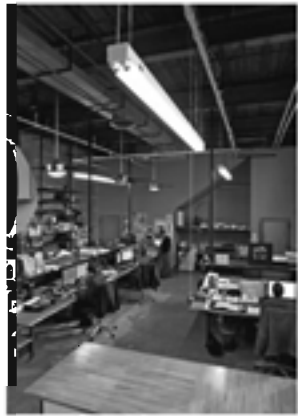


ONION
FLATS



PLUMBO



JIG
INC



GREEN ROOFS
GRASS
SOLAR SYSTEMS



BLOX
SUSTAINABLE BUILDING SYSTEMS





















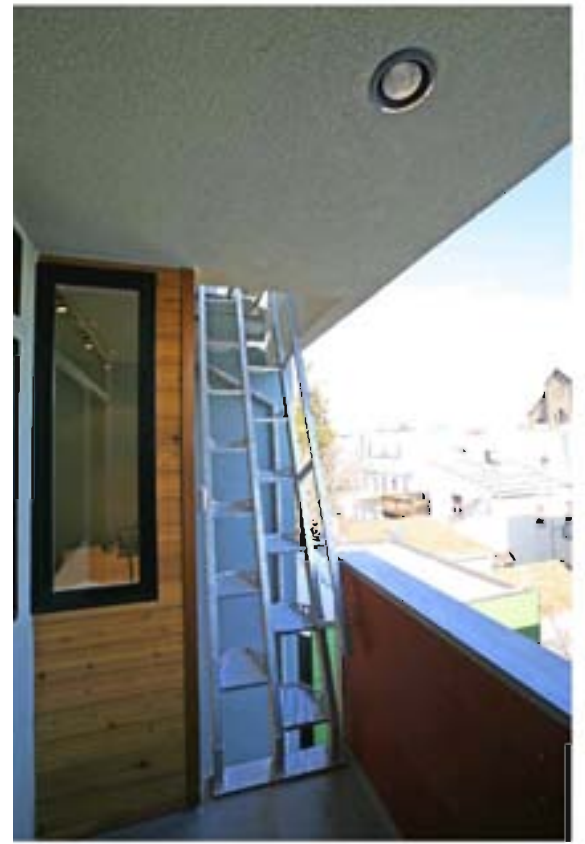


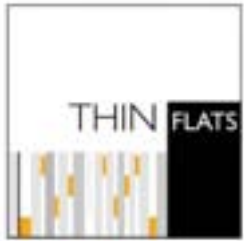










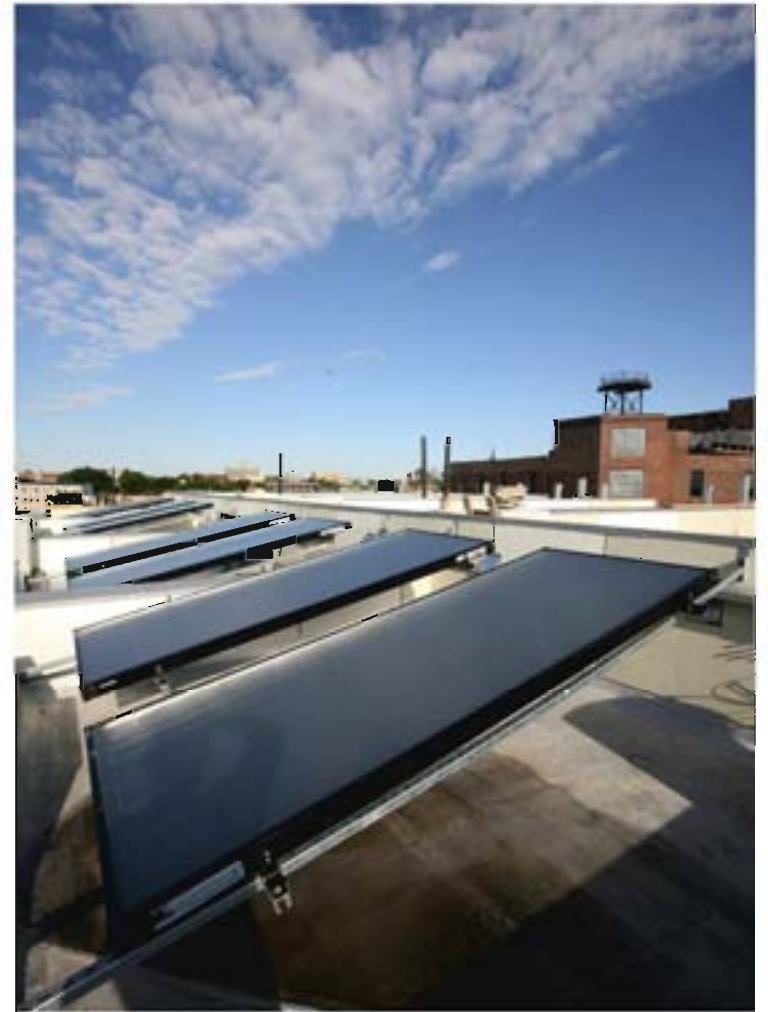


2008











Sustainable Sites



Water Efficiency



Energy & Atmosphere



Materials & Resources



Indoor Environmental Quality



Locations & Linkages



Awareness & Education



Innovation in Design



Regional Priority



Energy & Atmosphere

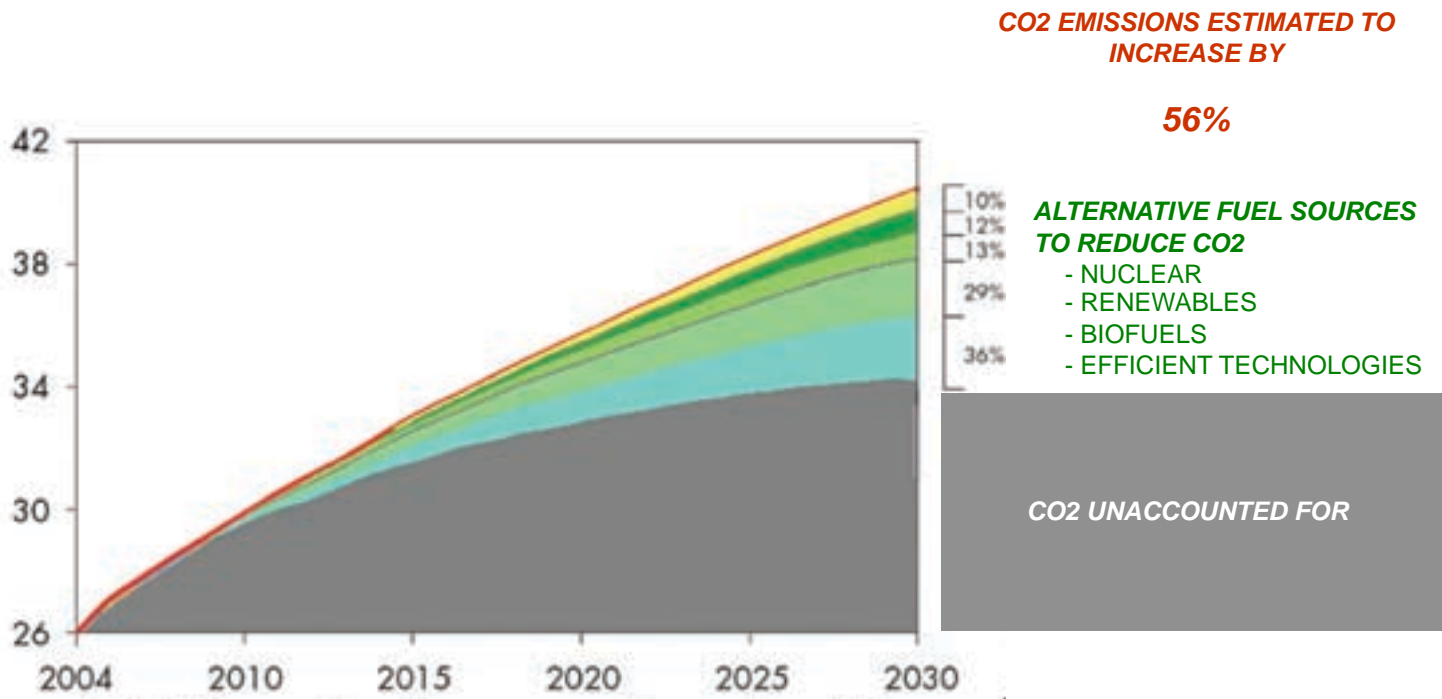


BUILDINGS IN THE U.S.A. ACCOUNT FOR

72% OF ELECTRICITY CONSUMPTION

39% OF ENERGY USE

38% OF CO2 EMISSIONS



90% Reduction
In energy consumption
per PERSON

**2000-WATT
SOCIETY**

100% Reduction
In fossil fuel consumption
per BUILDING

NET ZERO GOAL 2030



90% Reduction
In energy consumption
per BUILDING



90% Reduction
In energy consumption
per PERSON

**2000-WATT
SOCIETY**

CHALLENGE

100% Reduction
In fossil fuel consumption
per BUILDING

NET ZERO GOAL 2030



CHALLENGE

90% Reduction
In energy consumption
per BUILDING



Building SYSTEM

with
rigid metric standards

90% Reduction

In energy consumption
per BUILDING



Building SYSTEM

with
rigid metric standards

WHAT'S THE BEST HEATING SYSTEM IN THE WORLD ?

90% Reduction
In energy consumption
per BUILDING



Building SYSTEM

with
rigid metric standards

WHAT'S THE BEST HEATING SYSTEM IN THE WORLD ?

COGENERATION
SOLAR PV/THERMAL
HEAT PUMP
GEO-THERMAL.....

90% Reduction
In energy consumption
per BUILDING



Building SYSTEM

with
rigid metric standards

WHAT'S THE BEST HEATING SYSTEM IN THE WORLD ?

COGENERATION
SOLAR PV/THERMAL
HEAT PUMP
GEO-THERMAL.....



WHAT'S THE BEST HEATING SYSTEM IN THE WORLD ?

COGENERATION
SOLAR PV/THERMAL
HEAT PUMP
GEO-THERMAL.....

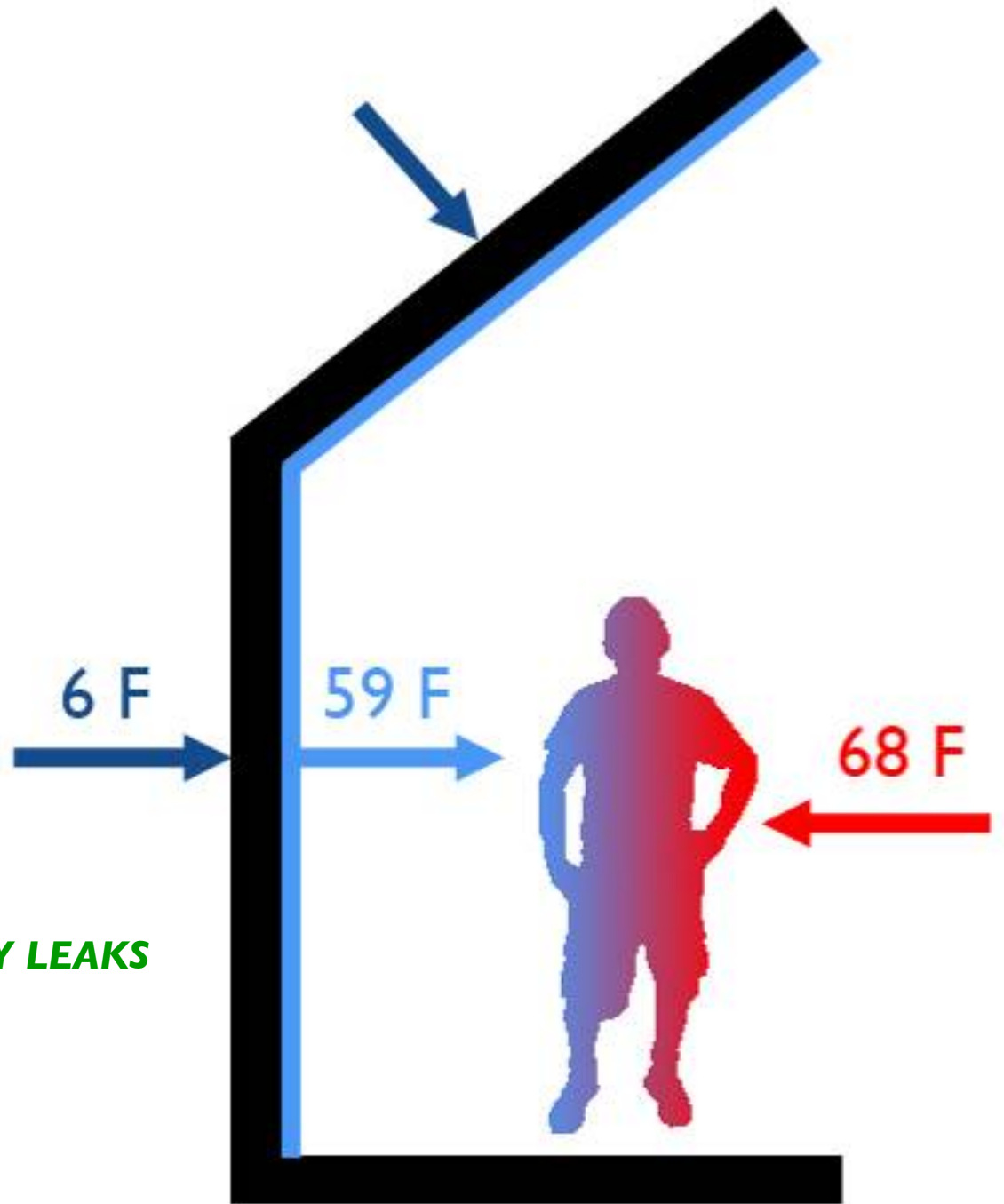
THE THERMAL ENVELOPE



CODE BUILDING

THE THERMAL ENVELOPE

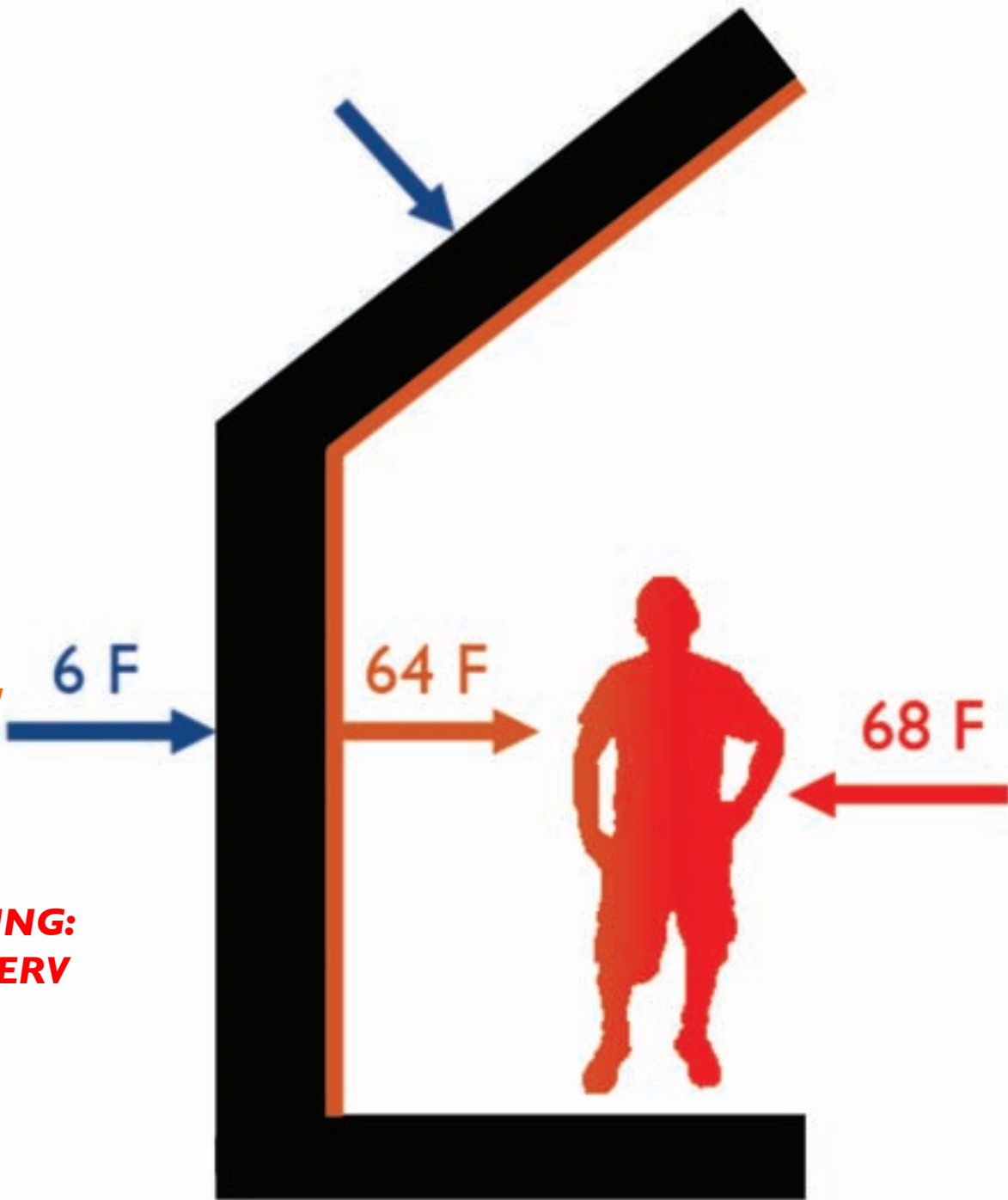
INSULATION: R 12
WINDOWS: R 1
VENTILATION: INTENTIONALLY LEAKS



PASSIVE HOUSE BUILDING

THE THERMAL ENVELOPE

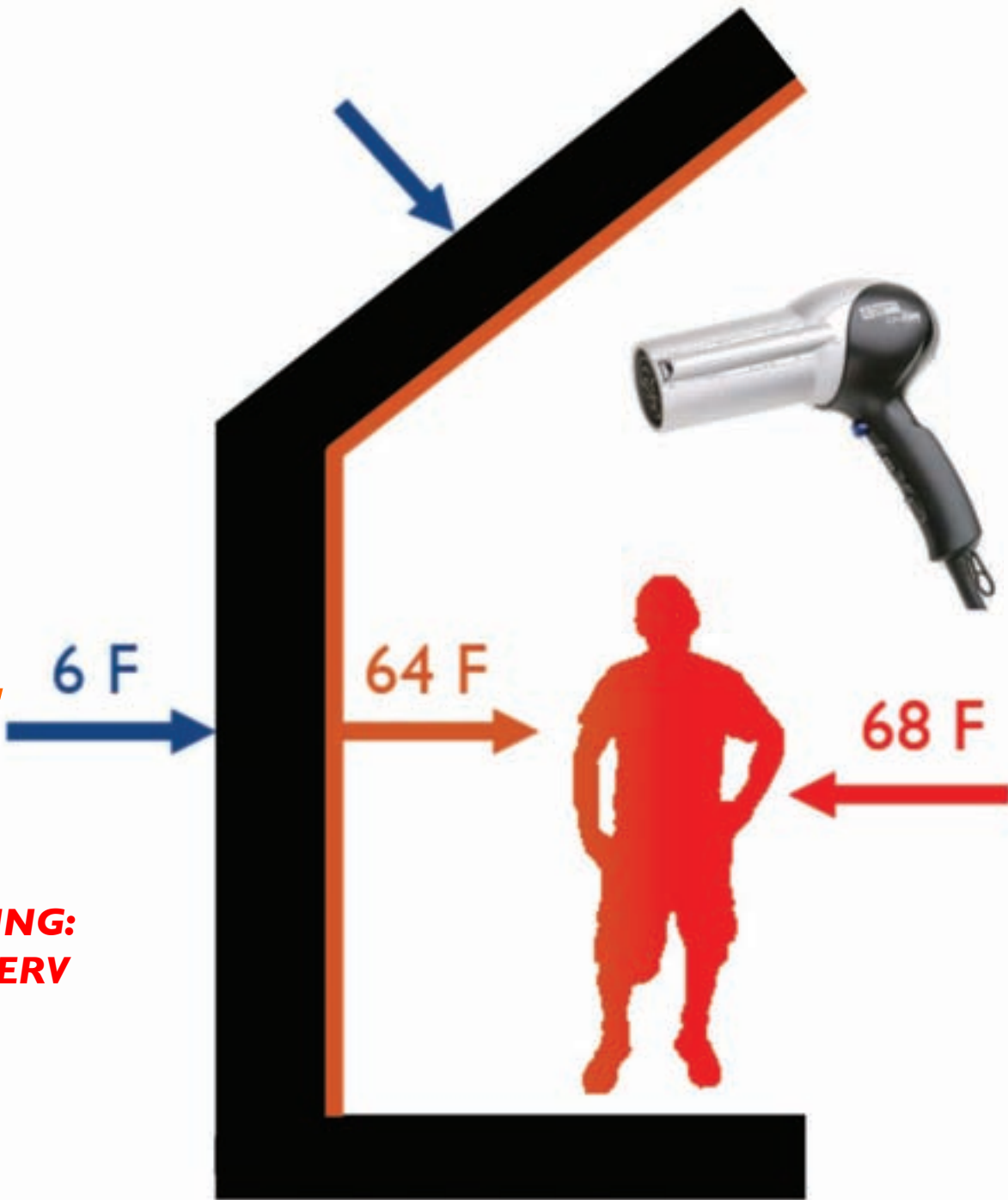
- INSULATION: R 50**
- WINDOWS: R 10**
- VENTILATION: AIR TIGHT LUNG: HRV/ERV**



PASSIVE HOUSE BUILDING

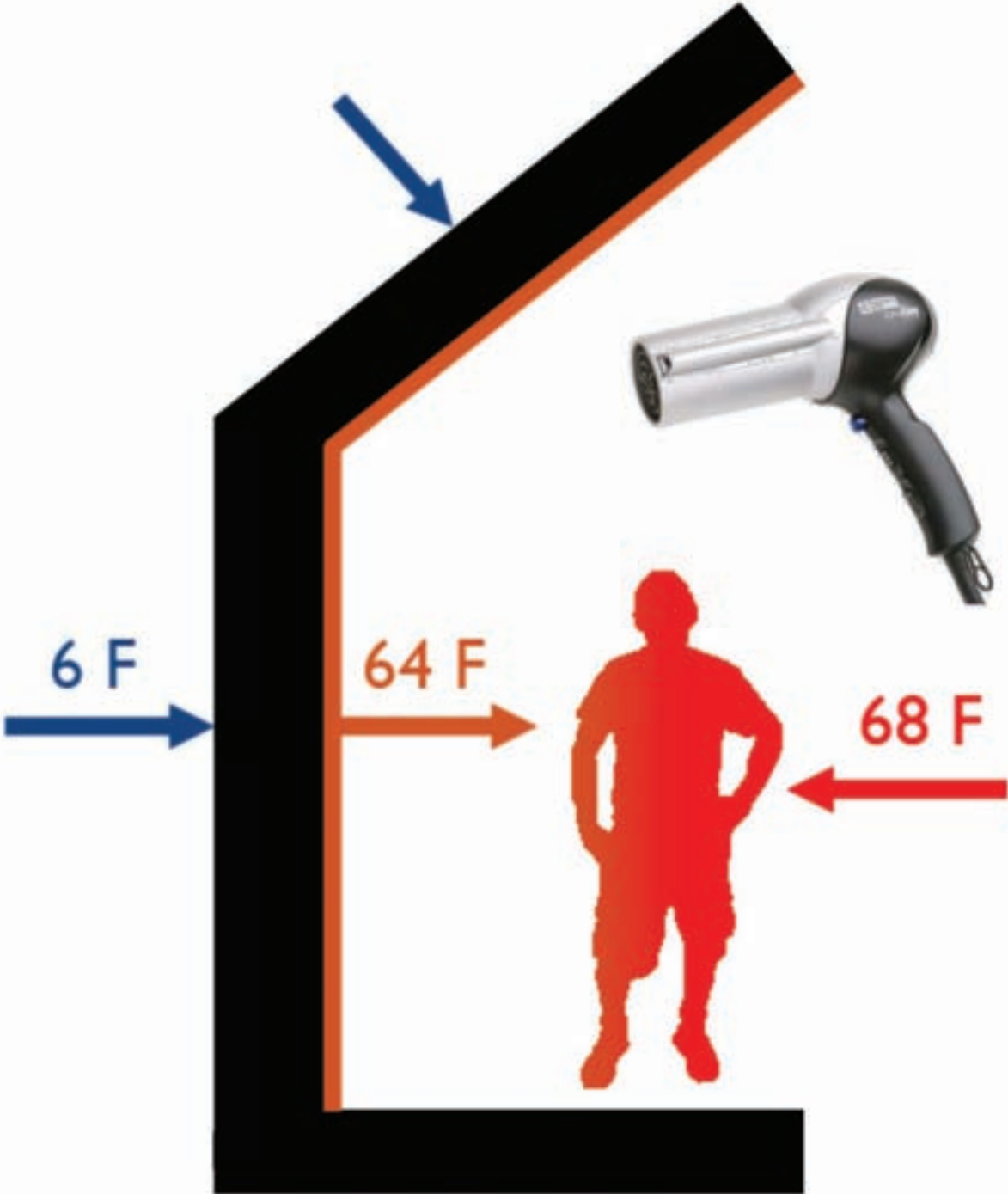
THE THERMAL ENVELOPE

- INSULATION: R 50**
- WINDOWS: R 10**
- VENTILATION: AIR TIGHT LUNG: HRV/ERV**



COGENERATION
SOLAR PV/THERMAL
HEAT PUMP
GEO-THERMAL.....

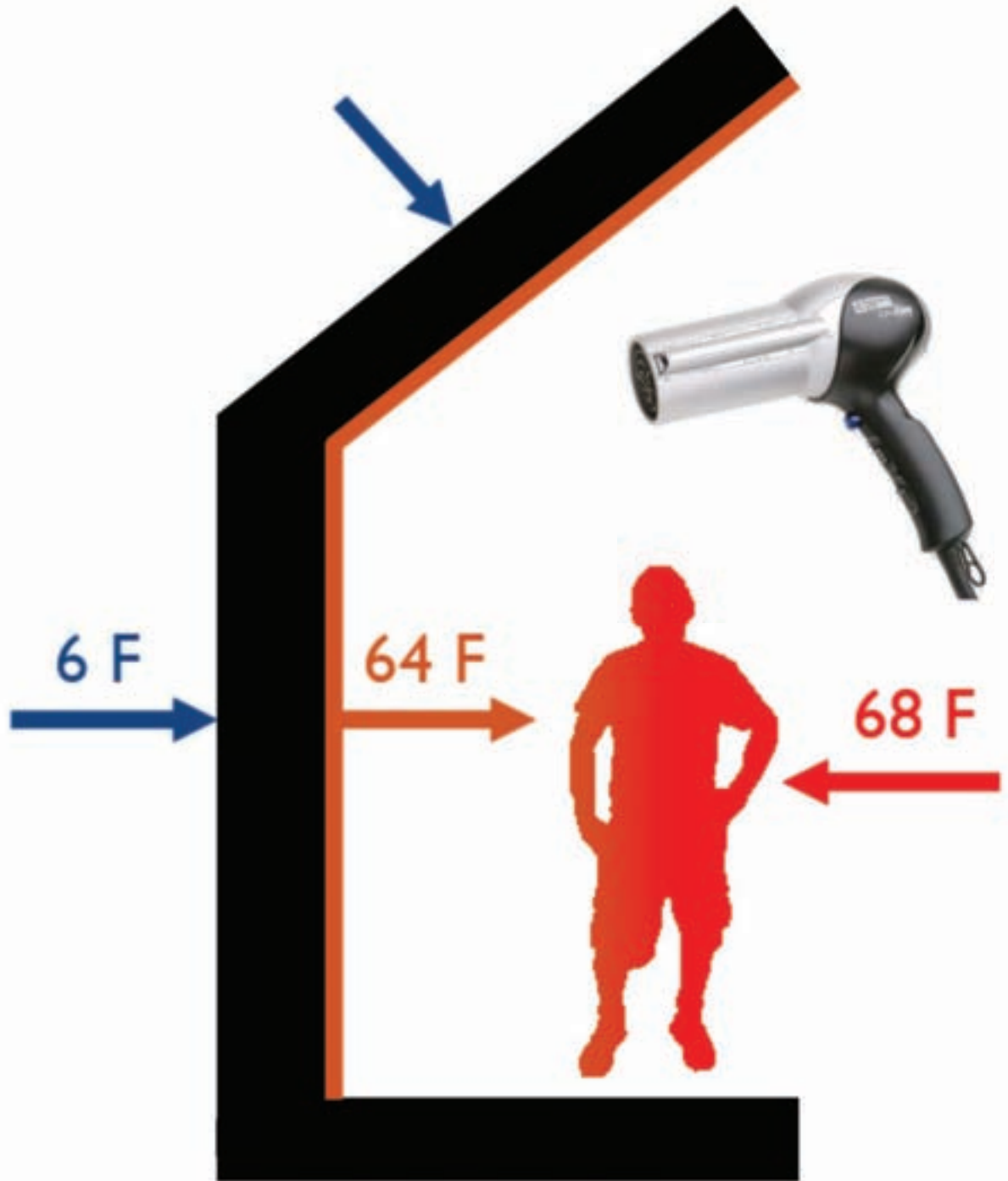
PASSIVE HOUSE BUILDING



COGENERATION
SOLAR PV/THERMAL
HEAT PUMP
GEO-THERMAL.....

PASSIVE HOUSE BUILDING

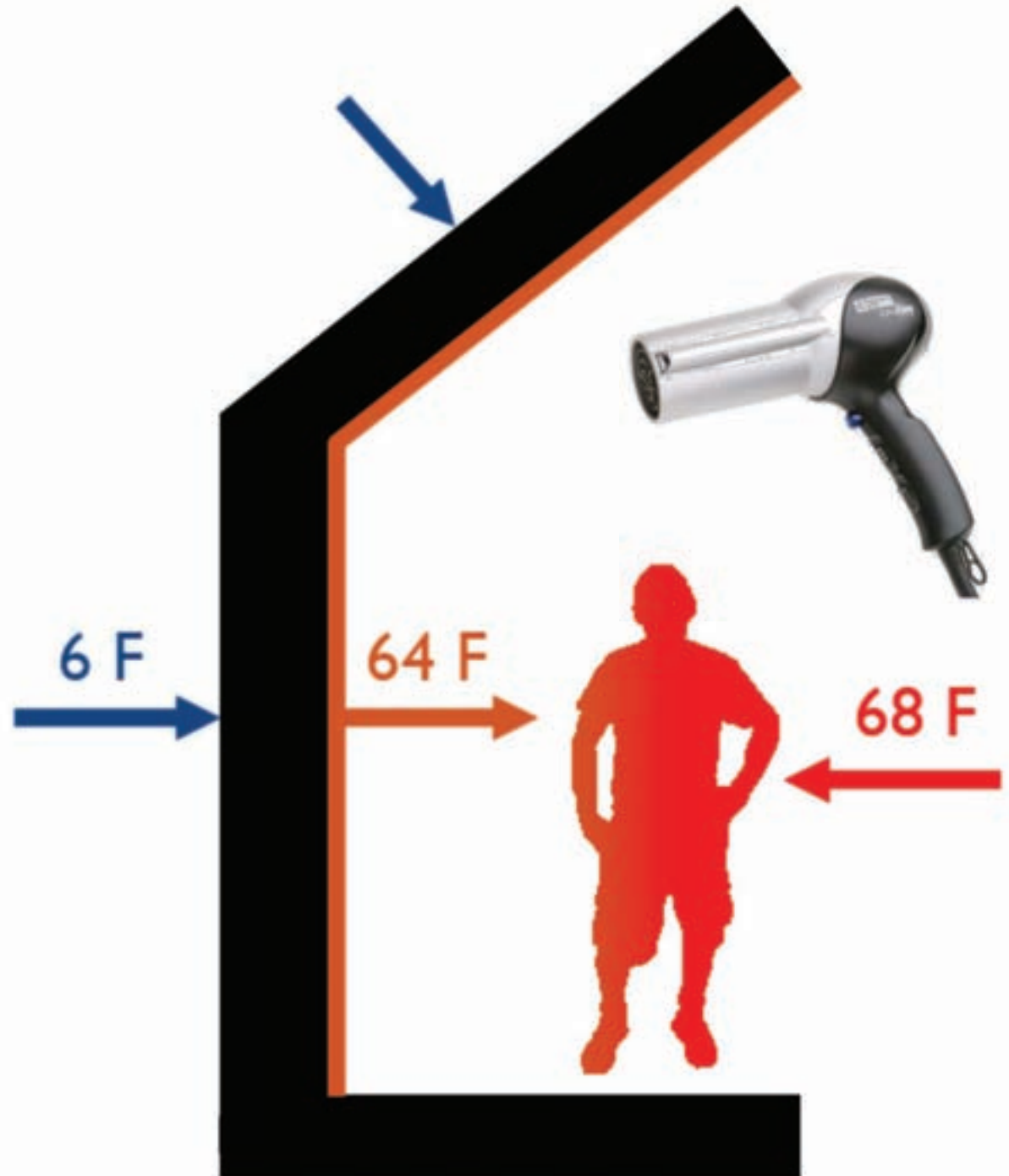
ZERO ENERGY

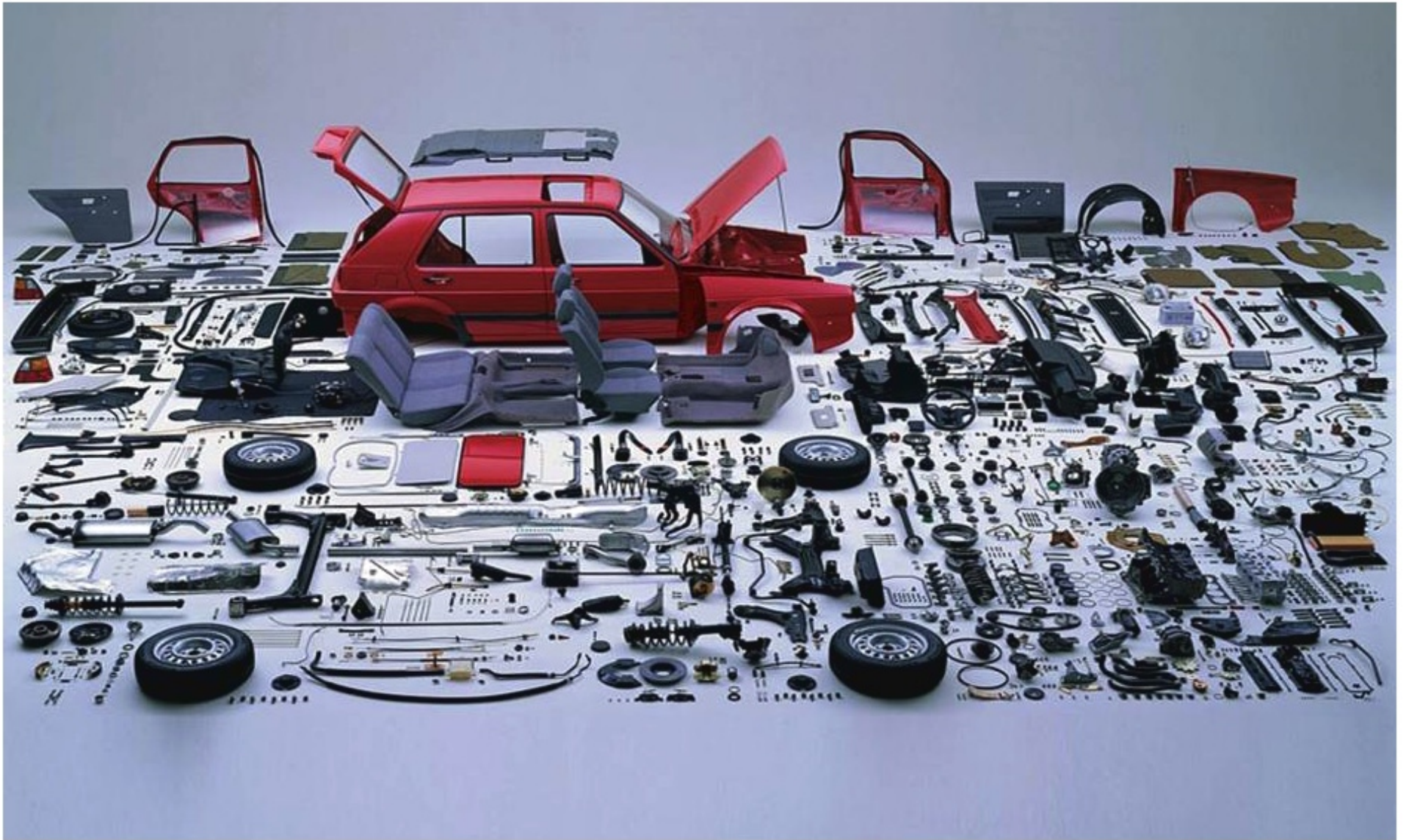


COGENERATION
SOLAR PV/THERMAL
HEAT PUMP
GEO-THERMAL.....

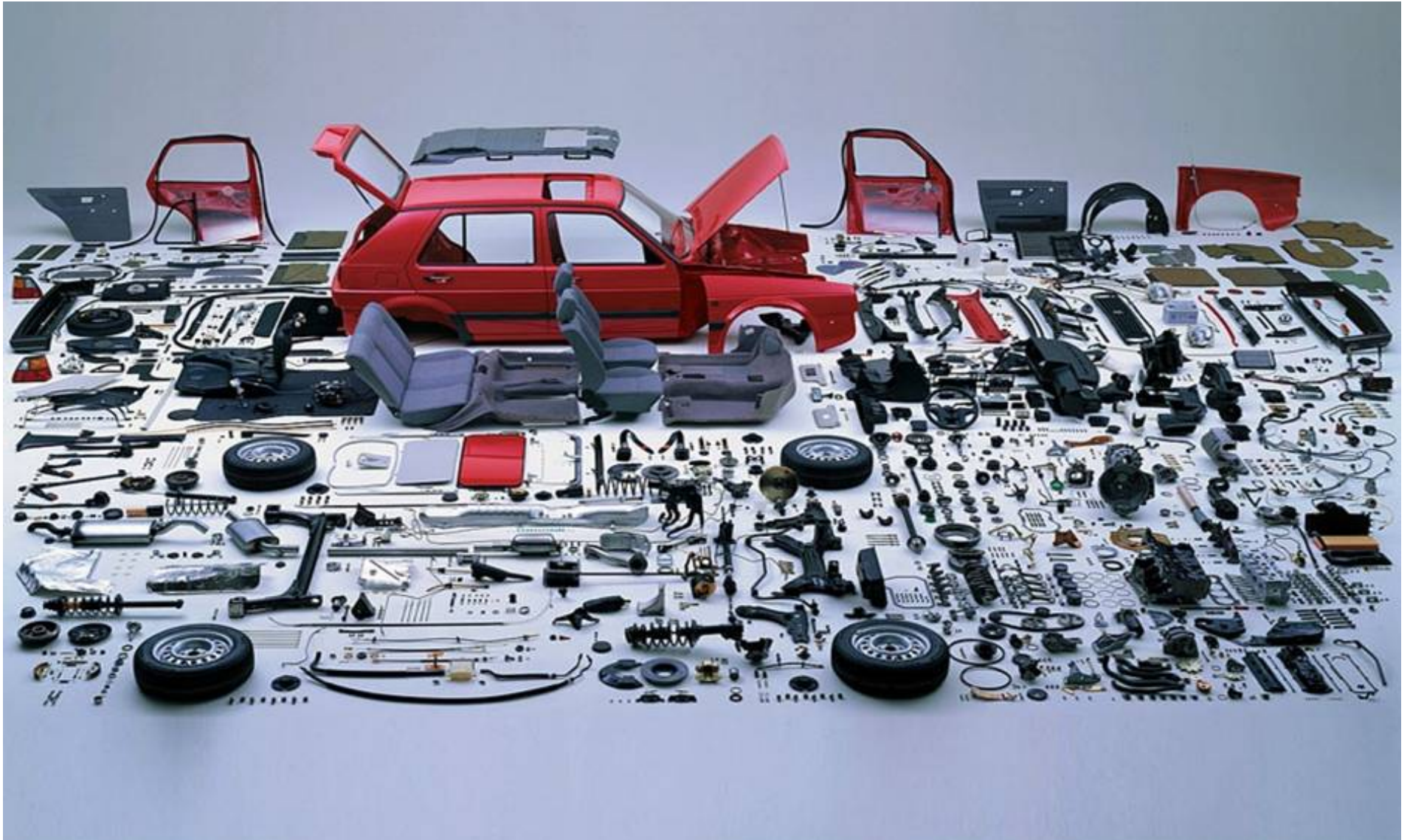
PASSIVE HOUSE BUILDING

ZERO ENERGY
CARBON NEUTRALITY





THE CONSTRUCTION INDUSTRY TODAY



THE MODULAR INDUSTRY TODAY



THE MODULAR INDUSTRY TODAY



TRAILER PARKS

THE MODULAR INDUSTRY TODAY



TRAILER PARKS

SUBURBAN SINGLE FAMILY

THE MODULAR INDUSTRY TODAY



TRAILER PARKS
SUBURBAN SINGLE FAMILY
“HIGH STYLE”

THE MODULAR INDUSTRY TODAY

MARMOL RADZINER PREFAB



TRAILER PARKS
SUBURBAN SINGLE FAMILY
"HIGH STYLE"
ONE-OFFS

THE MODULAR INDUSTRY TODAY

livinghomes.



TRAILER PARKS
SUBURBAN SINGLE FAMILY
“HIGH STYLE”
ONE-OFFS
UNAFFORDABLE NOVELTY

THE MODULAR INDUSTRY TODAY

1% OF ALL BUILDING CONSTRUCTION

THE MODULAR INDUSTRY TODAY

WHY HASN'T IT WORKED?

UNSUSTAINABLE

SUBURBAN

SINGLE FAMILY

CAR

SPACE



LEVITTOWN

UNSUSTAINABLE

SUBURBAN

SINGLE FAMILY

CAR

SPACE



LEVITTOWN

SUSTAINABLE

URBAN

MULTI-FAMILY, MULTI-USE, MULTI-STORY

PEDESTRIAN

DENSITY



SOUTH PHILADELPHIA

OBJECTS

EXPENSIVE

PROTOTYPICAL

LOW QUALITY

SYSTEMS

AFFORDABLE

CELLULAR

HIGH PERFORMANCE



LEVITTOWN



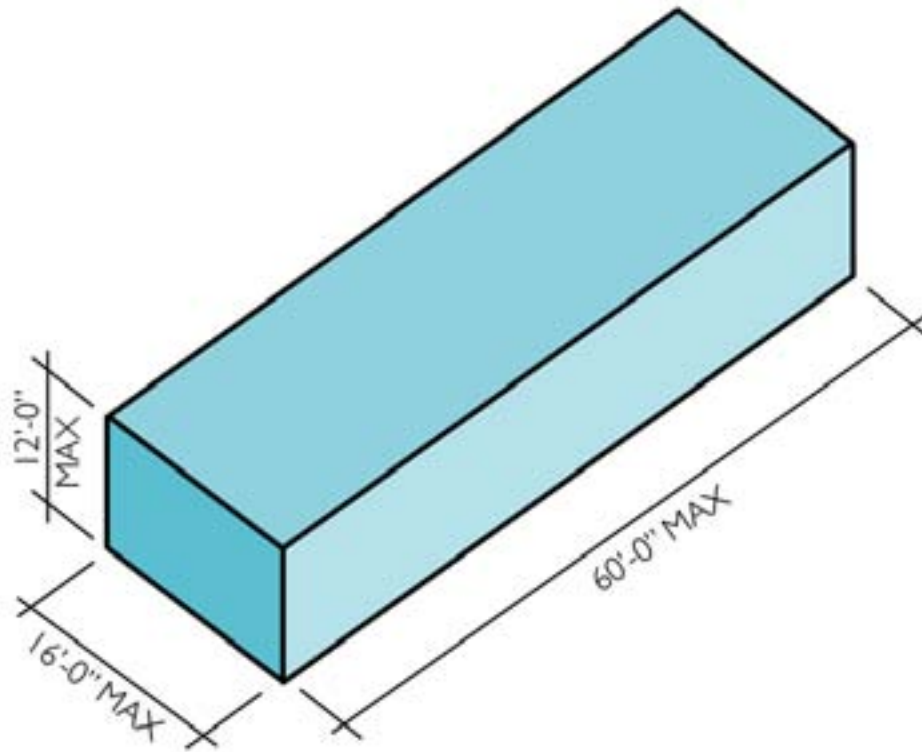
SOUTH PHILADELPHIA

SYSTEMS

AFFORDABLE

CELLULAR

HIGH PERFORMANCE



THE MODULAR INDUSTRY AROUND THE WORLD



Murray Grove, London, UK, 1999-2000
30 units, 1 and two bdrm flats
5 stories
Steel and concrete modular building by Yorkon
Cartwright Pickard Architects

Yorkon Modular



THE MODULAR INDUSTRY AROUND THE WORLD



Murray Grove, London, UK, 1999-2000

30 units, 1 and two bdrm flats

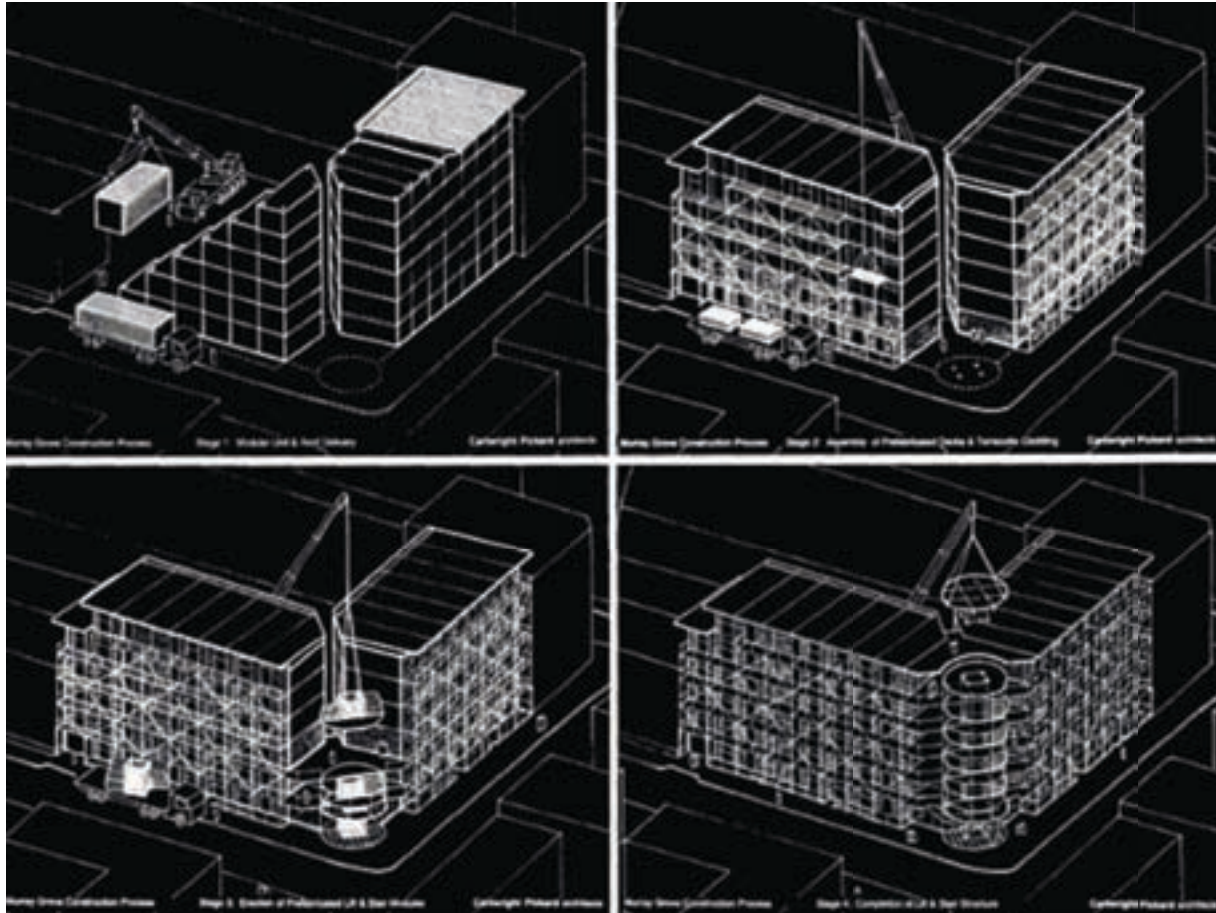
5 stories

Steel and concrete modular building by Yorkon
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THE MODULAR INDUSTRY AROUND THE WORLD



Murray Grove, London, UK, 1999-2000

30 units, 1 and two bdrm flats

5 stories

Steel and concrete modular building by Yorkon
Cartwright Pickard Architects

Yorkon Modular





POTTSTOWN PA: INDUSTRIAL HISTORY



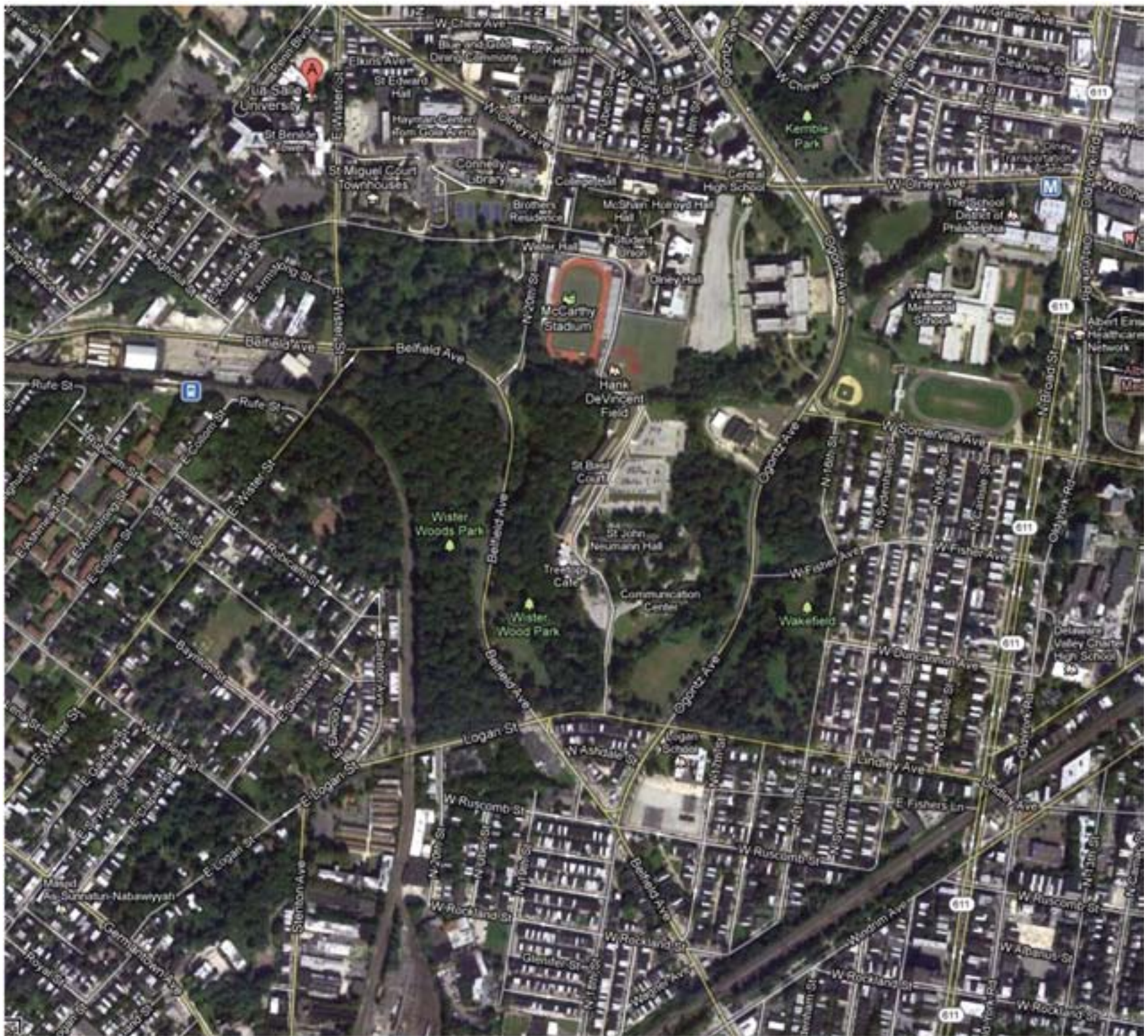


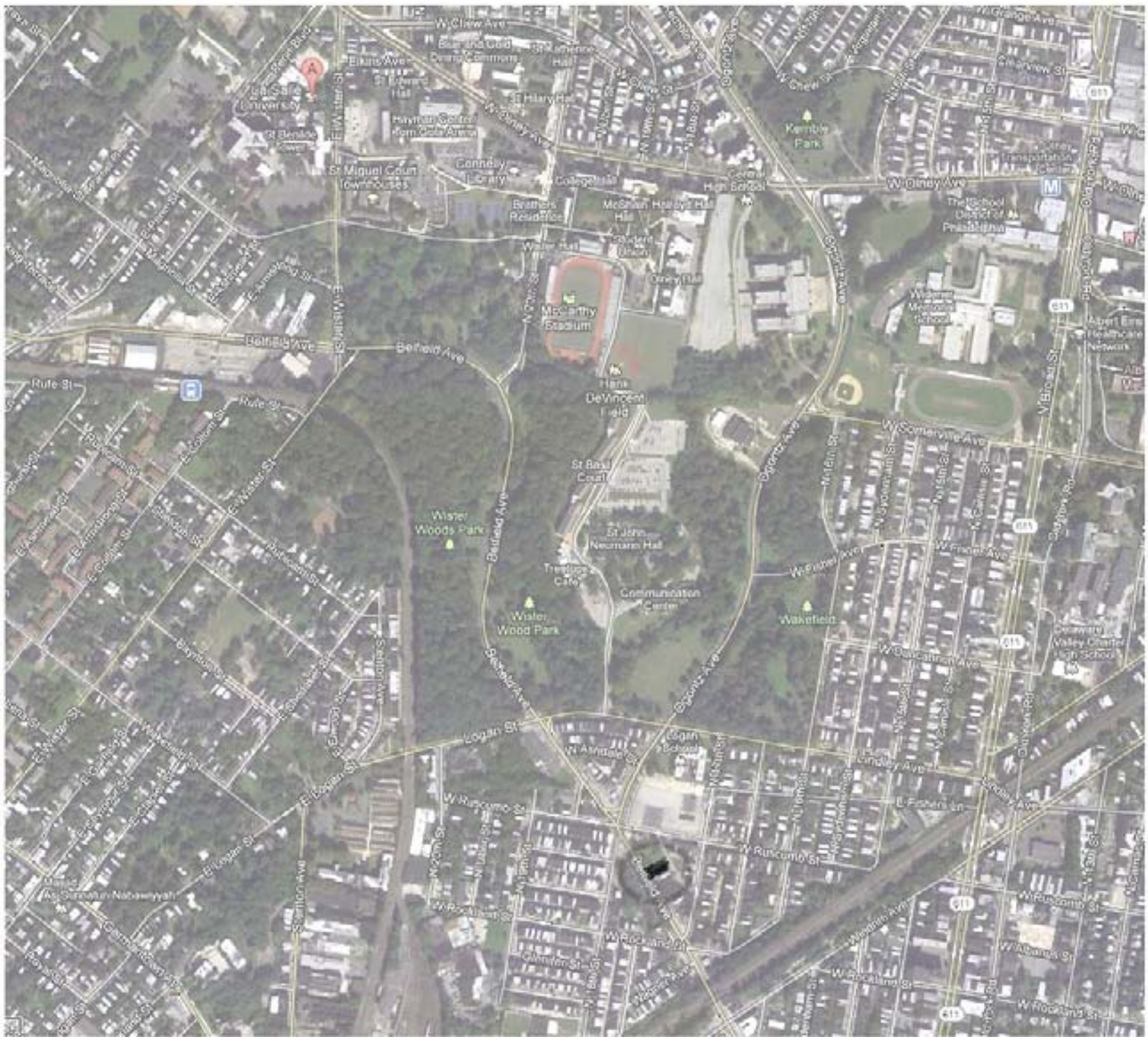
BLOX FACTORY

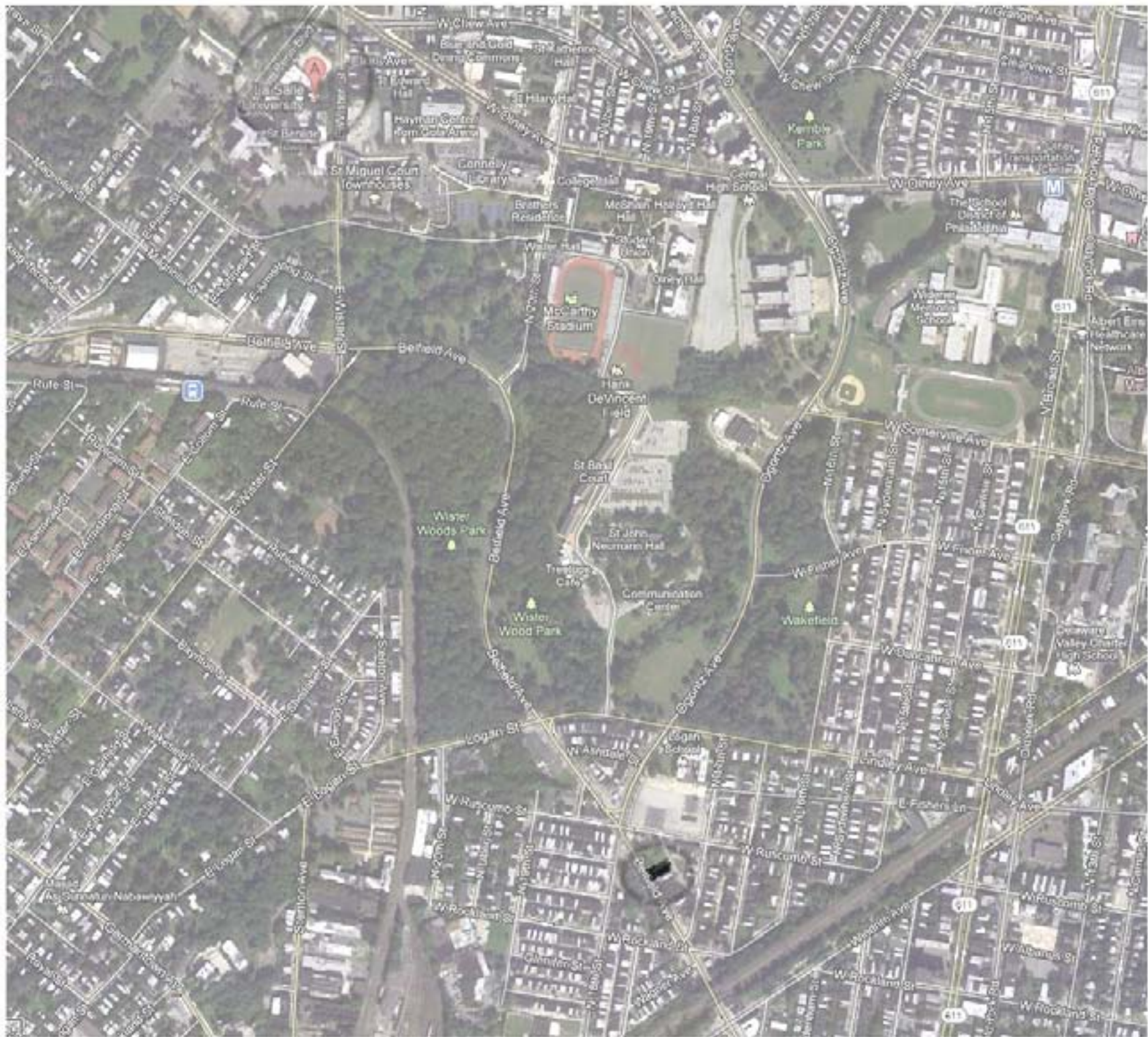




















	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM
JUNE								
DEC								

Passive House Verification



Building:	BELFIELD HOUSES		
Location and Climate:	Philadelphia, PA	Philadelphia PA*	
Street Address:	1733-1739 Belfield Ave		
City, State, Zip:	Philadelphia, PA 19141		
Country:			
Building Type:	Townhouse: NORTH END UNIT ONLY		
Home Owner(s) / Client(s):	Raise of Hope		
Street Address:			
City, State, Zip:			
Architect:	PLUMBOB LLC		
Street:	111 West Morris St.		
City, State, Zip:	Philadelphia, PA 19122		
Mechanical System:	Ducted mini-split; Ultimate Aire ERV, DHW heat pump		
Street Address:			
City, State, Zip:			
Year of Construction:	2012		
Number of Dwelling Units:	1	Interior Temperature:	68.0 °F
Gross Enclosed Volume V _e :	21771 ft ³	Internal Heat Gains:	0.7 BTU/hr-ft ²
Number of Occupants:	4.0		

Energy Demands with Reference to the Treated Floor Area				
Treated Floor Area:	1490 ft ²			
	Applied:	Monthly Method	PH Certificate:	Fulfilled?
Specific Space Heat Demand:	4.00	kBTU/(ft ² ·yr)	4.75 kBTU/(ft ² ·yr)	Yes
Pressurization Test Result:	0.60	ACH ₅₀	0.6 ACH ₅₀	Yes
Specific Primary Energy Demand (DHW, Heating, Cooling, Auxiliary and Household Electricity):	29.9	kBTU/(ft ² ·yr)	38.0 kBTU/(ft ² ·yr)	Yes
Specific Primary Energy Demand (DHW, Heating and Auxiliary Electricity):	11.7	kBTU/(ft ² ·yr)		
Specific Primary Energy Demand Energy Conservation by Solar Electricity:	9.2	kBTU/(ft ² ·yr)		
Heating Load:	4.52	BTU/(ft ² ·hr)		
Frequency of Overheating:		%	over 77.0 °F	
Specific Useful Cooling Energy Demand:	1.50	kBTU/(ft ² ·yr)	4.75 kBTU/(ft ² ·yr)	Yes
Cooling Load:	4.33	BTU/(ft ² ·hr)		

Passive House Verification



Building:	BELFIELD HOUSES		
Location and Climate:	Philadelphia, PA	Philadelphia PA*	
Street Address:	1735-1739 Belfield Ave		
City, State, Zip:	Philadelphia, PA 19141		
Country:			
Building Type:	Townhouse: NORTH END UNIT ONLY		
Home Owner(s) / Client(s):	Raise of Hope		
Street Address:			
City, State, Zip:			
Architect:	PLUMBBOB LLC		
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Gross Enclosed Volume V _e :	21771 ft ³	Internal Heat Gains:	0.7 BTU/hr-ft ²
Number of Occupants:	4.0		

Energy Demands with Reference to the Treated Floor Area

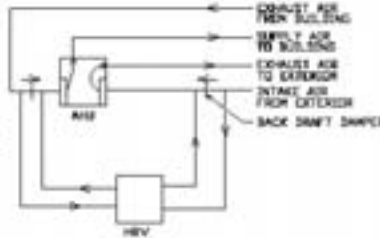
Treated Floor Area:	1490 ft ²			
	Applied:	Minimum Method	PH Certificate:	
Specific Space Heat Demand:	4.00	kBTU/(ft ² ·yr)	4.75 kBTU/(ft ² ·yr)	Fulfilled? Yes
Pressurization Test Result:	0.60	ACH ₅₀	0.6 ACH ₅₀	Yes
Specific Primary Energy Demand (DHW, Heating, Cooling, Auxiliary and Household Electricity):	29.9	kBTU/(ft ² ·yr)	38.0 kBTU/(ft ² ·yr)	Yes
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Cooling Load:	4.33	BTU/(ft ² ·hr)		

MECHANICAL EQUIPMENT

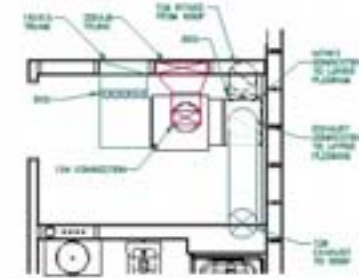
TAG	DESCRIPTION	PRODUCT
MS-240P1	WALL SUPPLY WALL	US-22 ENERGY EFFICIENT VERSION OF MITSUBISHI ELECTRIC SYSTEM 100
MS-1	WALL SUPPLY RECESS	1/2" x 1/2" WALL SUPPLY WALL BY MITSUBISHI
MS-1	CEILING SUPPLY RECESS	1/2" x 1/2"
MS-1	WALL EXHAUST WALL	US-22 ENERGY EFFICIENT VERSION OF MITSUBISHI ELECTRIC SYSTEM 100
MS-1	WALL EXHAUST RECESS	1/2" x 1/2" ENERGY EFFICIENT RECESS BY MITSUBISHI ELECTRIC SYSTEM 100
MS-1	BACK DRAFT DAMPER	STANDARD 800 BY GRANCO
MS-1	BACK DRAFT DAMPER	REGULAR 800 BY GRANCO
MS-1	HP GASOLINE UNIT	10. ZONALBO AIRBORNE
MS-1	HEAT RECOVERY VENTILATOR	ULTIMATE AIR 8000

AHU BASIS OF DESIGN IS THE
 02 ZONALBO A900-090AC
 COP 84/77 = 24
 EER = 88.0
 RTU TOTAL 8,700 COOLING
 TWR = 7.5
 OTHW/ESP = 1/4" W/L/
 480/270/225
 UNIT IS 220V 4.4 AMPS

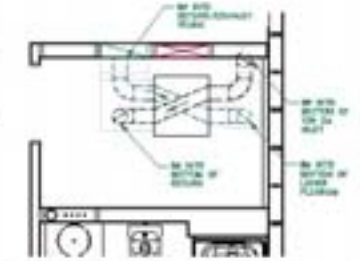
HRV BASIS OF DESIGN IS THE
 ULTIMATE AIR 8000
 COP = 76 - 80
 120V 5A
 SERVICE EFF 95%



5 MECHANICAL FLOW DIAGRAM
 NTS



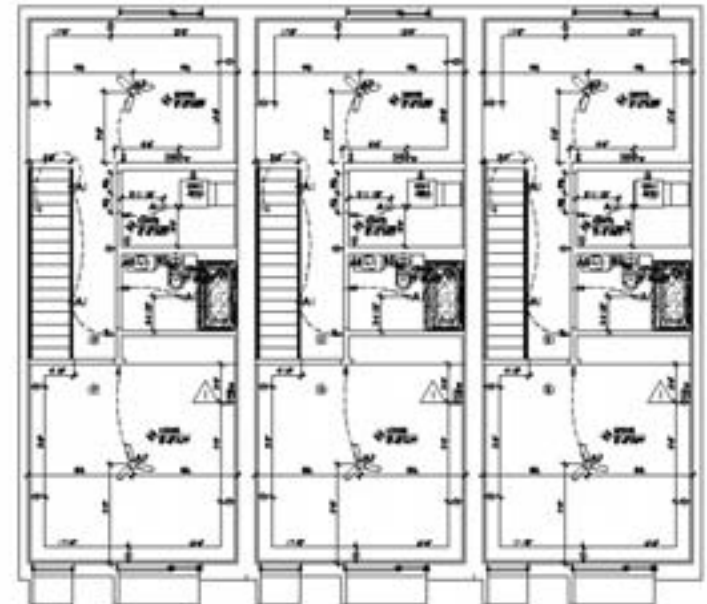
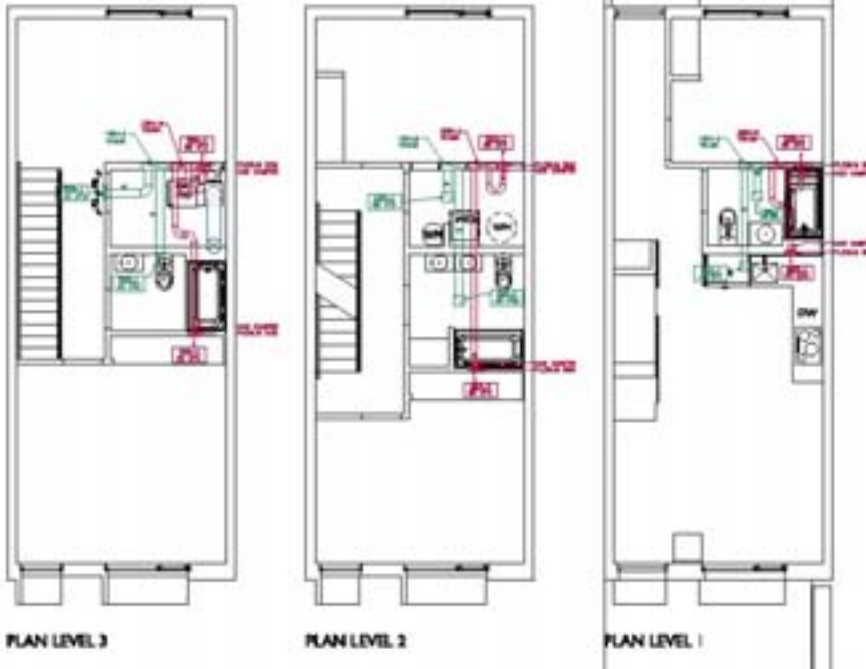
4 SECTION 24" AFF HRV BELOW AHU

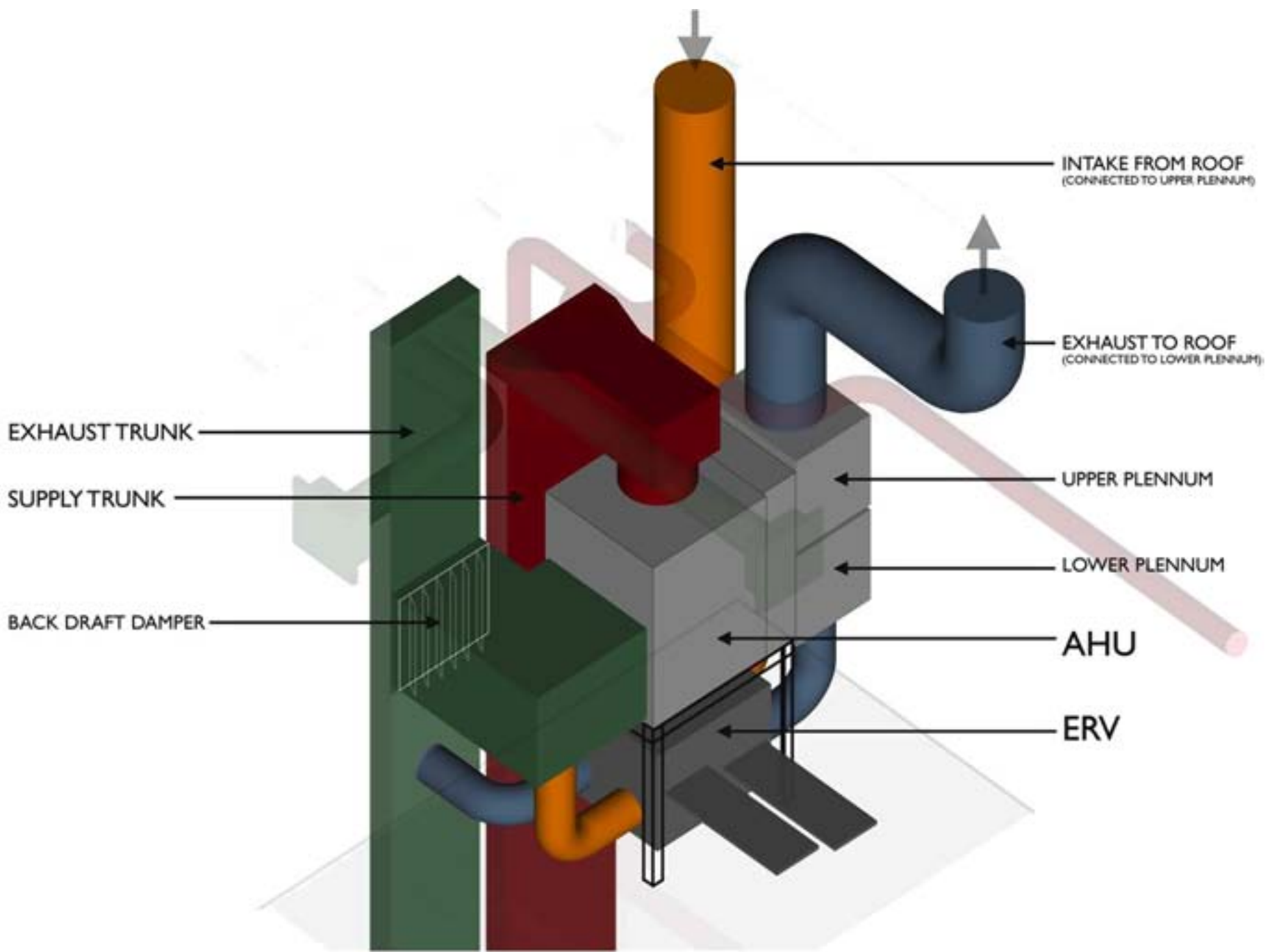


3 SECTION B' AFF HRV BELOW AHU

4 MECHANICAL MECHANICAL
 1/2" = 1'

3 MECHANICAL ROOM DETAIL (GENERAL)
 1/2" = 1'





EXHAUST TRUNK

SUPPLY TRUNK

BACK DRAFT DAMPER

INTAKE FROM ROOF
(CONNECTED TO UPPER PLENUM)

EXHAUST TO ROOF
(CONNECTED TO LOWER PLENUM)

UPPER PLENUM

LOWER PLENUM

AHU

ERV















VERMONT ENERGY
INVESTMENT CORPORATION

Home Energy & Environment Window

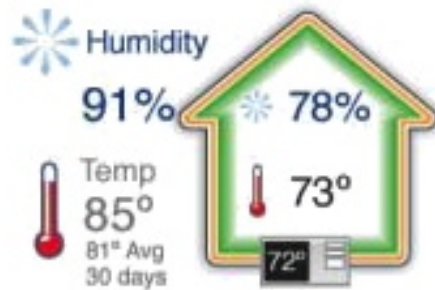
Welcome, Rita | Log Out

DASHBOARD BROUGHT TO YOU BY VEIC'S PASSIVE HOUSE PROJECT

Feb 19 2011, 2:15 pm
Partly sunny

Tomorrow
Partly sunny

Home Comfort



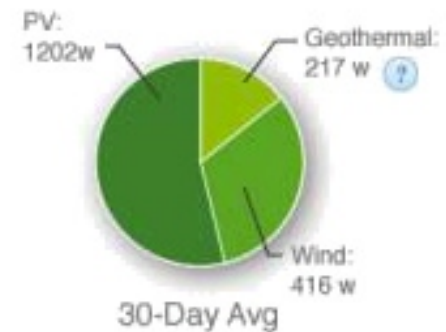
Indoor Temp Details

Real Time Electricity – All Sources



Top 5 Users

On-Site Generation



Solar HW Energy



Saved: \$3.74 today

My **monitor** Login

Solar Hot Water



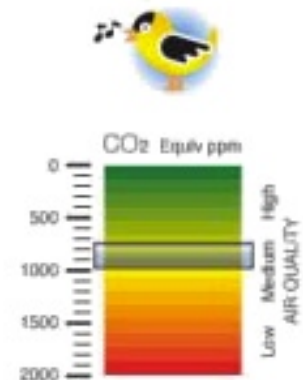
Good time to use hot water

Export My Data

Last 30 Days By the Numbers

Renewable energy	1.3 kWh
Solar Hot Water equiv.	22 gal @ 120°
Cost of heat	\$10
Home saved	\$23

Air Quality



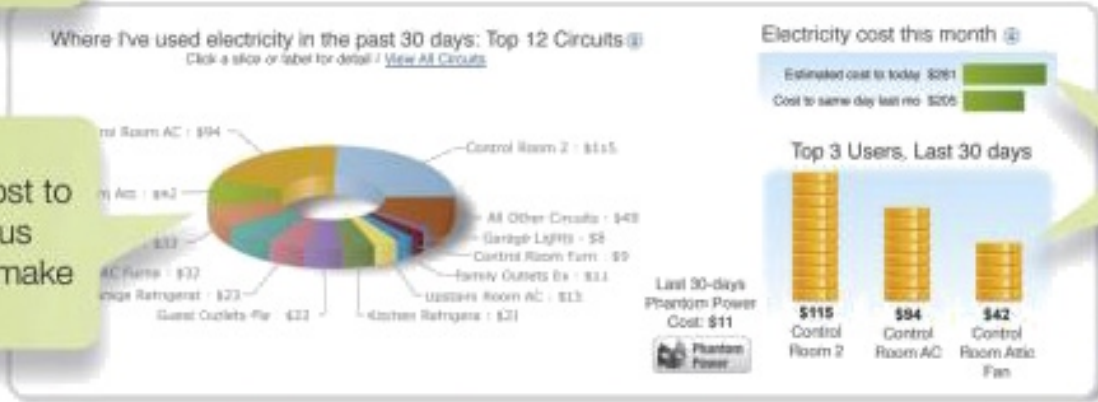
dashboard powered by **intellergy**

⚡ See all circuits and appliances drawing power right now – be alerted when something is on that shouldn't be



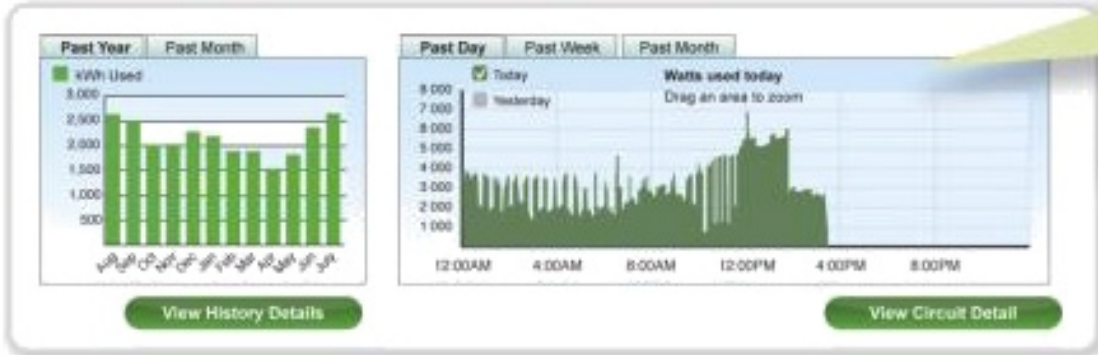
👣 Compare carbon footprint with state averages – track the impact of actions aimed at reducing it

🍷 Understand what different appliances cost to operate – you can focus attention where it will make the most difference.



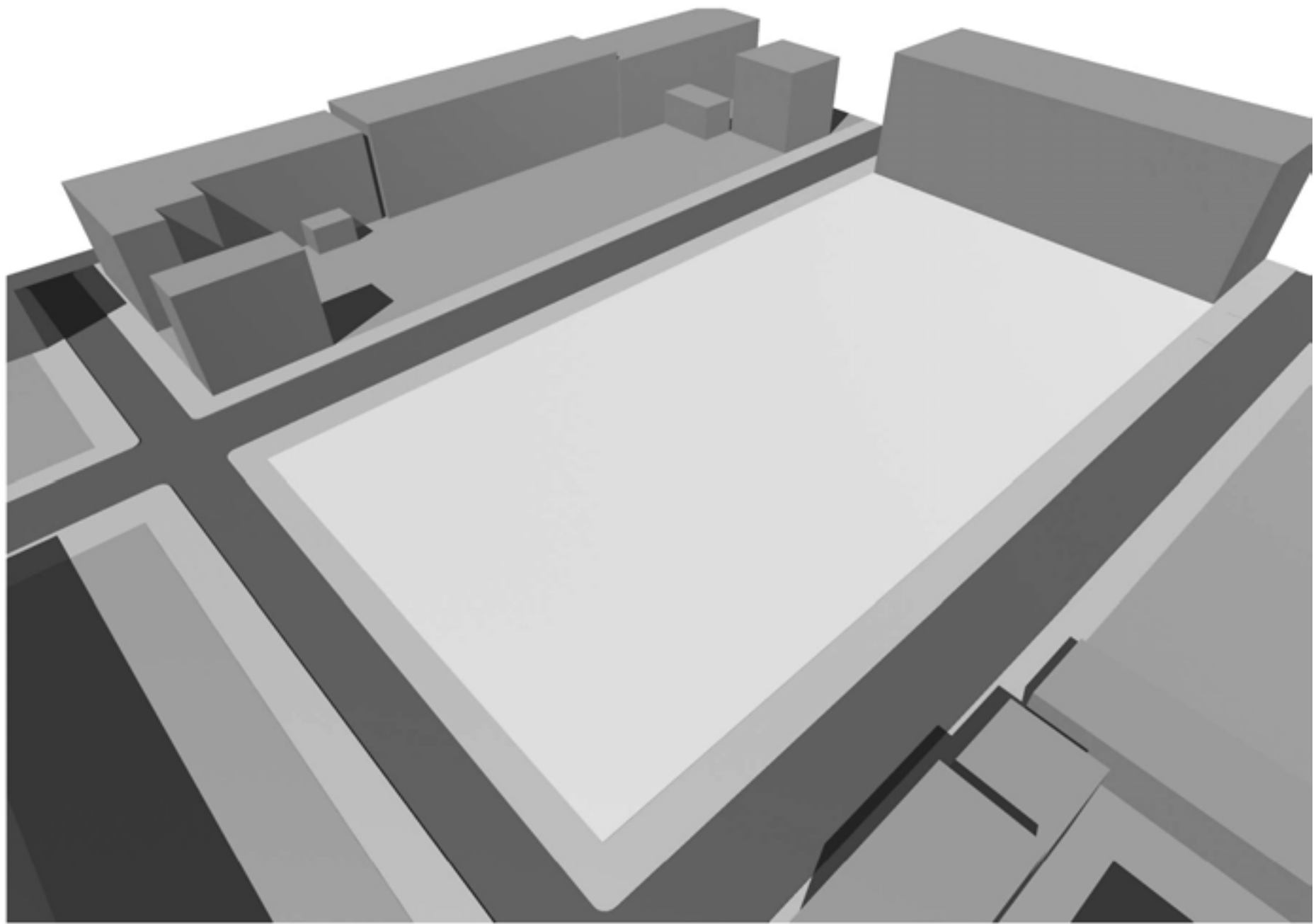
🍷 Find out how much is being spent and exactly what you are spending it on, even before your bill arrives

📅 See usage on a minute by minute basis to understand patterns and identify spikes

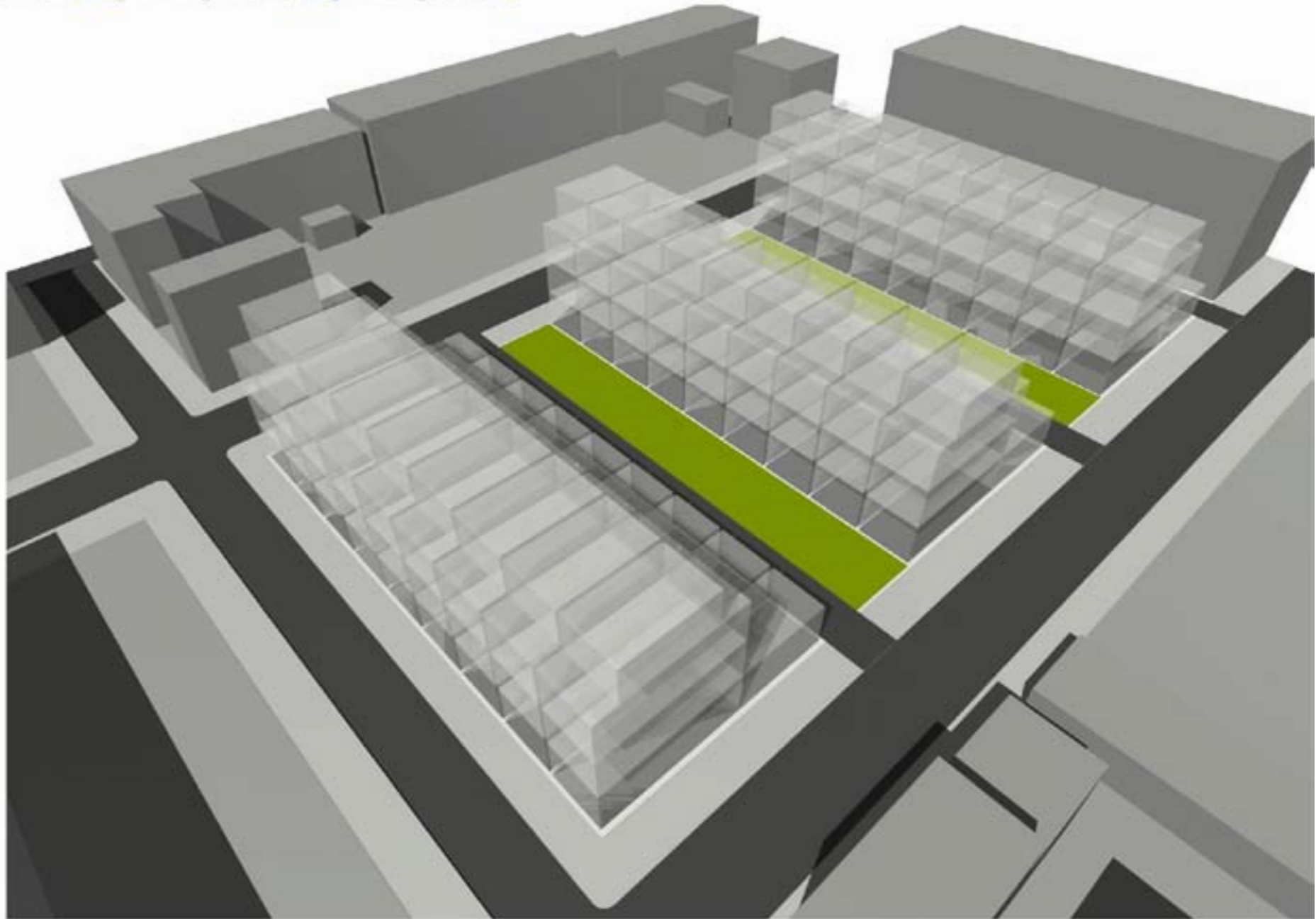




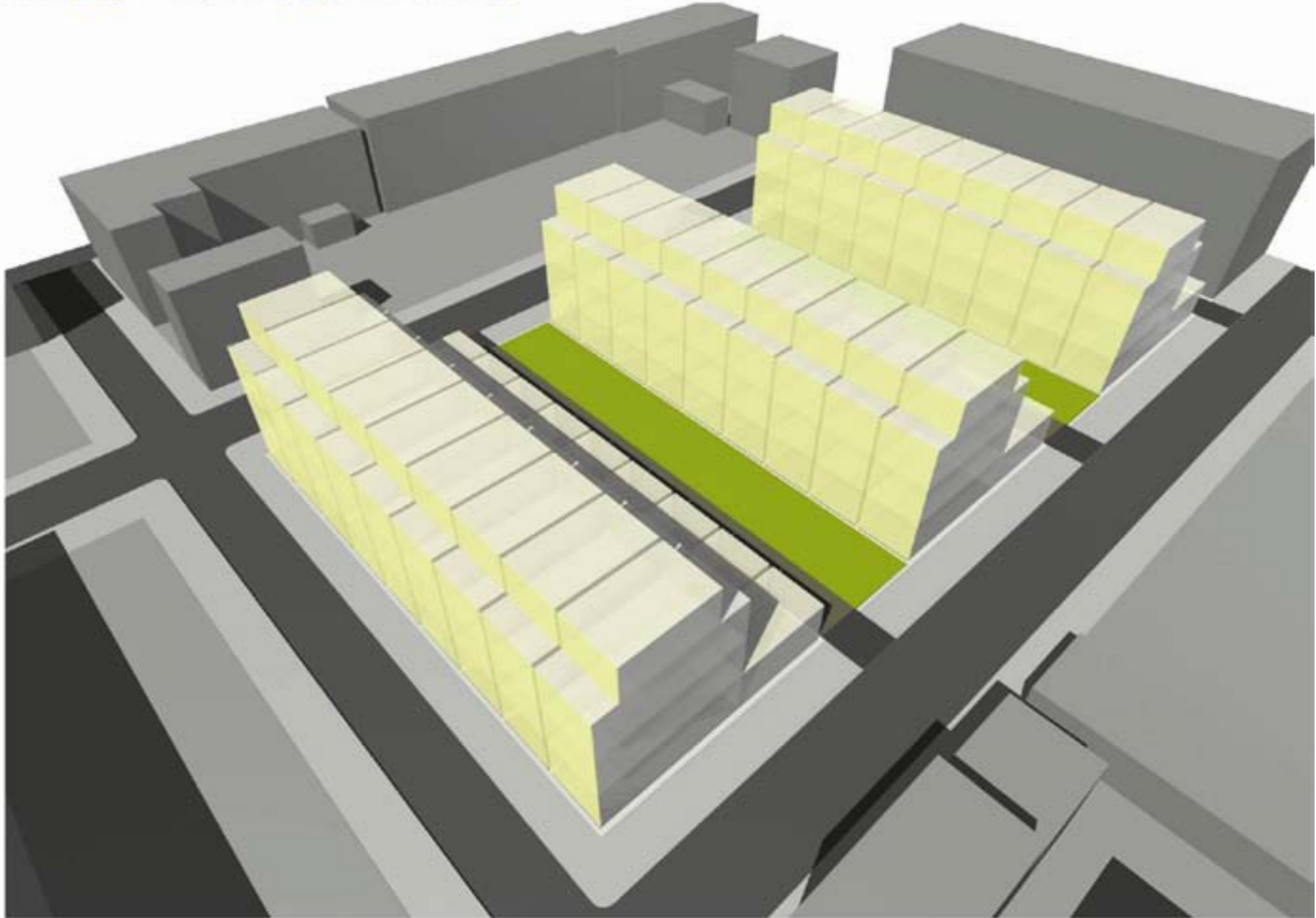




VERNAL EQUINOX: 50'

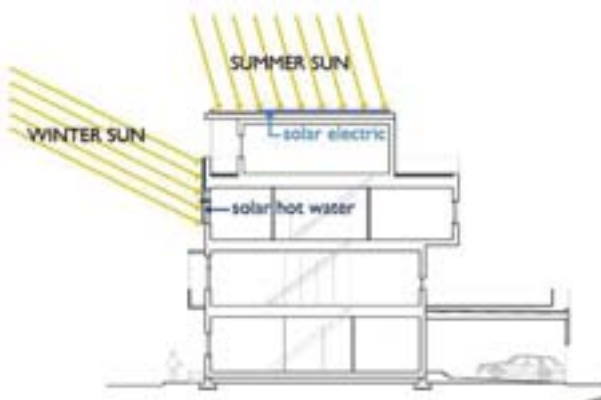


VERNAL EQUINOX 50'



















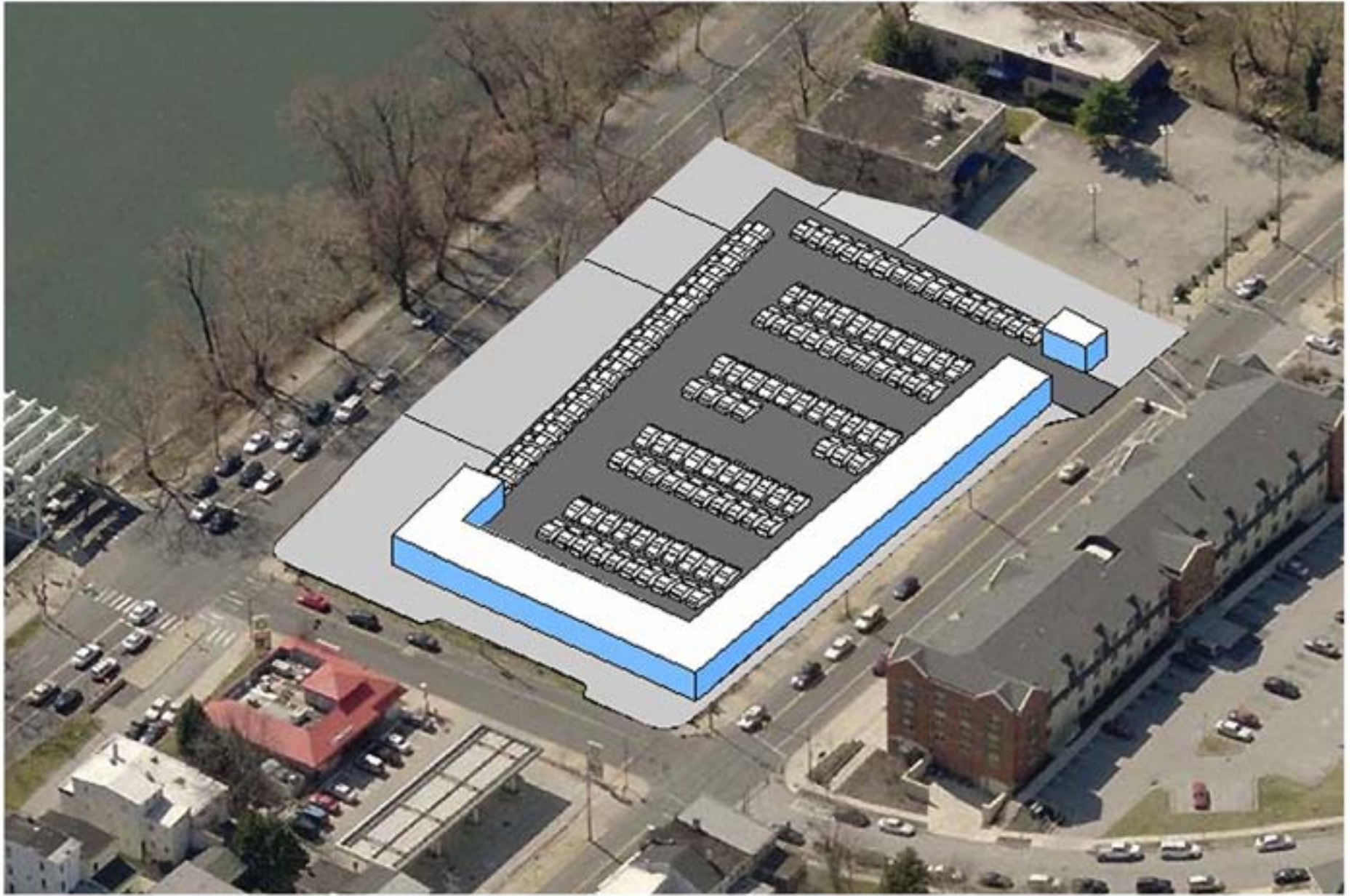




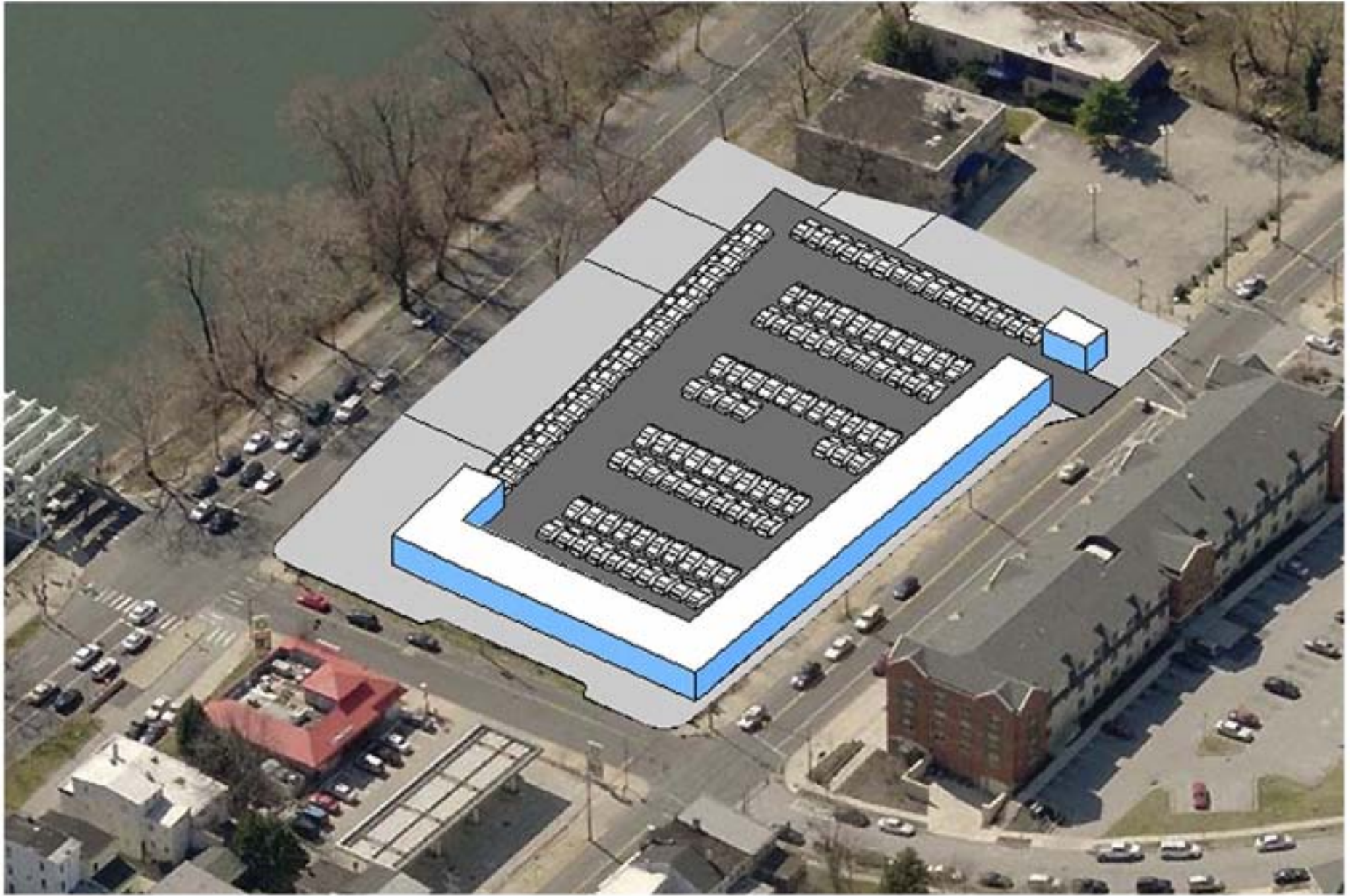






























- 1 BED FLAT
560 SQFT
- 2 BED FLAT
938 SQFT
- ELEVATOR
STAIR LOBBY

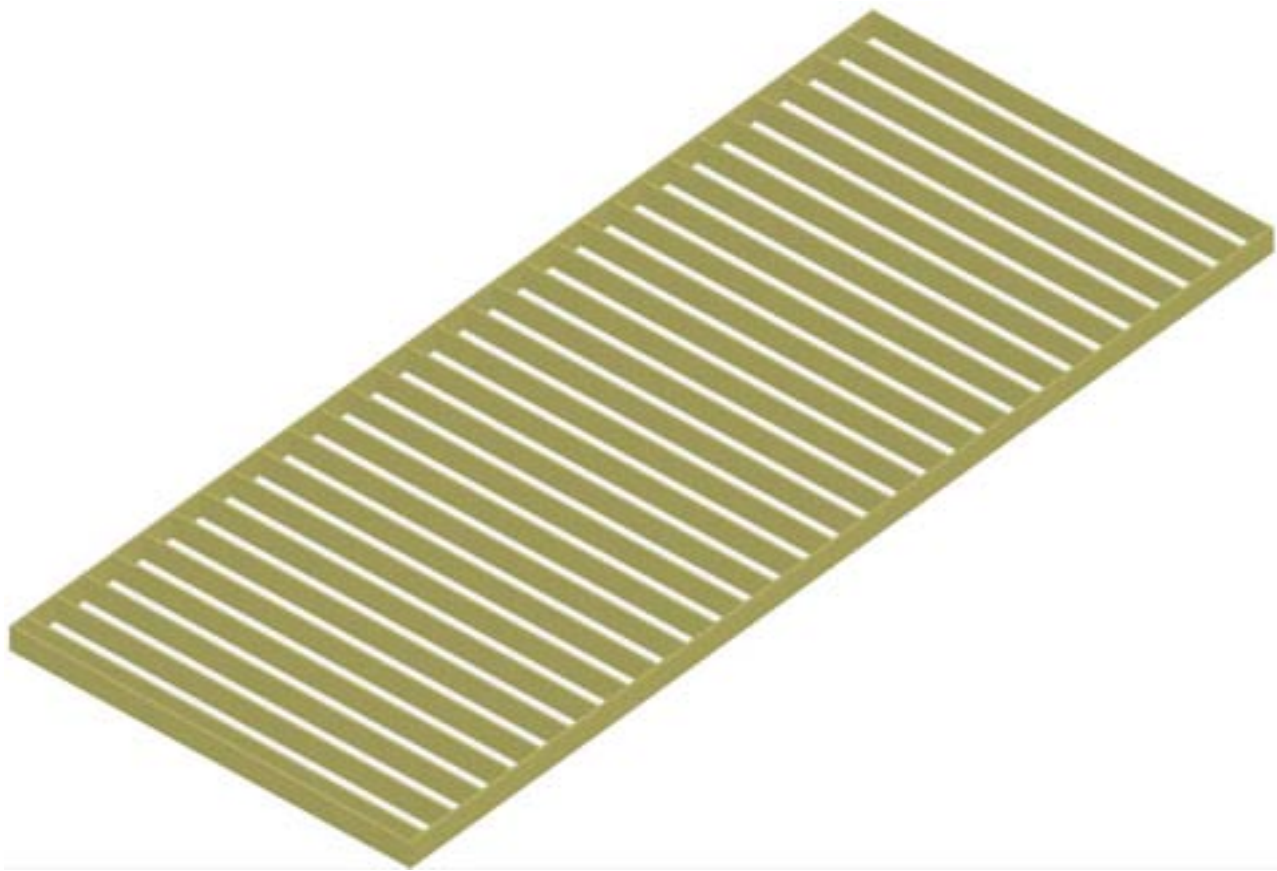


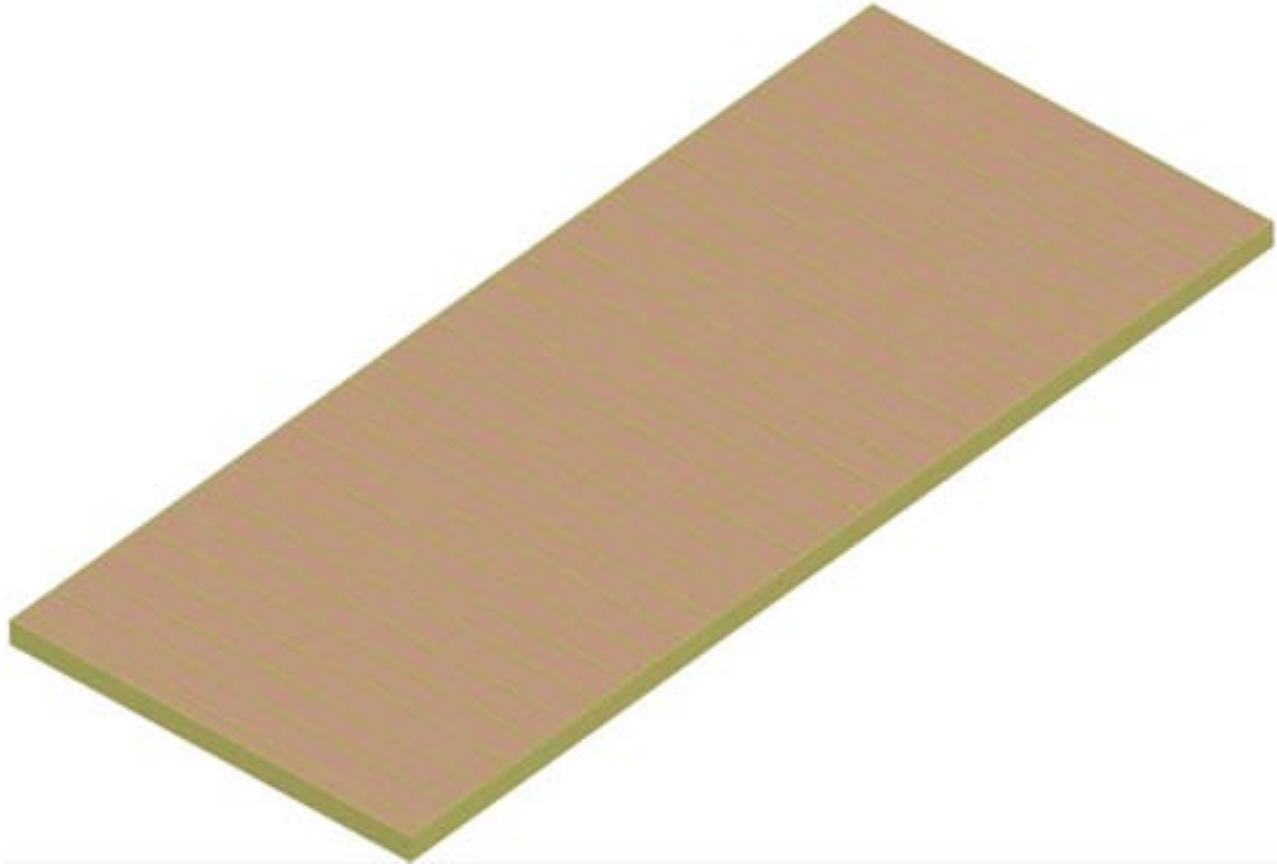
plan lvl_2

- 2 BED FLAT
918 SQFT
- 3 BED FLAT
1190 SQFT
- ELEVATOR/
STAIR LOBBY

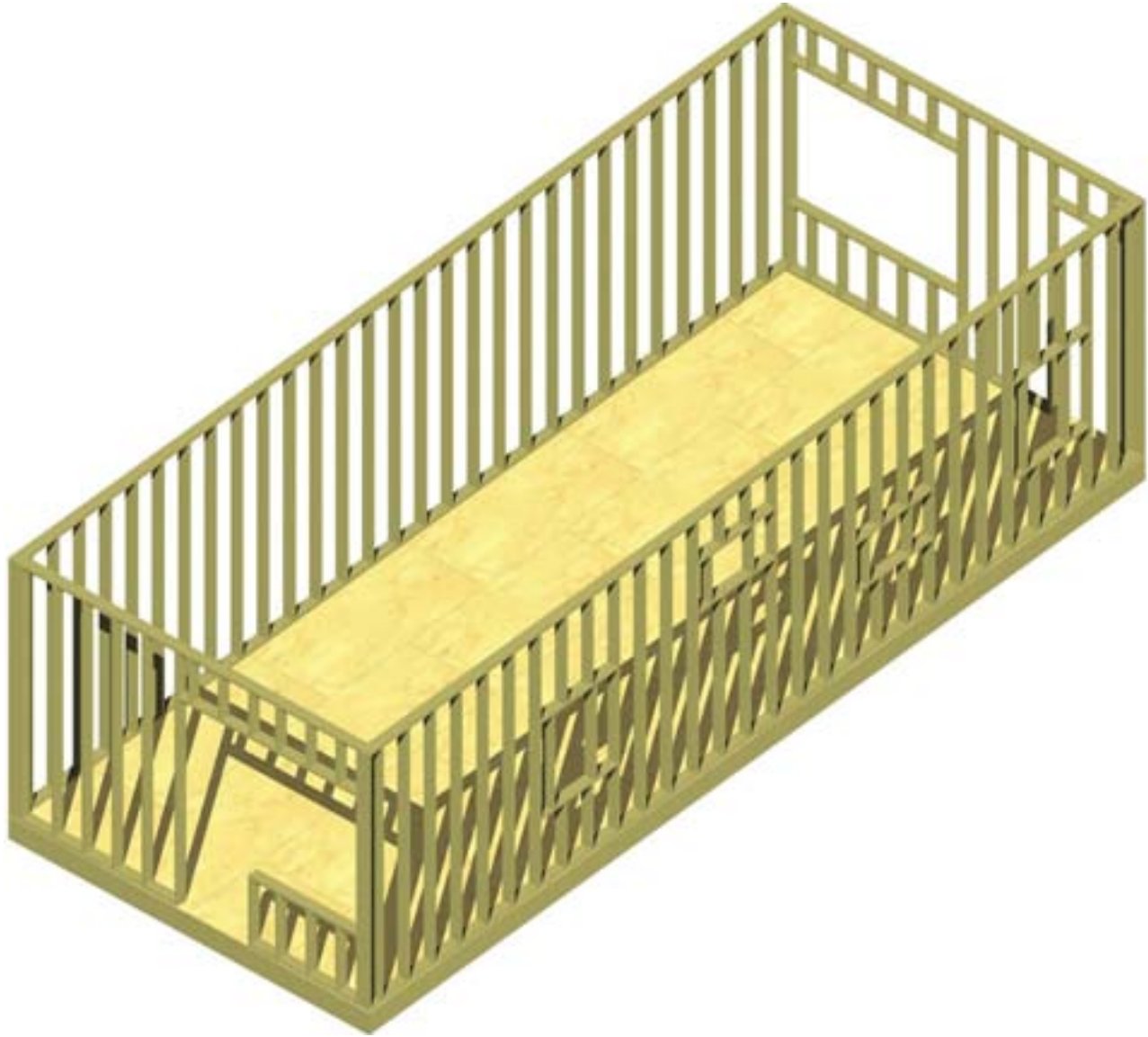


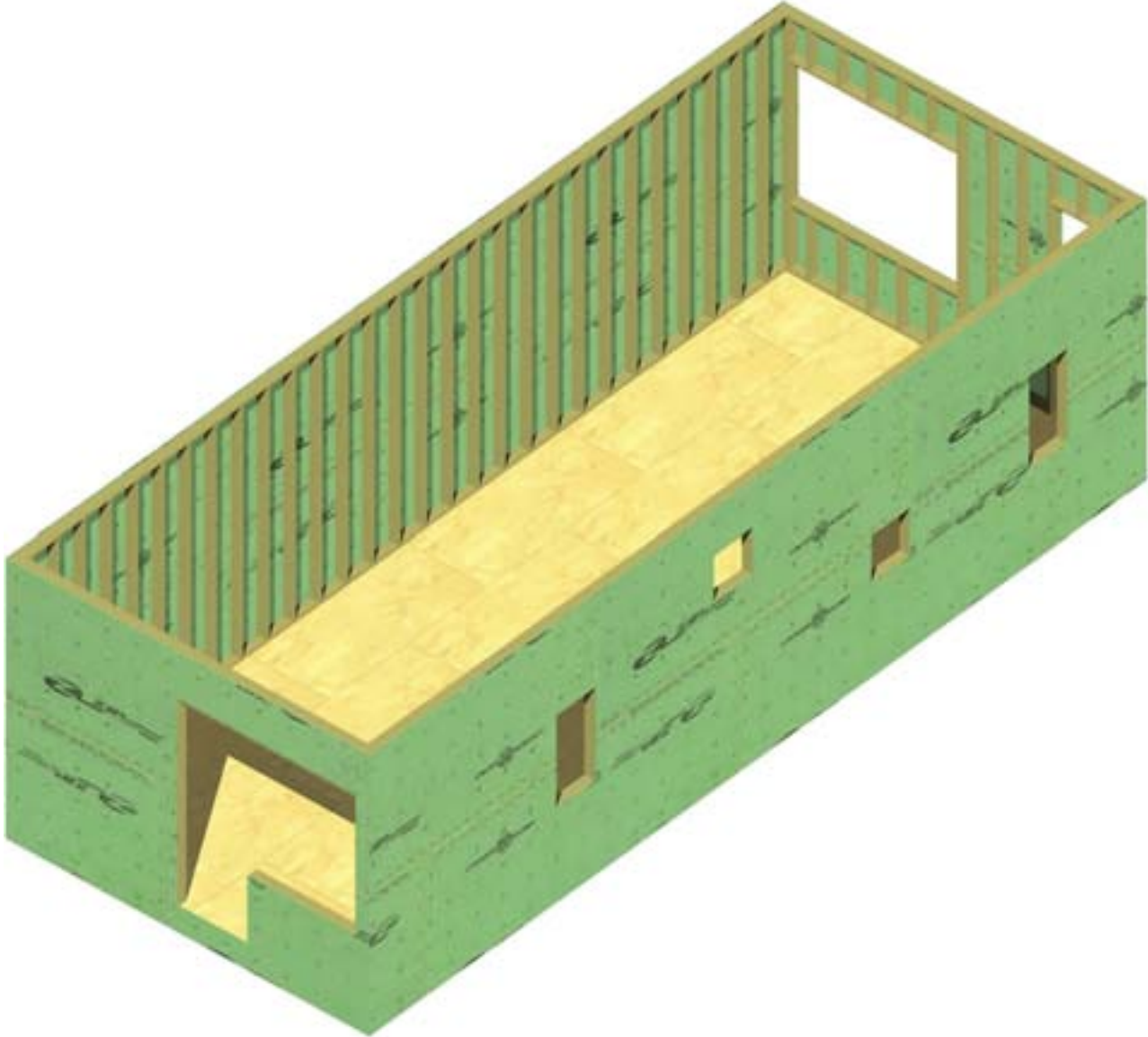
plan lvl_3/4

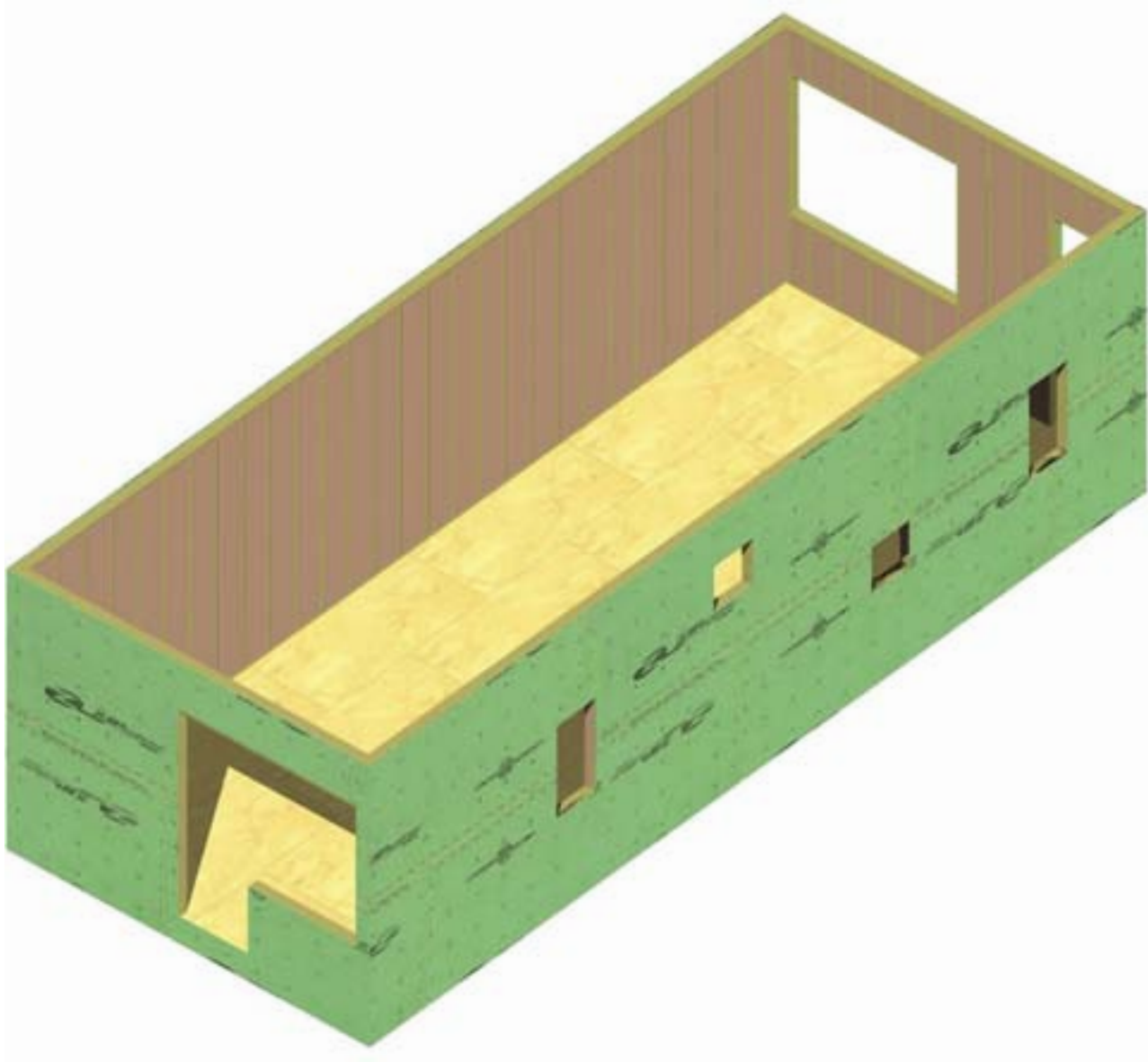


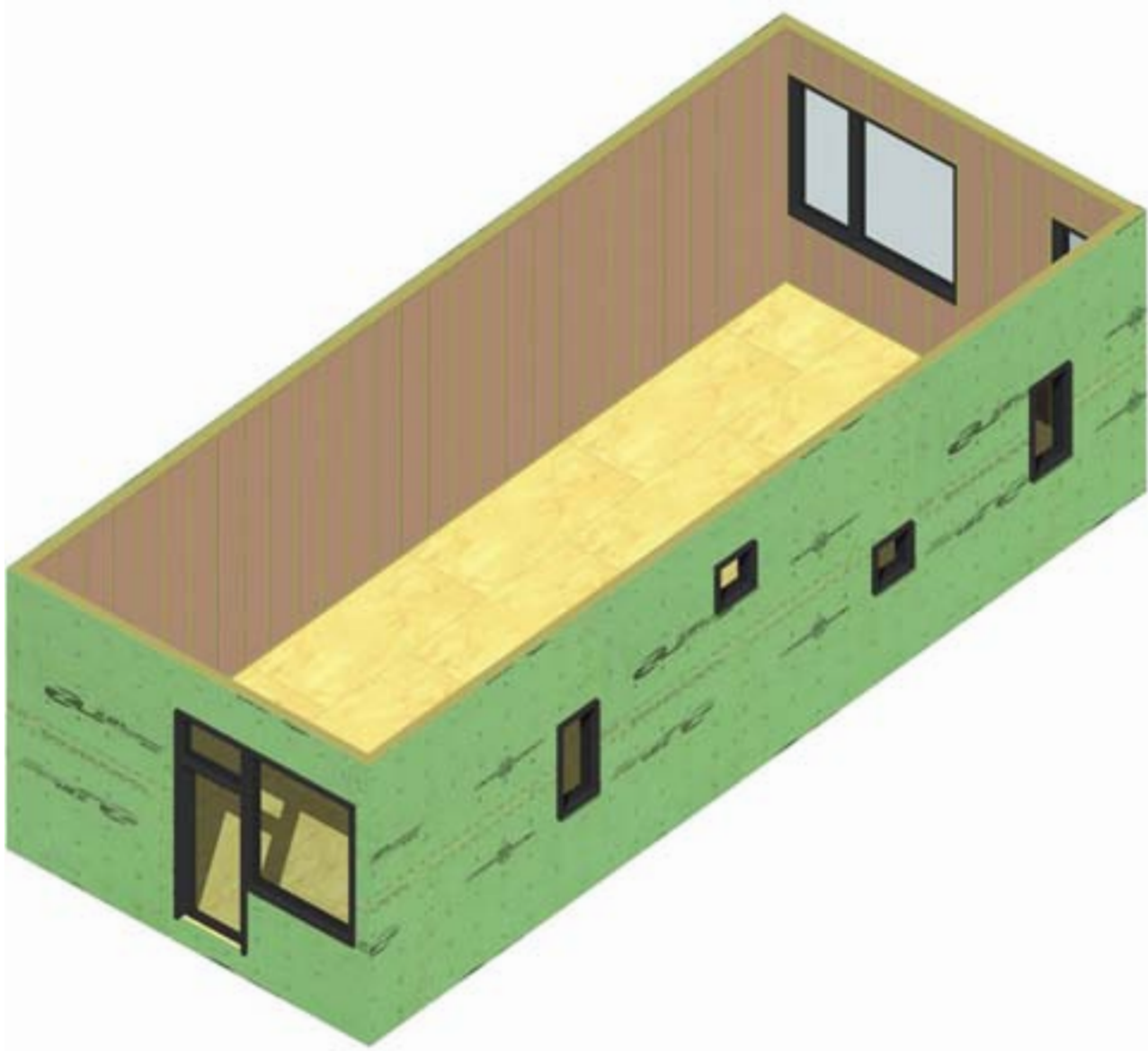


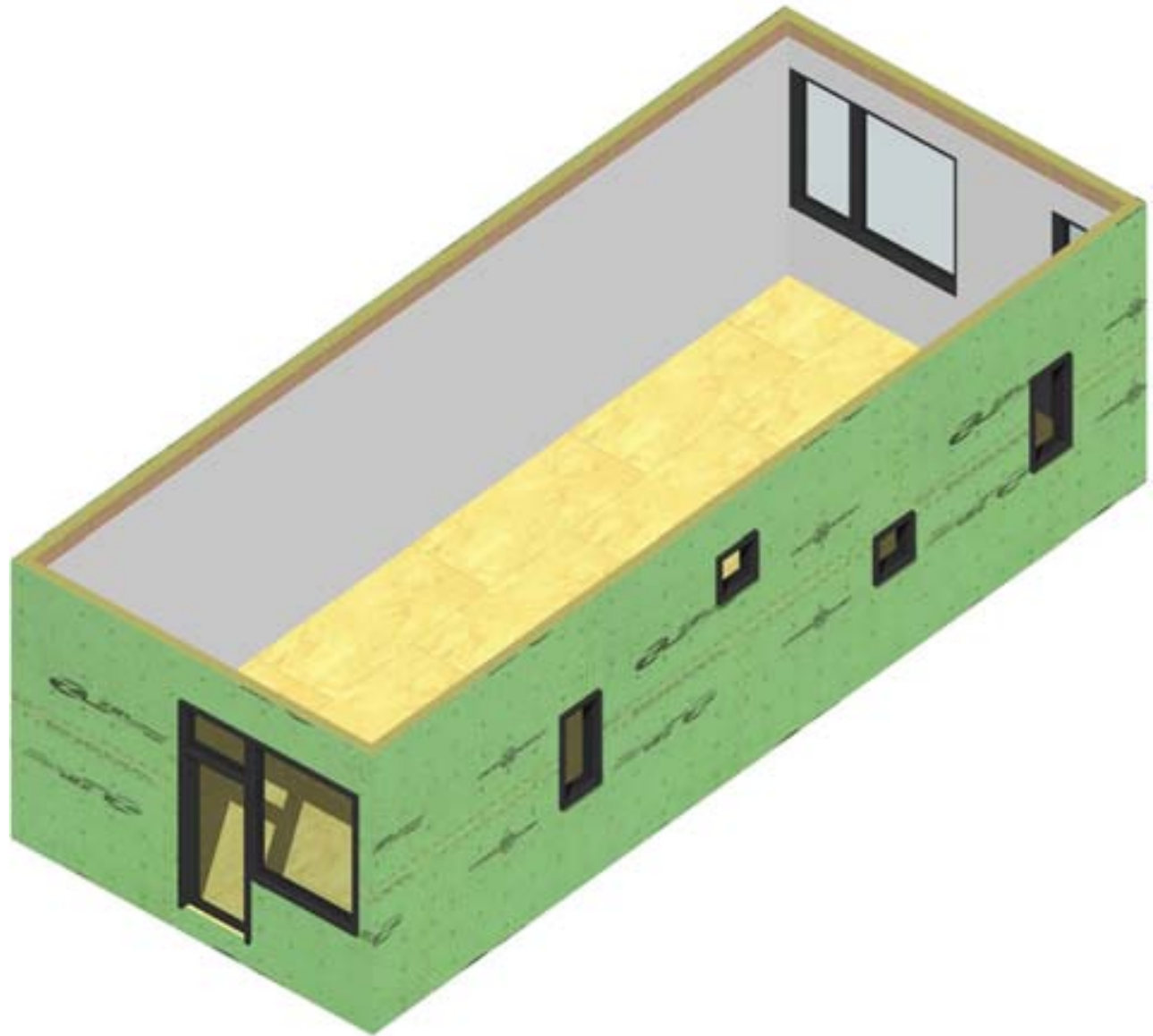


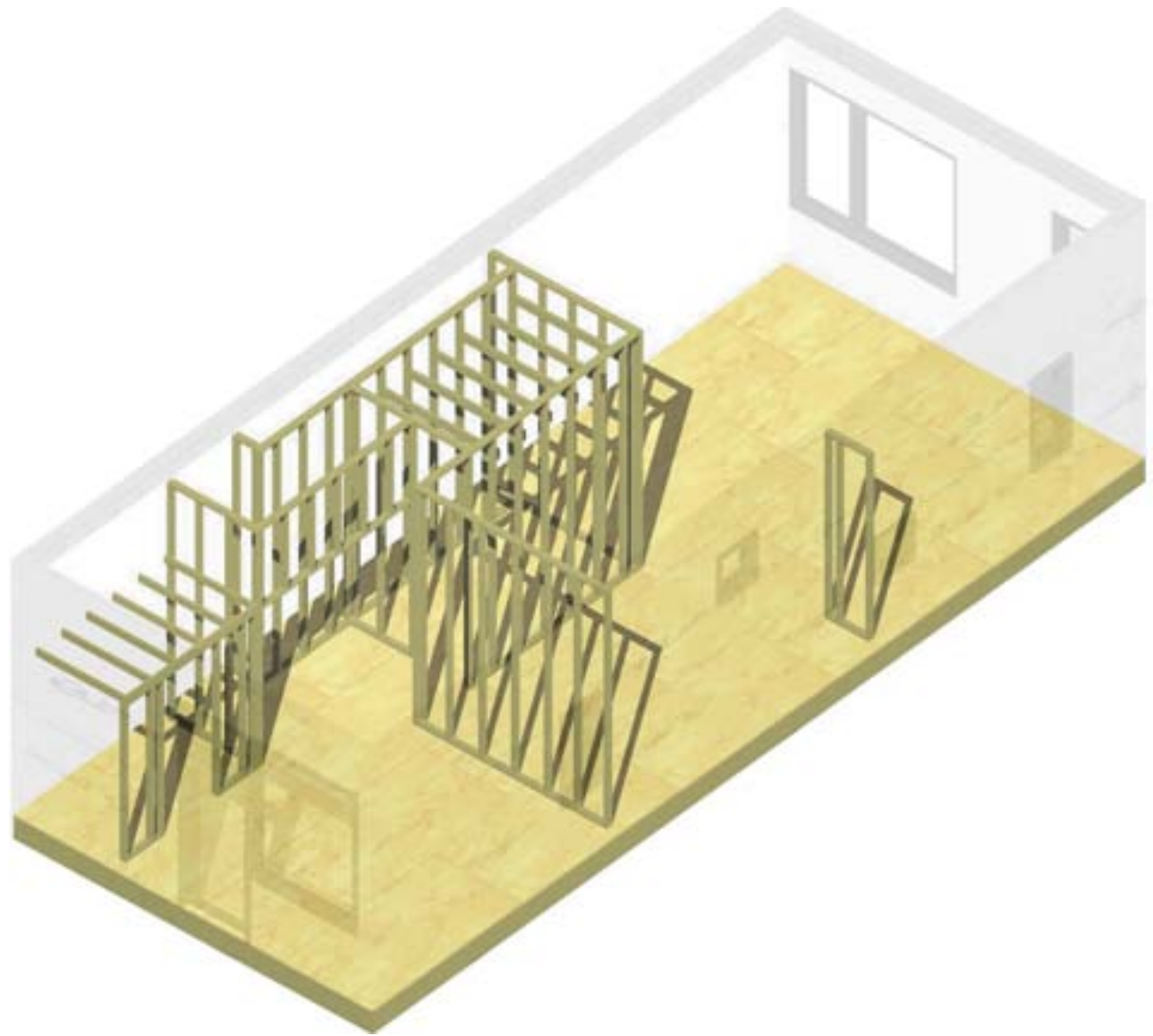


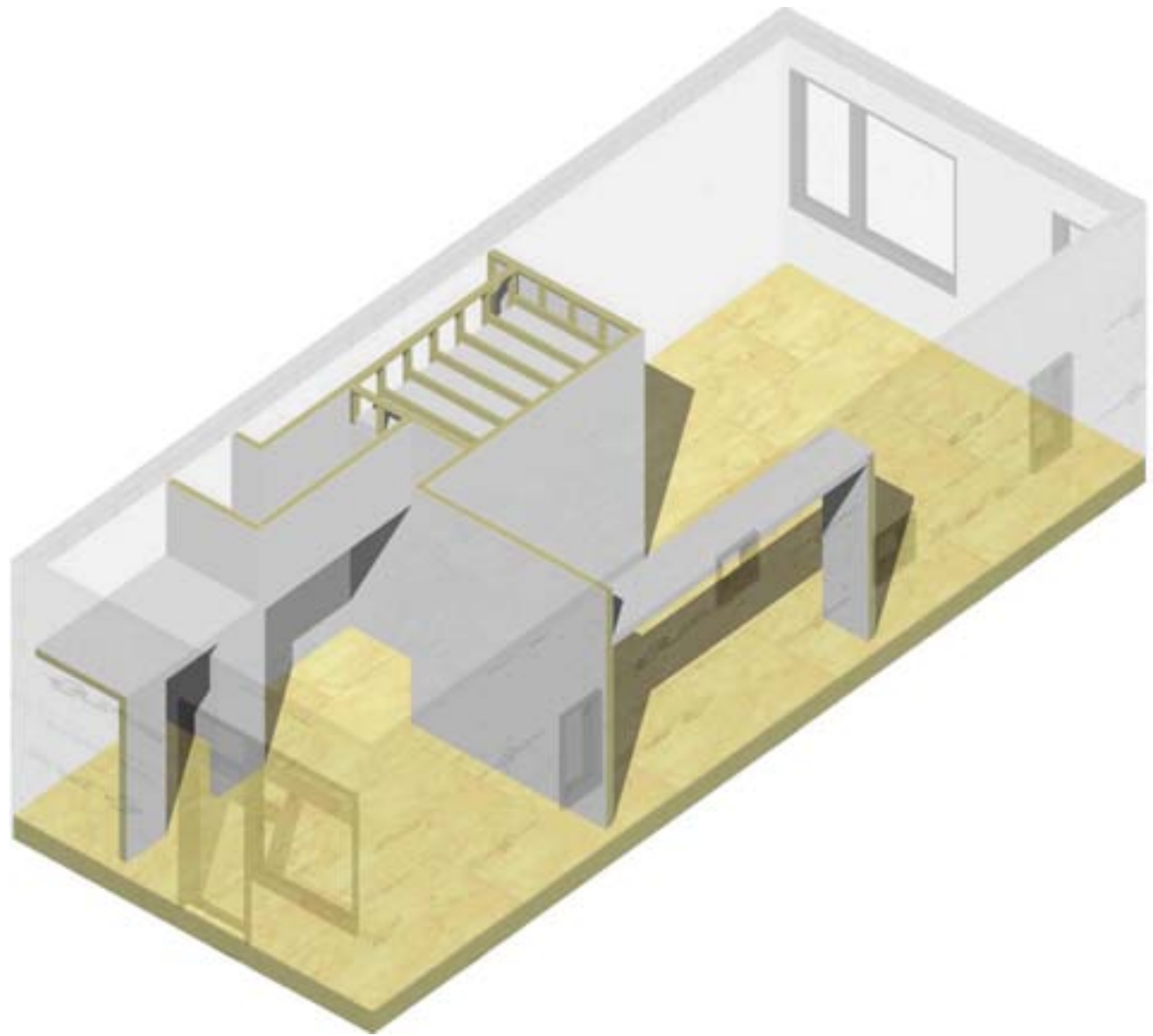


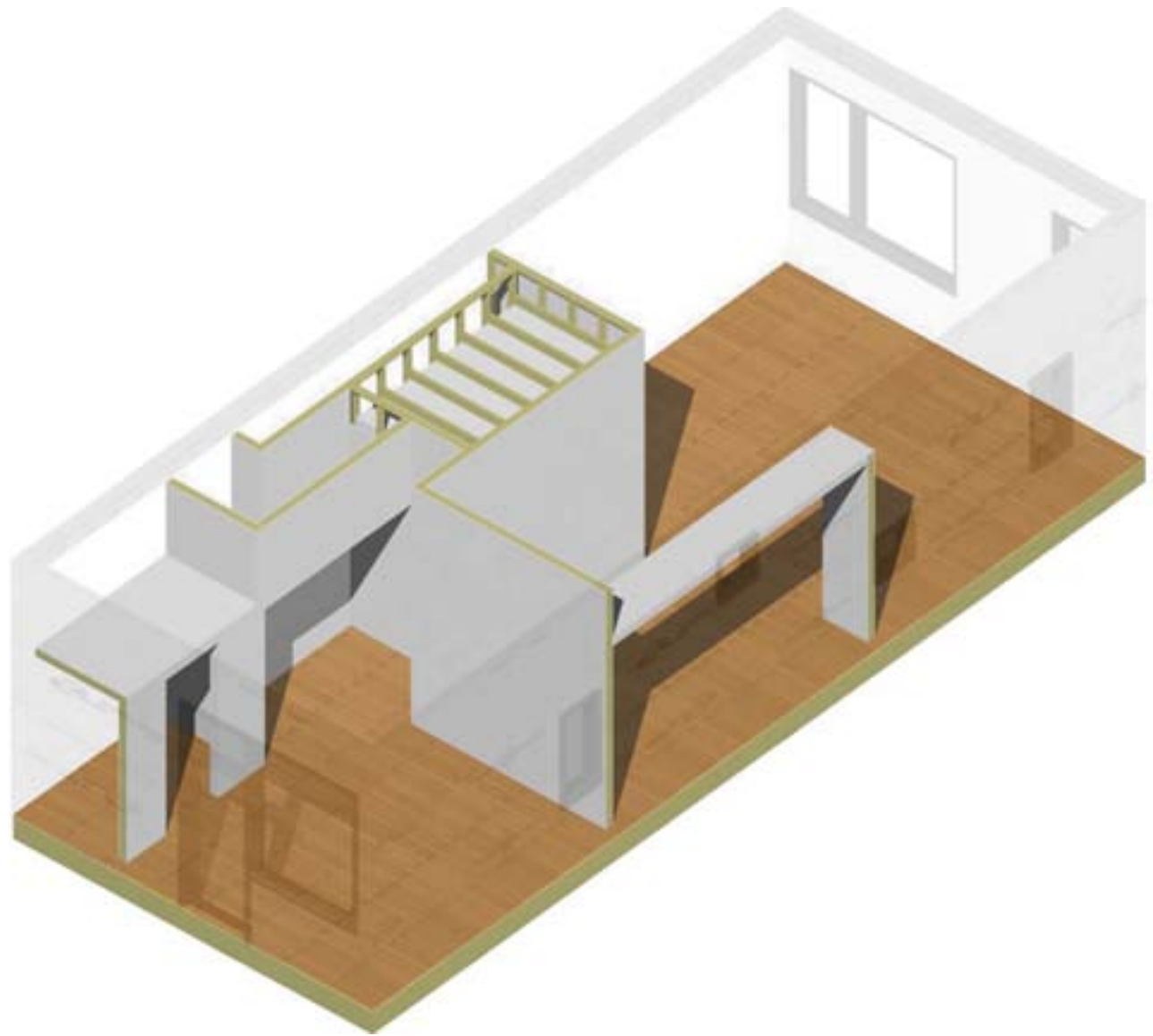


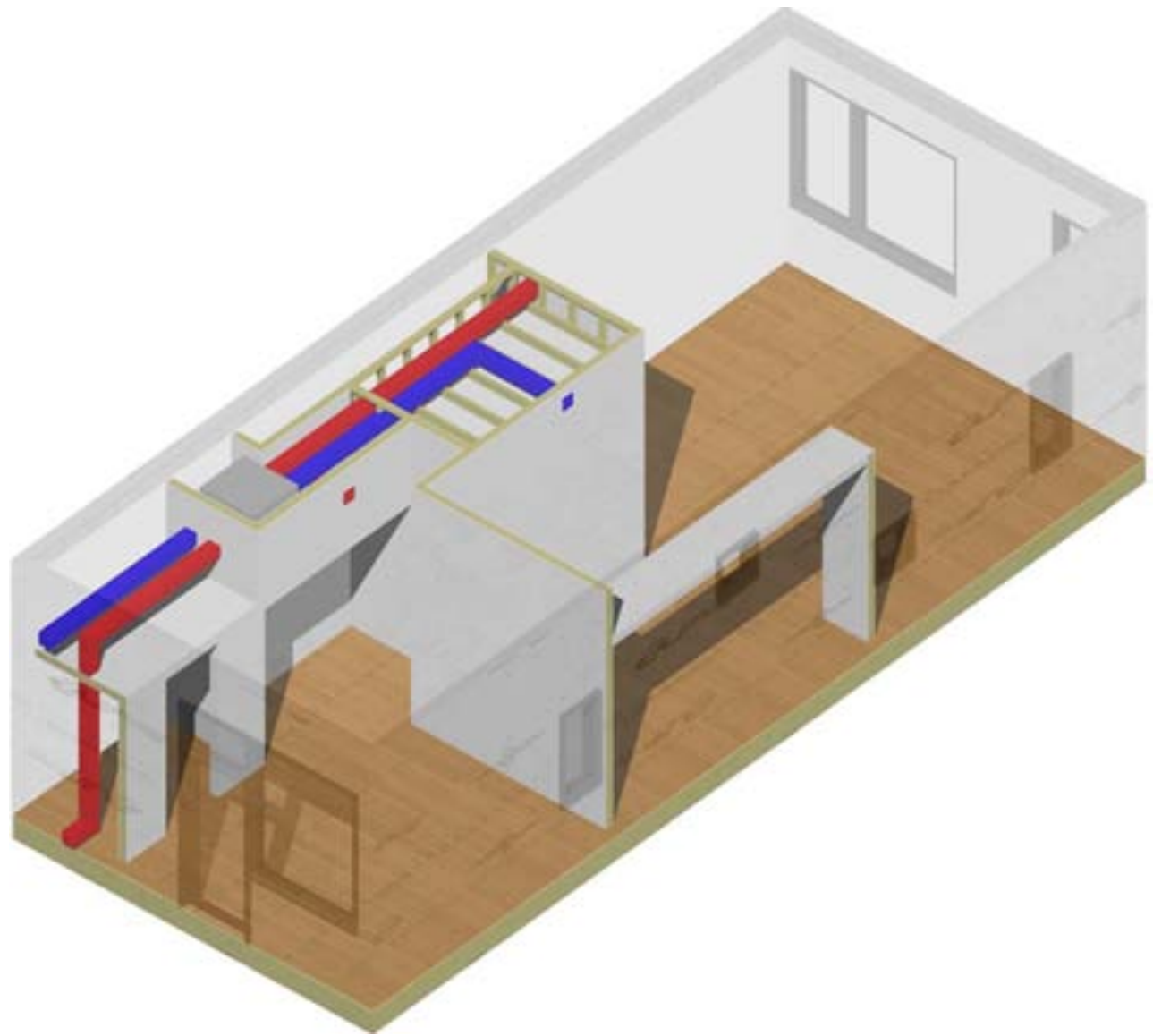


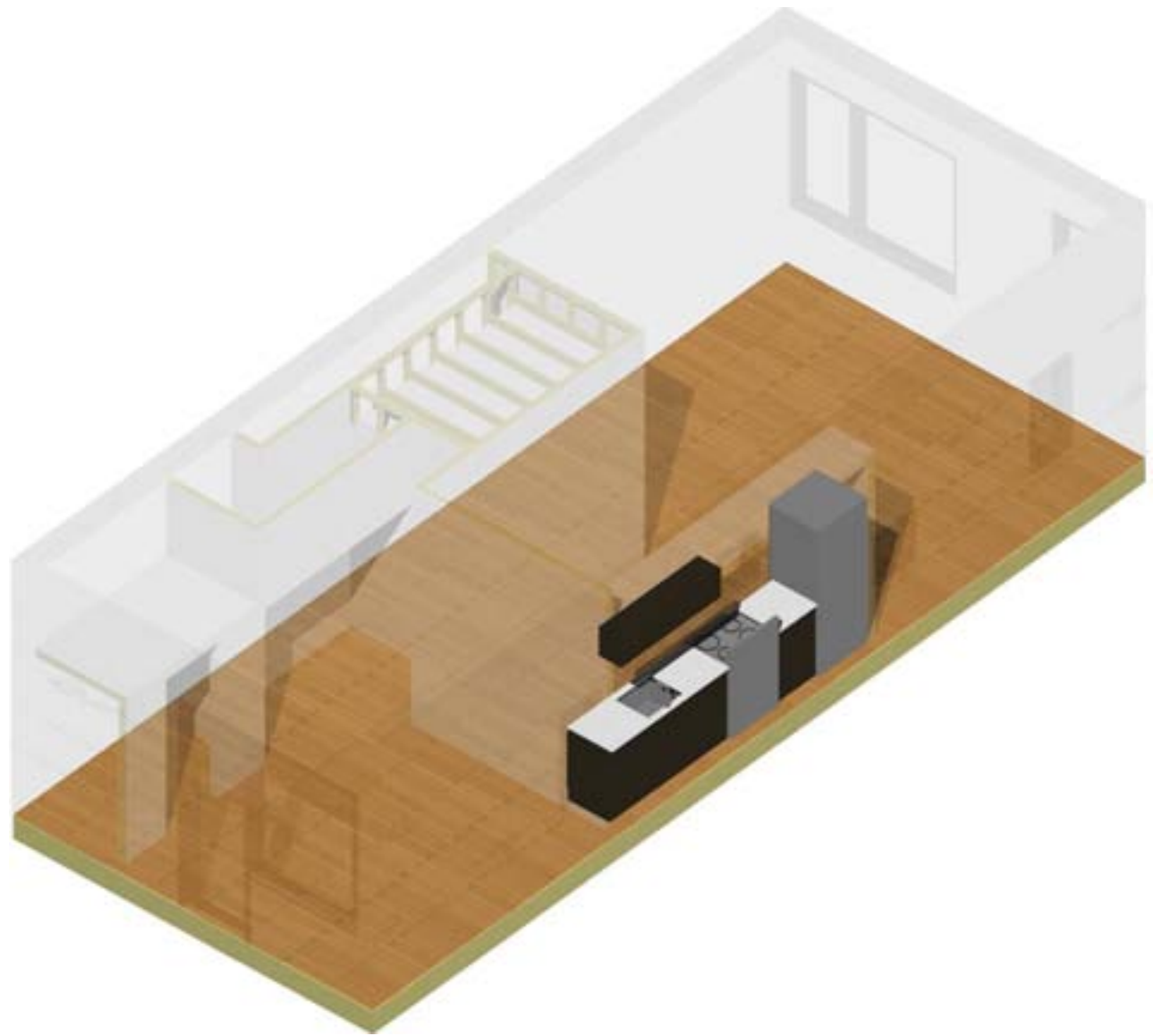






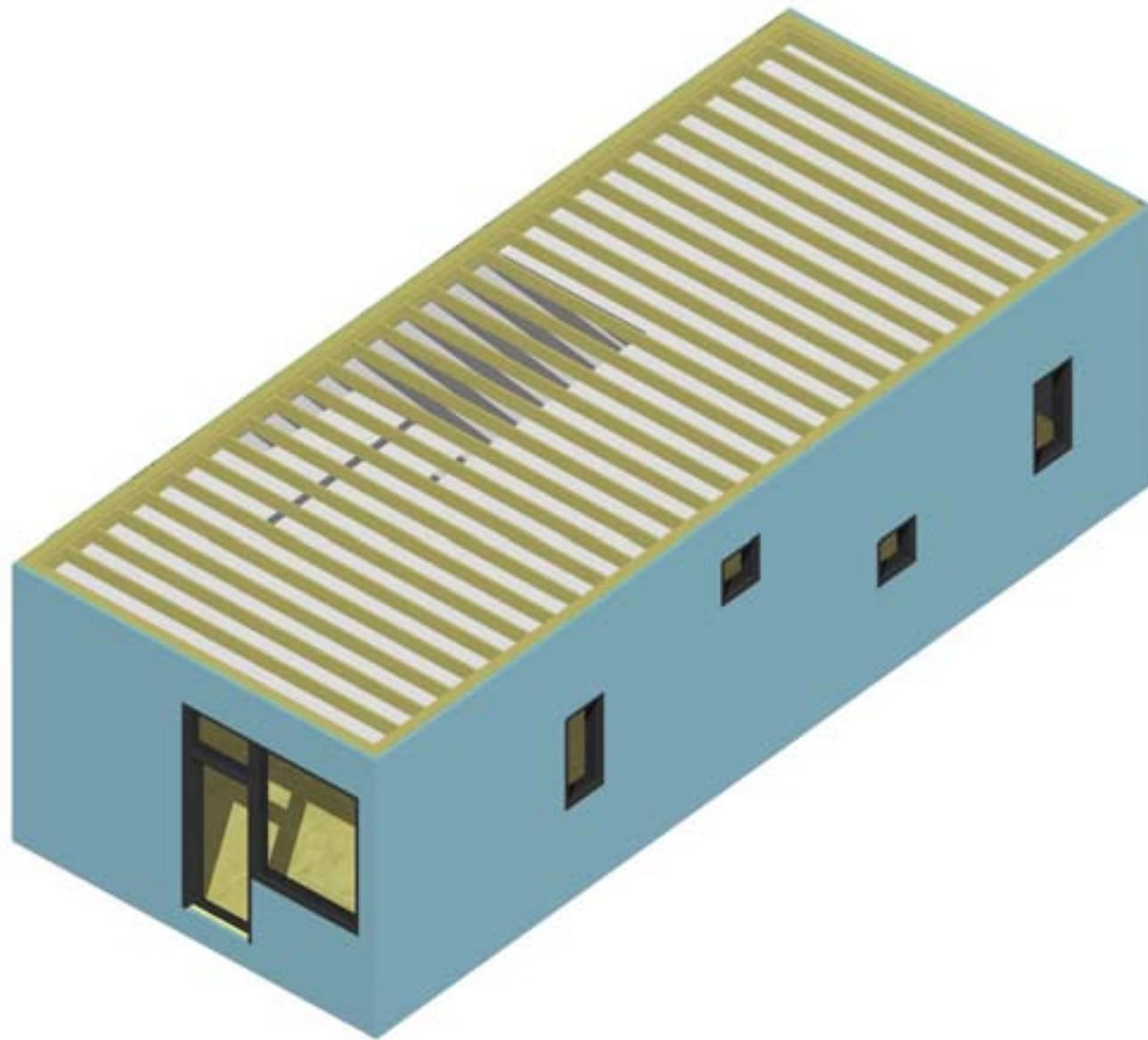


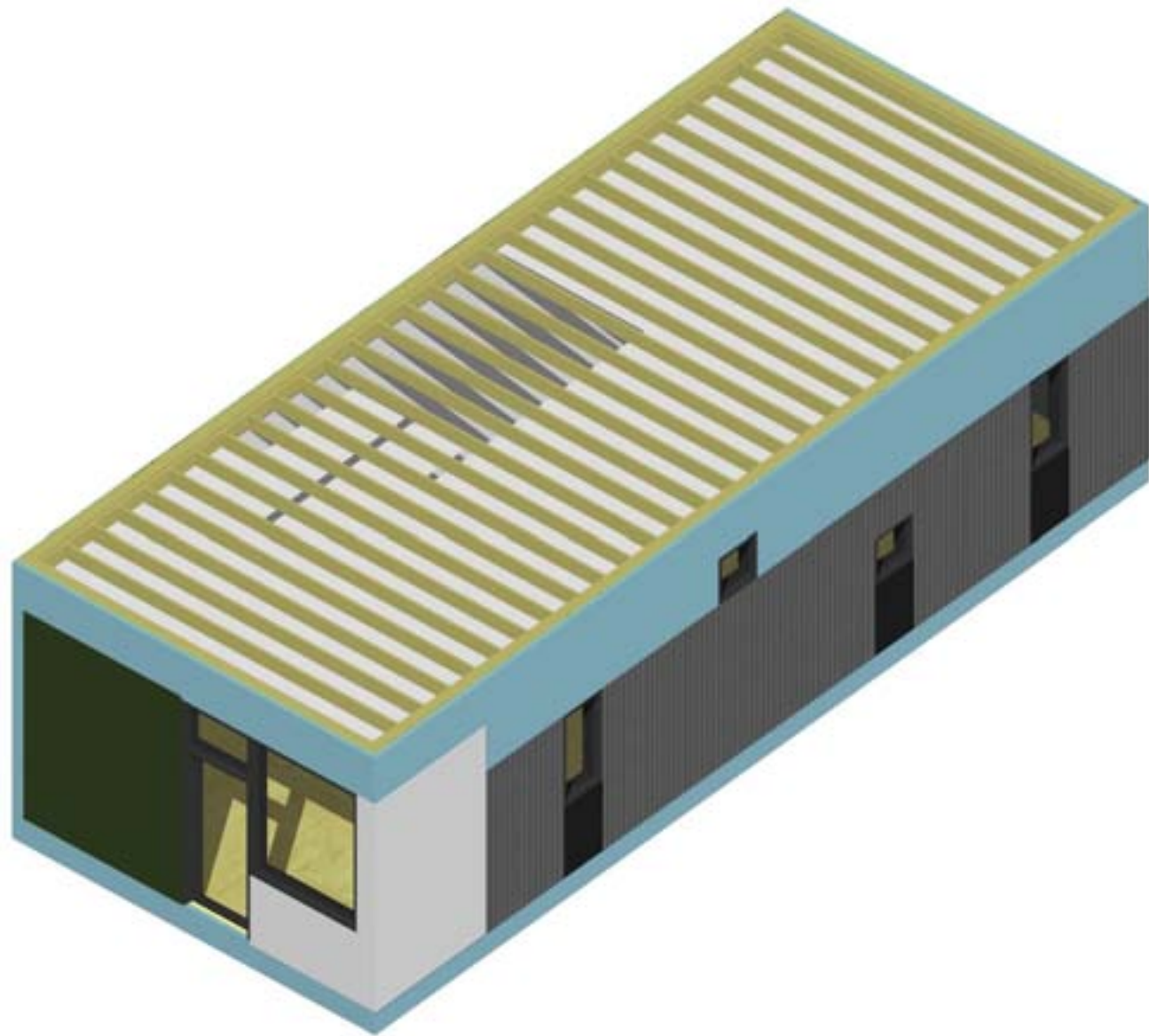
















3 BED
1190 SF



3 BED
1190 SF

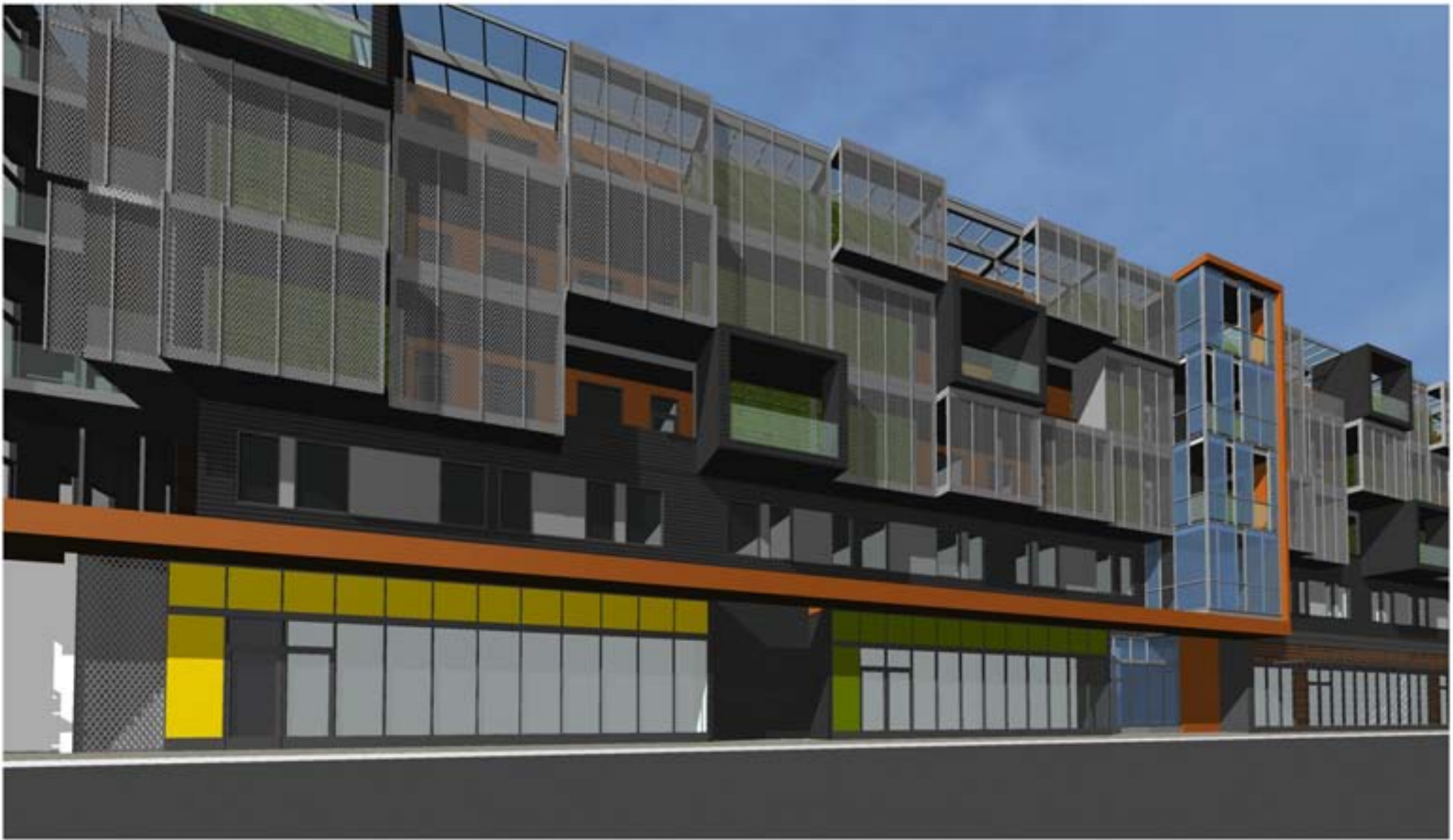


2 BED
938 SF



1 BED
560 SF













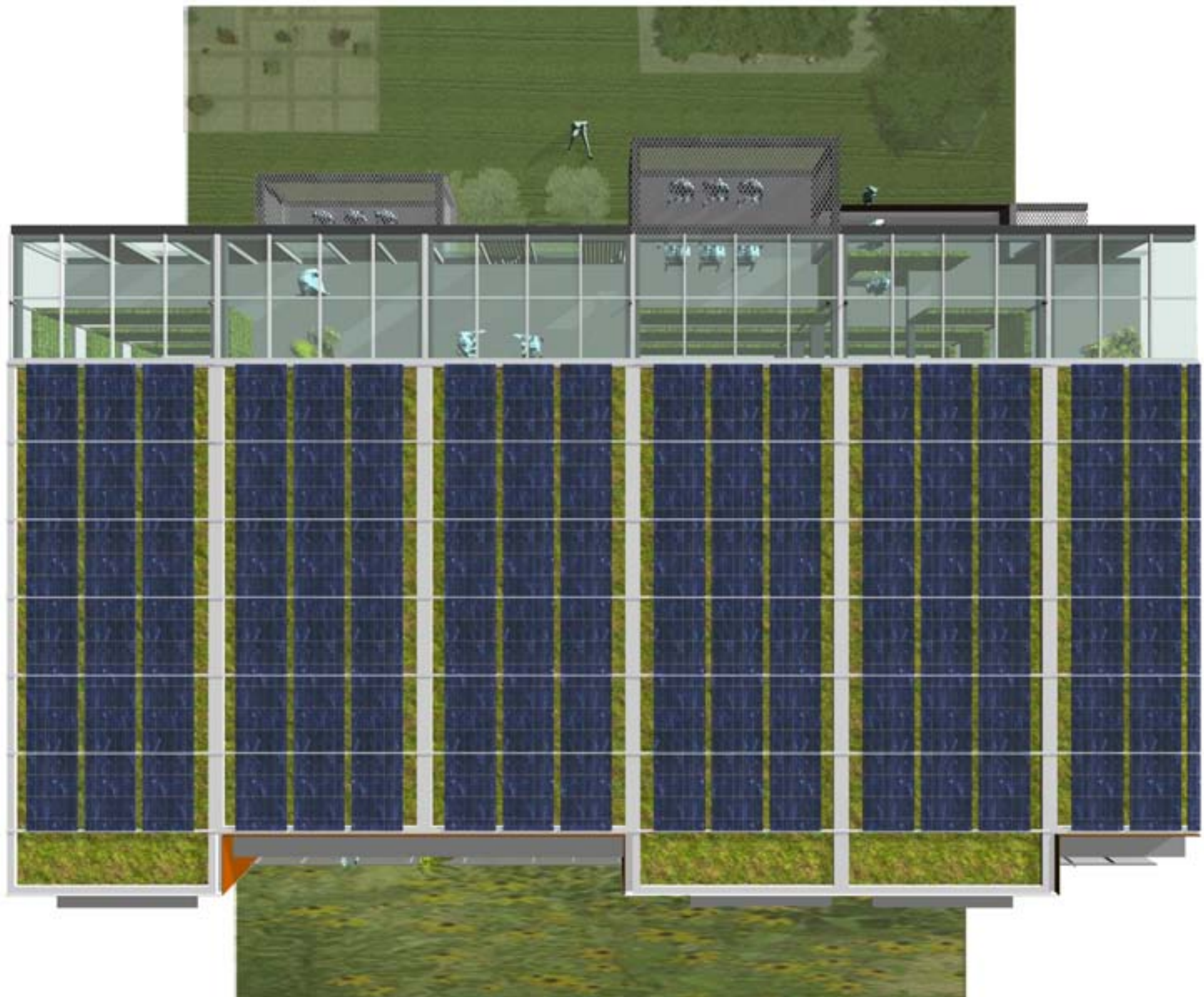


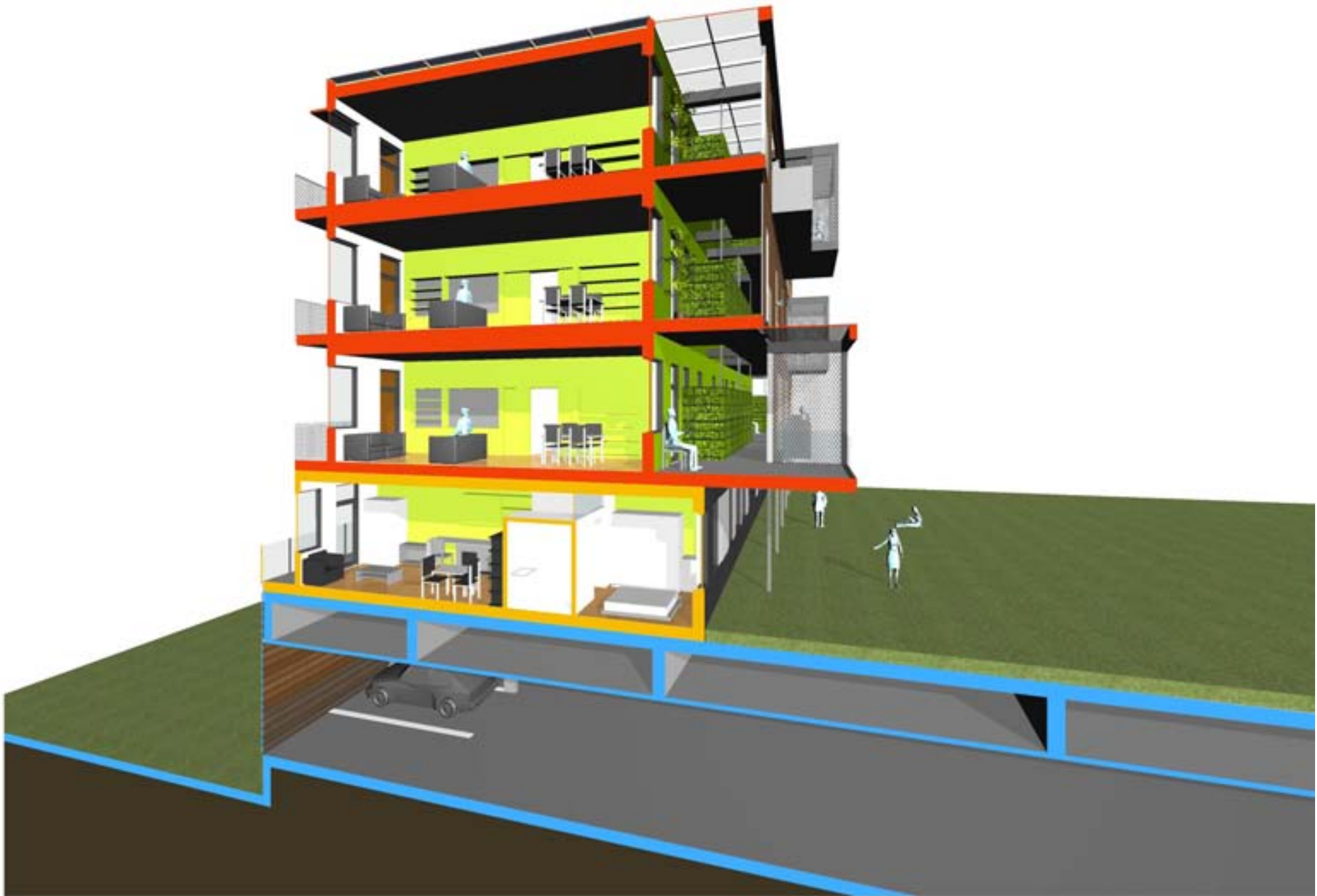














COMMUNITY GATEWAY

