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G.0.1

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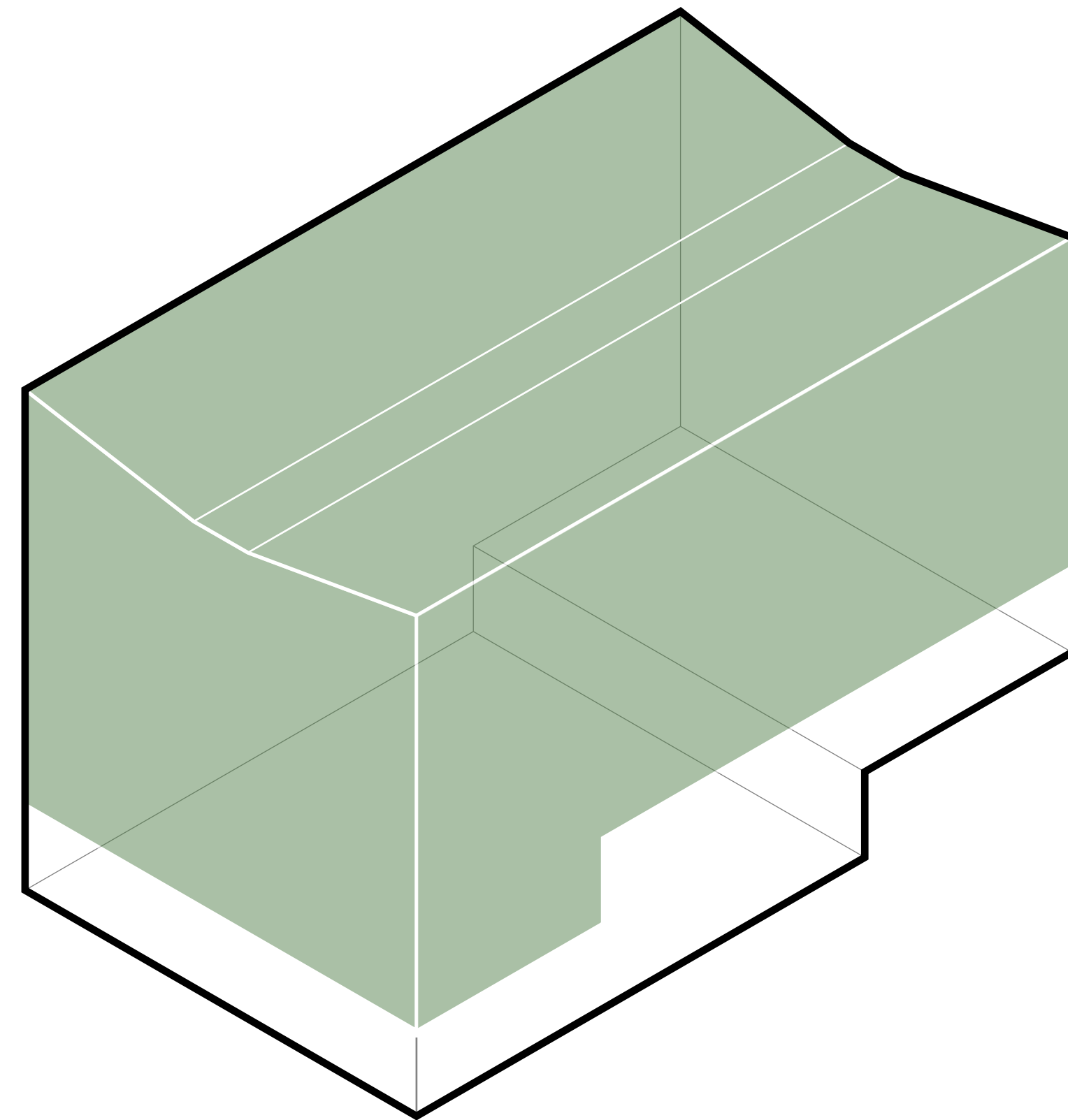
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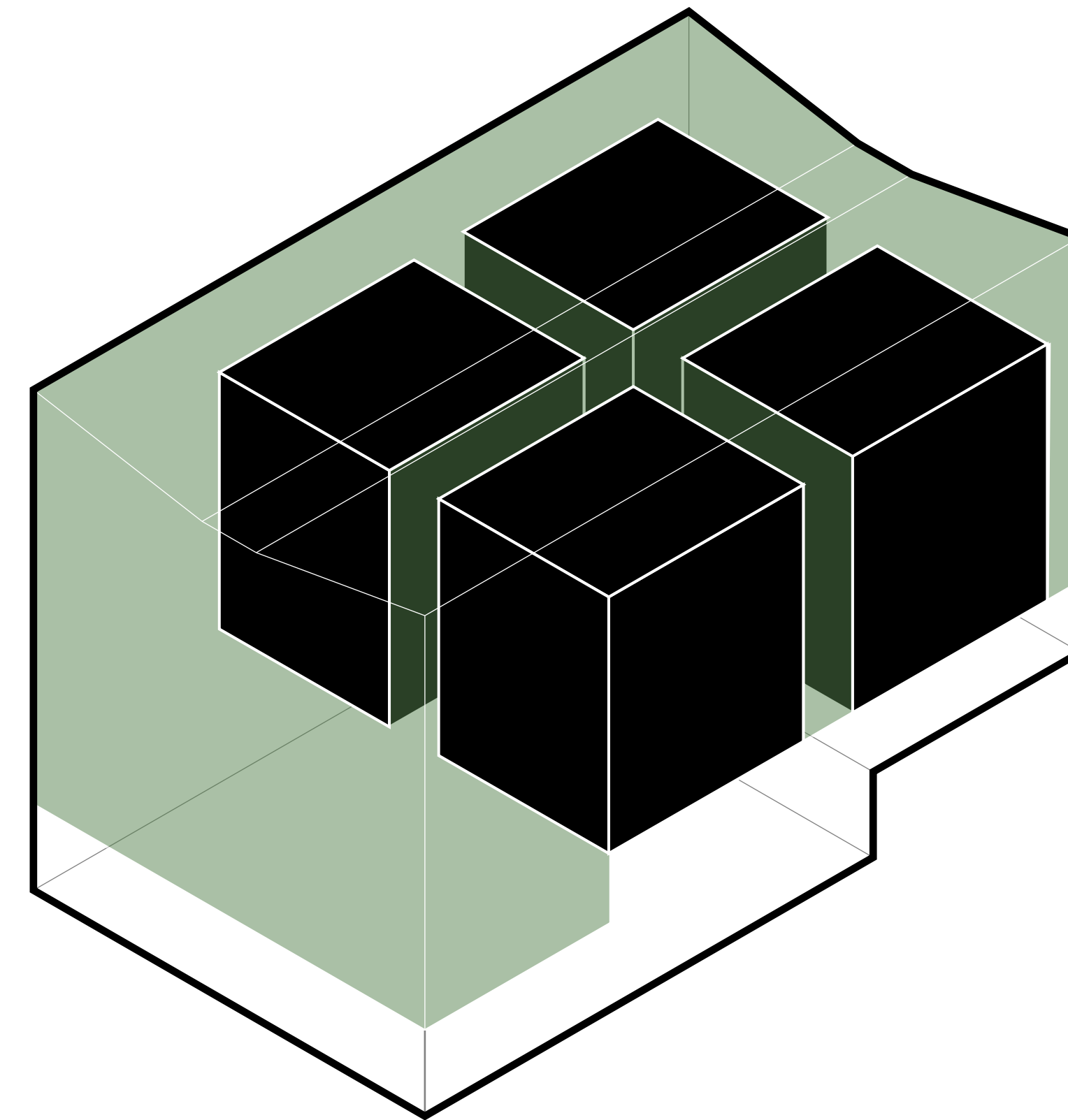
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Greenhouse



Residential in Greenhouse

CONCEPT

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Double Skin Facade

Bedrooms/Bathroom

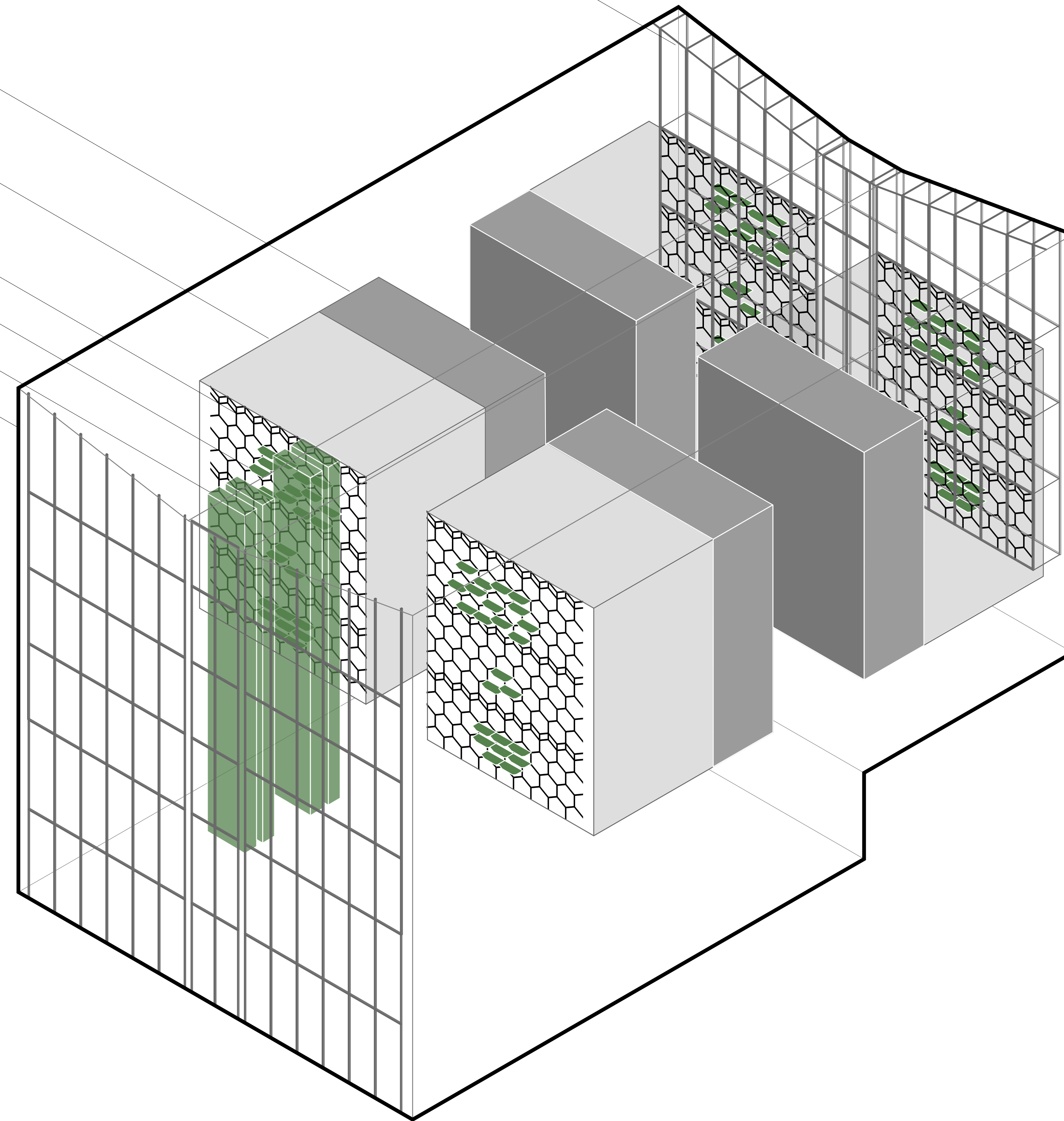
Kitchen/Living Room

Hexagonal Glazing

Planters

Vertical Garden

Curtain Wall



Layers for Privacy

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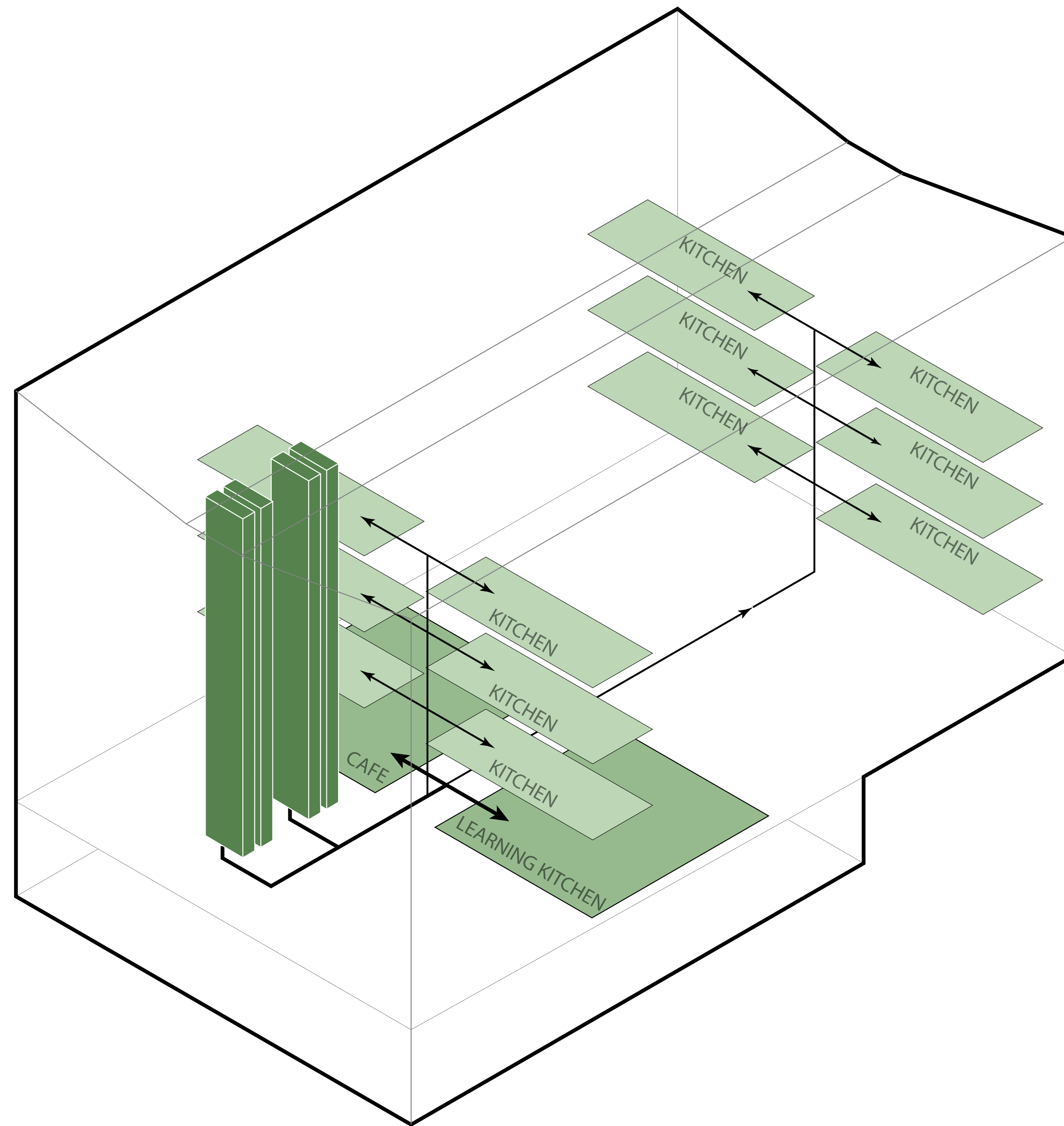
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Harvested Crop Circulation



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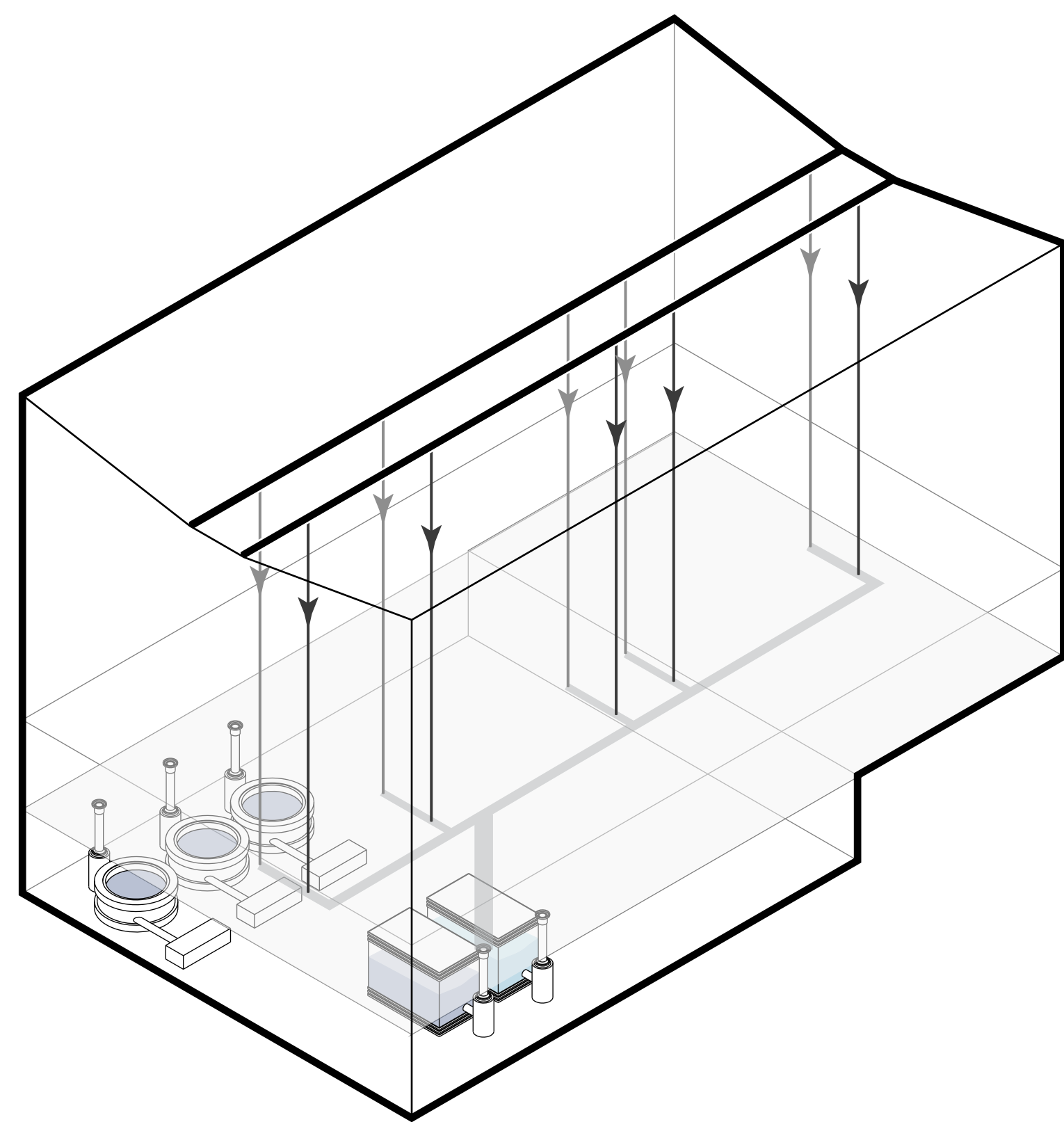
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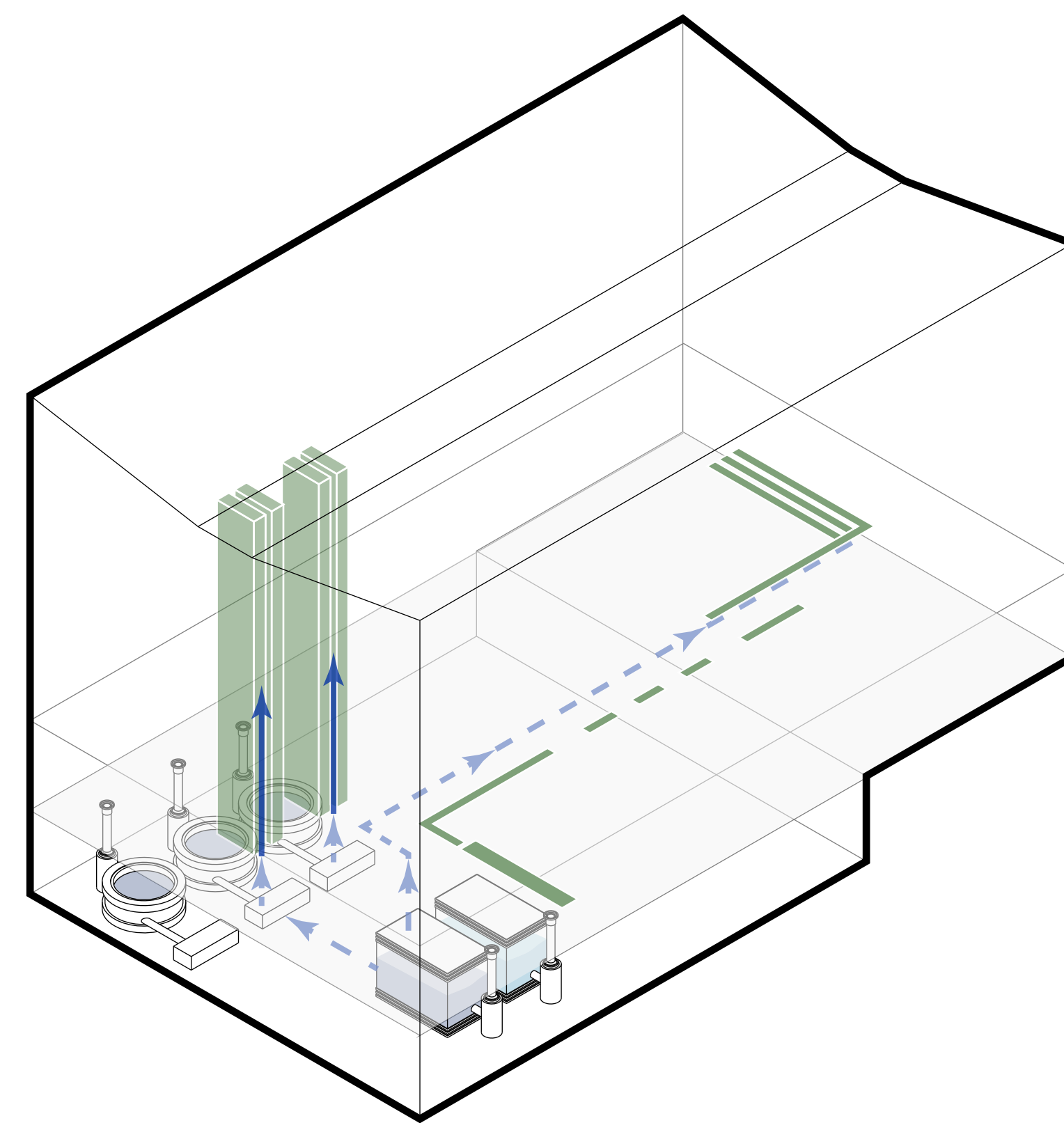
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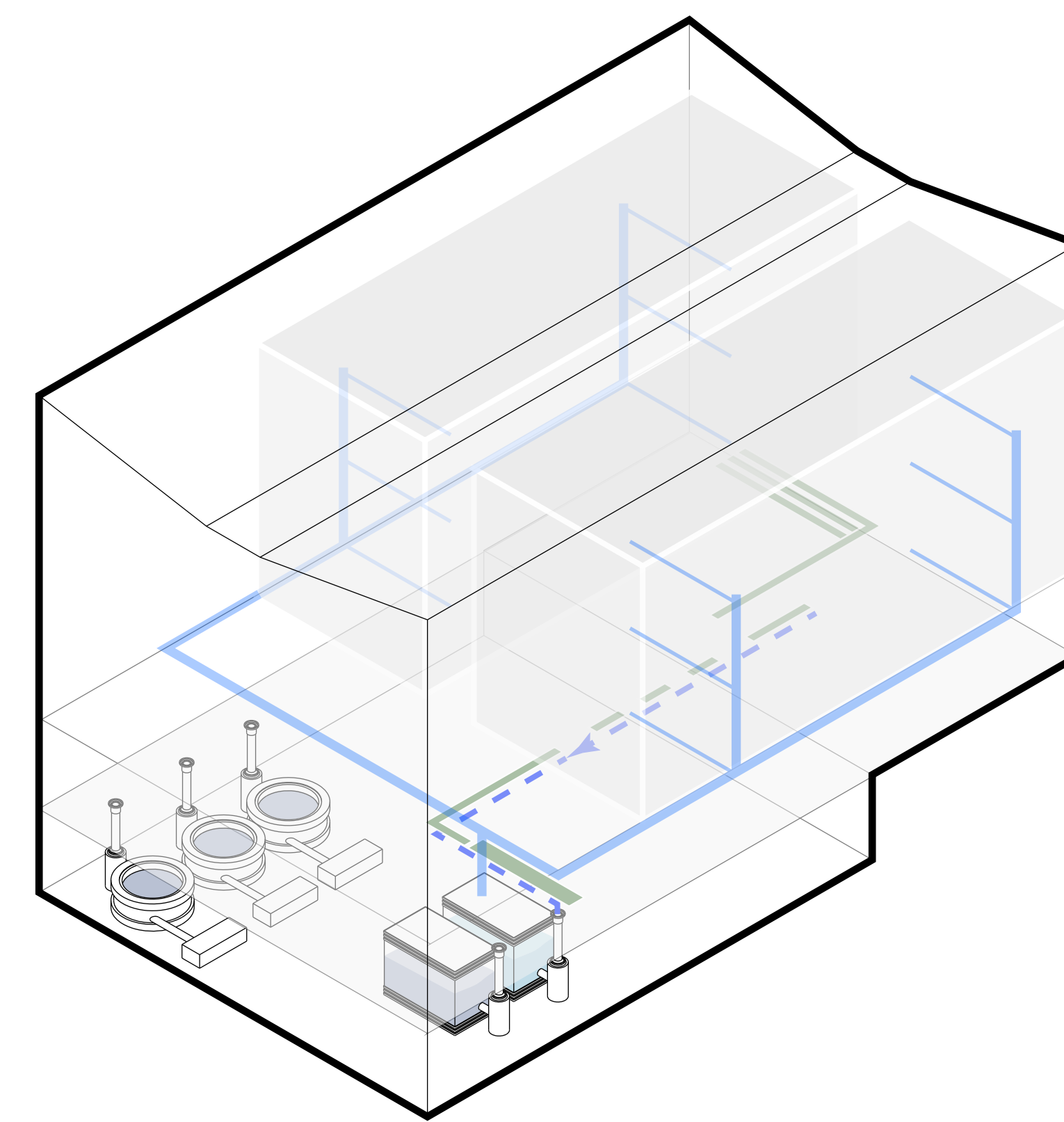
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Water Collection



Grey Water Usage



Potable Water Usage

Water

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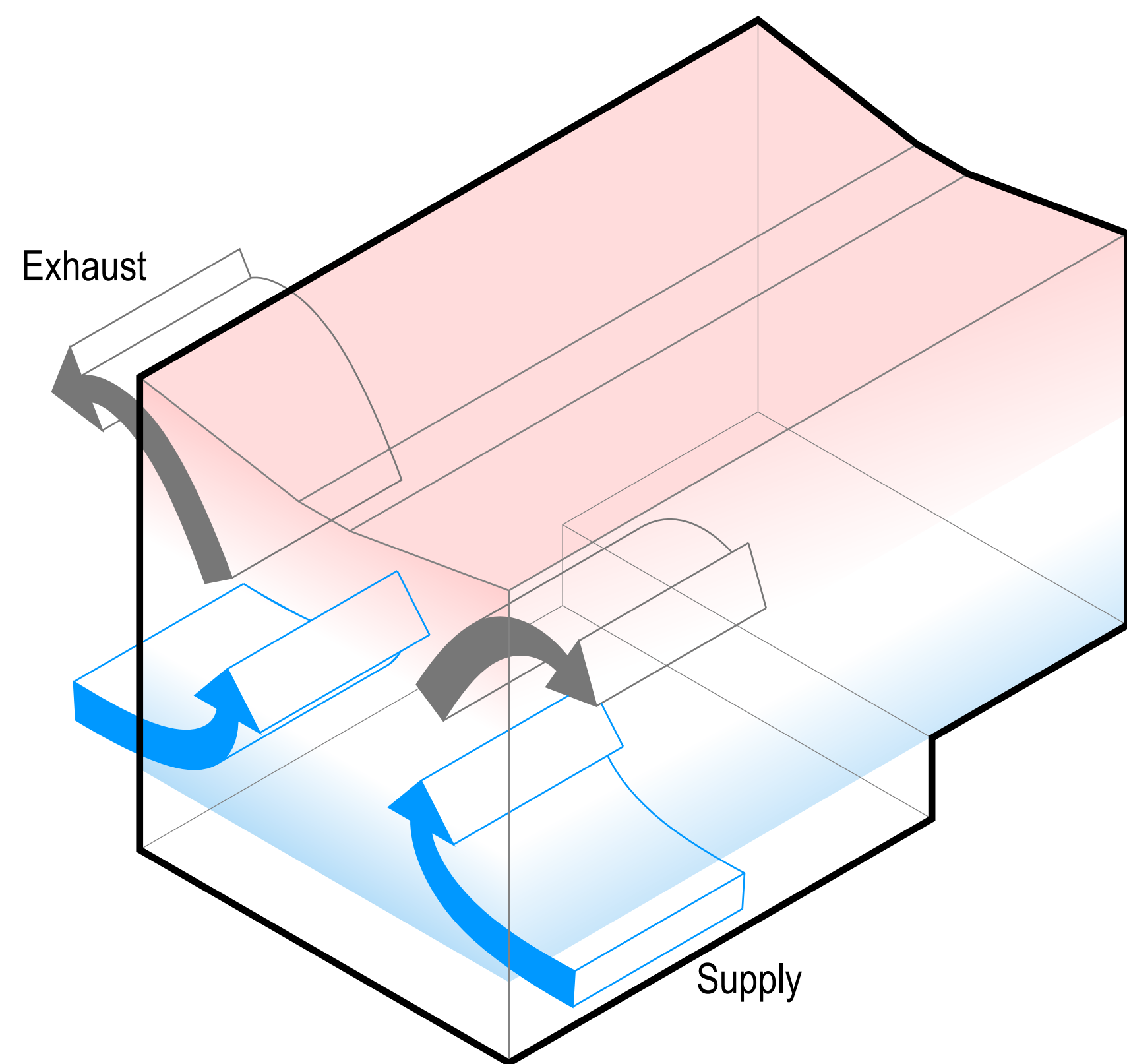
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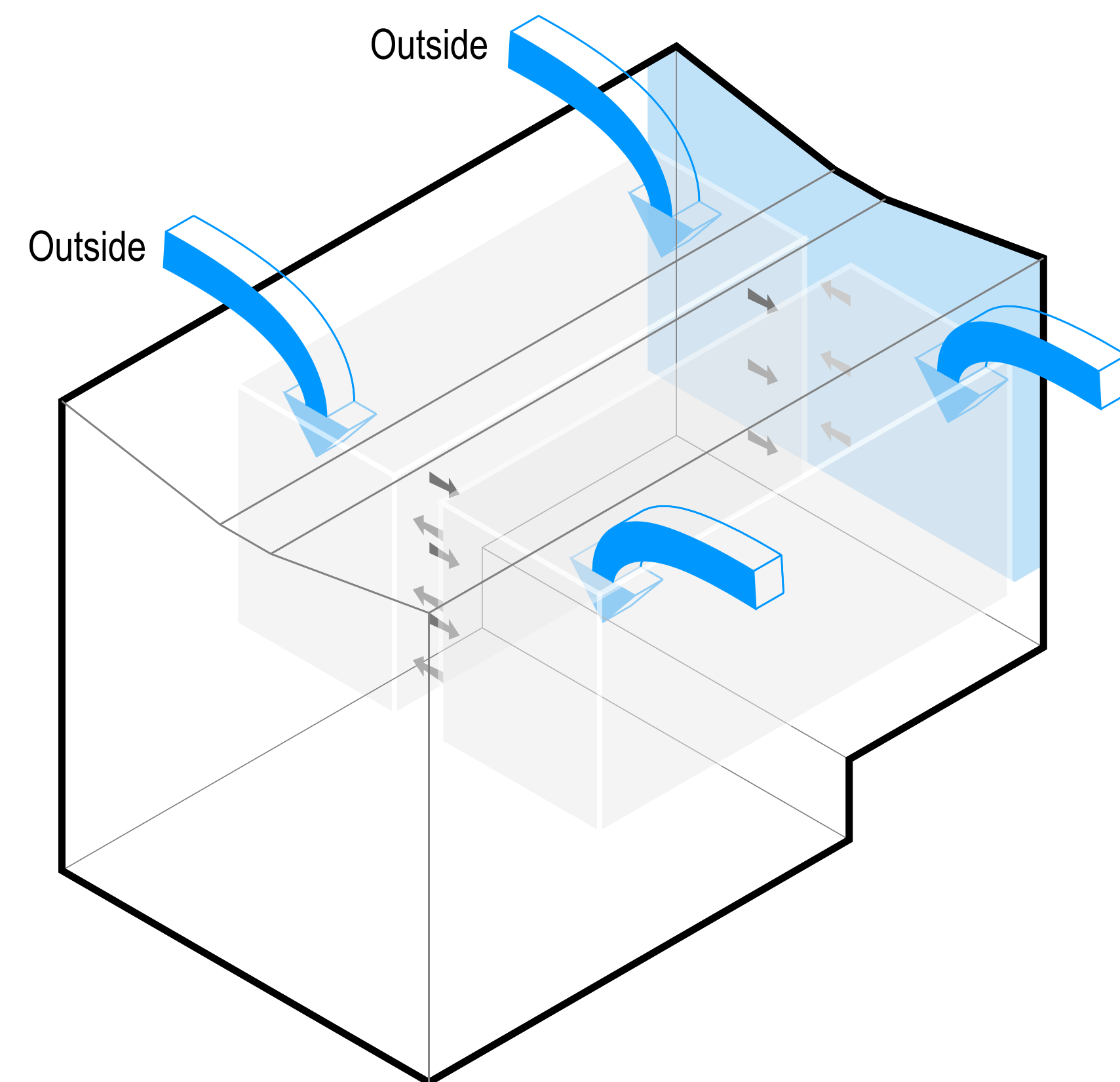
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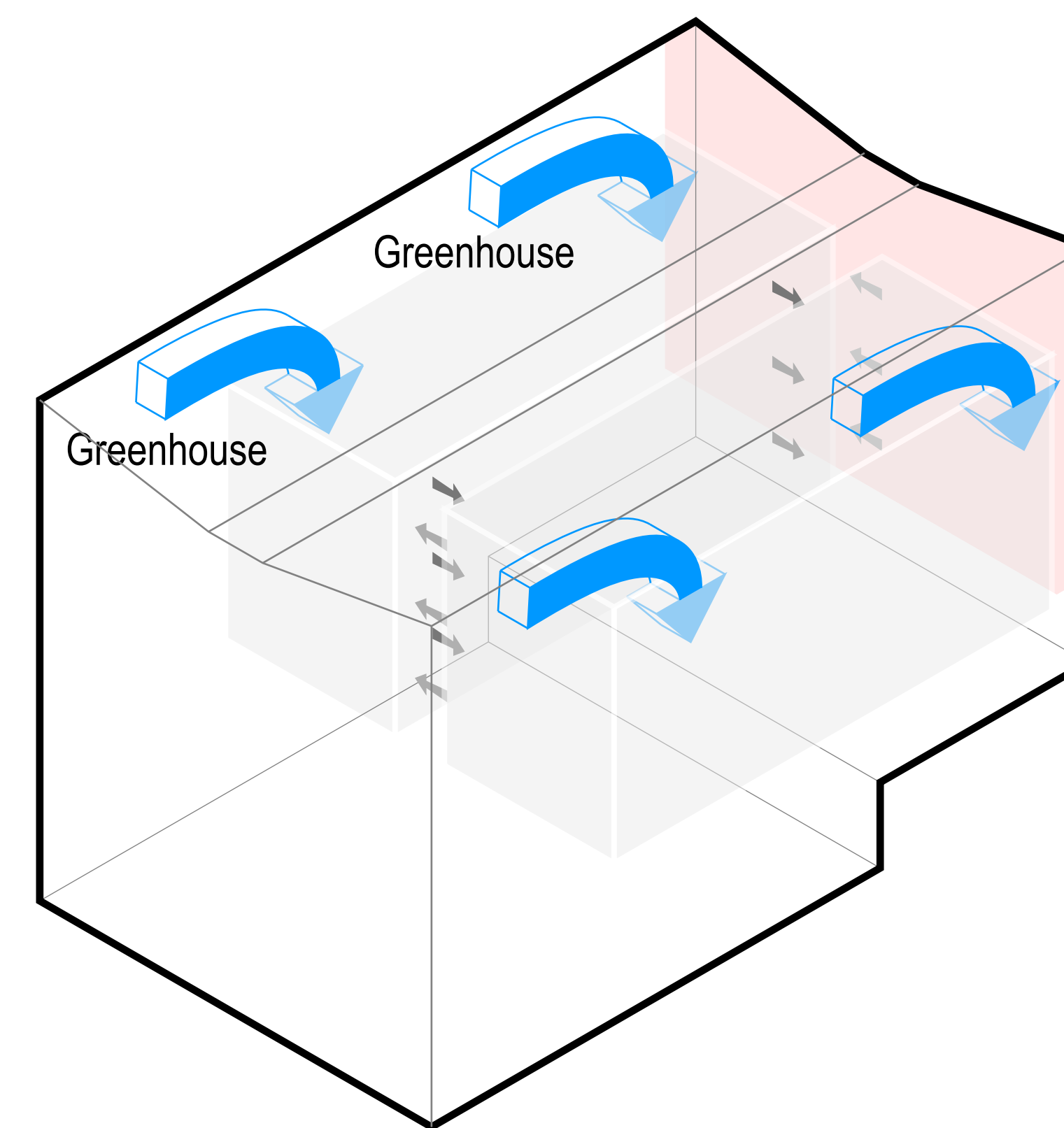
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Greenhouse



Living Units
Summer



Living Units
Winter

HVAC

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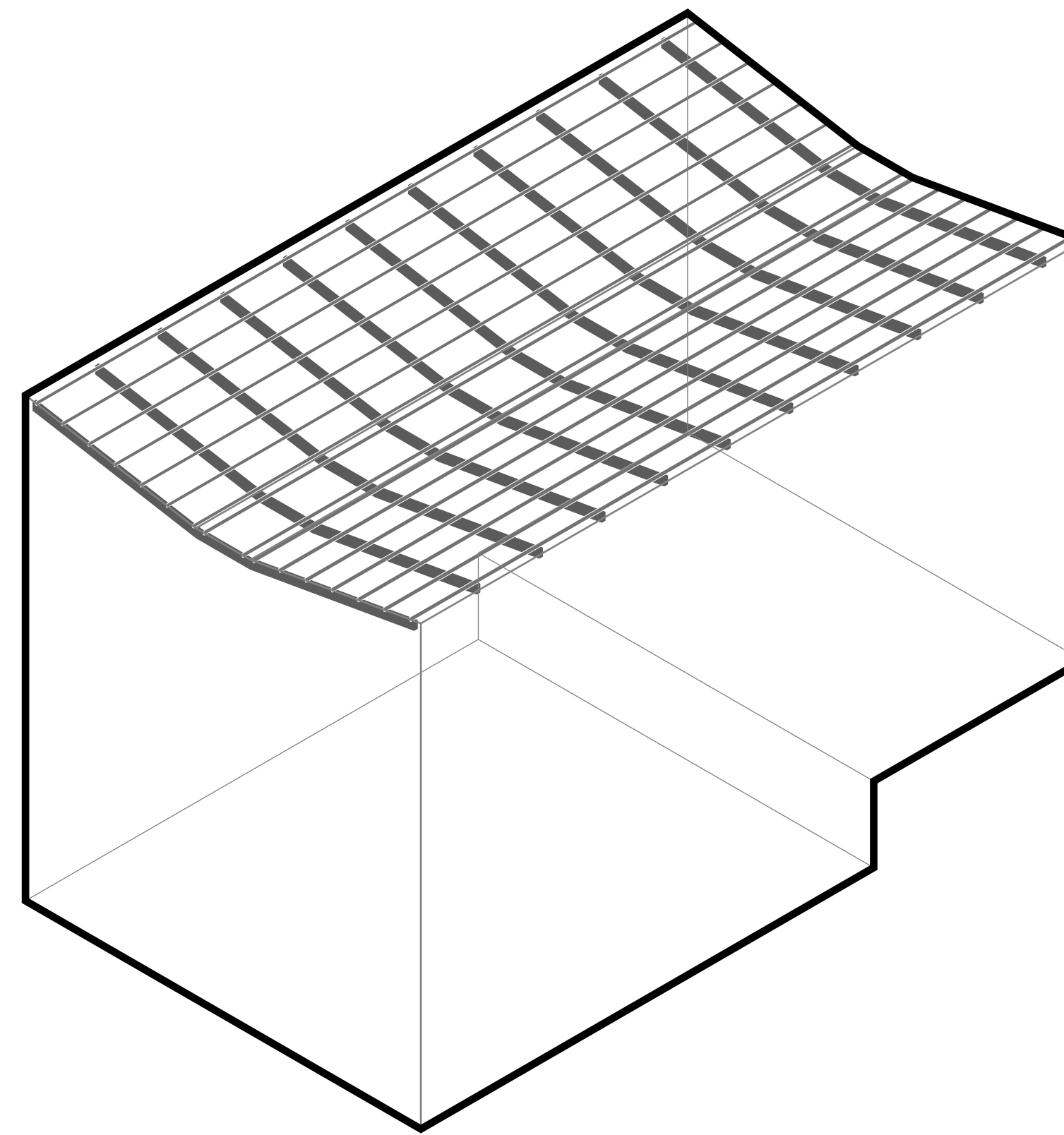
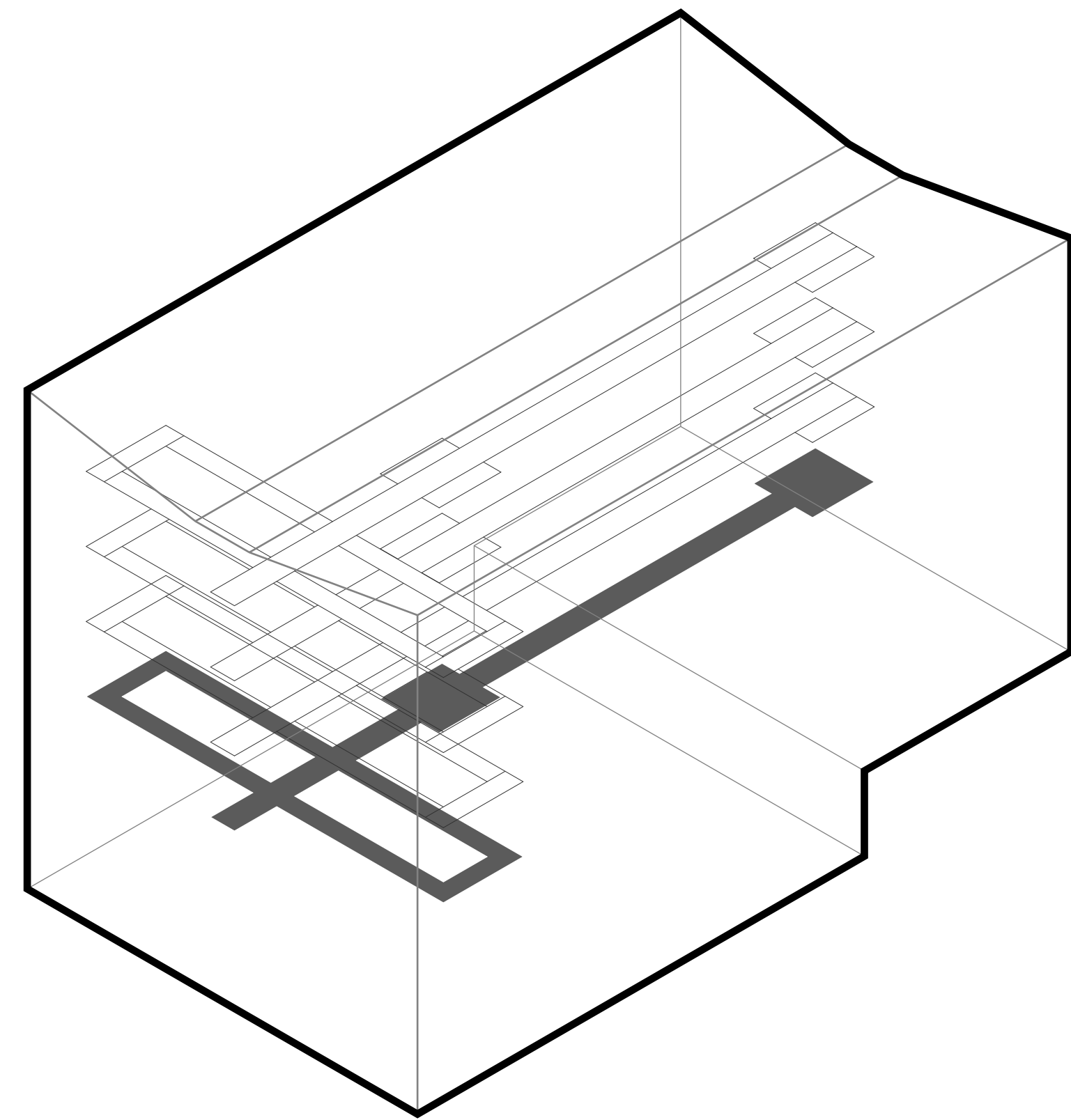
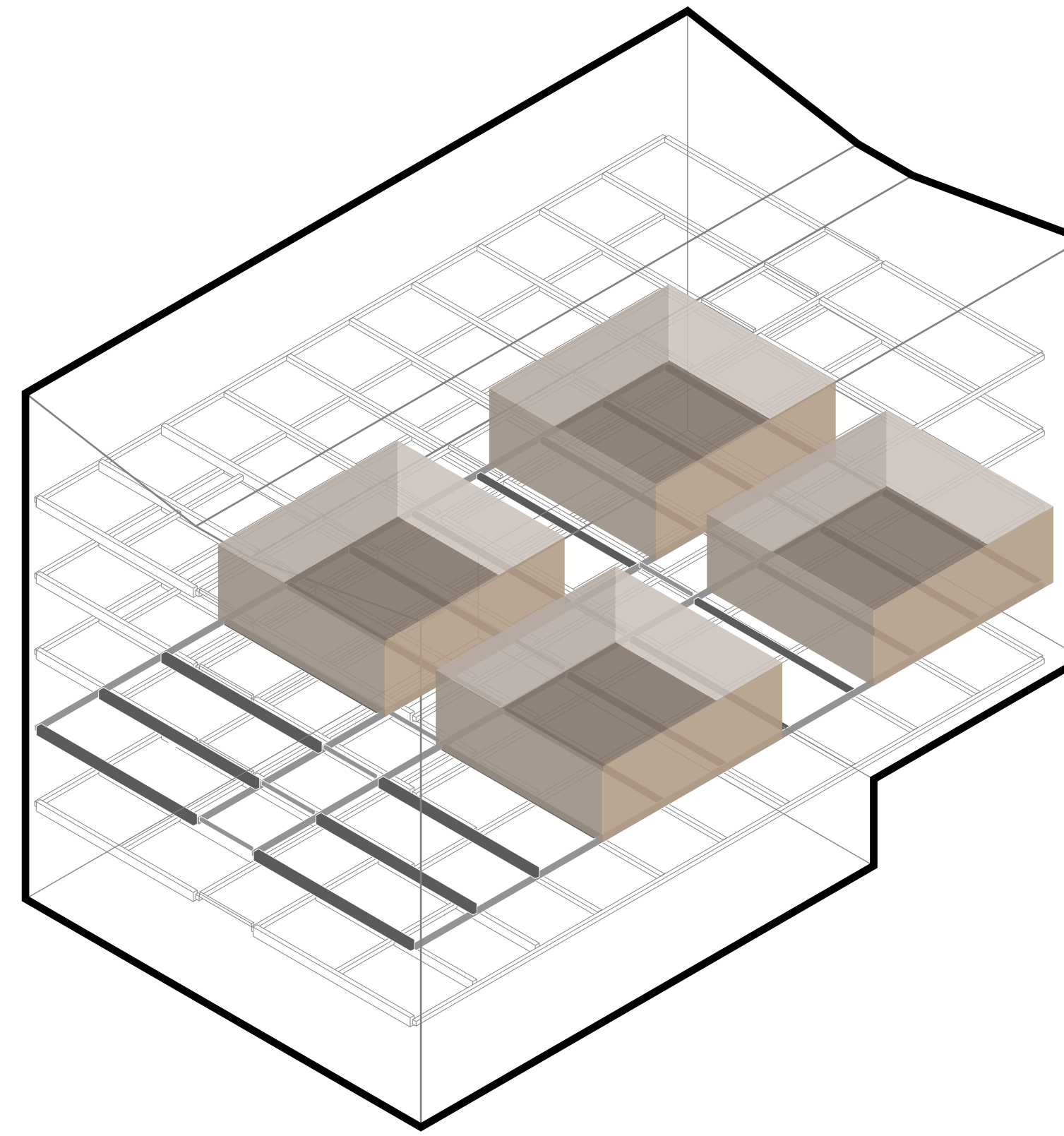
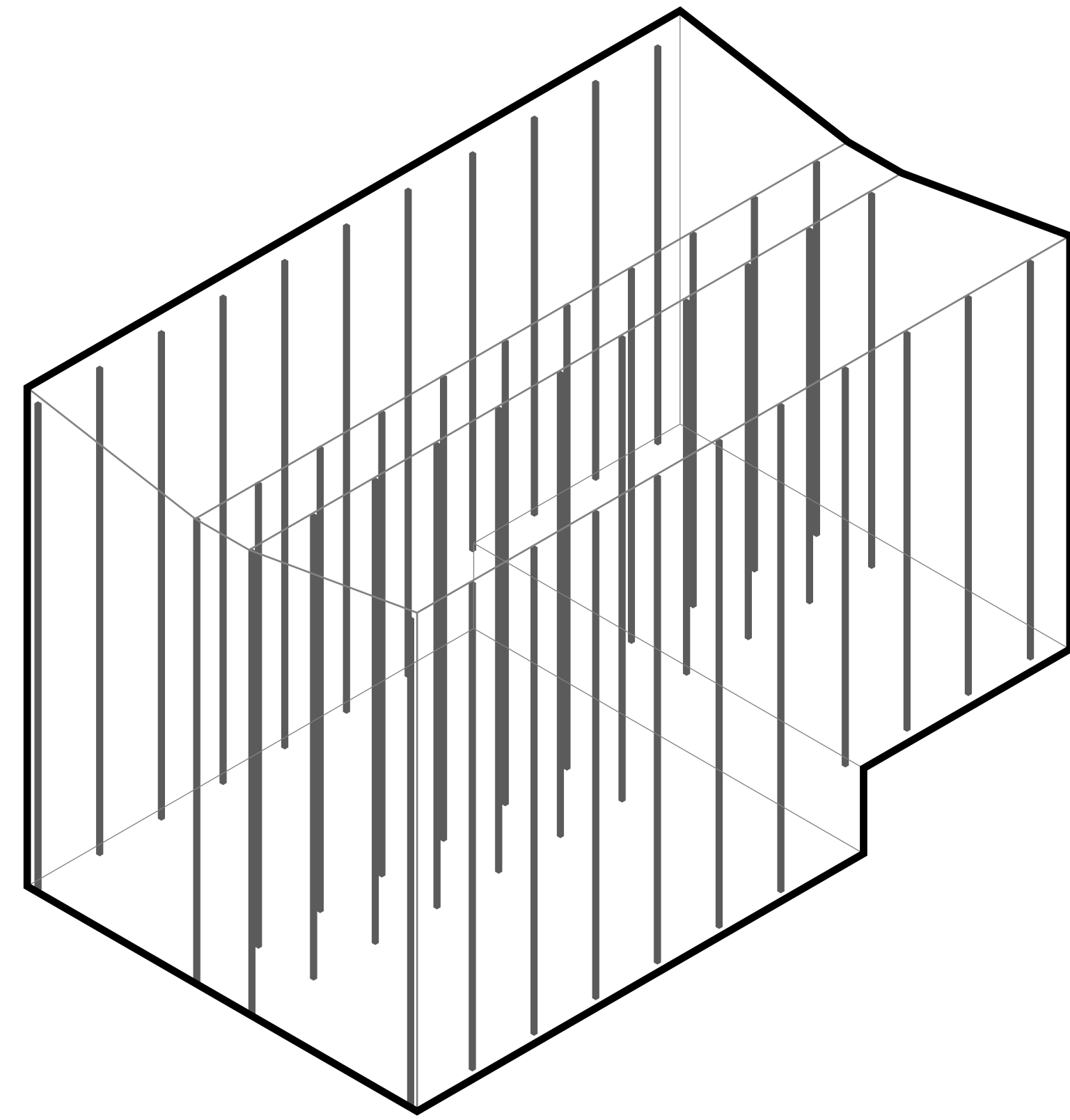
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Structure

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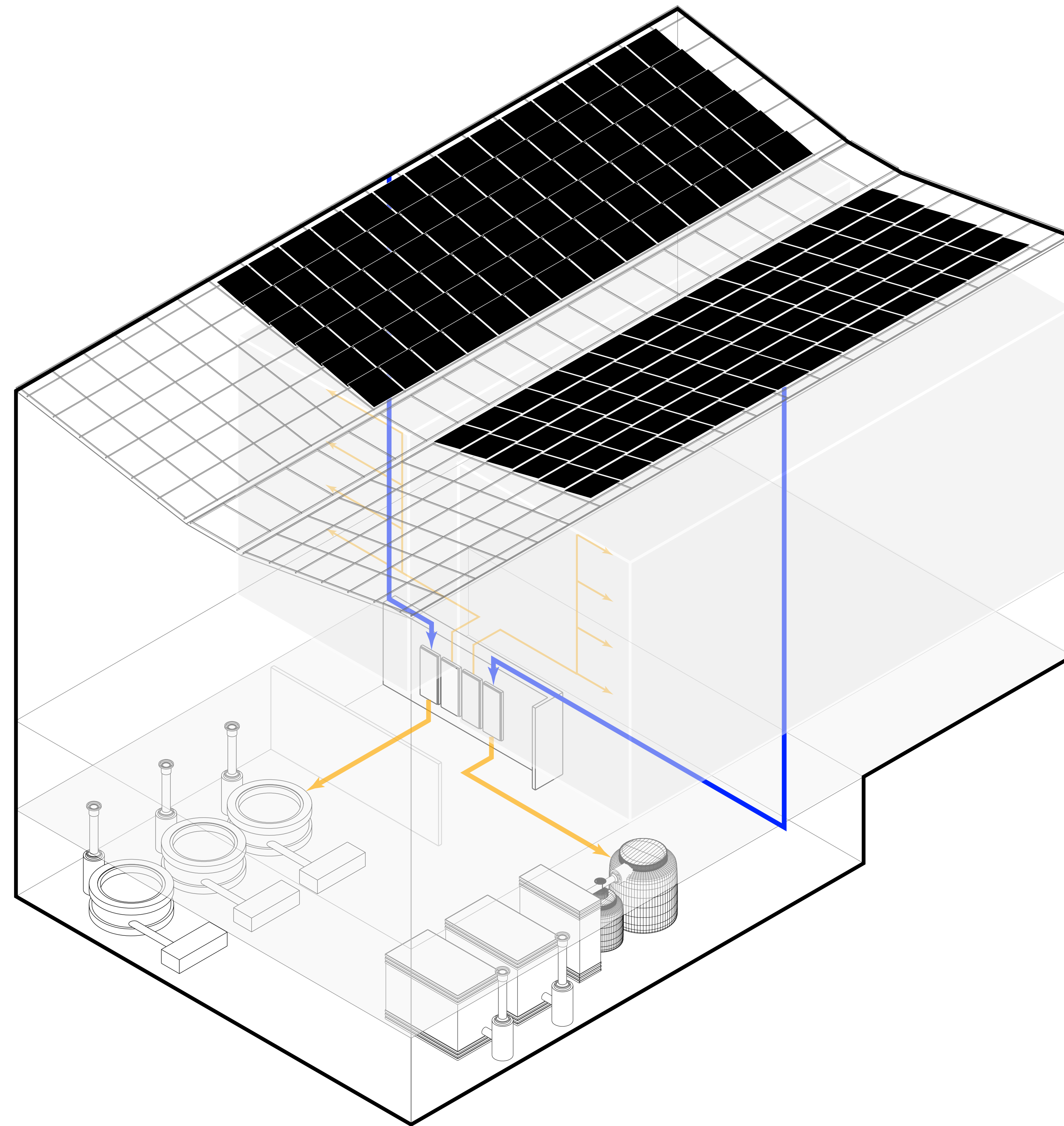
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PV System



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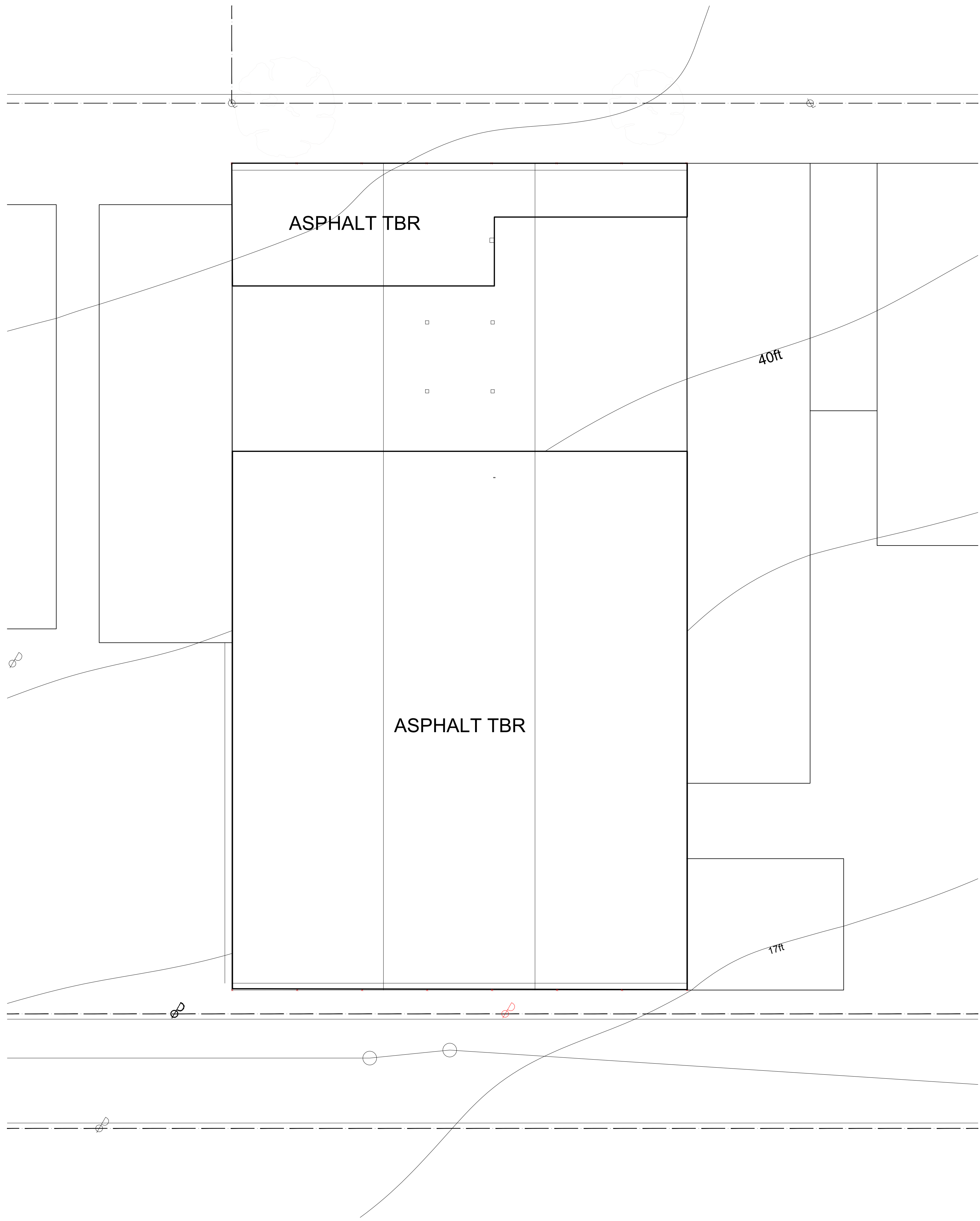
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- POWERLINE TBR
- EXISTING POWERLINE
- SEWAGE/WATER LINE
- FENCE TBR

TOTAL SITE RUNOFF				
year storm	volume (gal)	Qy (peak runoff rate) (cfs)		first inch of rainfall
				Q = 1
2	11205.205	0.0141	area	8580
5	13830.106	0.0182	V (ft^3)	770
10	15938.271	0.0216	V(gal)	5760.0004
50	21759.323	0.0319	min rainwater cisterns volume = 5400 gallons	
100	24412.805	0.0376		



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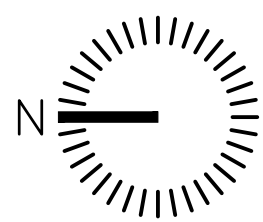
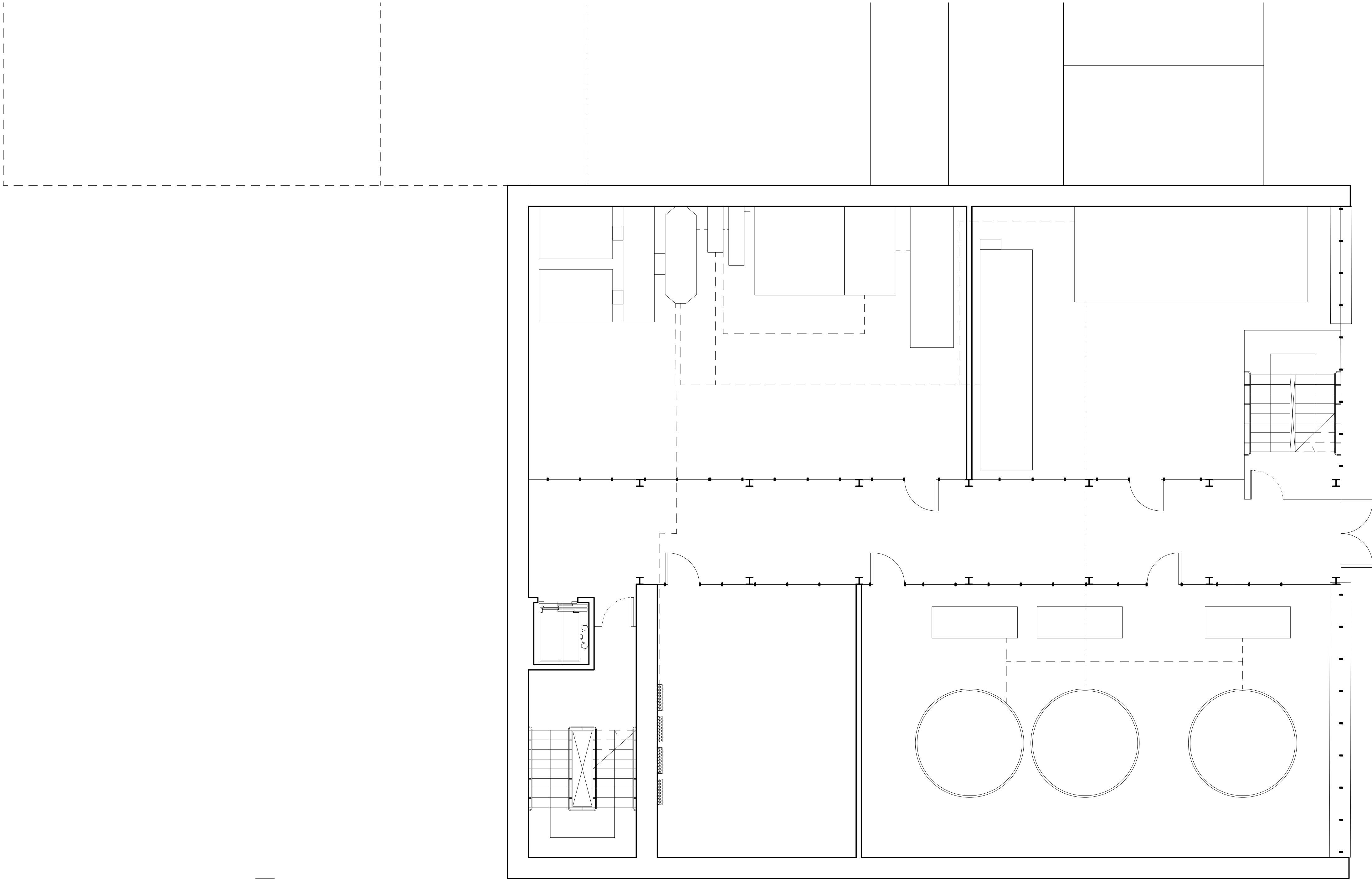
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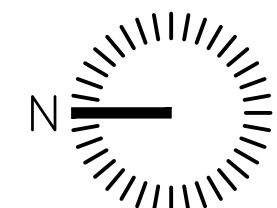
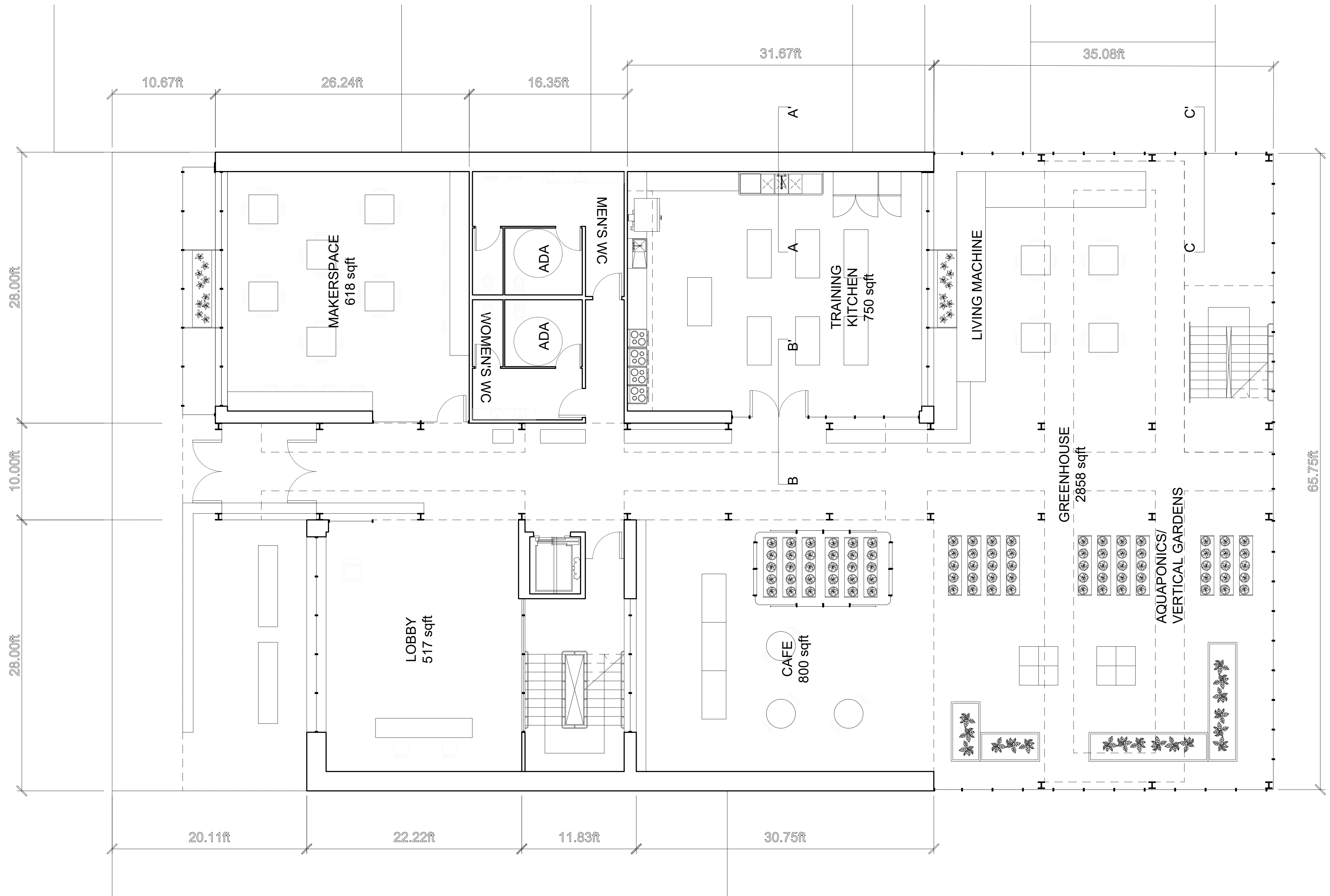
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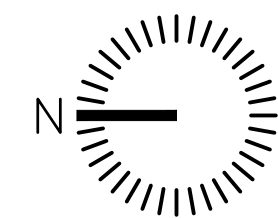
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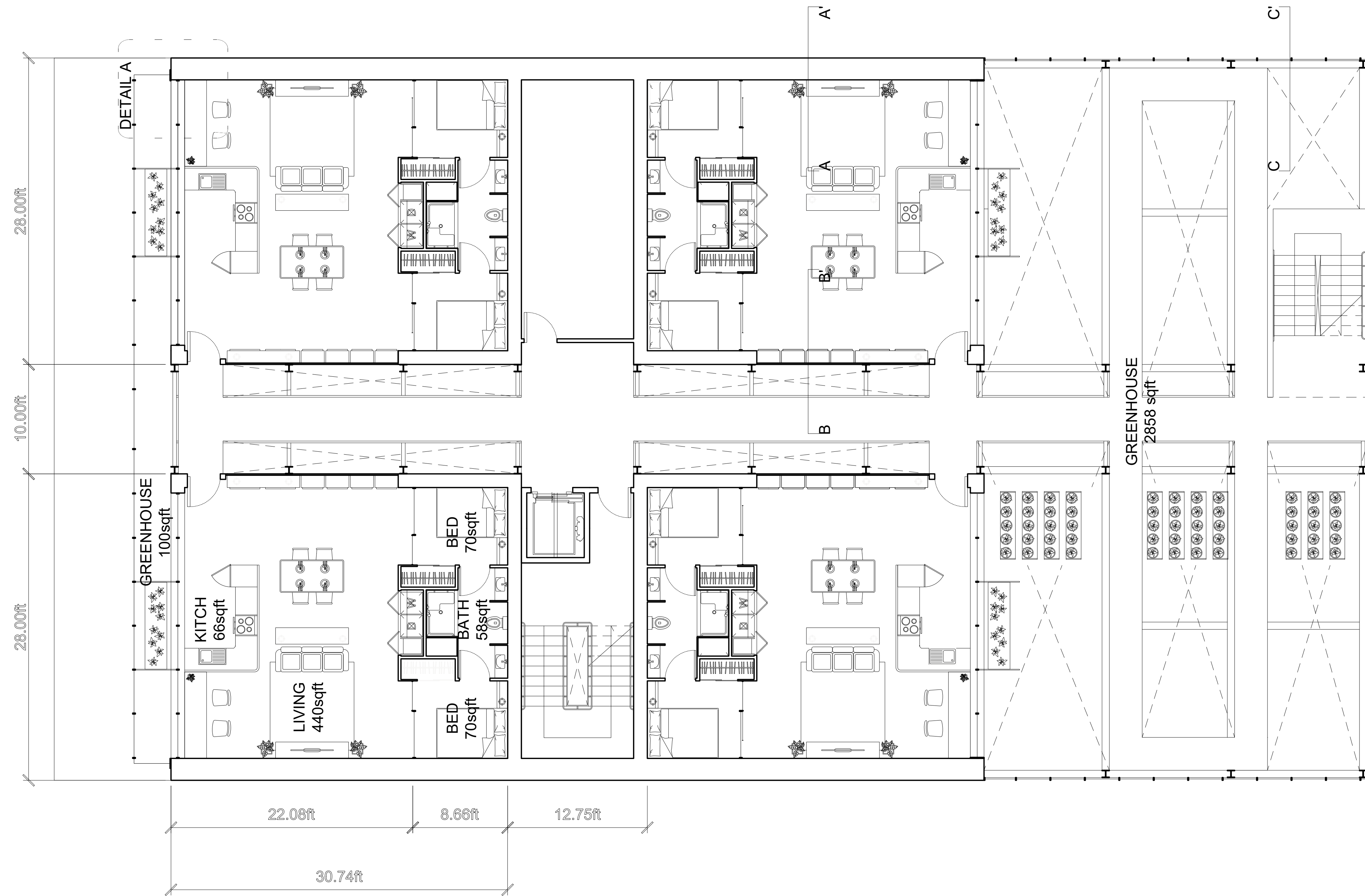
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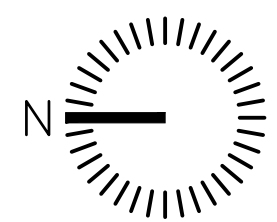
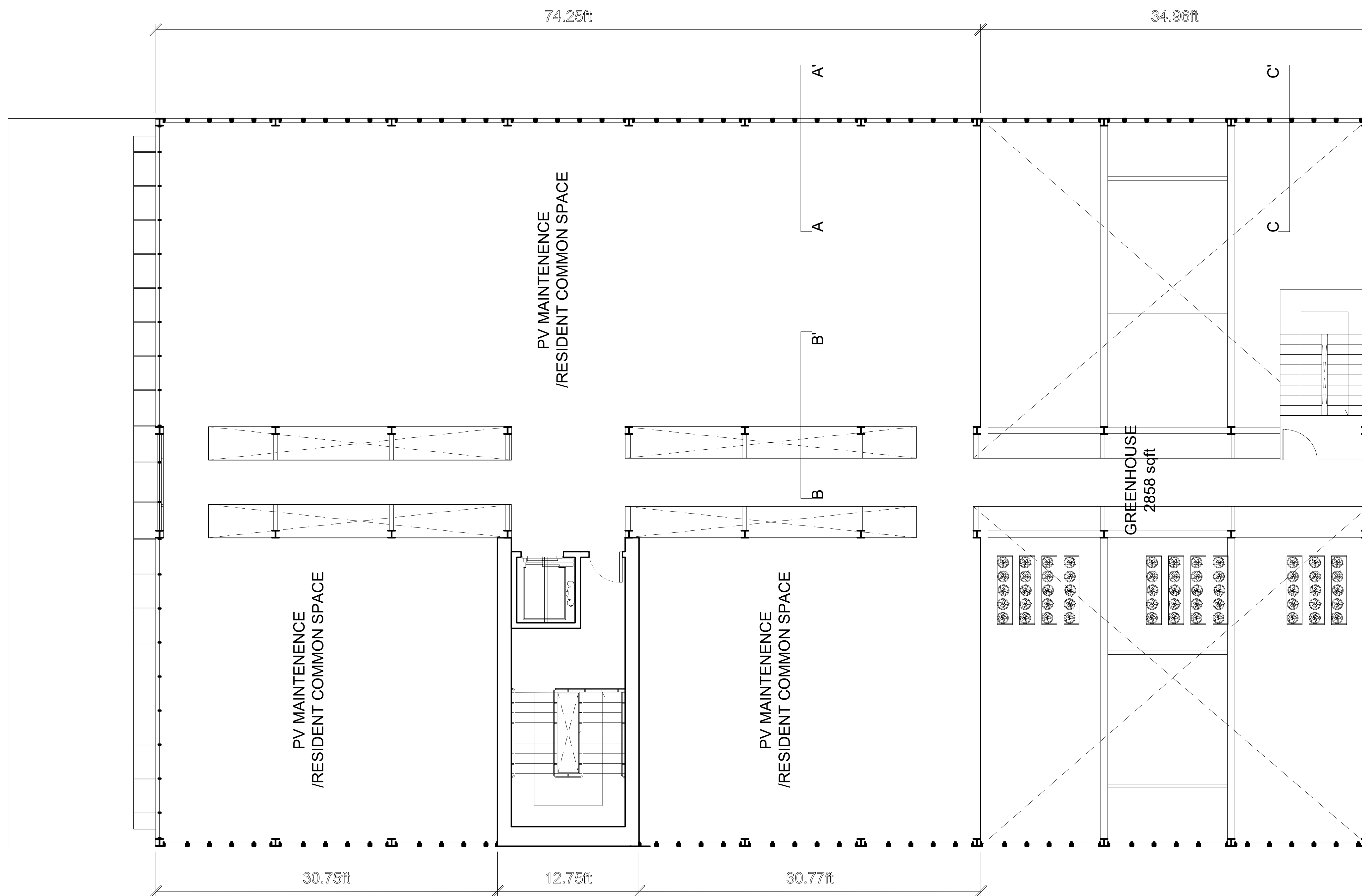
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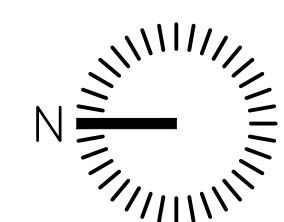
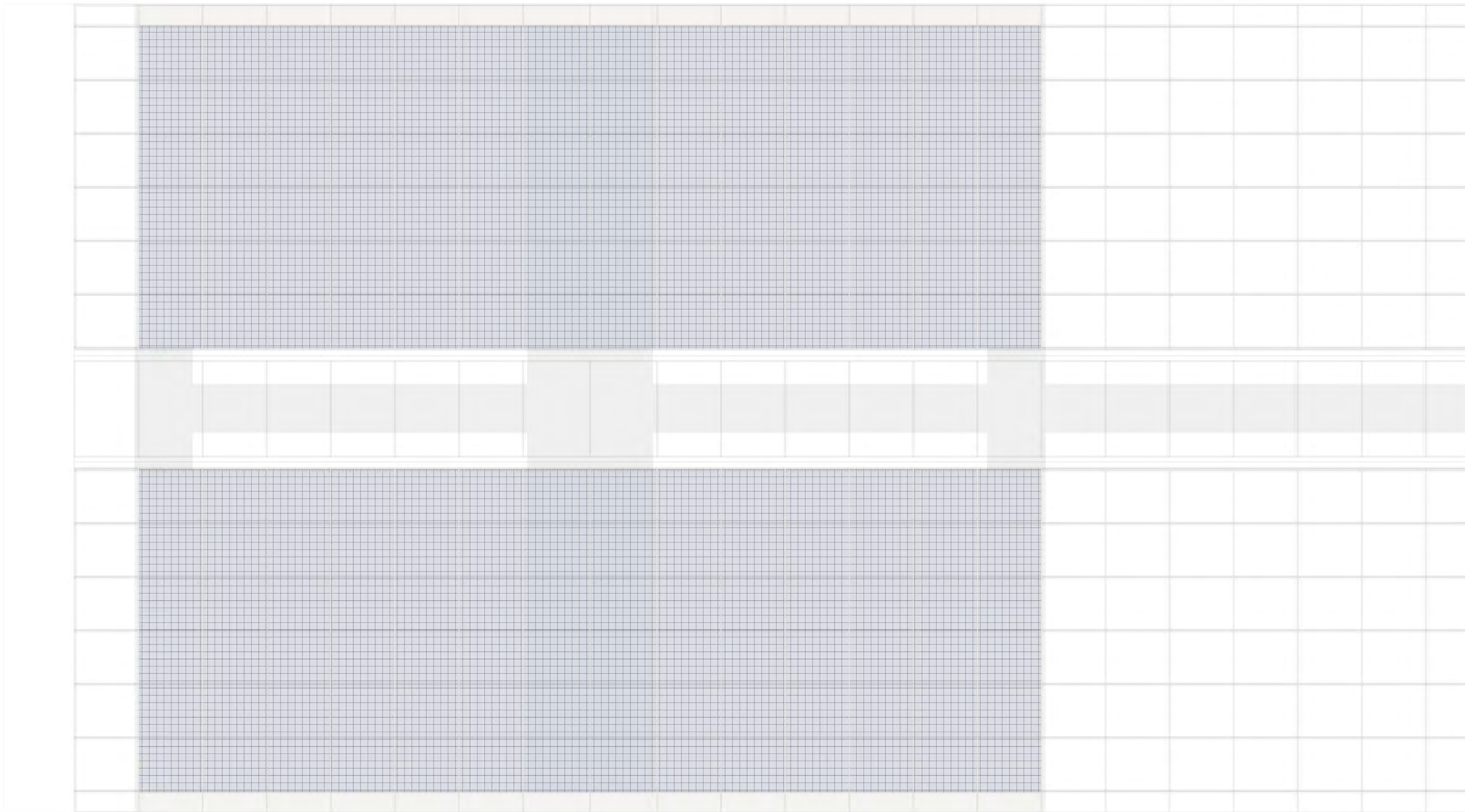
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MATERIALS SCHEDULE

Material	Details/Certifications	Website
Glazing		
Lightwall 3440 Polycarbonate Wall	100% recyclable polycarbonate and aluminum framing	https://extechinc.com/lightwall-3440-polycarbonate-wall-panels/
Solarban 60	LEED EA, IN + EQ	https://www.vitroglazings.com/products/low-e-glass/solarban-60-glass/
Sungate 460	EnergyStar compliant	http://www.vitrowindowglass.com/lowe_glass/sungate_460.aspx
Wall Assembly		
Intello Plus Air Barrier	Passive House Institute Certified	https://proclima.com/products/internal-sealing/intello-plus
Havelock Wool Insulation	USGBC and LEED certified	https://havelockwool.com/
Gutex Multitherm Wood Insulation	NaturePlus certified	https://gutex.de/en/product-range/products/product/gutex-multitherm/
ProClima Solitex Mento	Tested according to Iso 1600	https://proclima.com/products/external-sealing
IronWoods Rainscreen facade	USGBC and LEED certified	https://proclima.com/products/external-sealing

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WALL ASSEMBLIES

Greenhouse Glazing				
Material	Thickness	R-Value	VT	SHGC
Double pane insulated glass (Standard Clear)		0.25	2	79
				0.7

Residential TRANSPARENT Walls				
Material	Thickness	R-Value	VT	SHGC
Sungate 460(3) Triple Glazed IGU		1.25	5.5	68%
				0.51

Residential TRANSLUCENT Walls (Ext to Int)				
Material	Thickness	R-Value	VT	SHGC
Lightwall 3440		2	5	

Residential Opaque Walls (Ext to Int)				
Dew Point Calculation				
Material	Thickness (in)	R-Value	Temperature Diff to Ref Pt	Temperature Difference at Ref Pt
Inside Air Film	0	0.45	0.67	64.33
Drywall	0.5	0.45	0.67	63.66
Service Cavity/Air Gap	2	1	1.48	62.18
Intello Plus Air Barrier	0	0	0.00	62.18
Havelock wool insulation	6	21.6	32.07	30.11
Proclima solitex mento	0	0	0.00	30.11
Gutex multitherm wood insulation	5	19	28.21	1.90
CMU Block	8	1.11	1.65	0.25
Outside Air Film	0	0.17	0.25	0.00
Total	21.5	43.78		

Residential Opaque Walls (Int to Int)				
Dew Point Calculation				
Material	Thickness	R-Value	Temperature Diff to Ref Pt	Temperature Difference at Ref Pt
Inside Air Film	0	0.45	1.090400746	71.90959925
Softwood Paneling	1.5	1.875	4.54333644	67.36626281
Vertical Rainscreen Battens	2	0	0	67.36626281
Air Gap	1	1	2.423112768	64.94315005
Proclima Solitex Mento	0	0	0	64.94315005
Havelock Wool Insulation	6	21.6	52.33923579	12.60391426
Intello Plus Air Barrier	0	0	0	12.60391426
Service Cavity/Air Gap	2	1	2.423112768	10.18080149
Drywall	0.5	0.45	1.090400746	9.090400746
Inside Air film	0	0.45	1.090400746	8
Total	13	26.825		

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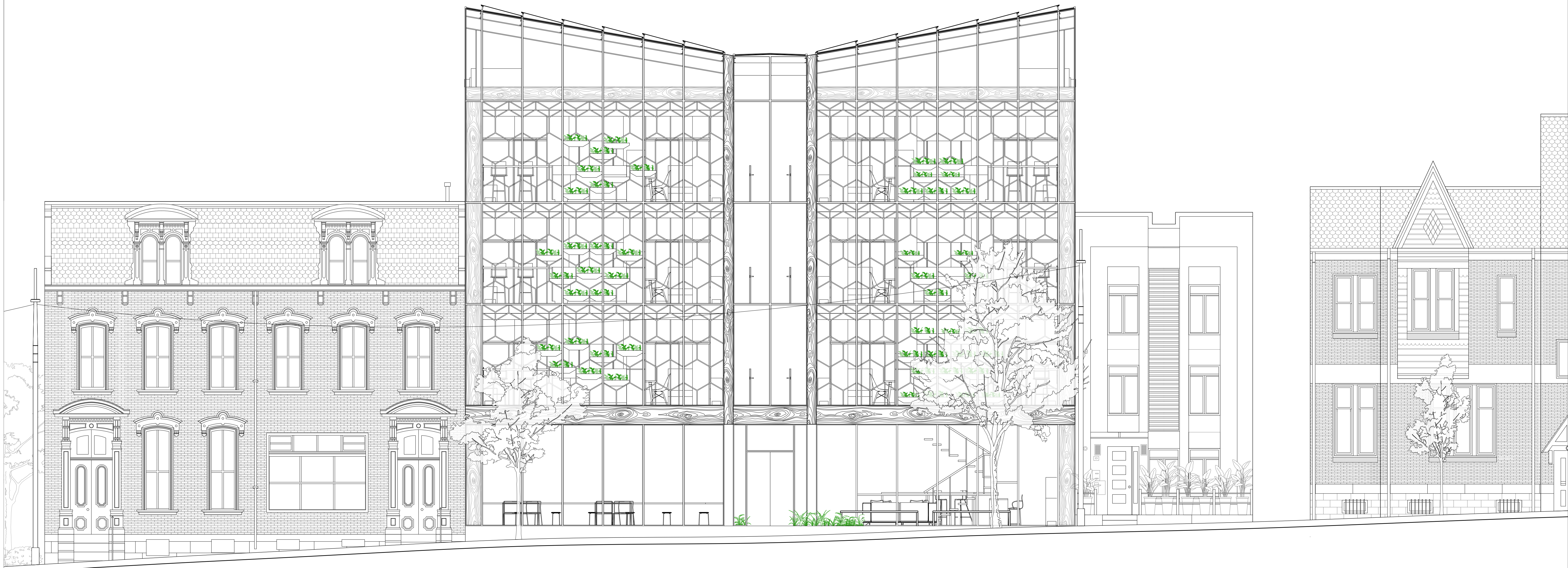
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A.3.02

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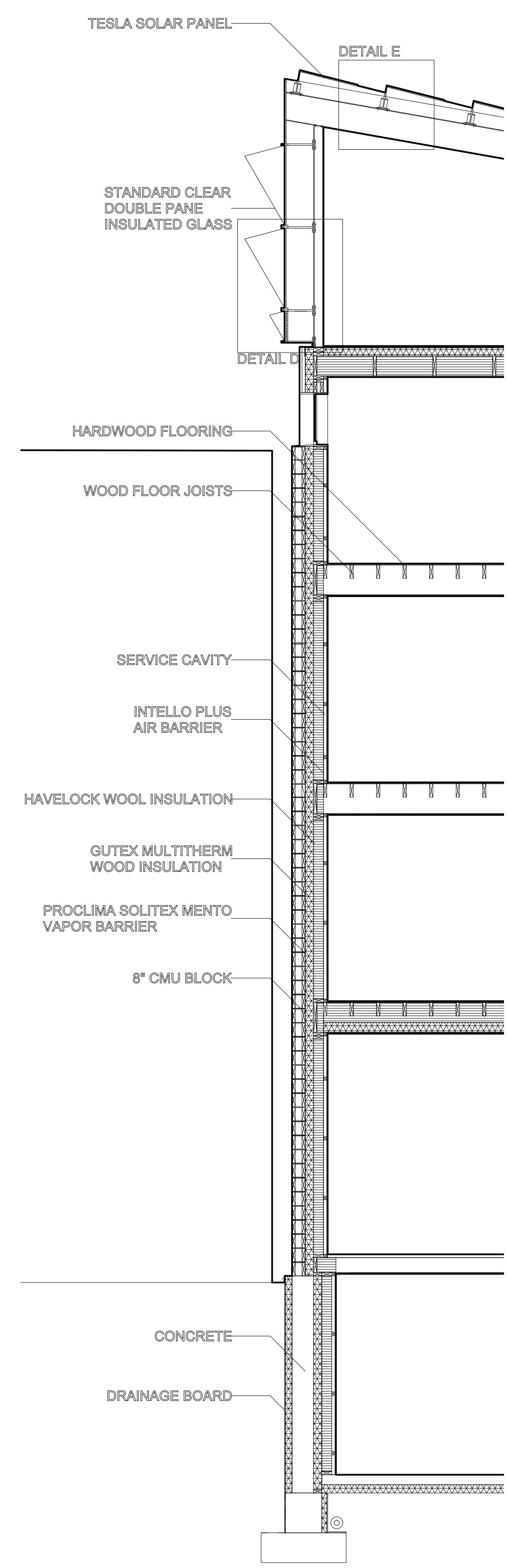
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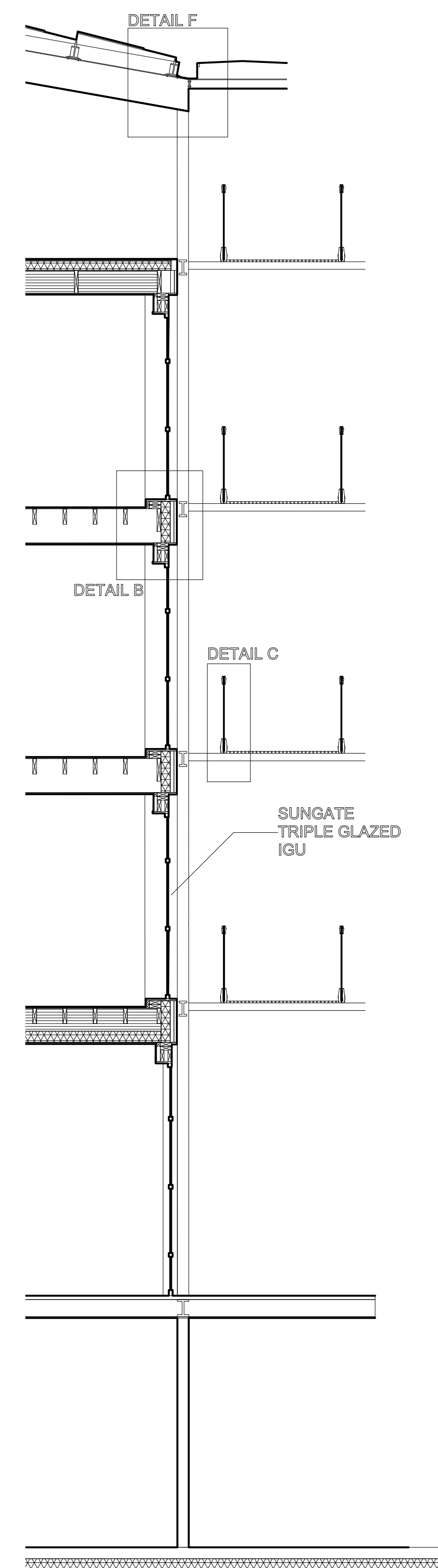
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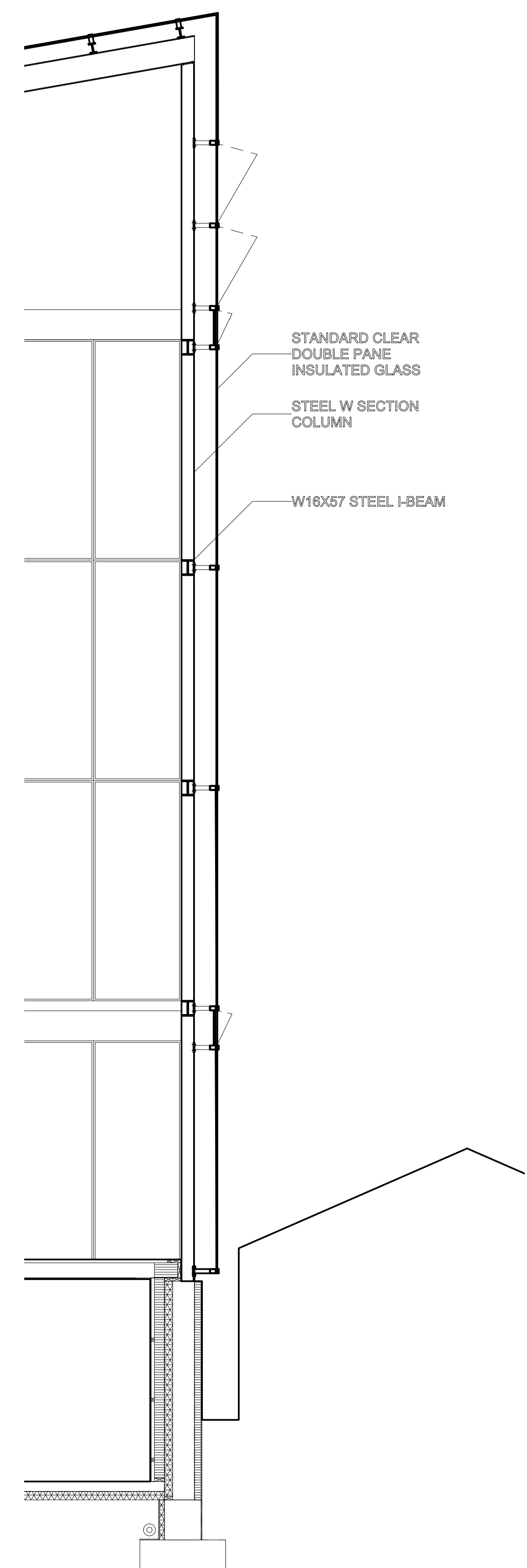
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section A



section B



section C

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STRUCTURAL SIZING

	Total tributary area	Column height (ft)	Needed Column width (inches)	Needed Column depth (inches)	Actual width (in)	Actual depth (in)
Greenhouse (Exterior) - light load	109.3125	68	4	4	8	8
Greenhouse (interior) - light load	437.25	64	4	4	8	8
Living Space (corner 1) - medium load	990	49	6	6	8	8
Living Space (corner 2) - medium load	1980	49	6	6	8	8

	Beam Width	Beam depth	Span (ft)	Specs
Greenhouse (perpendicular)	4	8	10.3	W8x24
Greenhouse (parallel)	8	16	26.5	W16x57
Greenhouse (walkway)	2.5	5	7	W6x20
Living Space (steel)	8	16	26.5	W16x57
Living Space (wood)	9	18	26.5	CLT

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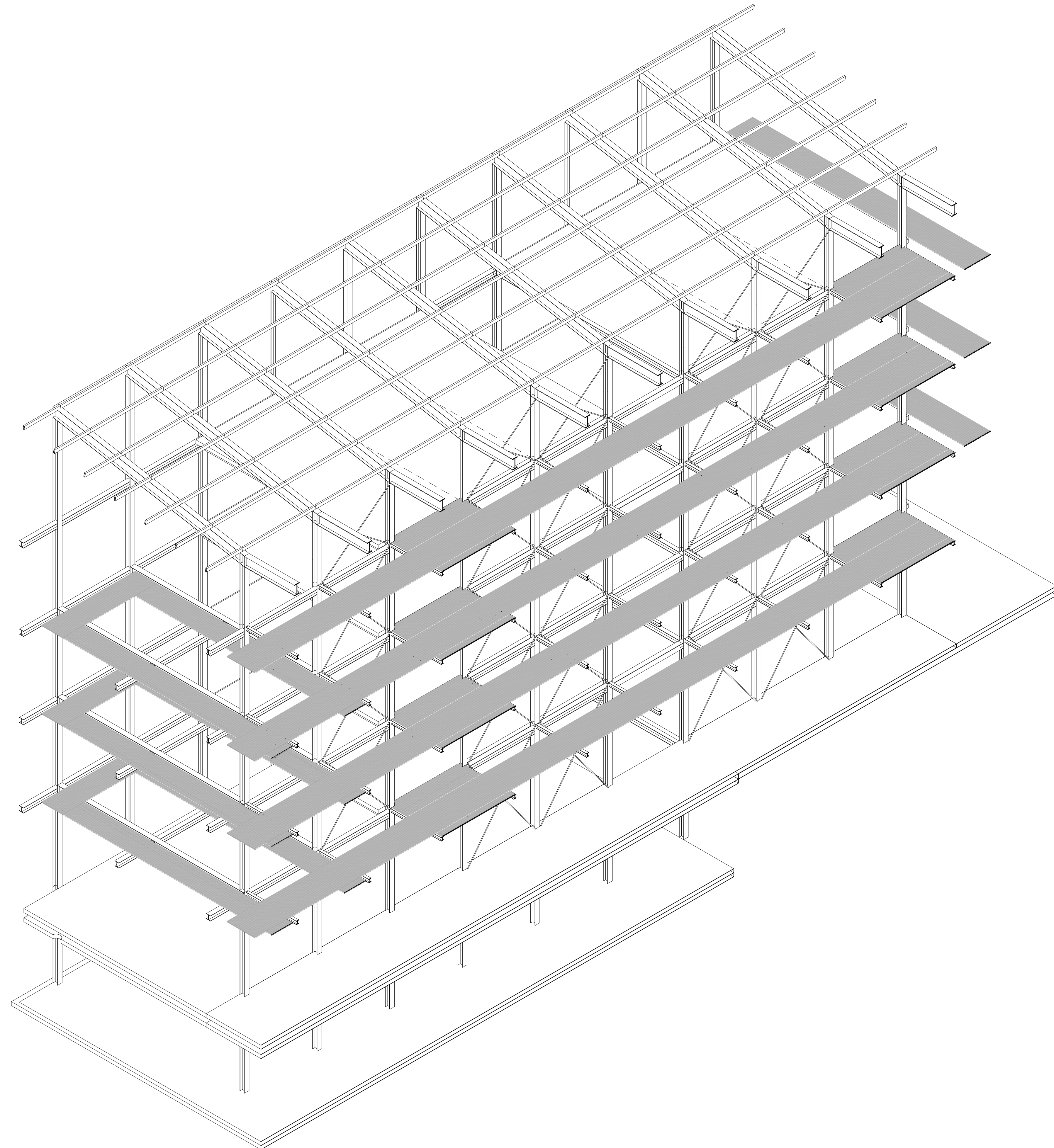
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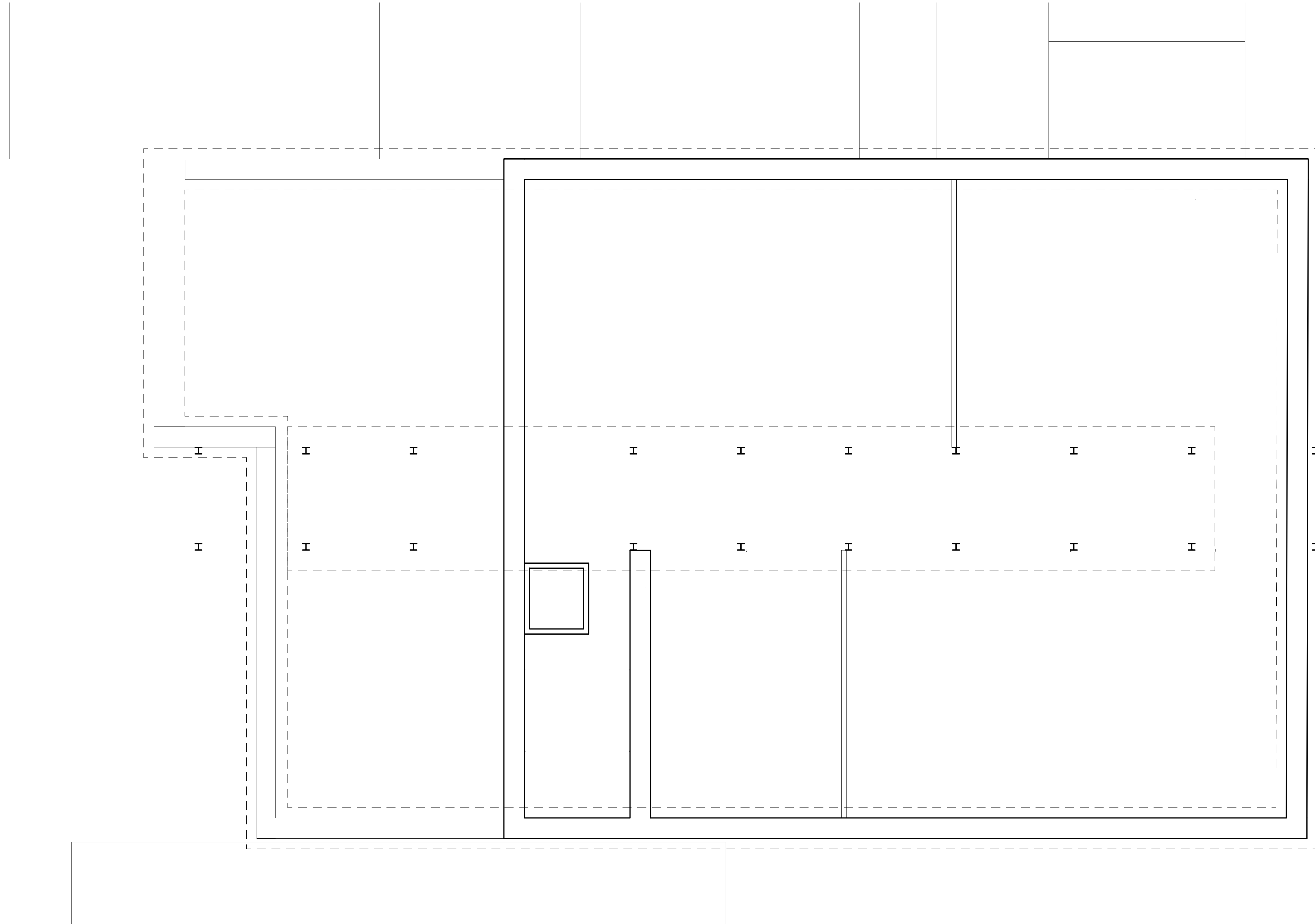
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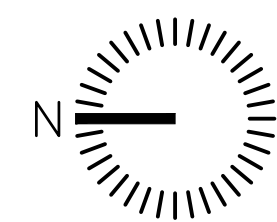
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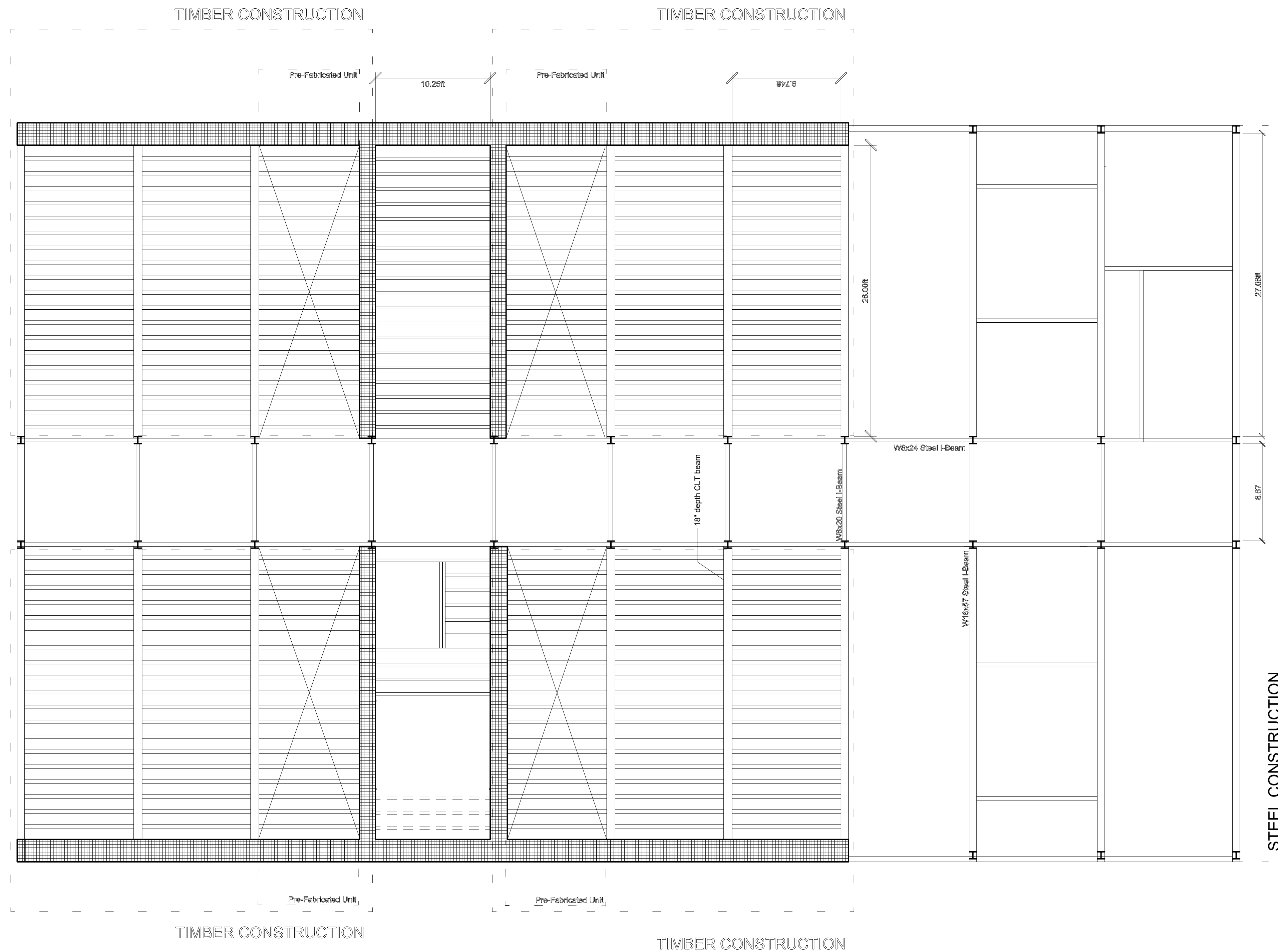
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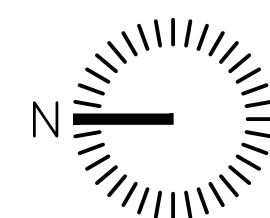
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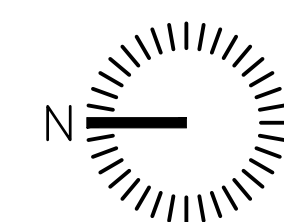
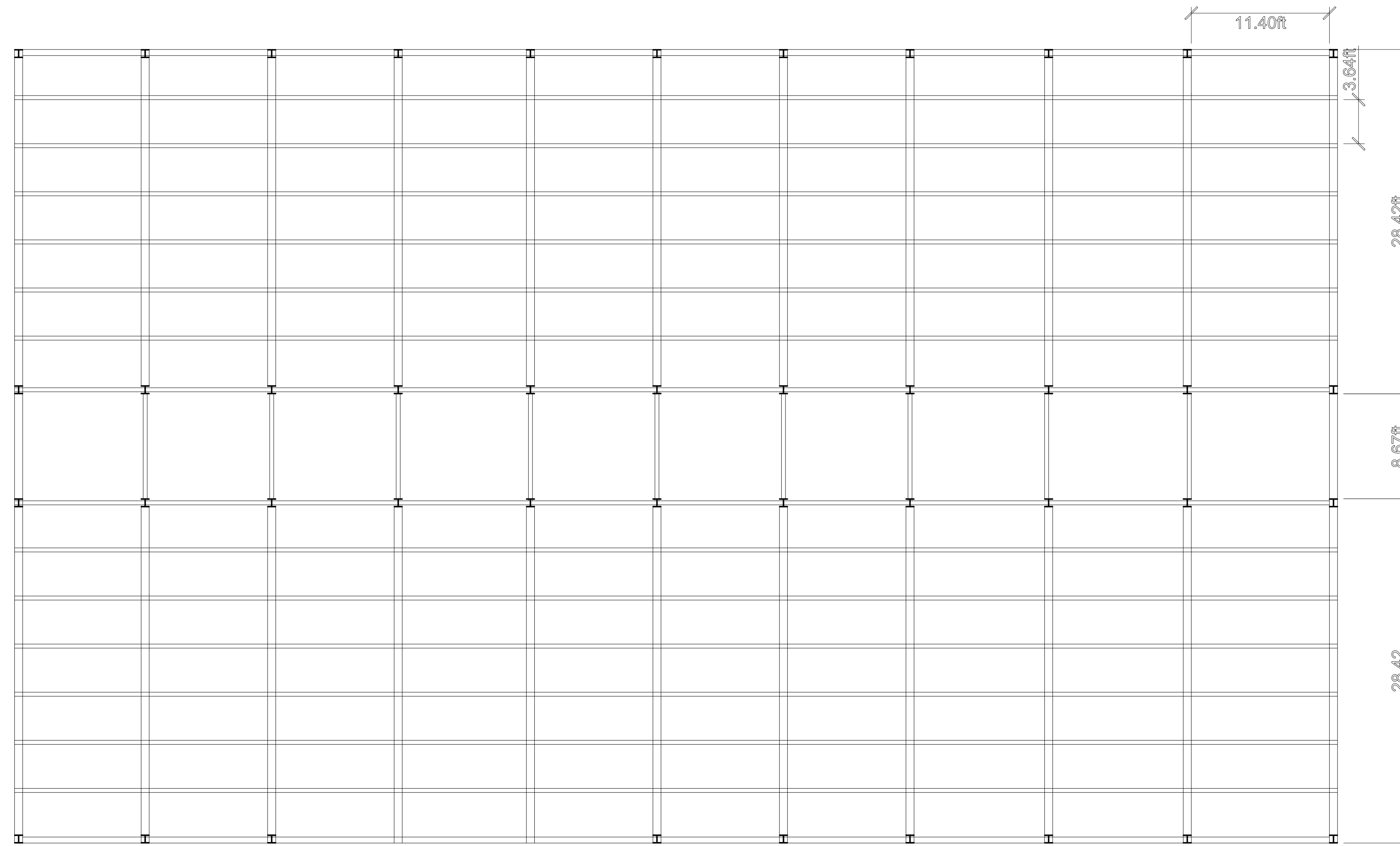
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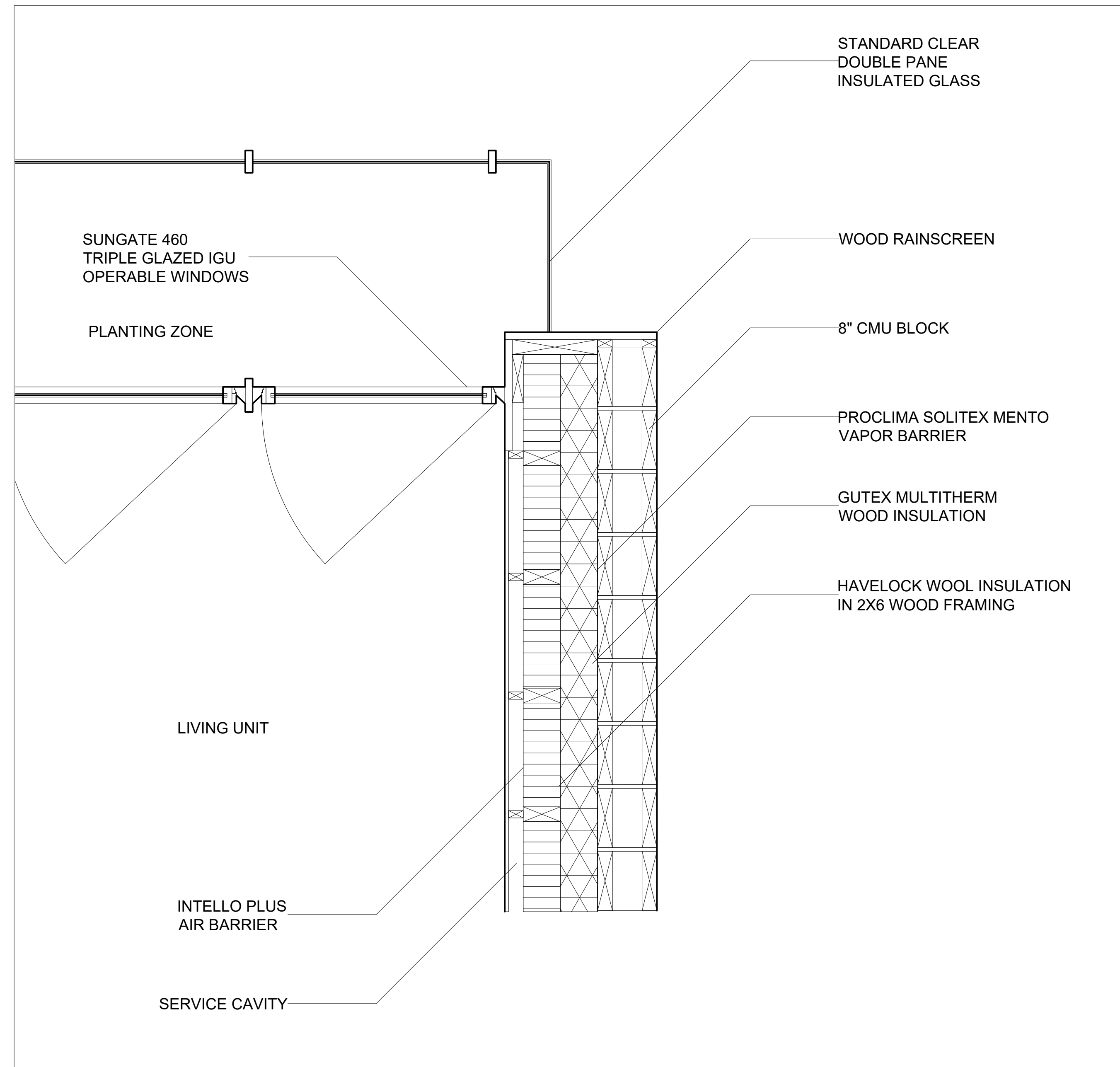
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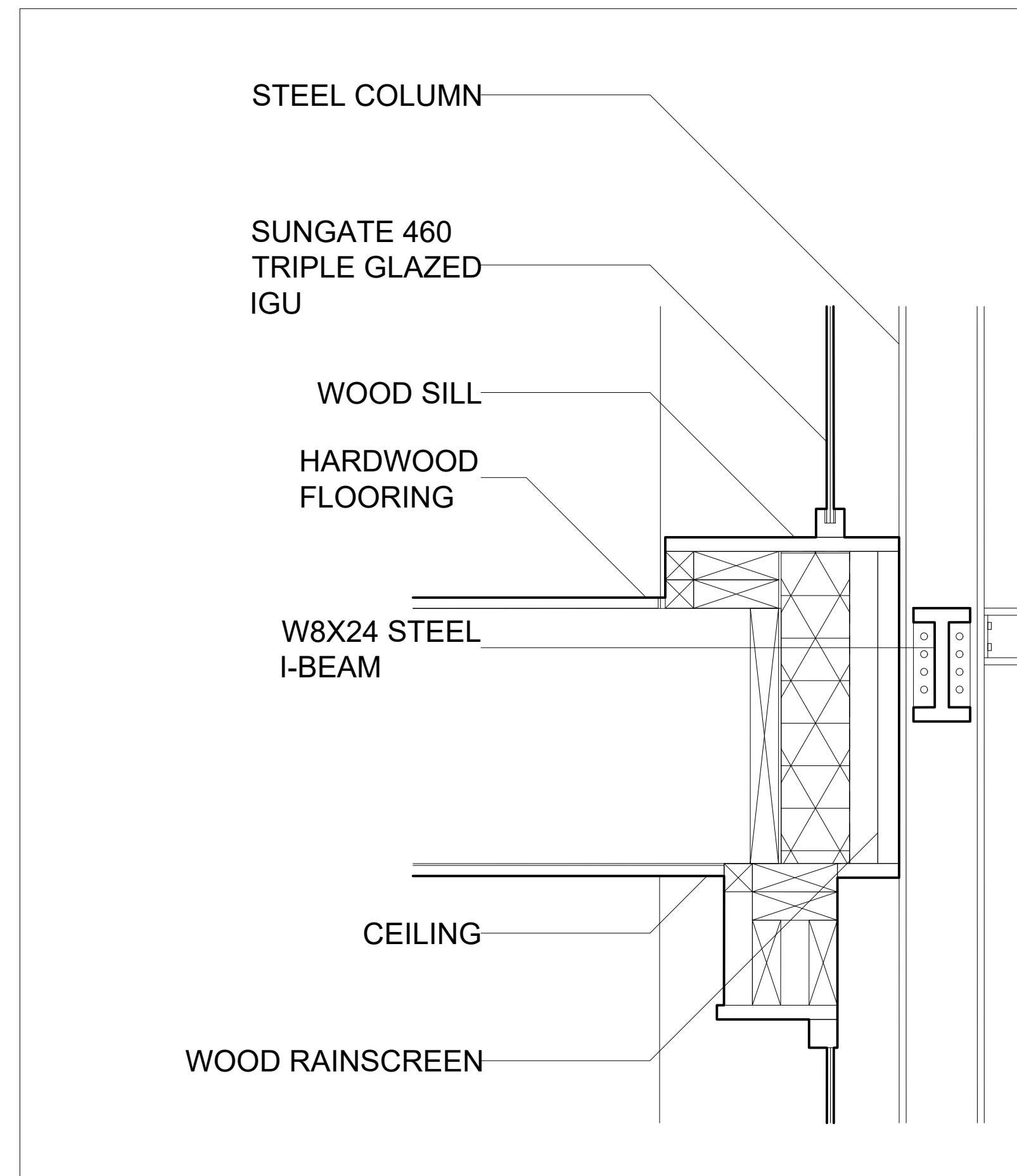
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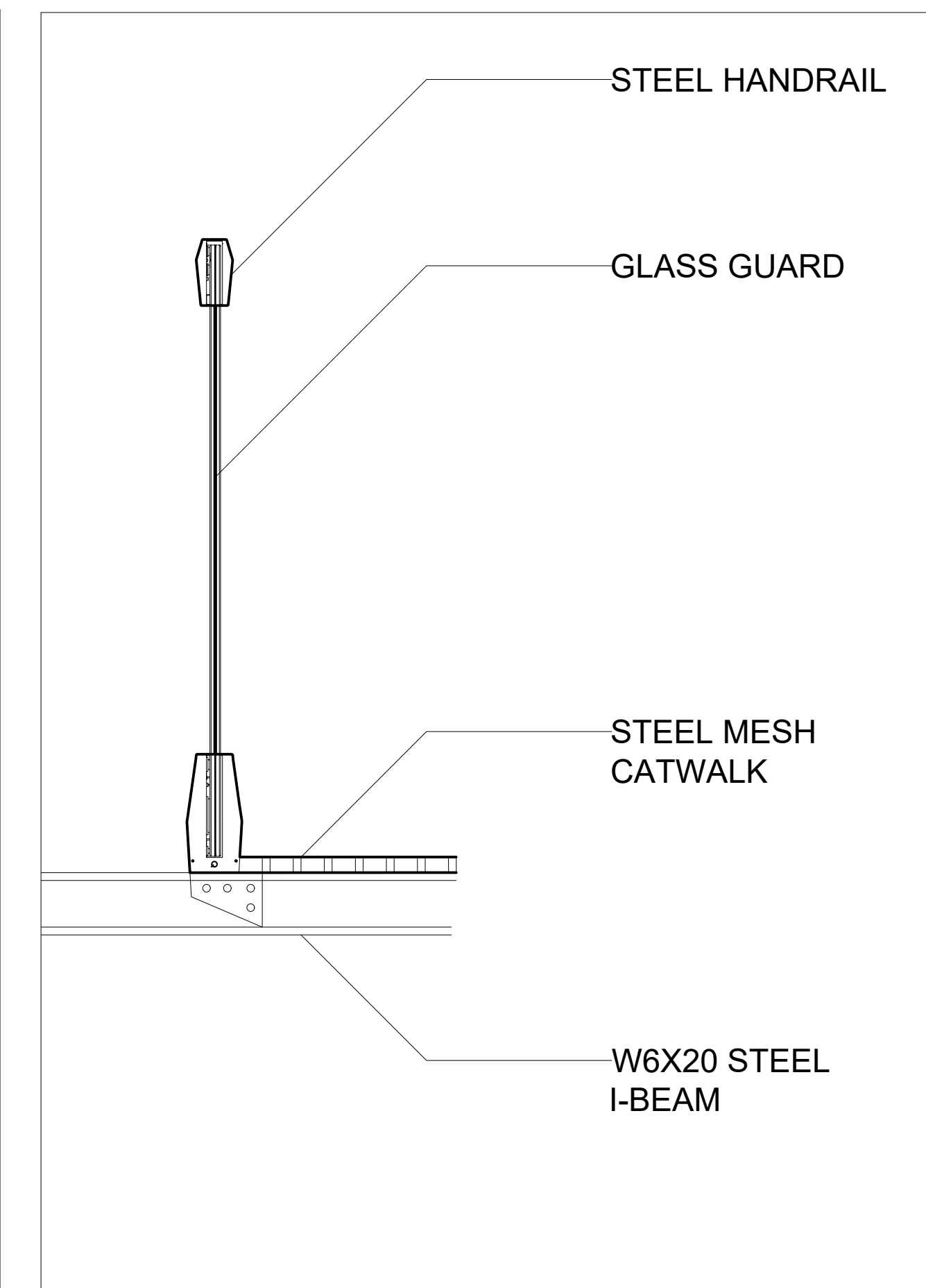
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detail A



detail B



detail C

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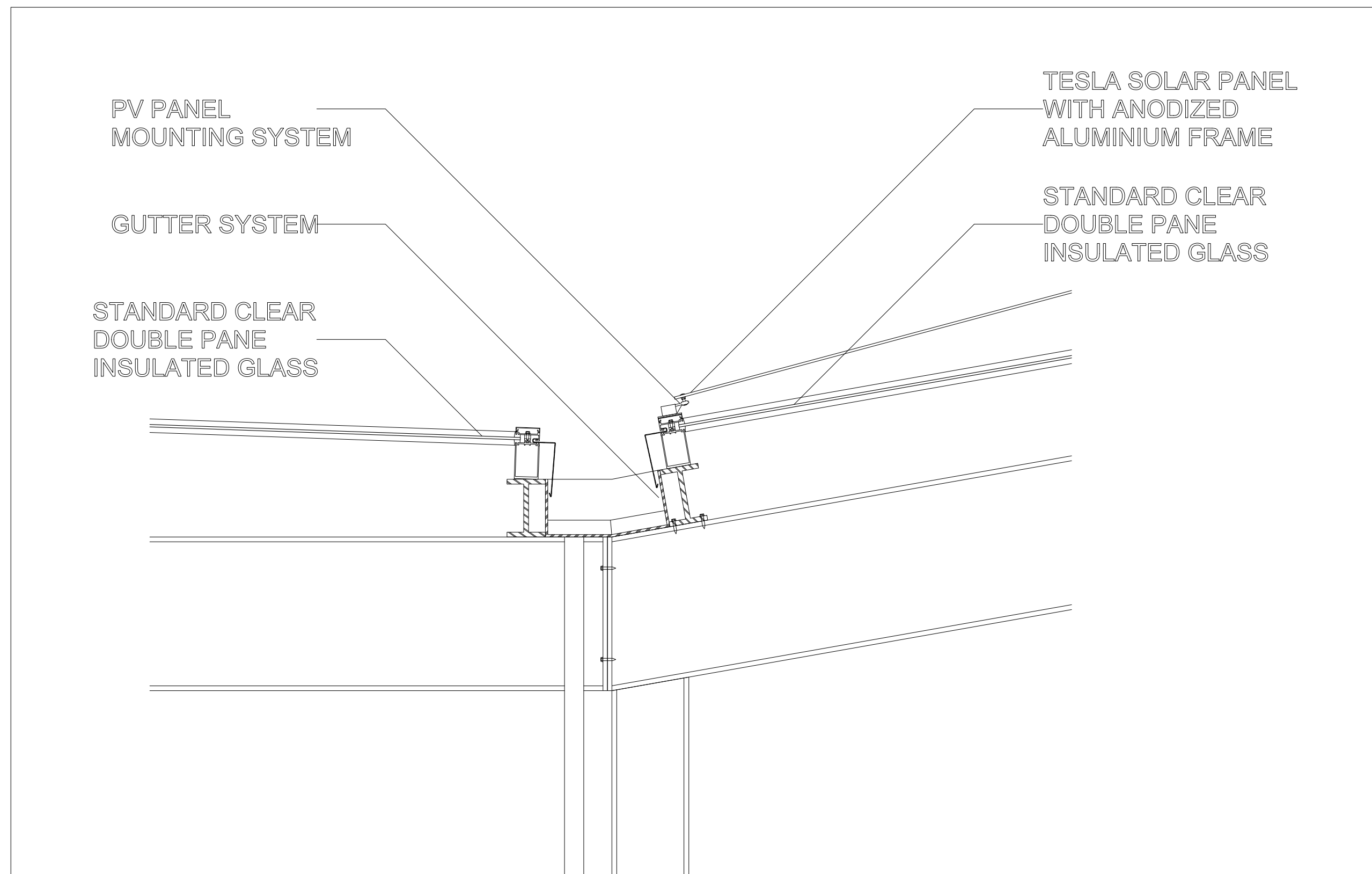
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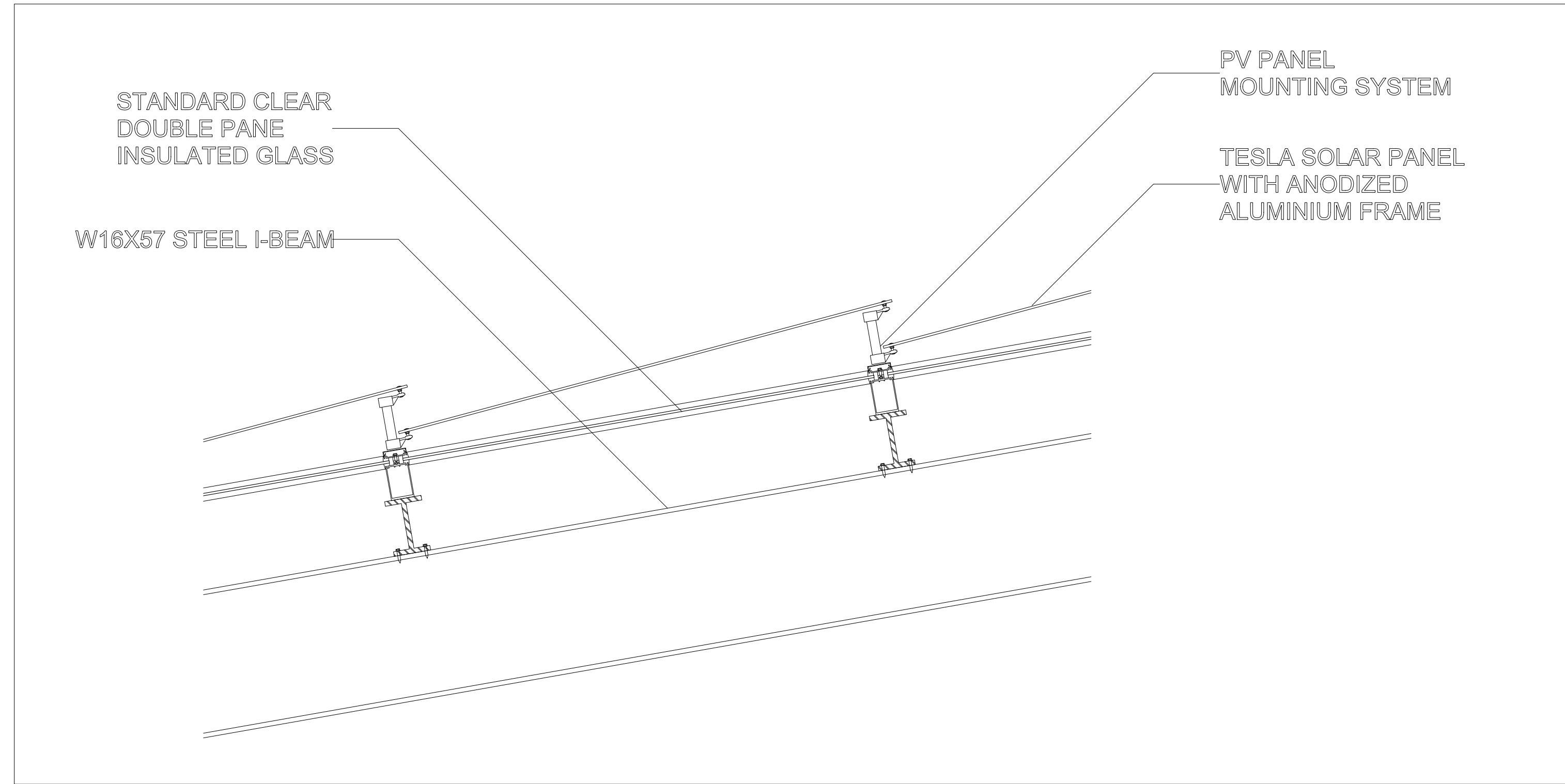
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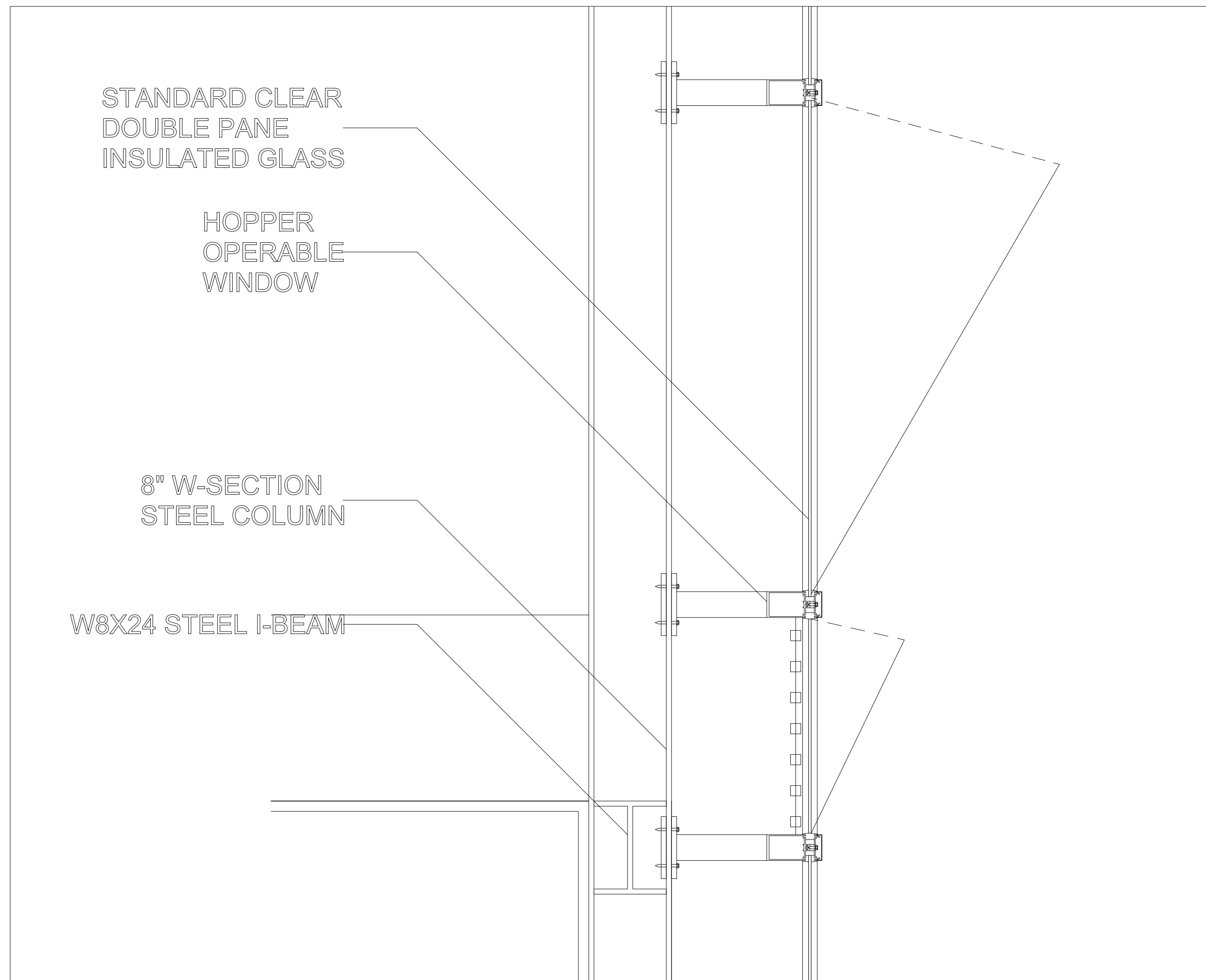
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detail F



detail E



detail D

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MECHANICAL EQUIPMENT SCHEDULE

EQUIPMENT				
MODEL	DESCRIPTION	NUMBER	LEVEL	FAMILY
Mitsubishi MLZ series one-way cassette	Indoor unit - heat pump	48	Res Floors	HVAC_Residential Units
Mitsubishi MXZ-2C20NAHZ2	Outdoor unit - heat pump	4	Sub-Roof	HVAC_Residential Units
Pfannenbergs PKS 330	Heat Exchanger	4	Res Floors	HVAC_Residential Units
UltimateAir RecoupAerator, Stirling Technology ERV		4	Res Floors	HVAC_Residential Units
tekmarNet® Thermostat 557, WATTS	Thermostat	36	Res Floors	HVAC_Residential Units
Pfannenbergs PKS 330	Heat Exchanger	2	Ground Floor	HVAC_Greenhouse
UltimateAir RecoupAerator, Stirling Technology ERV		4	Ground Floor	HVAC_Greenhouse, GREENHOUSE_Shared Space
tekmarNet® Thermostat 557, WATTS	Thermostat	5	Ground Floor	HVAC_Public

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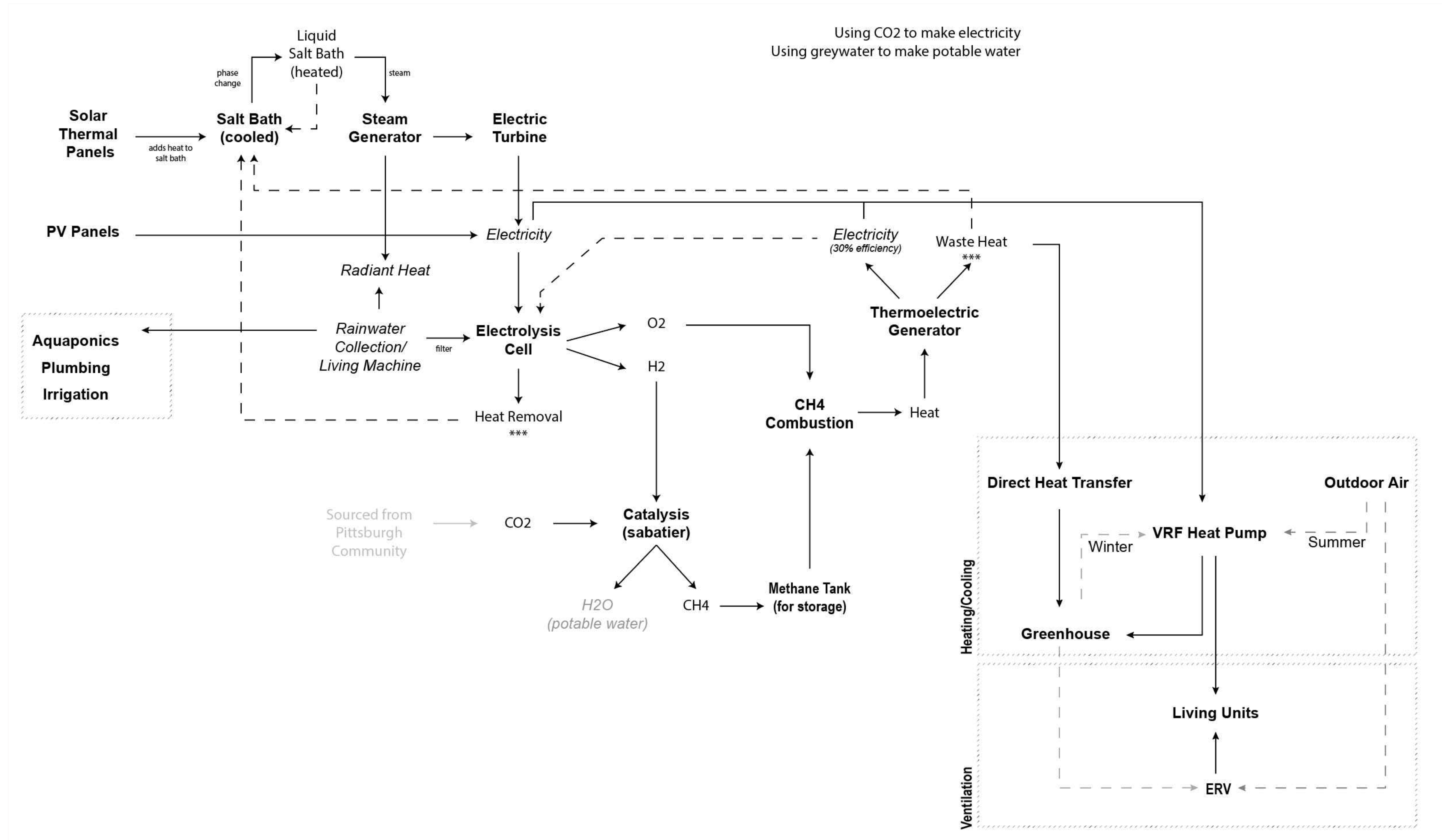
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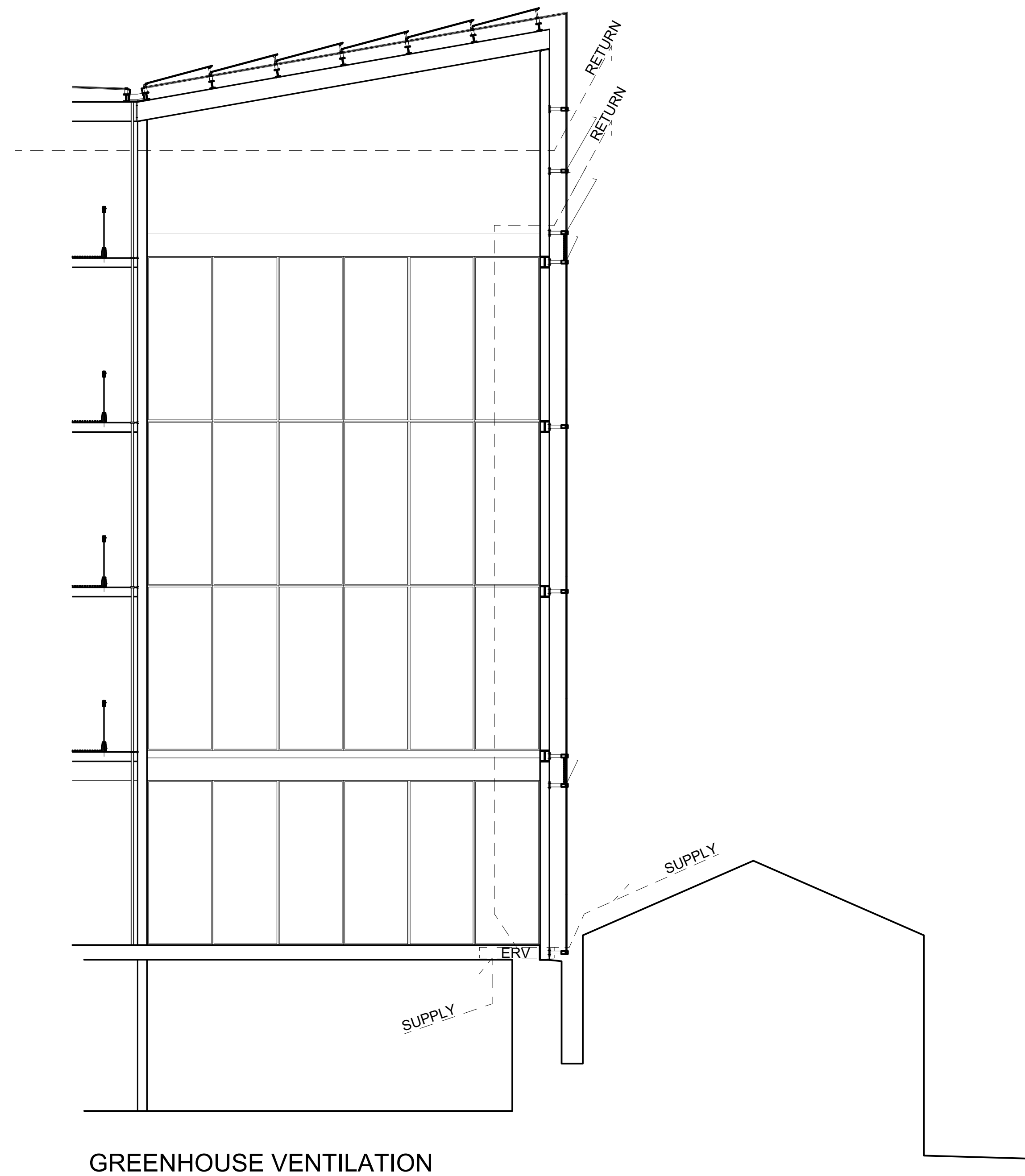
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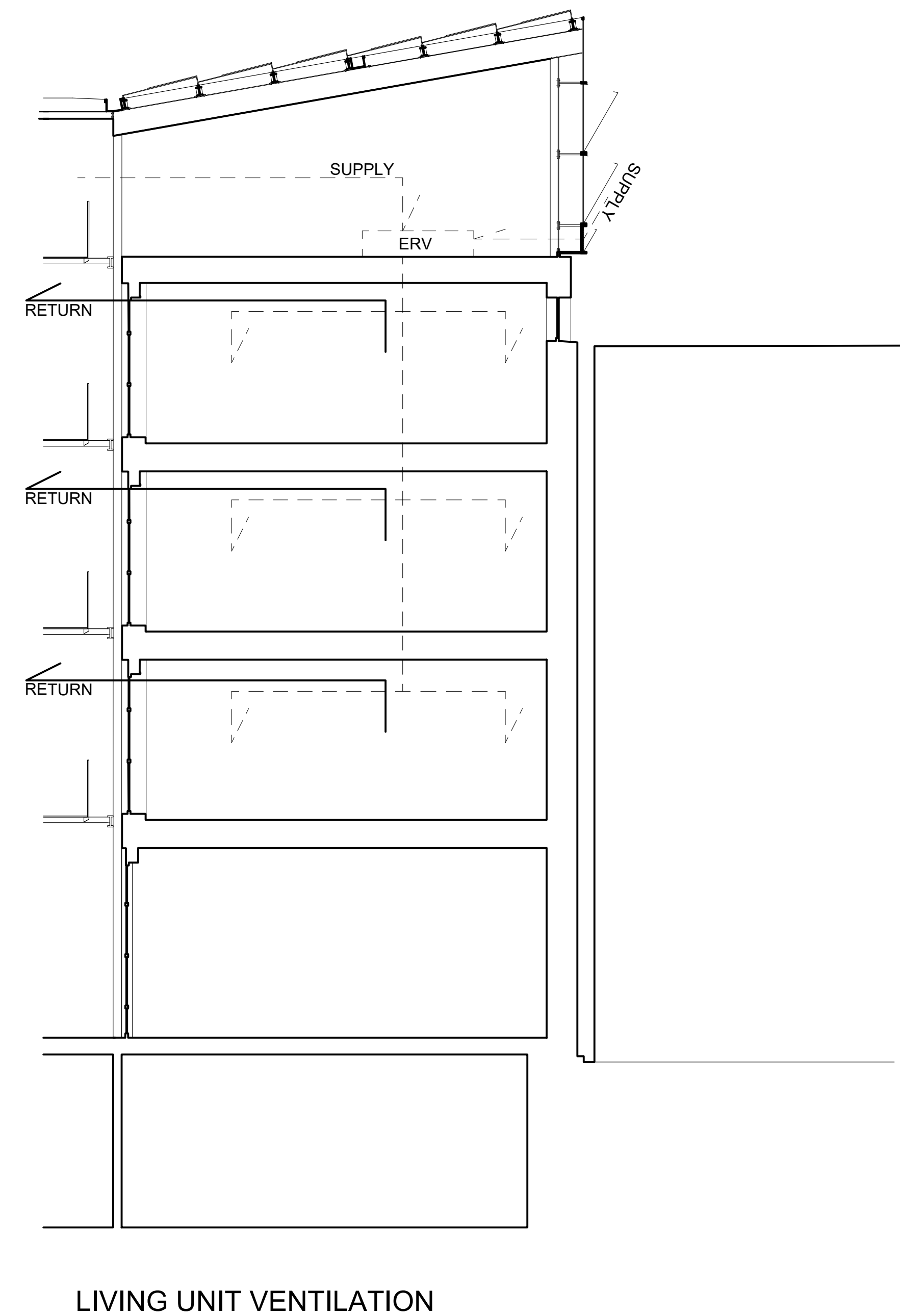
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GREENHOUSE VENTILATION



LIVING UNIT VENTILATION

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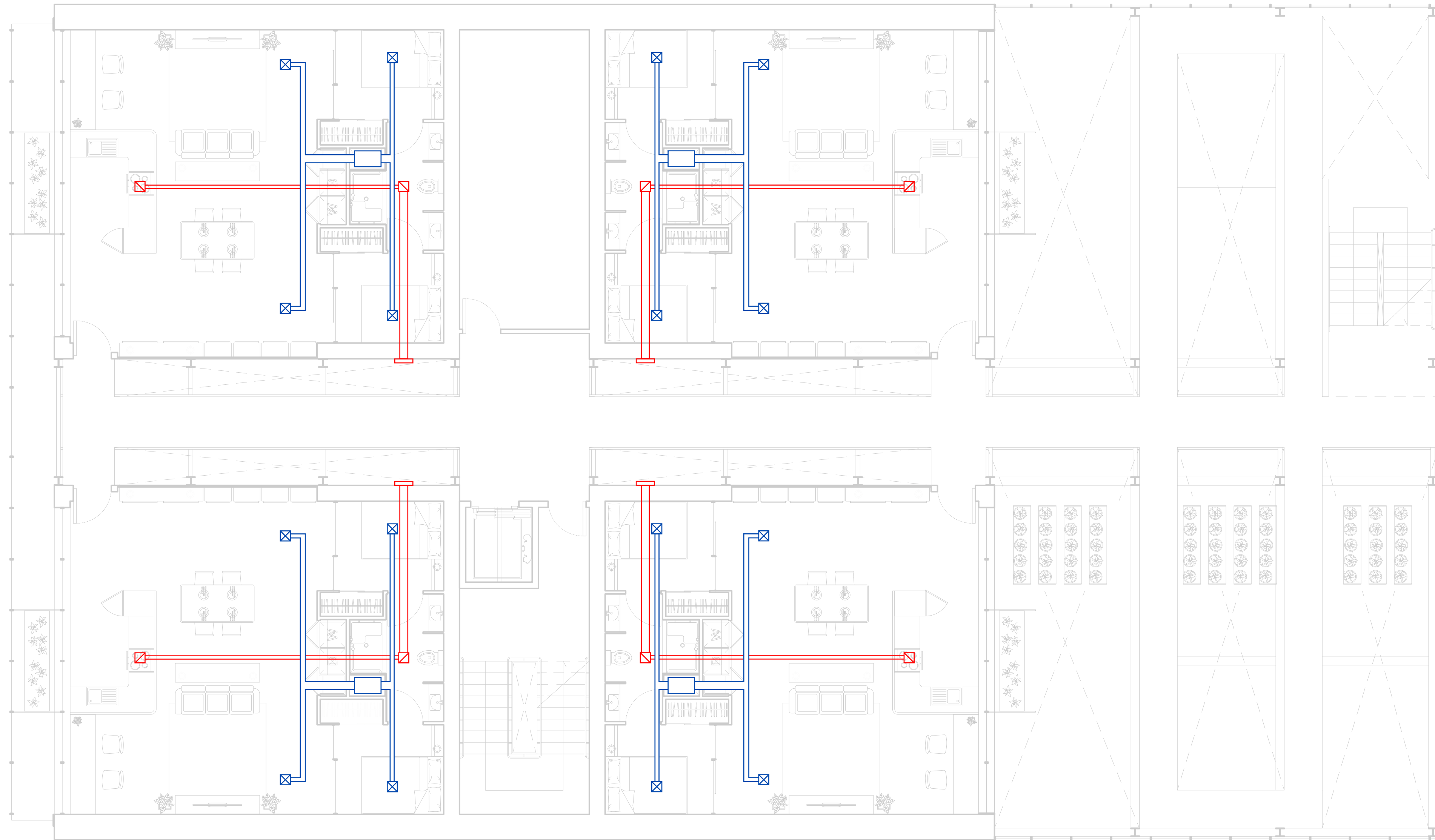
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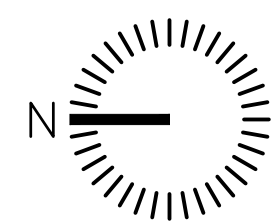
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ELECTRICAL EQUIPMENT SCHEDULE

MODEL	DESCRIPTION	NUMBER	LEVEL	FAMILY
TESLA Powerwall	Backup power (off the grid)		4 Basement	GREENHOUSE_Sabatier Mech.
TESLA Solar Panels (11.34 kW)	PV Panels		Roof	GREENHOUSE_Sabatier Mech.
40-Watt Equivalent Soft White A19 Dimmable	Light bulb		4 Res Floors (Bedroom)	LIGHTING_Residential Units
Philips 60W Daylight A19 LED Light Bulb	Light bulb		2 Res Floors (Bathroom)	LIGHTING_Residential Units
Philips 60W Daylight A19 LED Light Bulb	Light bulb		2 Res Floors (Kitchen)	LIGHTING_Residential Units
65-Watt Equivalent Soft White Dimmable LED	Light bulb		1 Res Floors (Living)	LIGHTING_Residential Units
LEDGLE LED plant grow lights 300 Watt	Light bulb		4 Ground Floor	LIGHTING_Aquaponics
	UV bulb		12 Basement	LIGHTING_Aquaponics
Philips 60W Daylight A19 LED Light Bulb	Light bulb		6 Ground Floor	LIGHTING_Greenhouse
Philips 60W Daylight A19 LED Light Bulb	Light bulb		4 Ground Floor	LIGHTING_Shared Spaces
Philips 60W Daylight A19 LED Light Bulb	Light bulb		4 Ground Floor	LIGHTING_Shared Spaces
Philips 60W Daylight A19 LED Light Bulb	Light bulb		8 Ground Floor	LIGHTING_Shared Spaces
Philips 60W Daylight A19 LED Light Bulb	Light bulb		12 All floors	LIGHTING_Circulation
Philips 60W Daylight A19 LED Light Bulb	Light bulb		4 Ground Floor	LIGHTING_Bathroom
	Refridgerator		12 Res Floors	EQUIPMENT_Residential Units
	Microwave		12 Res Floors	EQUIPMENT_Residential Units
	Small Stovetop		12 Res Floors	EQUIPMENT_Residential Units
	TV		12 Res Floors	EQUIPMENT_Residential Units
	Electric Kettle		12 Res Floors	EQUIPMENT_Residential Units
	Exhaust Fan		12 Res Floors	EQUIPMENT_Residential Units
	Router		12 Res Floors	EQUIPMENT_Residential Units
	Washer		12 Ground Floor	EQUIPMENT_Residential Units
	Dryer		12 Ground Floor	EQUIPMENT_Residential Units
	Pump		1 Ground Floor	EQUIPMENT_Greenhouse
	Fans		4 Ground Floor	EQUIPMENT_Greenhouse
	Computers		5 Ground Floor	EQUIPMENT_Shared Space
	3D printer		2 Ground Floor	EQUIPMENT_Shared Space
	Soldering Station		4 Ground Floor	EQUIPMENT_Shared Space
	Projector		1 Ground Floor	EQUIPMENT_Shared Space
	Oven(s)		4 Ground Floor	EQUIPMENT_Shared Space

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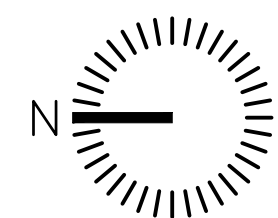
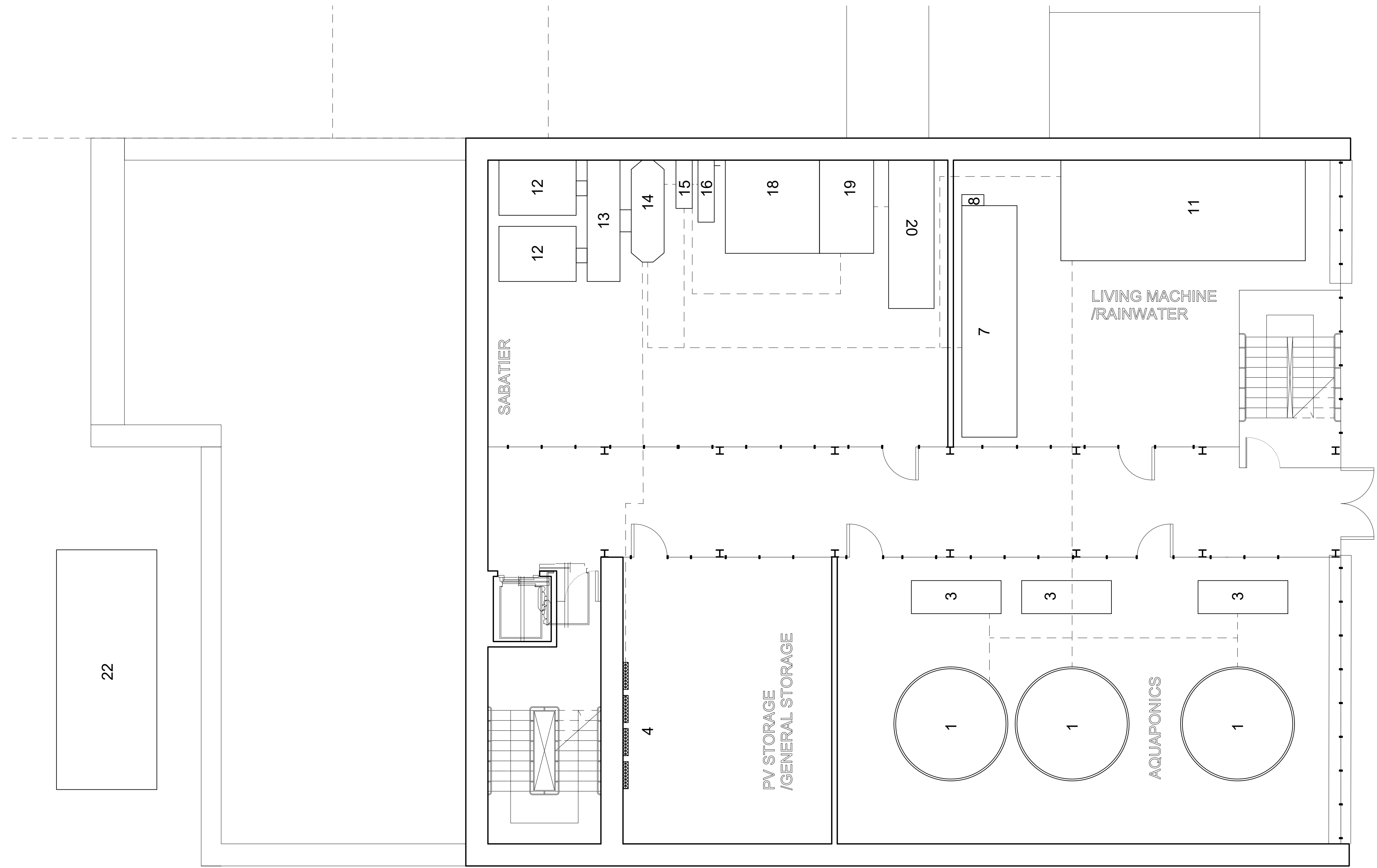
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Equip	Location	System	Amount	
1	Fish Tanks	Basement	Aquaponics	3
3	Return Tank	Basement	Aquaponics	3
2	Vertical Farming Towers	Greenhouse	Aquaponics	9
4	Tesla PV Storage	Basement	Electric	4
5	Tesla PV Panels	Top Roof	Electric	148
6	VRF Heat Pump	Bottom Roof	Heating/Cooling	4
7	Water Storage	Basement	Living Machine	1
8	Purifier	Basement	Living Machine	1
9	Tidal Wetlands	Greenhouse	Living Machine	1
10	Flow Wetlands	Ground Floor	Living Machine	1
22	Settlement Tank	Outside	Living Machine	1
11	Rainwater Collection Tank	Basement	Rainwater	1
12	Salt Bath	Basement	Sabatier	2
13	Steam Generator	Basement	Sabatier	1
14	Electric Turbine	Basement	Sabatier	1
15	Electrolysis Cell	Basement	Sabatier	1
16	Sabatier	Basement	Sabatier	1
18	Methane Tank	Basement	Sabatier	1
19	Combustion Tank	Basement	Sabatier	1
20	Thermoelectric Generator	Basement	Sabatier	1
17	Solar Thermal Panels	Top Roof	Sabatier	24
21	ERV	Bottom Roof	Ventilation	4



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