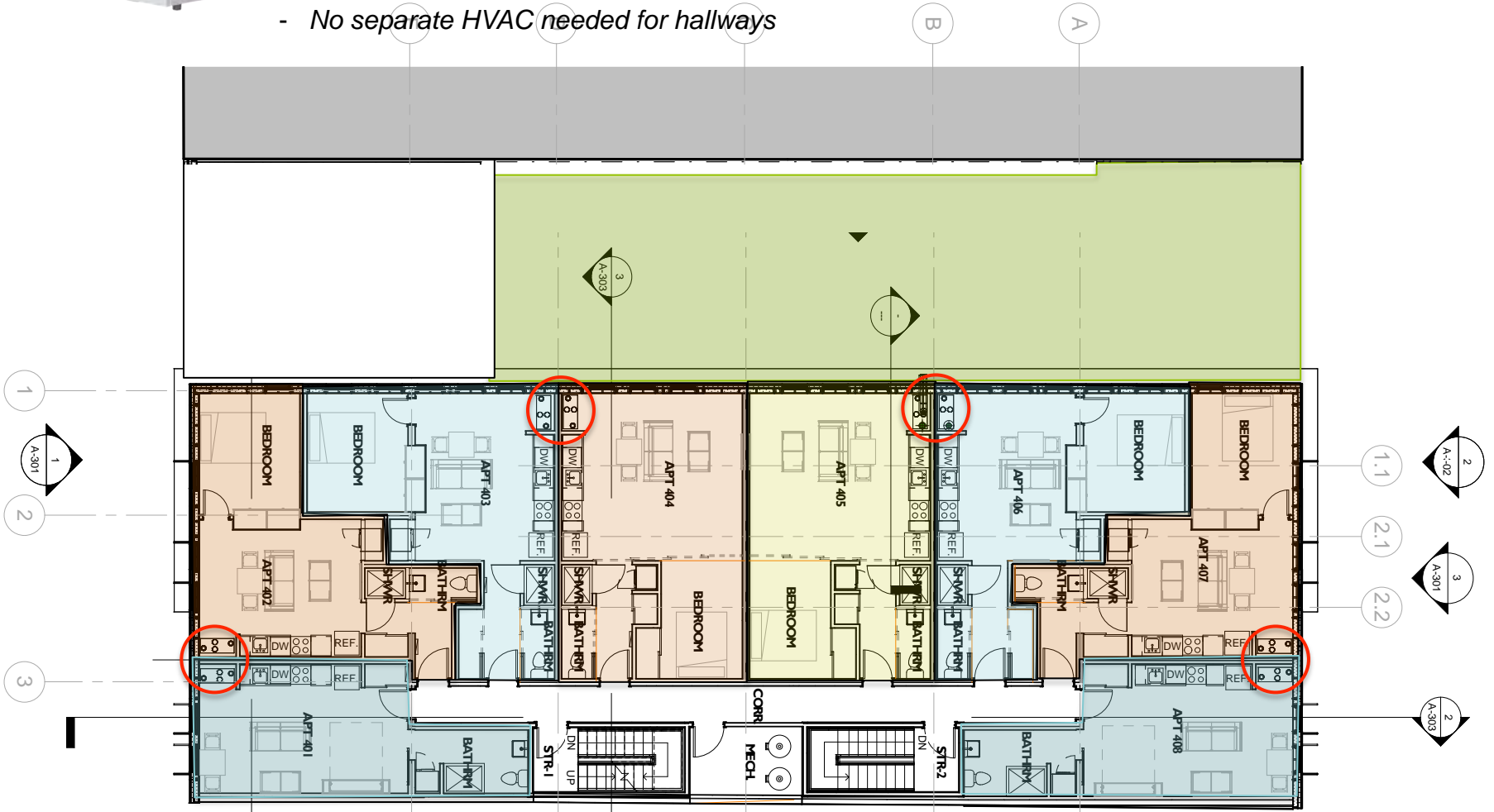


HEATING, COOLING, VENTILATION MINOTAIR

- Decentralized
- Combination ERV, heating, cooling
- Condenser self-contained
- No separate HVAC needed for hallways



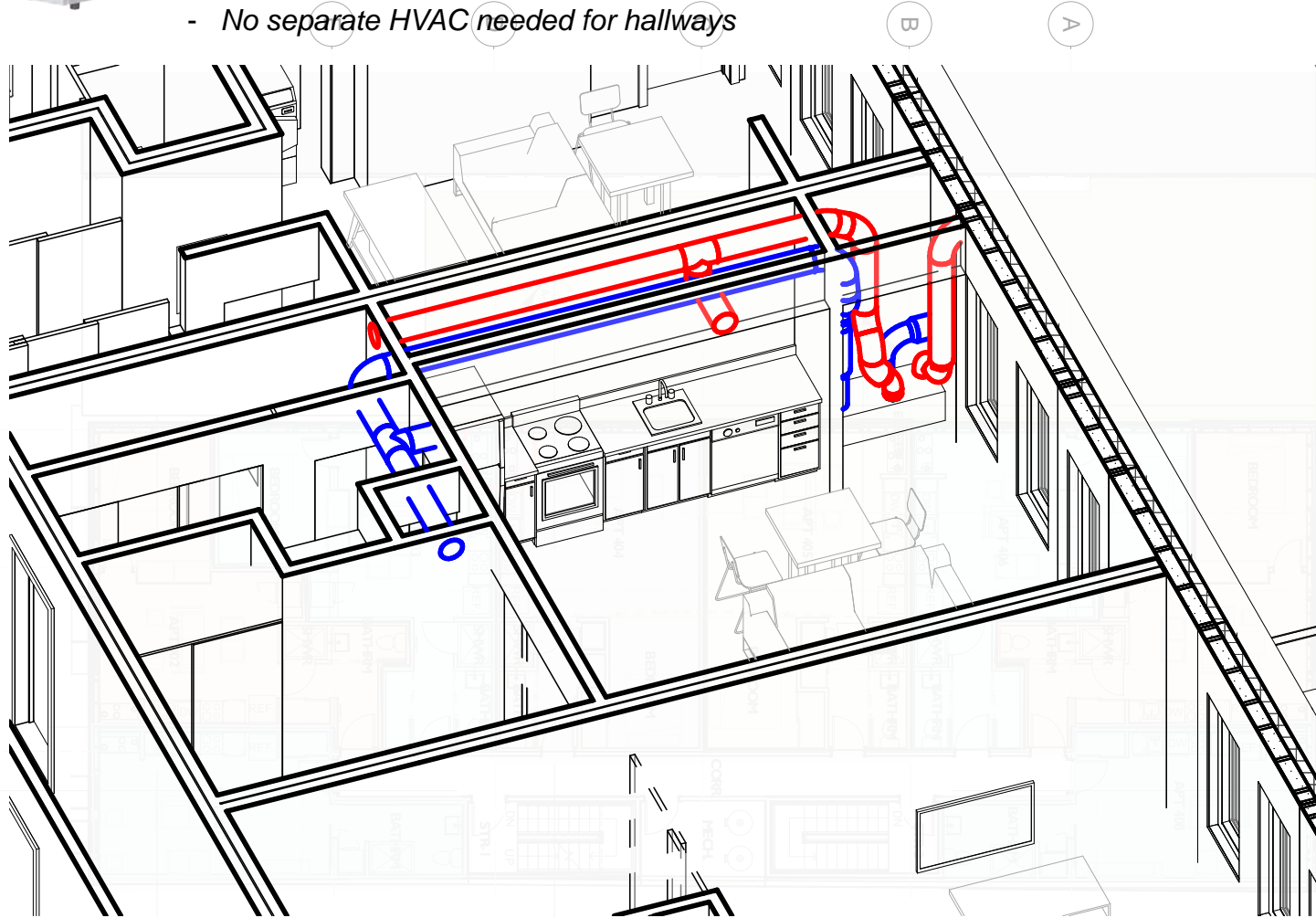
2ND-4TH FLOORS

BANK FLATS 2018: 30 units and retail

HEATING, COOLING, VENTILATION

MINOTAIR

- Decentralized
- Combination ERV, heating, cooling
- Condenser self-contained
- No separate HVAC needed for hallways



DUCTING STRATEGY

BANK FLATS 2018: 30 units and retail

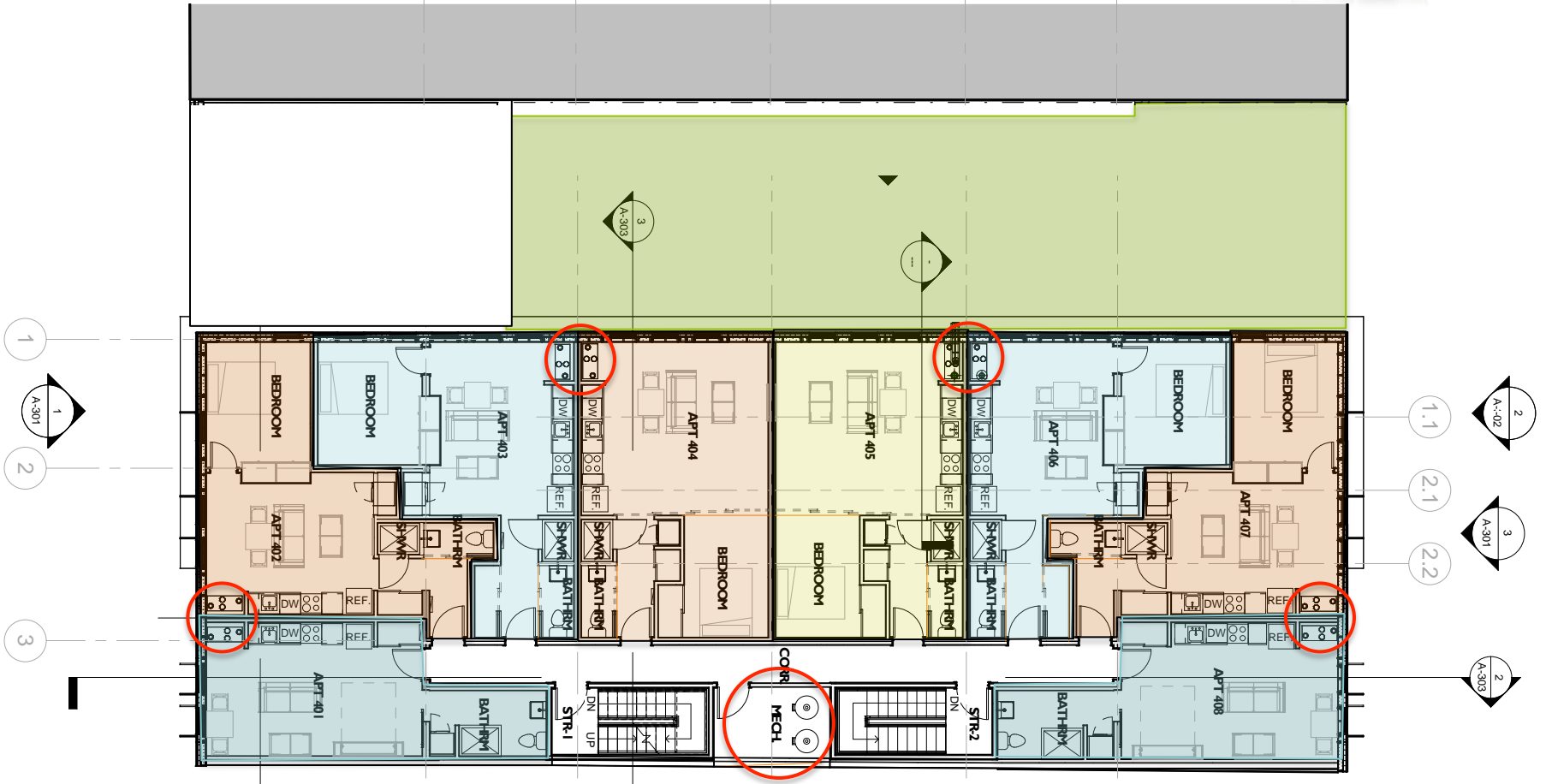
HEATING, COOLING, VENTILATION MINOTAIR

- Decentralized
- Combination ERV, heating, cooling
- Condenser self-contained
- No separate HVAC needed for hallways



HOT WATER SANDEN

- SEMI- Decentralized
- Heat pumps on roof
- FAST recovery time: less storage
- Tanks localized per floor



2ND-4TH FLOORS

BANK FLATS 2018: 30 units and retail



VIEW FROM CORNER OF NORRIS & HOWARD

COPPER FLATS 2020: 70 units and retail



GROUND FLOOR PLAN

COPPER FLATS 2020: 70 units and retail





2ND-4TH FLOORS

COPPER FLATS 2020: 70 units and retail

BELFIELD HOMES

PHILADELPHIA, PENNSYLVANIA 19141

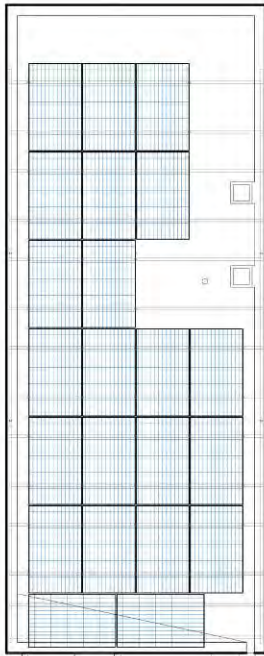


NON-PROFIT
COMMUNITY
ORGANIZATION

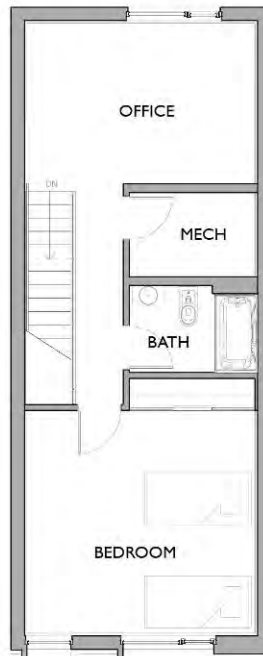
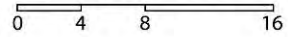


PHILADELPHIA
REDEVELOPMENT
AUTHORITY

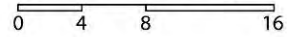




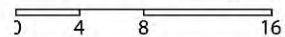
UNIT ROOF LVL



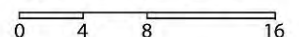
UNIT PLAN LVL 3



UNIT PLAN LVL 2



UNIT PLAN LVL 1



FIRST CERTIFIED PASSIVE HOUSE IN PENNSYLVANIA

START: APRIL 20, 2012

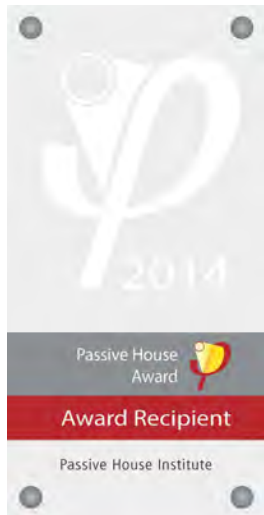
CERTIFICATE OF OCCUPANCY: JULY 20, 2012



RECIPIENT OF THE
2014 INTERNATIONAL
PASSIVE HOUSE AWARD



SECOND PLACE WINNER
2015 PHIUS AWARD
"AFFORDABLE HOUSING"



ONION
FLATS





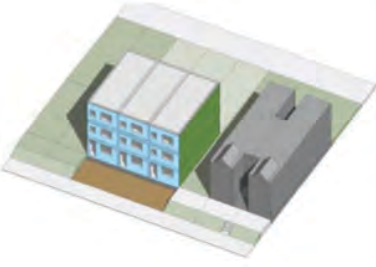
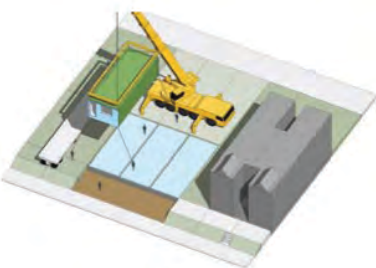
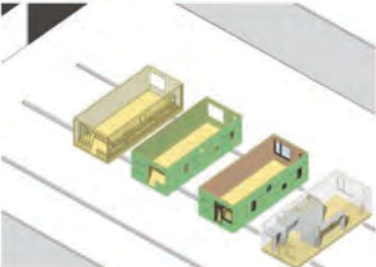




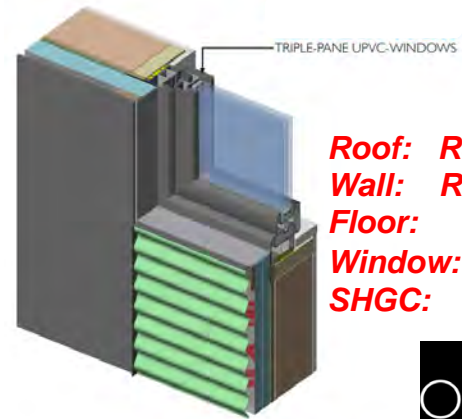
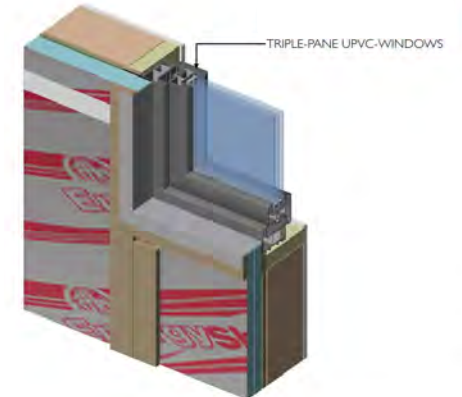
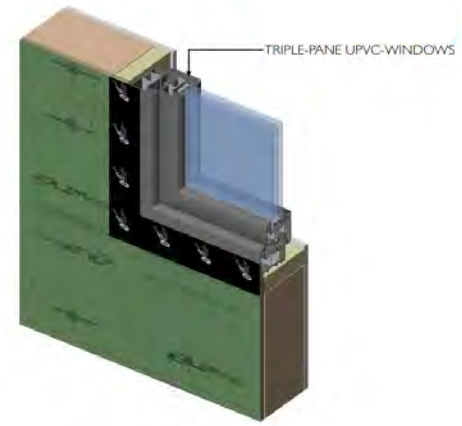
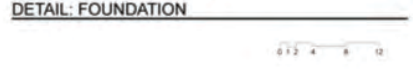
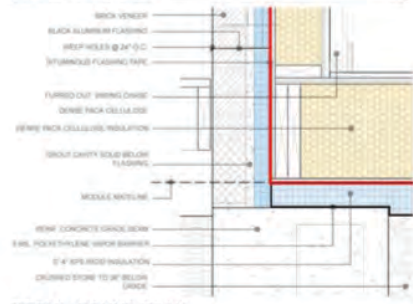
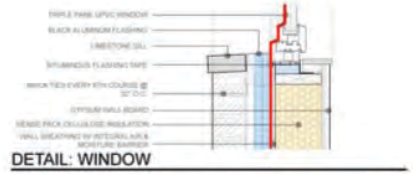
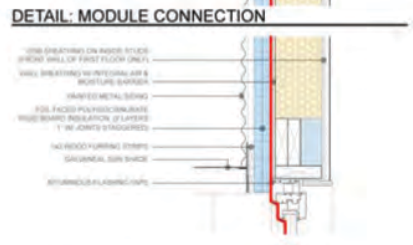
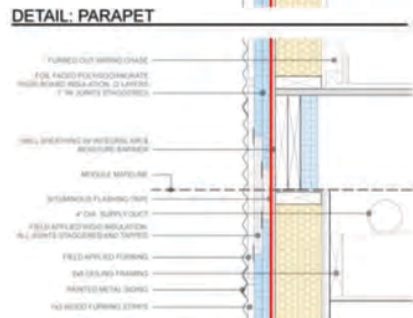
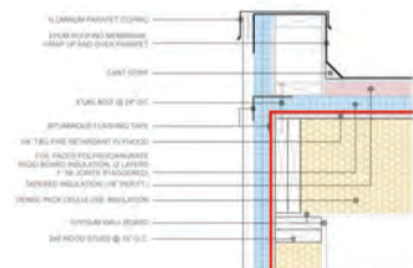




FACTORY BUILD



SITE ASSEMBLE



Roof: R52.3
Wall: R33.6
Floor: 58.4
Window: .11
SHGC: .63

BUILDING LEAKAGE TEST COMPARISON

Test #1	Test #2
Test File: Depressurization File	Test File: Pressurization File
Date of Test: 7/5/2012	Date of Test: 7/5/2012
Customer: Onion Flats, LLC 111 West Norris Street Philadelphia, Pennsylvania 19122	Customer: Onion Flats
Phone: 215-783-5591	

Test Results

	Test #1	Test #2	Change	Percent
1. Airflow at 50 Pascals:	293 CFM	201 CFM	-92 CFM	-31.4 %
	0.48 ACH	0.33 ACH	-0.15 ACH	-31.4 %

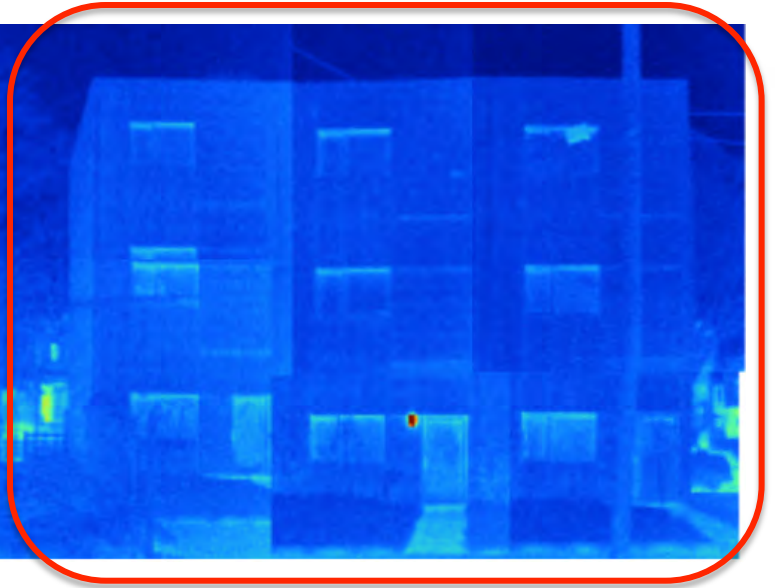
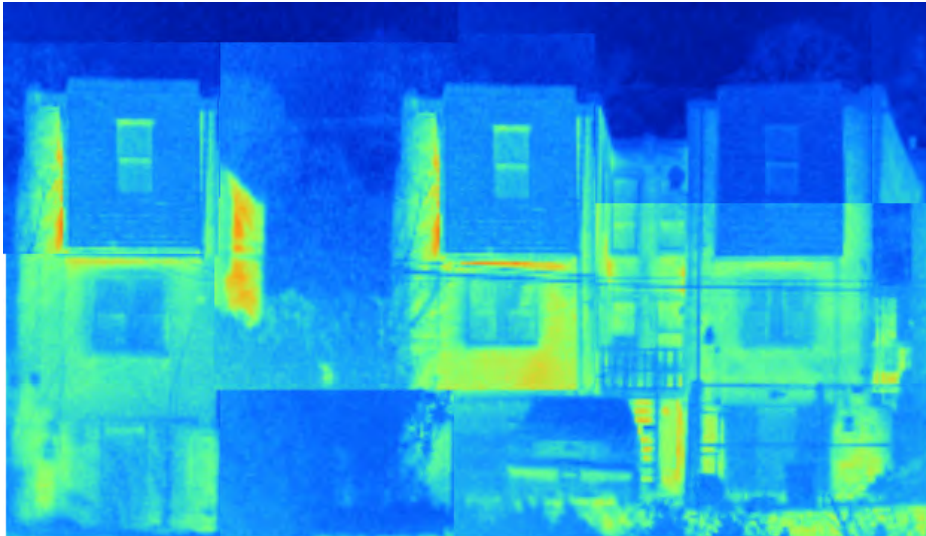
FINAL AIRFLOW:

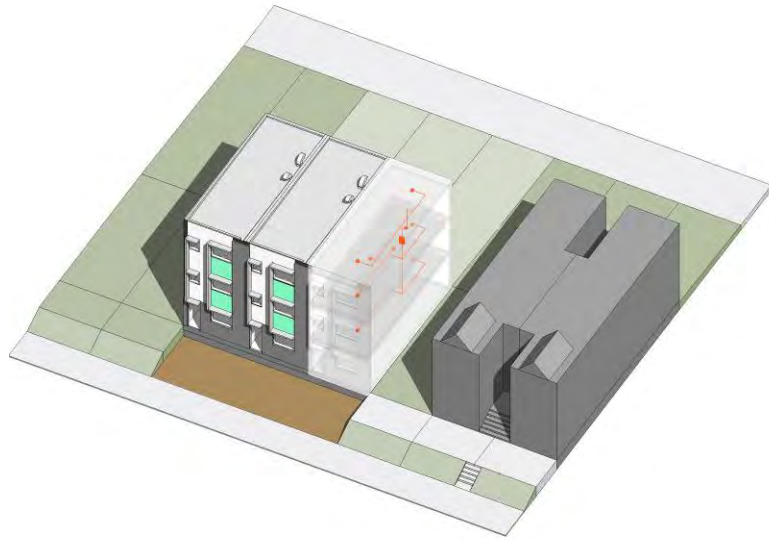
0.405 ACH 50

PASSIVE HOUSE MAX

0.6 ACH 50







Sensors		
Name	Last Reading	Type
Unit 1; LVL1-LivingRm	73°F	Temperature
Unit 1; LVL1-Hall	75°F	Temperature
Unit 1; LVL1-BedRm (Back)	73°F	Temperature
Unit 2; LVL2-BedRm (Back)	75°F	Temperature
Unit 2; LVL2-Hall	73°F	Temperature
Unit 1; LVL2-WashRm	75°F	Temperature
Unit 2; LVL2-BedRm (Fnt)	73°F	Temperature
Unit 2; LVL3-Mech Rm	75°F	Temperature
Unit 2; LVL3-BedRm (Fnt)	73°F	Temperature
Unit 2; LVL3-Office (Back)	75°F	Temperature
Unit 2; LVL 3 - Mech Rm; Inside Retrun Air Duct	77°F	Temperature
Unit 2; LVL 3 - Mech Rm; Inside Retrun Air Duct	450 ppm	VOC
Unit 2; LVL 3 - Mech Rm; Inside Retrun Air Duct	%	Humidity
Unit 1; LVL1-Hall	453 ppm	VOC
Unit 1; LVL1-Hall	45%	Humidity
Unit 1; LVL2-WashRm	450 ppm	VOC
Unit 1; LVL2-WashRm	44%	Humidity

