Mount Vernon Library Commons

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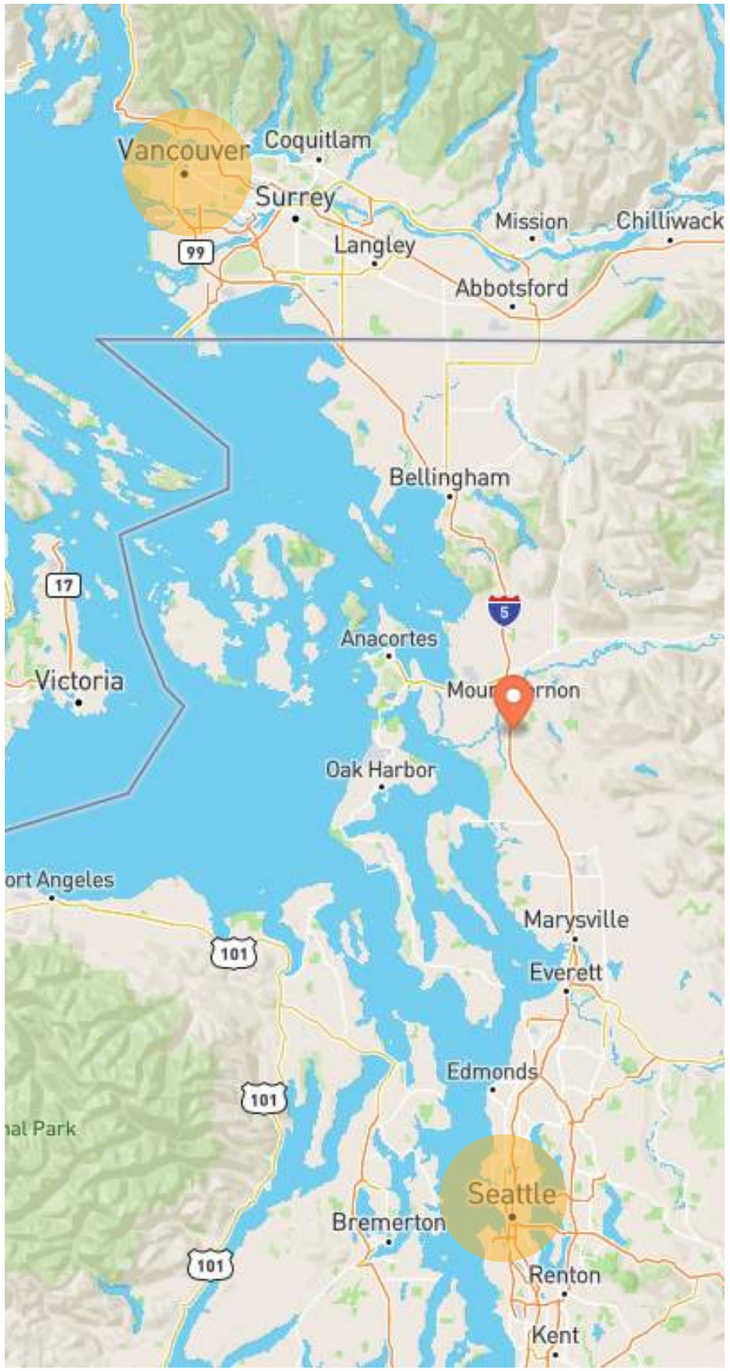

Catalyst and Gateway Project

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Overarching Goals

- **Library as HUB of community gathering**
- **Three uses: library, community center, parking/ EV charging**
- **Economic Development Catalyst**
- **Climate resilient building:**
  - » **Built to last 75 to 100 years**
  - » **60% lower operational energy**
  - » **35% to 40% lower embodied energy**

Project Goals and Targets

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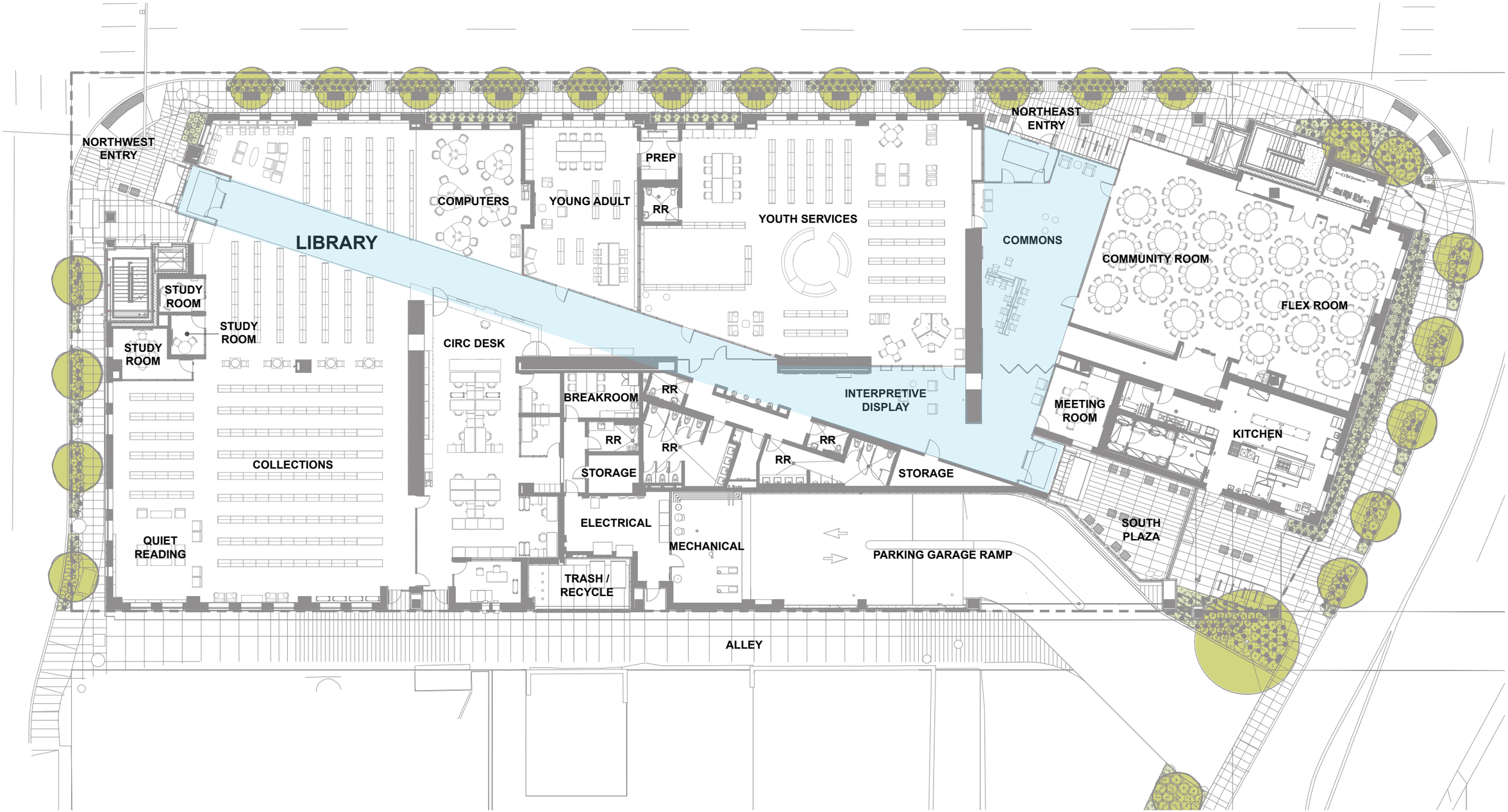

FIRST FLOOR PLAN

Organization

Low Energy Use
An anticipated Energy Use Intensity of 12 kBtu/SF/yr would be 82% more efficient than the average existing Library in Washington State.

76 EV Charging Stations
With capacity for 200 stations, the garage will be the largest public charging facility in the United States.

- **Low Energy Use**
- **PV Solar Array**
- **Low Carbon Concrete Mixes**
- **Daylighting**
- **High Efficiency Air-to-Water Heat Pump**
- **Native and Resilient Plantings**
- **On-site Stormwater Treatment And Permeable Pavers**
- **Naturally Ventilated Parking Garage**
- **Passive House Certification**
  - **Super Insulated Envelope**
  - **Air-Tight Construction**
  - **High-Performance Windows**
  - **Thermal-Bridge-Free Detailing**
  - **Heat Recovery Ventilation**
- **Proximity to Transit**
- **EV Charging Hub**
- **All-Electric Building and Commercial Kitchen (Kitchen ouside of Passive House boundary)**
- **Electric Bike Charging**
- **Material Transparency**

Native and Resilient Plantings
Reduces the need for irrigation.

PV Solar Array
A 129kW solar array on the roof and south facade would supply 19-21% of the building's annual power demand.

Naturally Ventilated Garage
Eliminates the energy required for mechanical ventilation.

Low Carbon Materials
Including concrete mix designs to reduce the embodied carbon emissions of typical construction by over 30%, and carbon-negative carpet.

Stormwater Management
Underground modular wetland system.

Material Transparency
Specifying products with publically available ingredient disclosures to promote human and environmental health.

Heat Recovery Ventilation
Reduces energy demand by exchanging heat between exhaust and intake air.

High Performance Windows
Triple-glazed and fiberglass frame to reduce thermal transfer.

Super Insulated Envelope
Reduces energy demand and maintains a comfortable interior environment year round.

Sustainable Strategies

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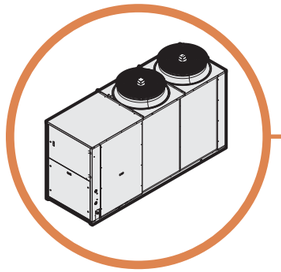
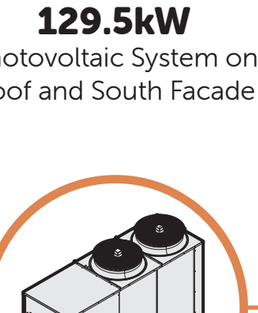
19-21%
of Building Load

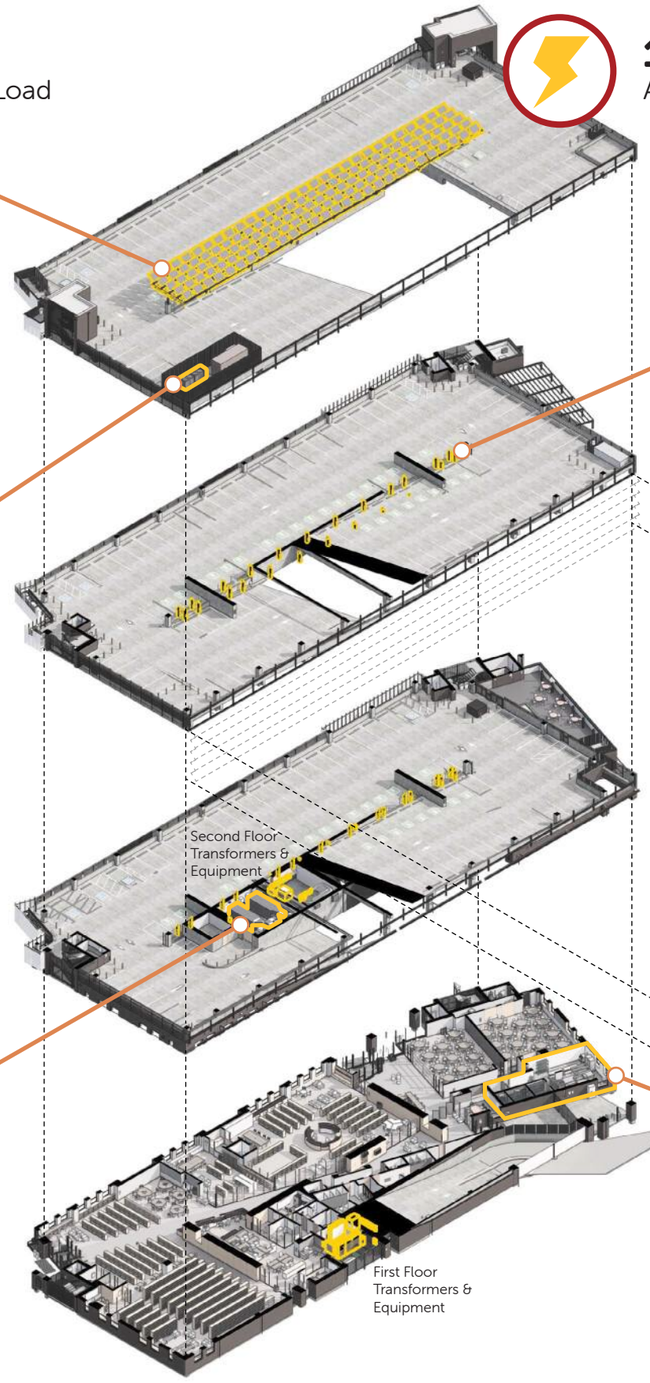
129.5kW
Photovoltaic System on Roof and South Facade



Air-to-Water Heat Pump



DOAS with Energy Recovery Heat Exchanger



12 EUI kBtu/SF/yr
Anticipated Energy Use Intensity

76 EV
Charging Stations, with infrastructure for up to 200

Commercial Kitchen
All Electric Kitchen Equipment

Rooftop Solar Array

Level 2 Selectable and DC Fast-Charge Charging Stations

Electric Bike Charging Lockers

All Electric Building

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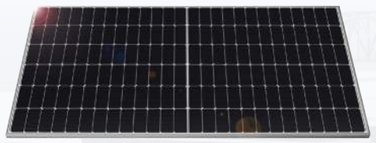
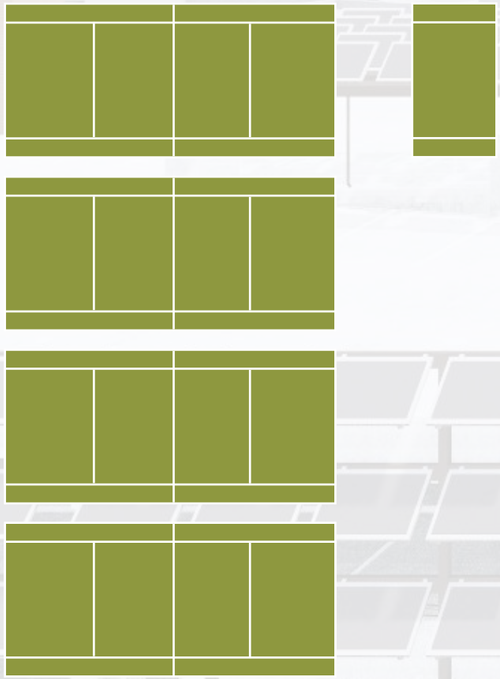


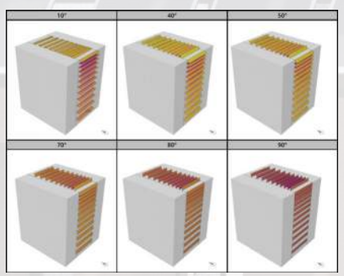
129.5 kW

= 4 1/4 TENNIS COURTS

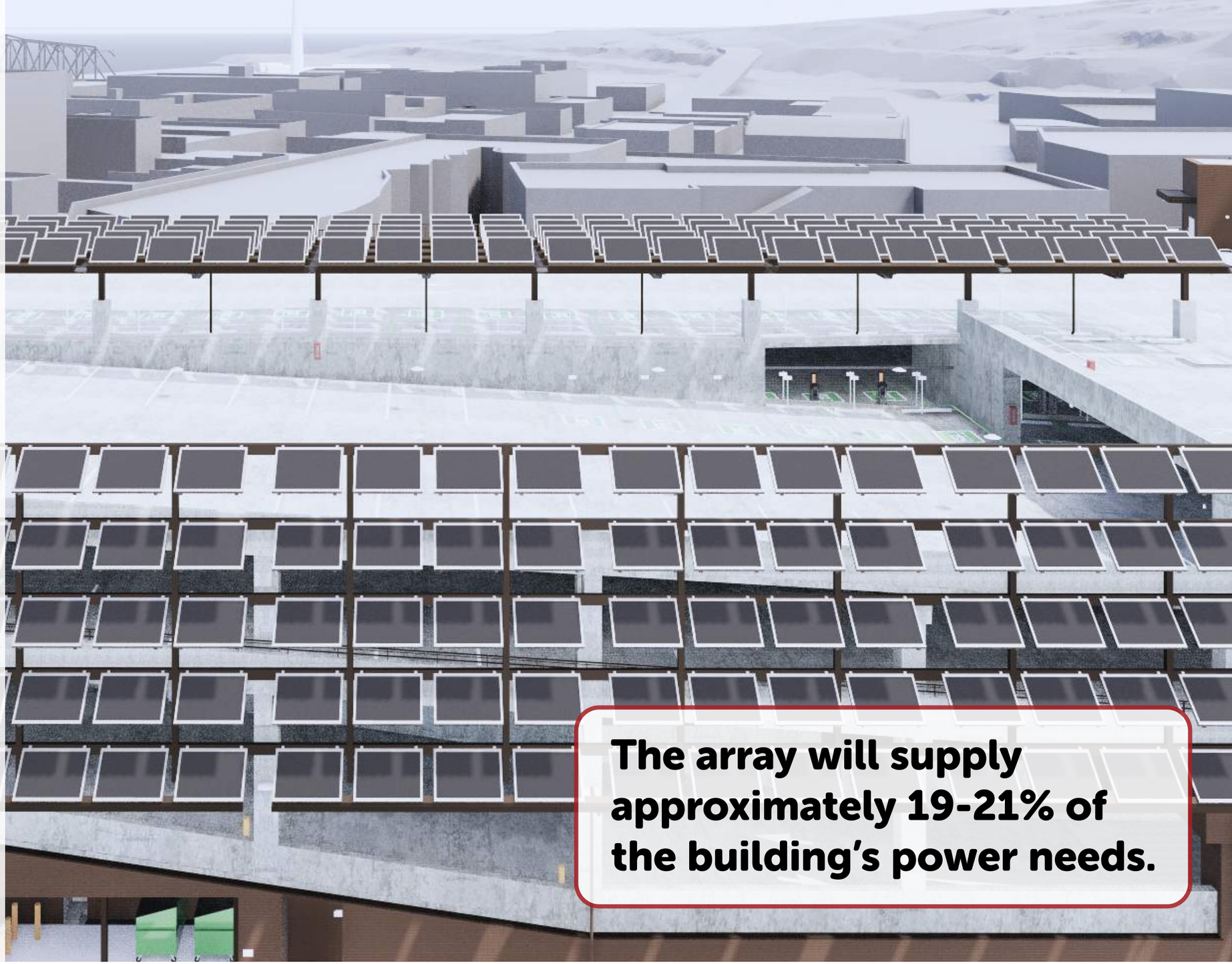
(Or 13 1/2 Pickelball Courts!)



Total infrastructure area
Photovoltaic System on Roof
and South Facade



Tilt angle simulations



The array will supply approximately 19-21% of the building's power needs.

Renewable Energy

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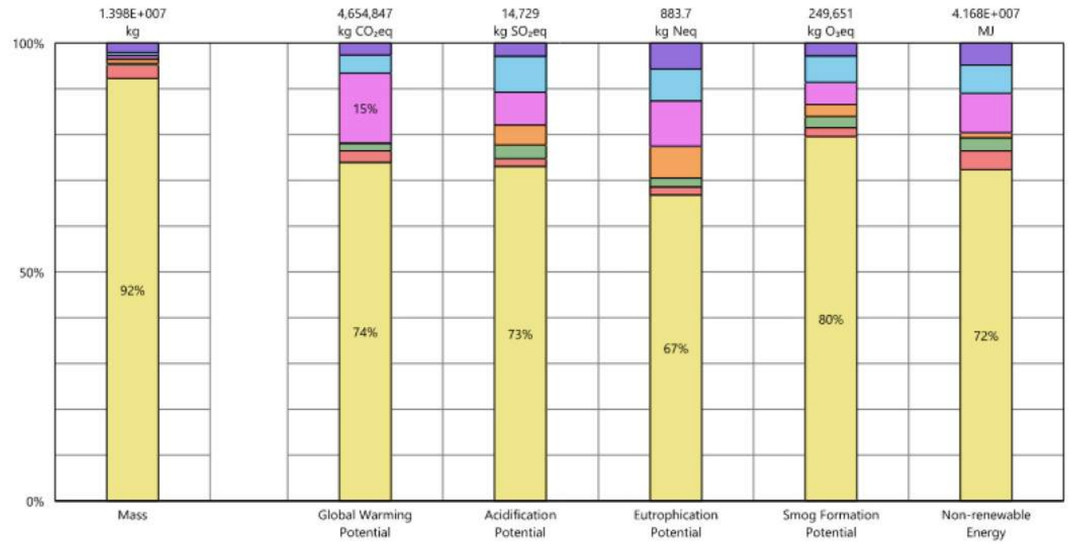
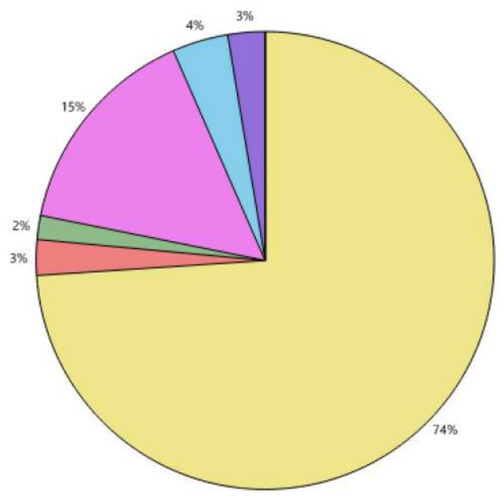
Results per Division



Legend

Divisions

- 03 - Concrete
- 04 - Masonry
- 05 - Metals
- 06 - Wood/Plastics/Composites
- 07 - Thermal and Moisture Protection
- 08 - Openings and Glazing
- 09 - Finishes



Global Warming Potential

CONCRETE

CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 19.

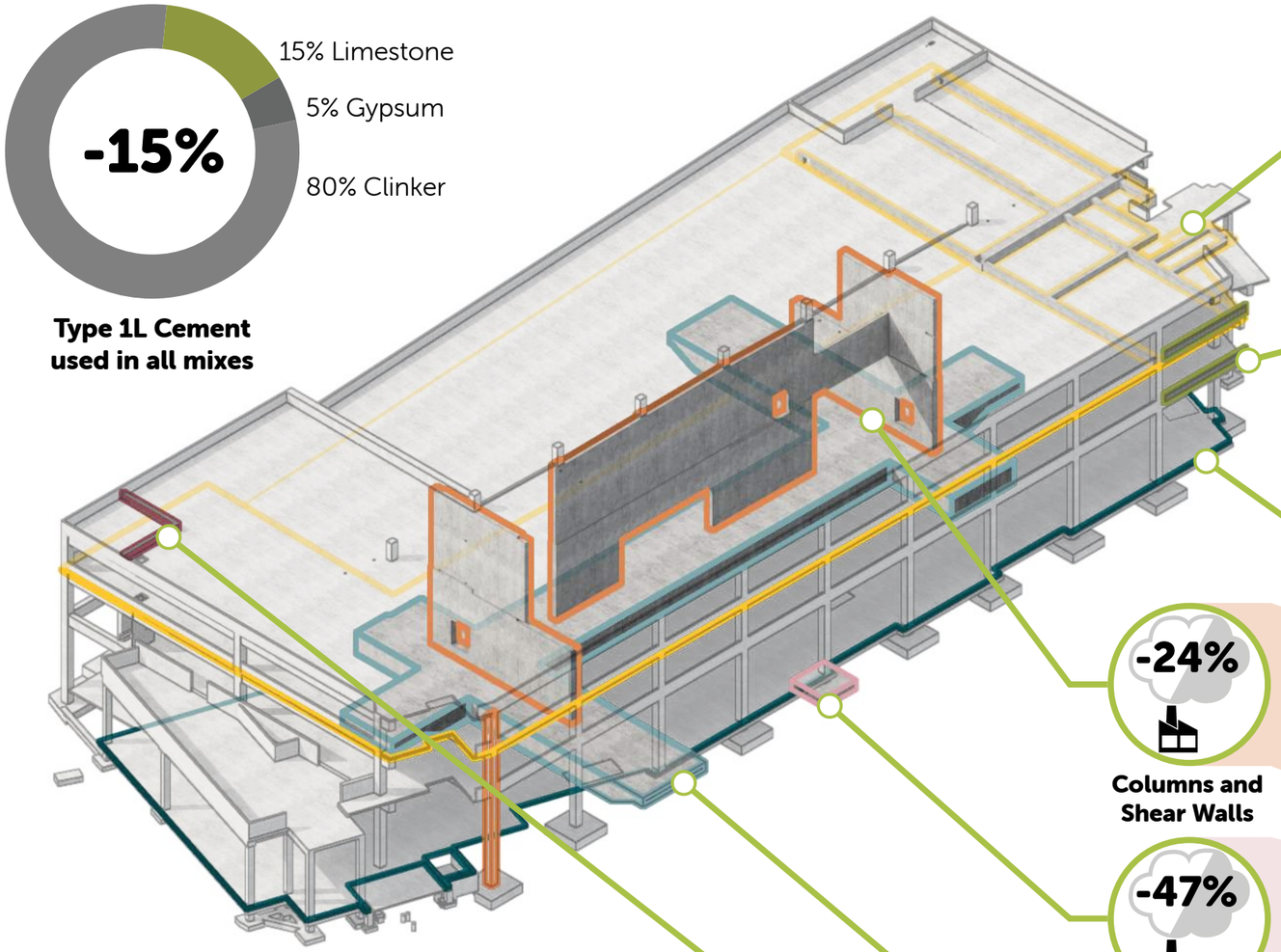
CONCRETE MIXTURES
CONCRETE MIXTURES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

CONCRETE MIXTURES

f'_c (PSI)	TEST AGE (DAYS)	EXPOSURE CLASS F	S	W	C	MAX W/C RATIO	USE	NOTES
3,500	56	F1	S0	W0	C1	-	CURBS AND PADS	3
4,000	56	F0	S1	W0	C1	-	FOUNDATIONS, UNO	5
4,000	56	F0	S1	W0	C1	0.45	WALLS (UNO), VEHICLE BARRIERS	4
4,000	56	F0	S1	W1	C1	0.45	INTERIOR SLAB-ON-GRADE, ELEVATOR PIT WALLS	2
4,000	56	F1	S1	W1	C1	0.45	EXTERIOR SLAB-ON-GRADE	4
5,000	56	F0	S1	W0	C1	-	MAT FOUNDATIONS	5
5,000	56	F0	S1	W0	C1	-	PRECAST STAIRS	-
6,000	56	F1	S0	W0	C1	0.40	ELEVATED SLABS AND BEAMS, UNO	1, 2
6,000	56	F2	S0	W1	C1	0.45	ELEVATED SLABS AND BEAMS AT TOP LEVEL, TOP RAMP	1, 2
6,000	56	F0	S0	W0	C1	-	COLUMNS, SHEAR WALLS	2

1. FOR POST-TENSIONED SLABS AND BEAMS, CONCRETE SHRINKAGE SHALL BE A MAXIMUM OF 0.035 PERCENT, OR A MAXIMUM ALLOWABLE WATER CONTENT OF 255 Lb/CY.
2. PROVIDE A MINIMUM OF 10% SUPPLEMENTARY CEMENITIOUS MATERIALS (SCM).
3. PROVIDE A MINIMUM OF 20% SUPPLEMENTARY CEMENITIOUS MATERIALS.
4. PROVIDE A MINIMUM OF 25% SUPPLEMENTARY CEMENITIOUS MATERIALS.
5. PROVIDE A MINIMUM OF 30% SUPPLEMENTARY CEMENITIOUS MATERIALS.

Type 1L in all mixes



=1,088 metric tons

237 typical passenger cars driven for 1 year

-24% Post-Tensioned Slabs and Beams

-46% Vehicle Barriers, Non-Structural Walls

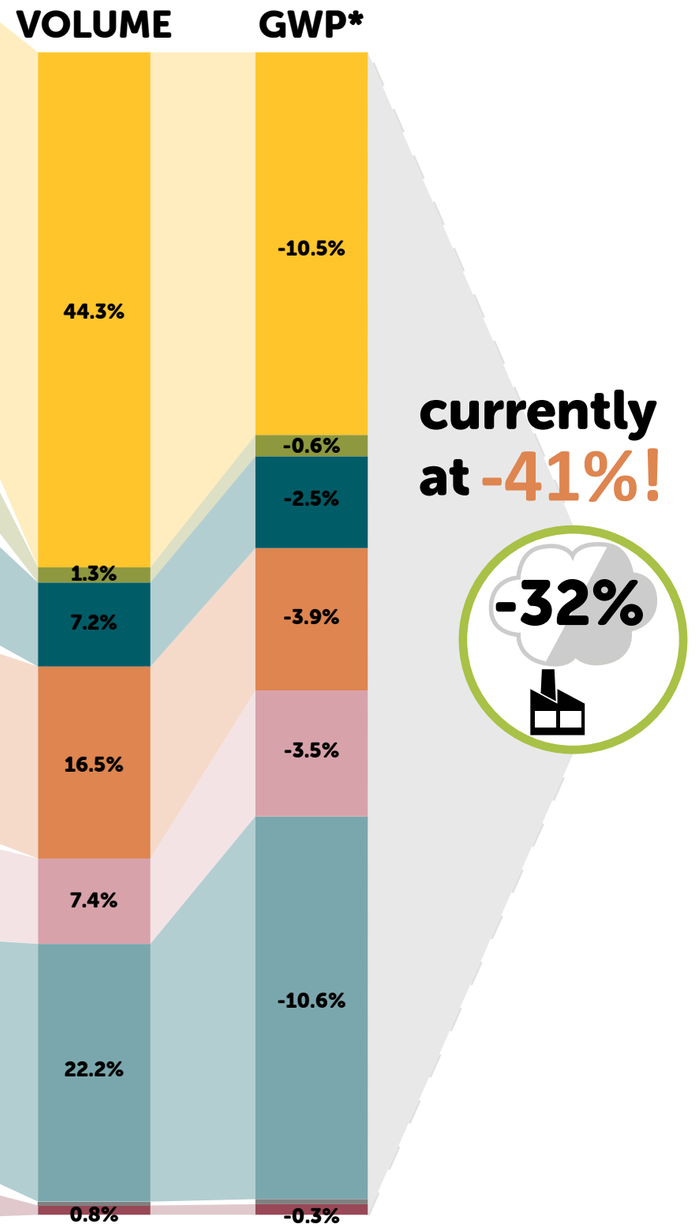
-35% Slab on Grade

-24% Columns and Shear Walls

-47% Typical Foundations

-48% Mat Foundations

-36% Curbs and Pads



currently at -41%!

-32%

Concrete Carbon Reduction

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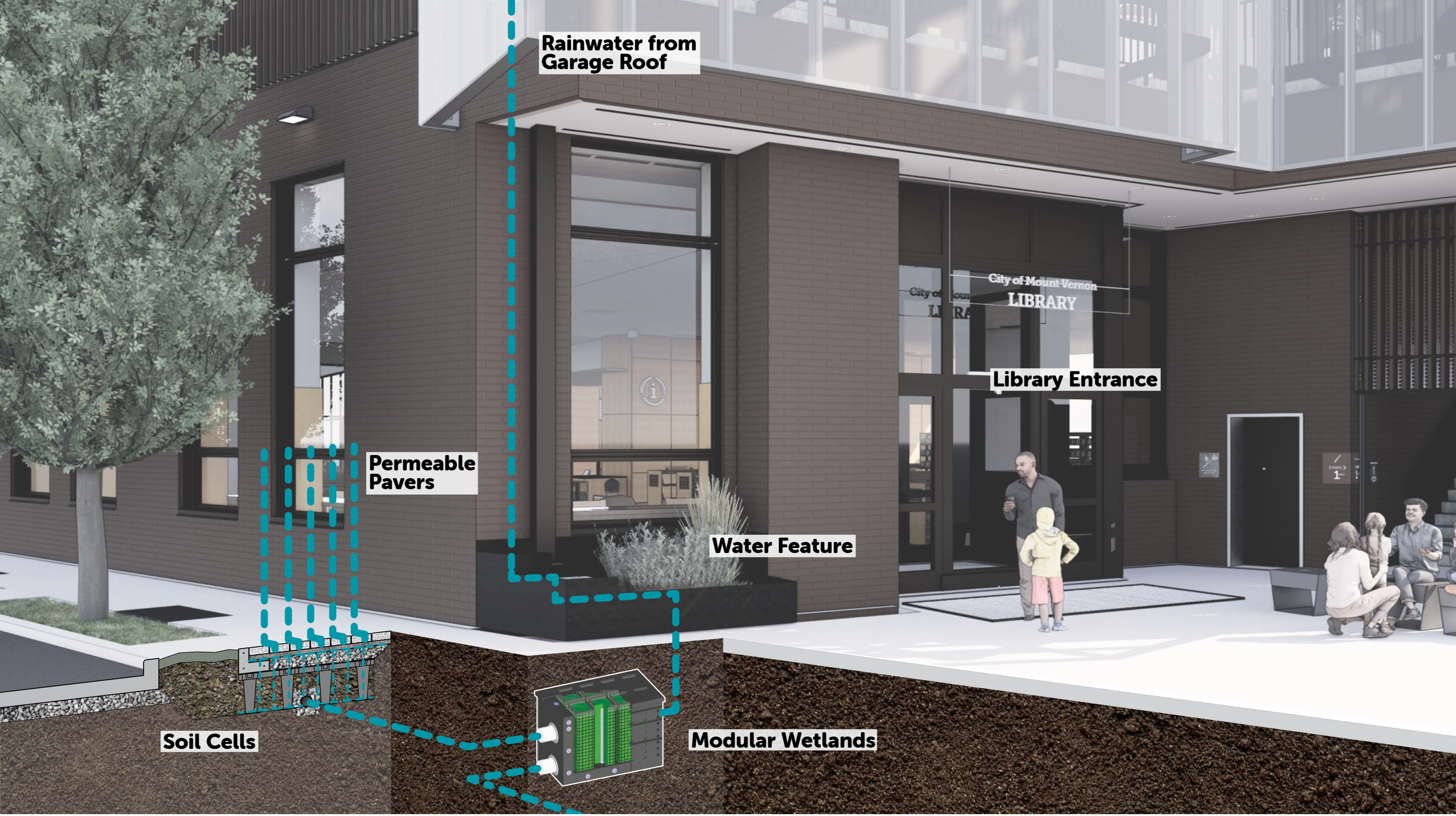

Stormwater Treatment

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Path Rush
Juncus tenuis

Blueberry
Vaccinium Corymbosum

Beach Strawberry
Fragaria chiloensis

Intermediate Yew
Taxus X media ‘everlow’

Western Swordfern
Polystichum munitum

Privet Honeysuckle
Lonicera pileata

COMMONS

Siberian Iris
Iris Sibirica

Salal
Gaultheria shallon

Rosemary
Rosmarinus officianalis

Lavender
Lavandula angustifolia

Native and Resilient Plantings

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STRATEGIES:

Super Insulated Envelope

High-Performance Glazing

Heat Recovery Ventilation

Thermal-Bridge-Free Detailing

Air-tight Construction

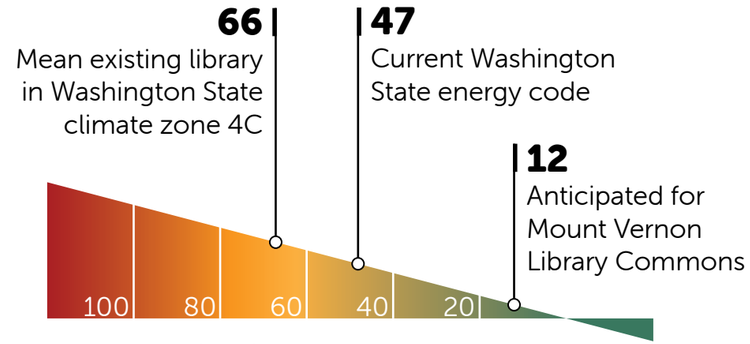
BENEFITS:

Low Energy Use
12 EUI*

Comfortable Interior Environment Year Round

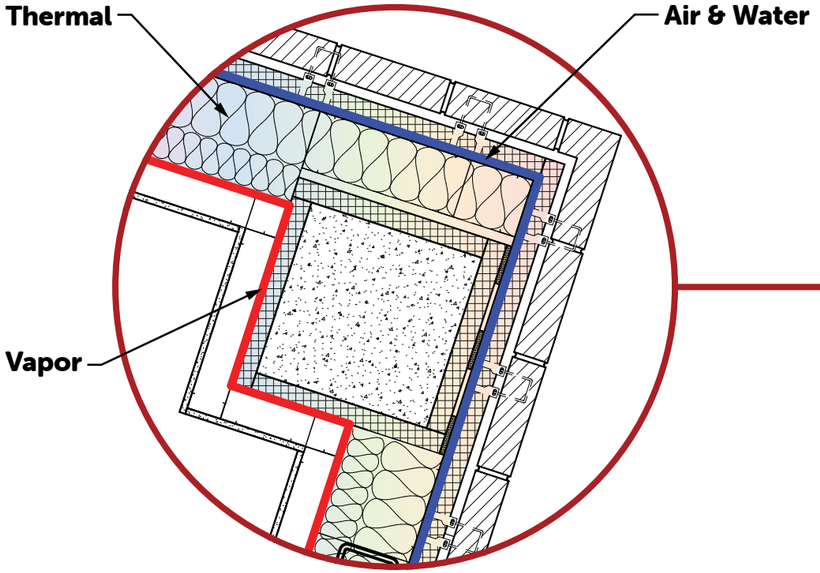
Improved Indoor Air Quality

Quiet Acoustics

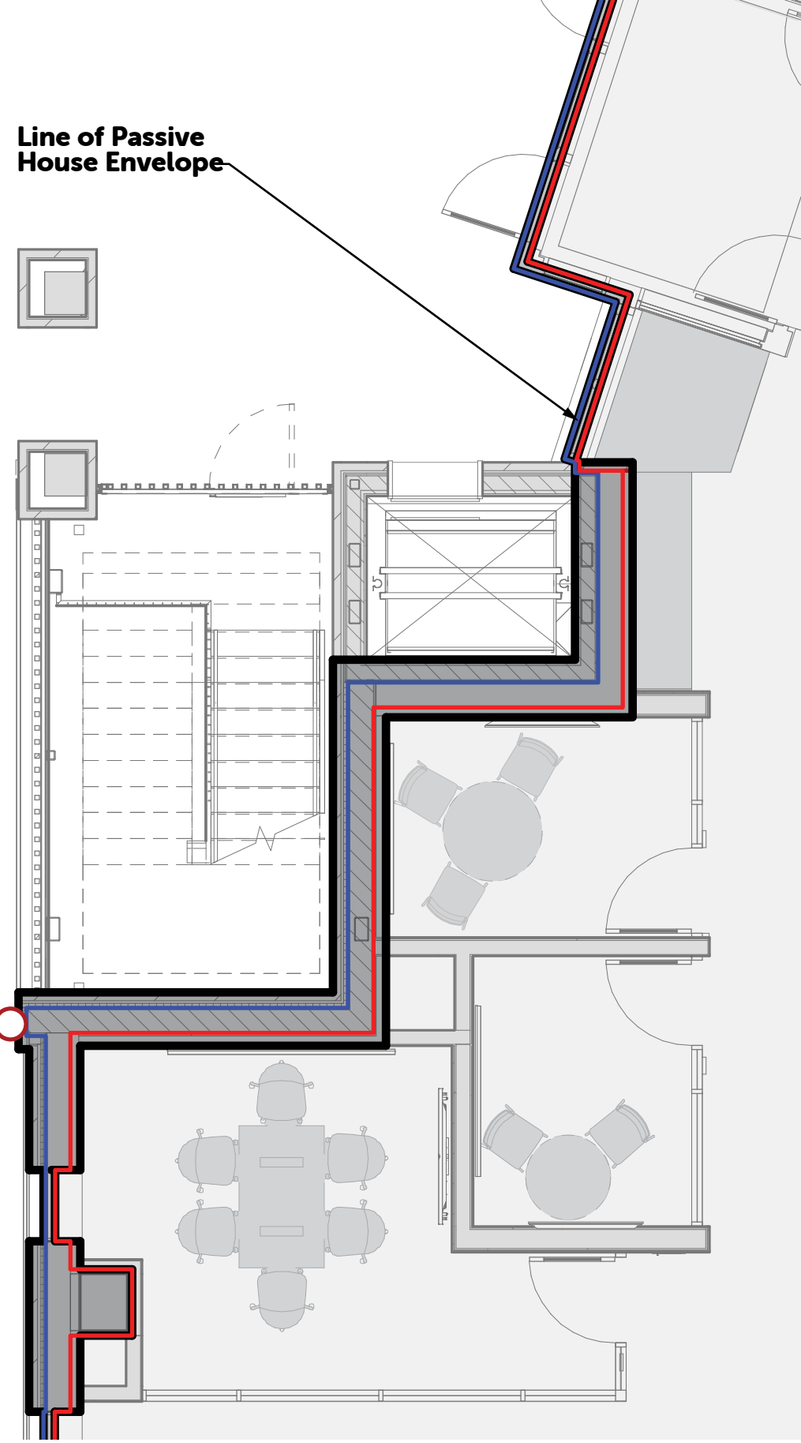


* **EUI** kBtu/SF/yr
Energy Use Intensity

Less than 1/5 the energy use of the mean existing library in Washington State climate zone 4C (66 EUI)



Continuous Control Layers



Passive House Certification

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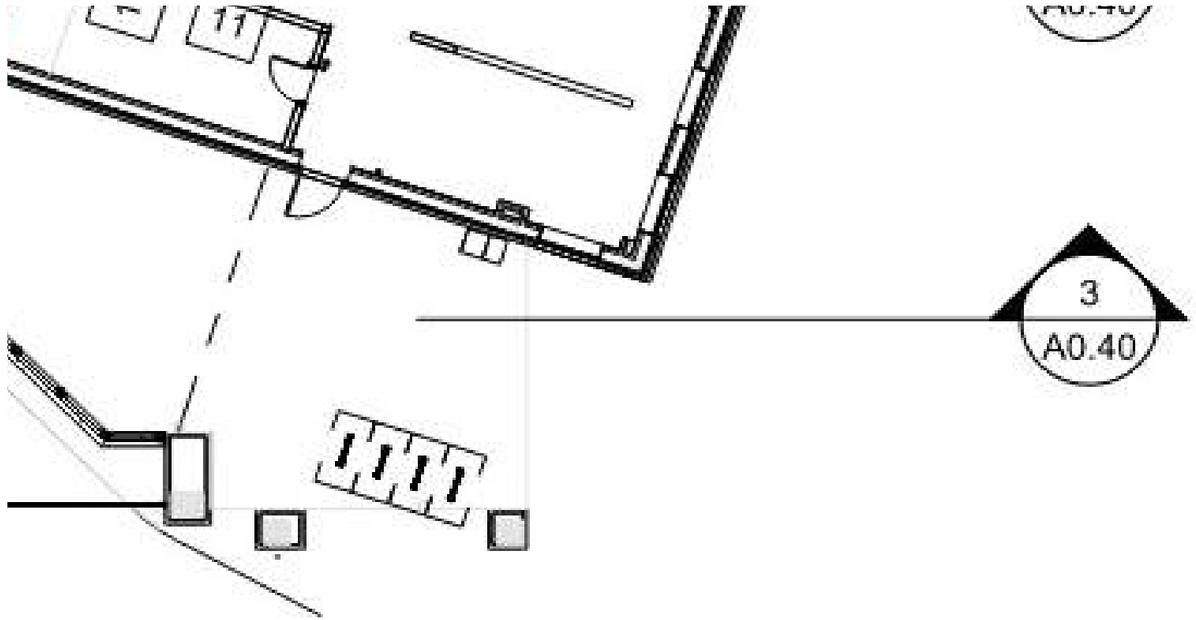


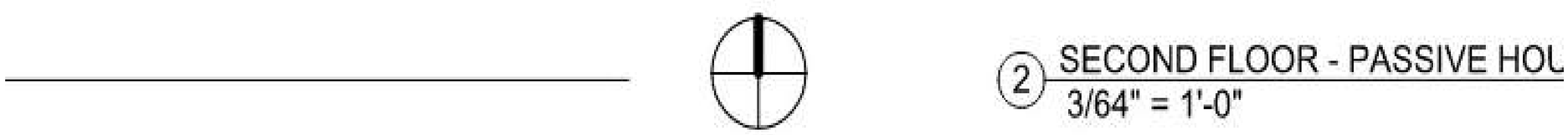
Phius 2018+

- Design Certified
- Construction Certification Pending

Blower Door Test

CFM50 = 0.055
ACH50 = 0.380

Equals 4x better than Code



Designed to LEED Silver Targets

Passive House Certification

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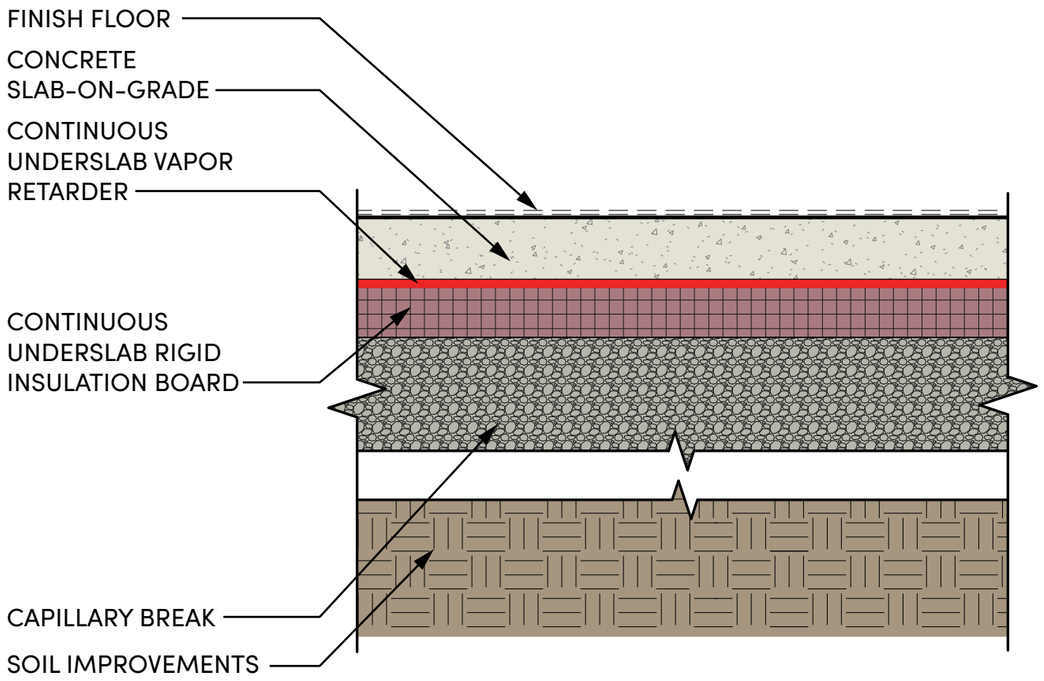
TYPICAL PASSIVE HOUSE SLAB-ON-GRADE FLOOR (R-20)



Passive House Envelope

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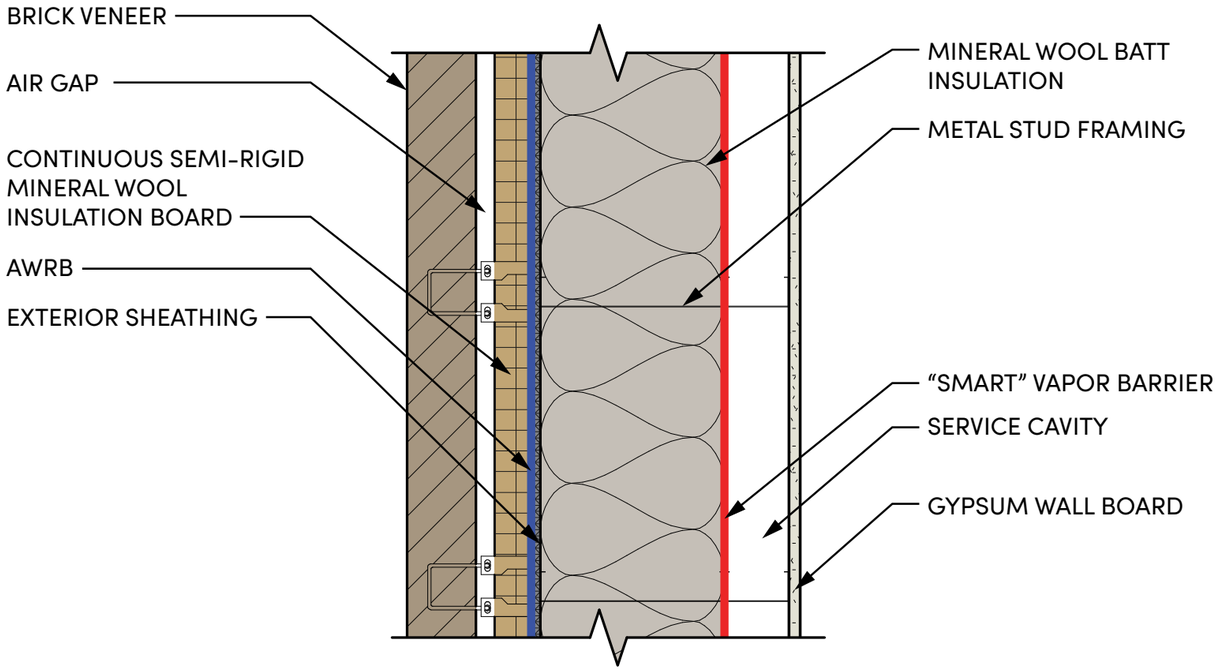
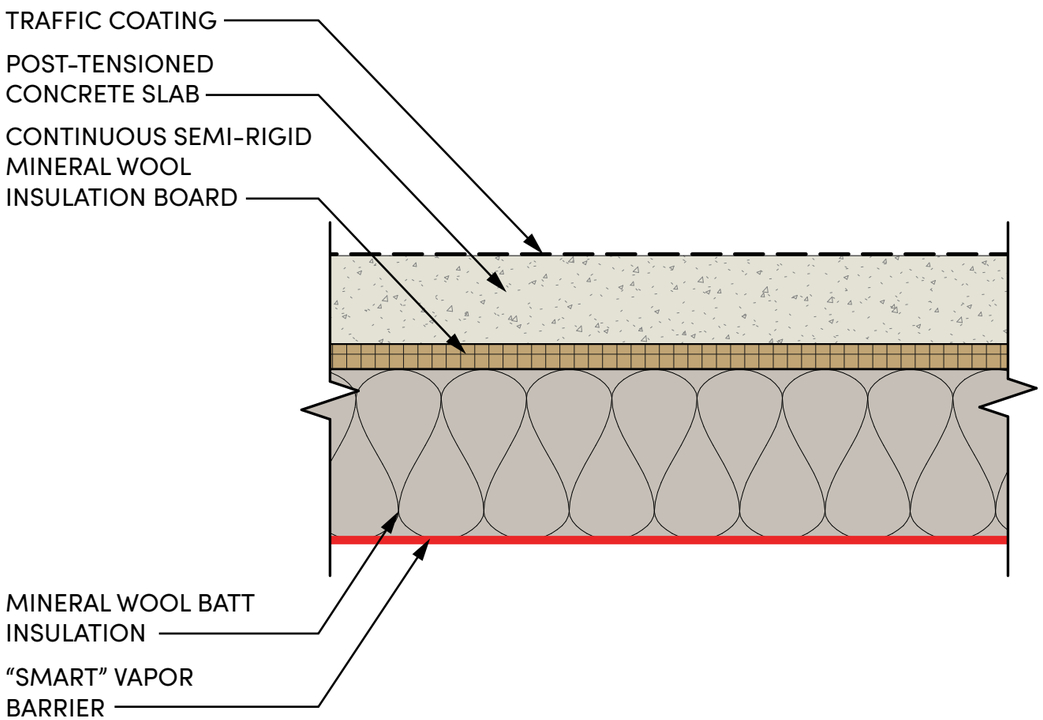
TYPICAL EXTERIOR PASSIVE HOUSE WALL (R-46.6)

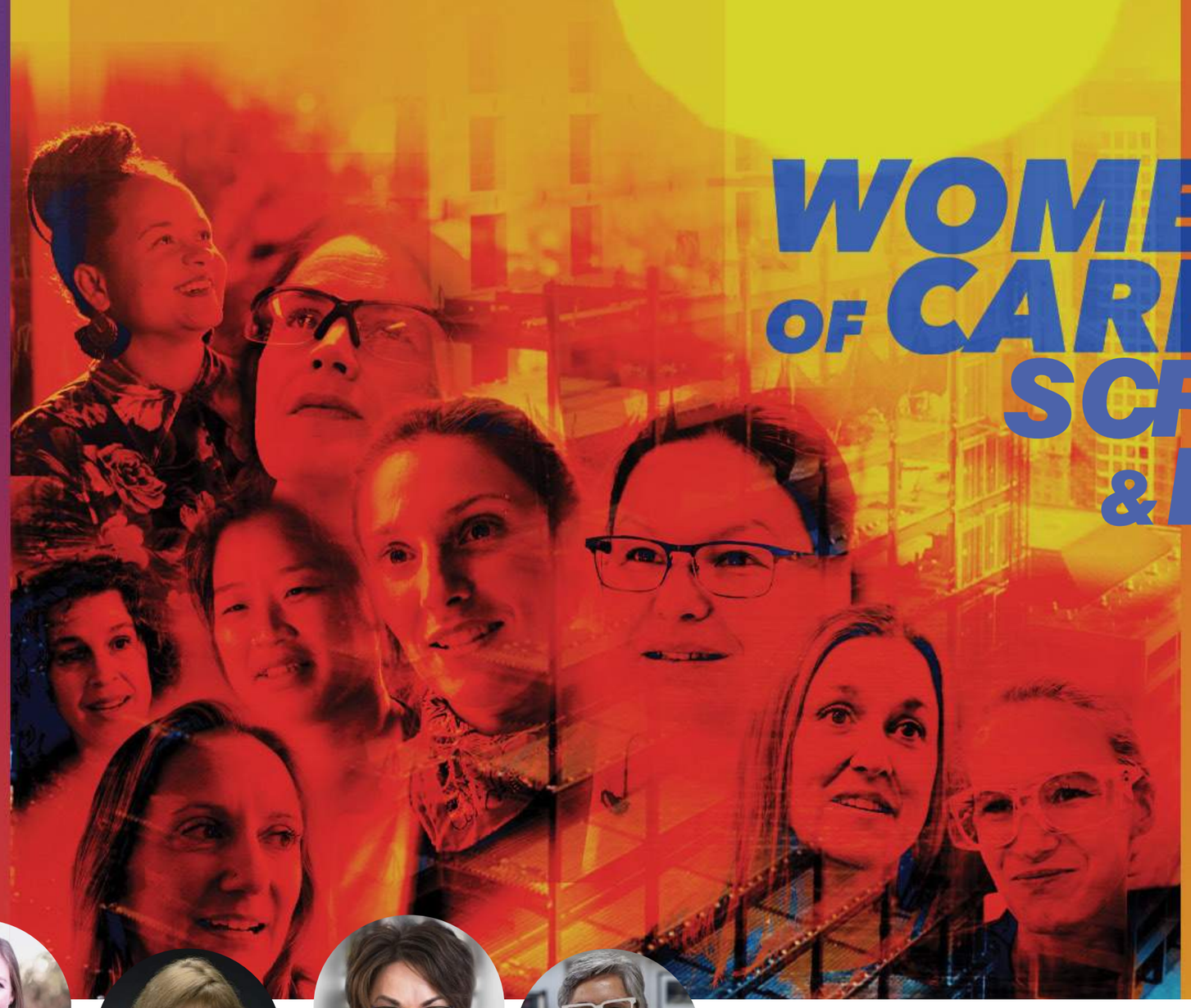


TYPICAL PASSIVE HOUSE CEILING AT GARAGE SLAB (R-57.6)



Passive House Envelope

WOMEN OF CARBON SCREENING & PANEL



04/25 | 5pm-8pm
Mount Vernon Library Commons Community Room

Produced and Directed by
Basia + Leonard Myszynski
sOlar eye communications

Susan Jones
ateliersjones

Erin McDade
Architecture 2030

Julie Kriegh
Kriegh Architecture Studios

Jill Boudreau
Former Mayor of Mount Vernon

Julie Blazek
HKP Architects

Shameless Plug

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