



**Unlocking family-friendly, livable, and
climate-adaptive housing with Point
Access Blocks**

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11 May 2023**

Bifurcated Urbanism



High level of lower-cost housing on arterials

Heinously poor land use

Apartments as air/noise pollution absorbers for homeowners

Poor public health outcomes

Is this Climate Adaptive Development?



Roosevelt
Seattle

- light rail station
- thick buildings
- no Passivhaeuser
- no Baugruppen/coops
- little social housing
- little open space
- no slow streets

Foto: google earth

Development Patterns: Frederiksberg, DK



Perimeter Block Housing
(continuous, semi-permeable)

4-6 story buildings
Inhabited attics
Tree-lined streets
Tree-filled communal courtyards
Walkable
Bike-friendly
Low-carbon living

Foto: google earth

Development Patterns: Frederiksberg, DK



Much like Seattle, many smaller buildings...

They're just much thinner...

And taller.

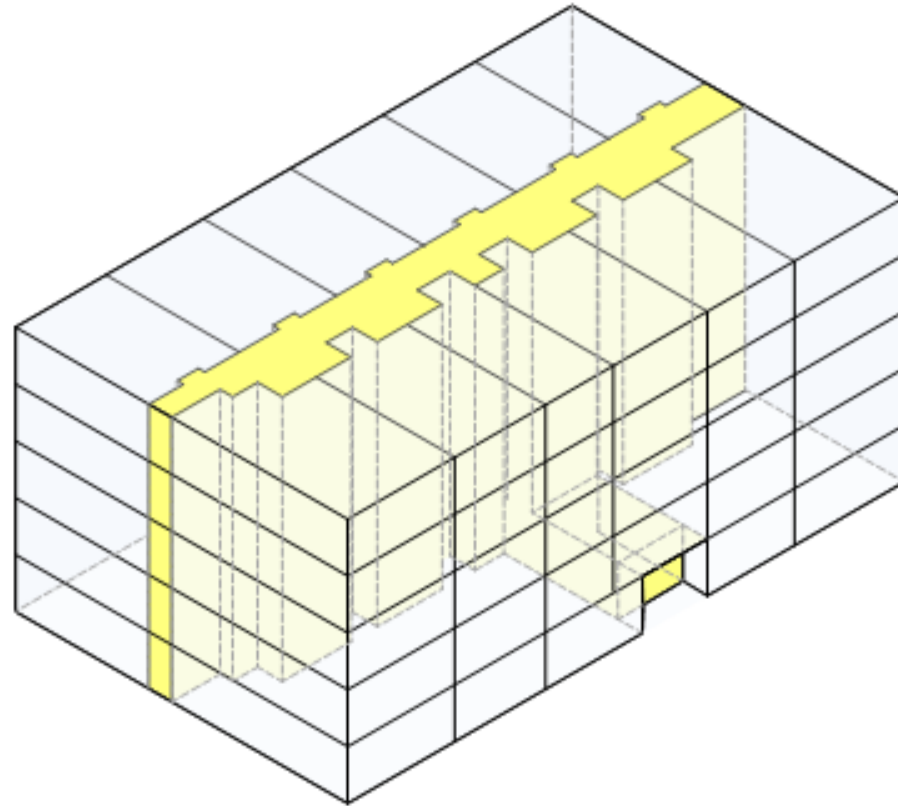
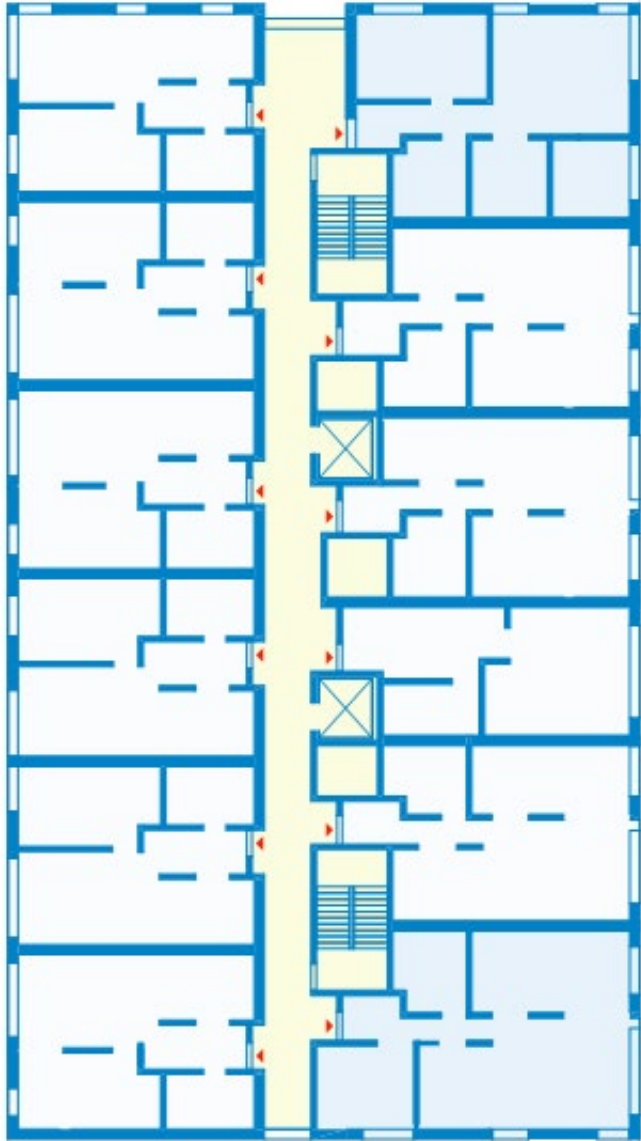
This building is almost non-existent outside the US



- + Modulation
- + Majority of units studios/1BRs
- + Process 6 mos – 3 years
- + Massive development
- + Parcel Assemblage
- + Double loaded corridor

Building Access = Community Influencer
(or, why I loathe corridors)

Double Loaded Corridor



- 87% efficient floor plate
- primarily small units
- no cross-ventilation
- no daylight on multiple sides
- little respite from urban noise

floor plan (left) and axonometric drawing (right), Larch Lab

Double Loaded Corridor

FLOOR PLAN - LEVEL 4 + 5

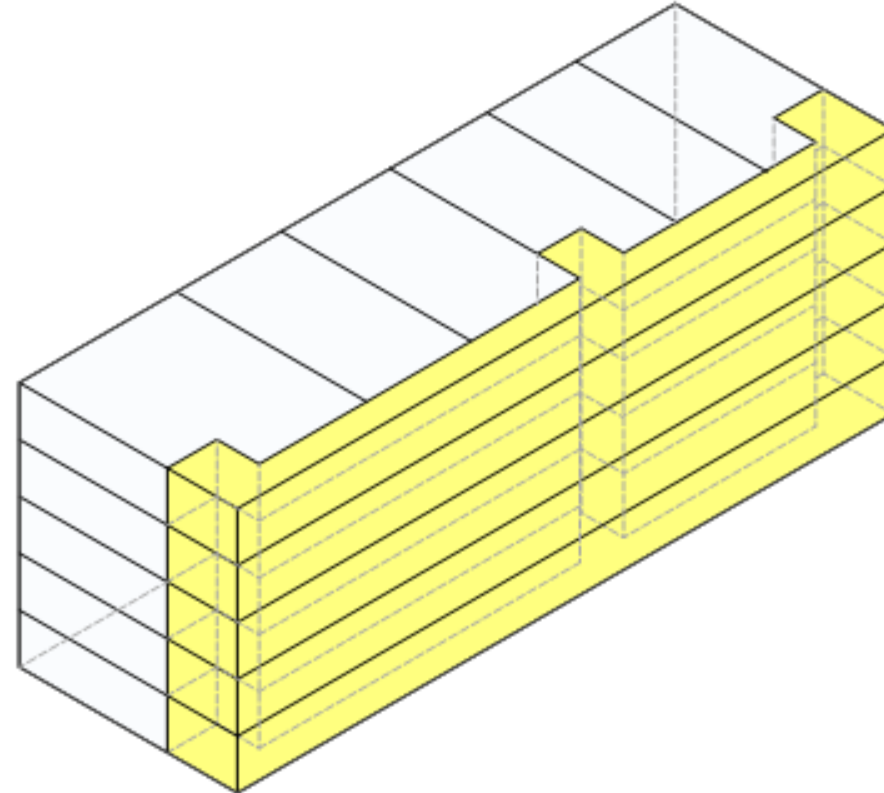
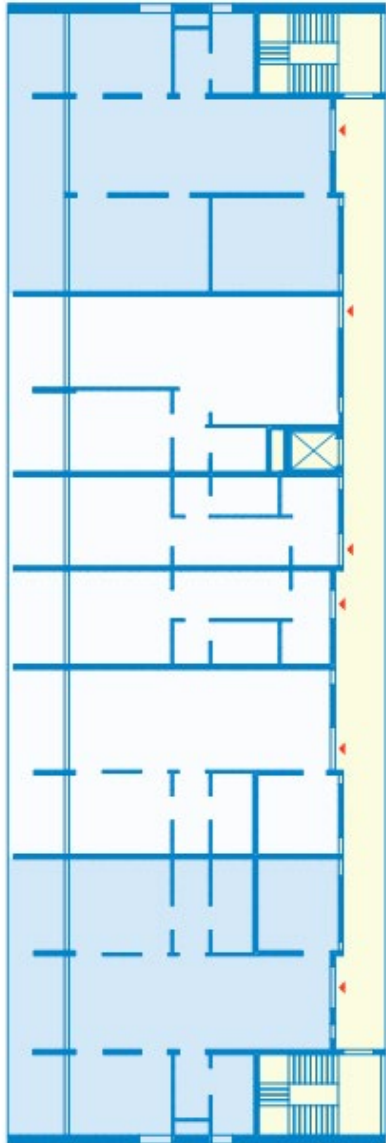


GRAND AVE MIXED USE APARTMENTS
FAIRFIELD RESIDENTIAL | SEPTEMBER 24, 2018

DESIGN REVIEW LU 18-191719 DZ C20

Grand Ave Apts, Courtesy Ankrom Moisan

Single Loaded Corridor



- 84% efficient floor plate
- diversity of unit sizes
- cross ventilation possible
- daylight on multiple sides

floor plan (left) and axonometric drawing (right), Larch Lab

Single Loaded Corridor

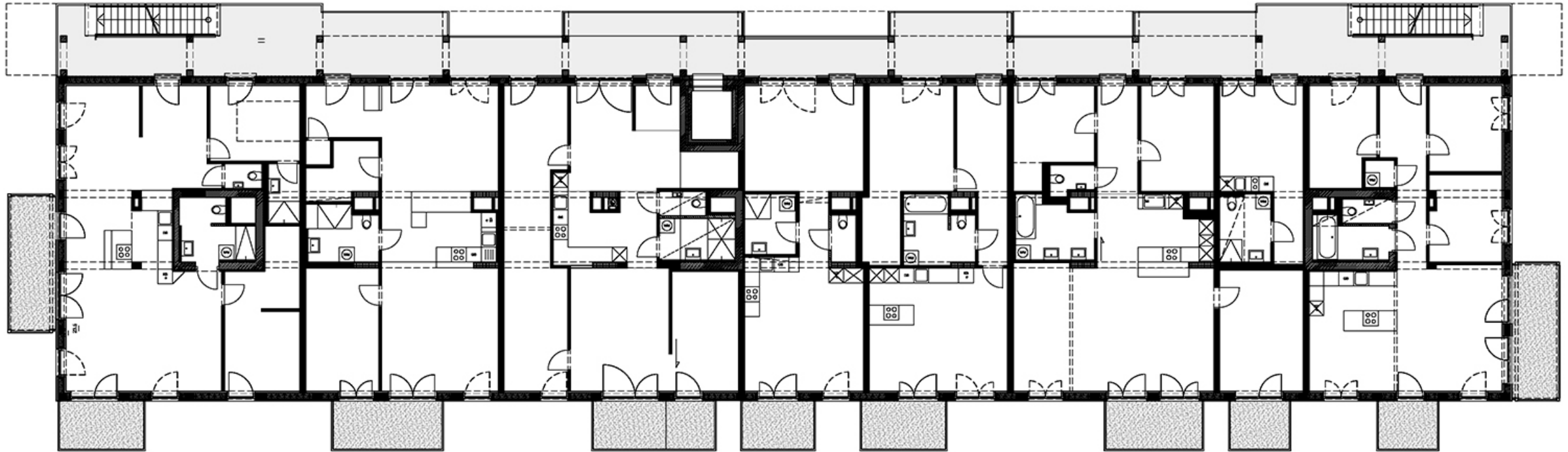
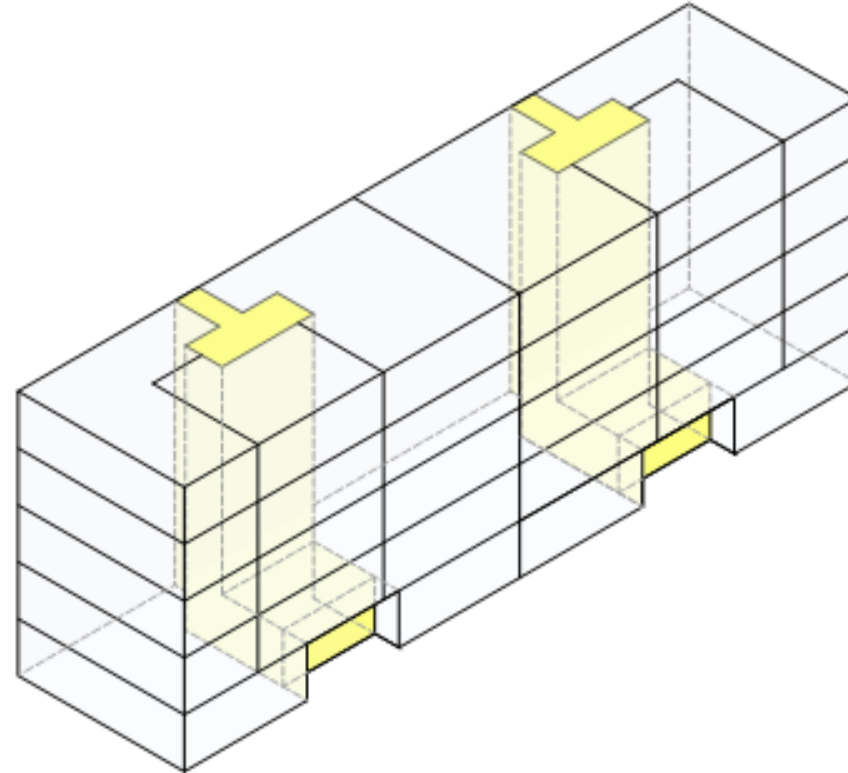
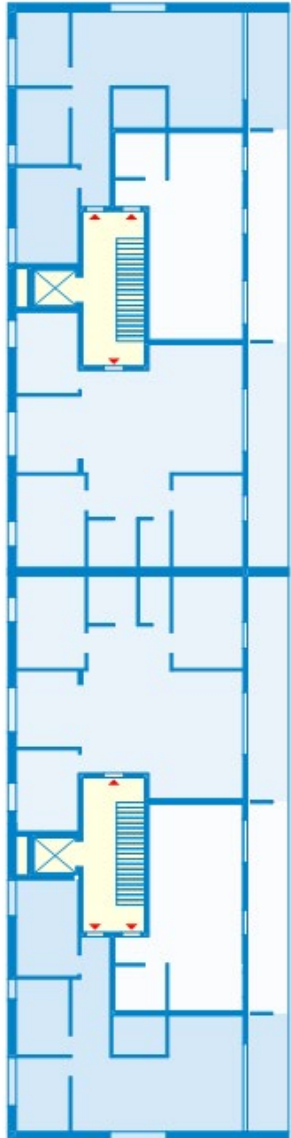


Foto: Einzueins

Point Access Block (single stair building)



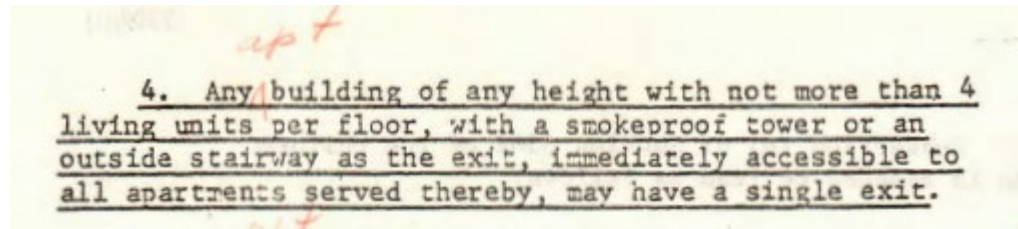
- compact layout
- 93,5% efficient floor plate
- diversity of unit sizes (1- to 3BRs)
- cross ventilation for most units
- daylight on multiple sides
- bedrooms on quiet side of building

floor plan (left) and axonometric drawing (right), Larch Lab

Seattle's History of Point Access Blocks

1977 Seattle Building Code:

4. Any building **of any height** with not more than 4 living units per floor, with a smokeproof tower or an outside stairway as the exit, immediately accessible to all apartments served thereby, **may have a single exit.**

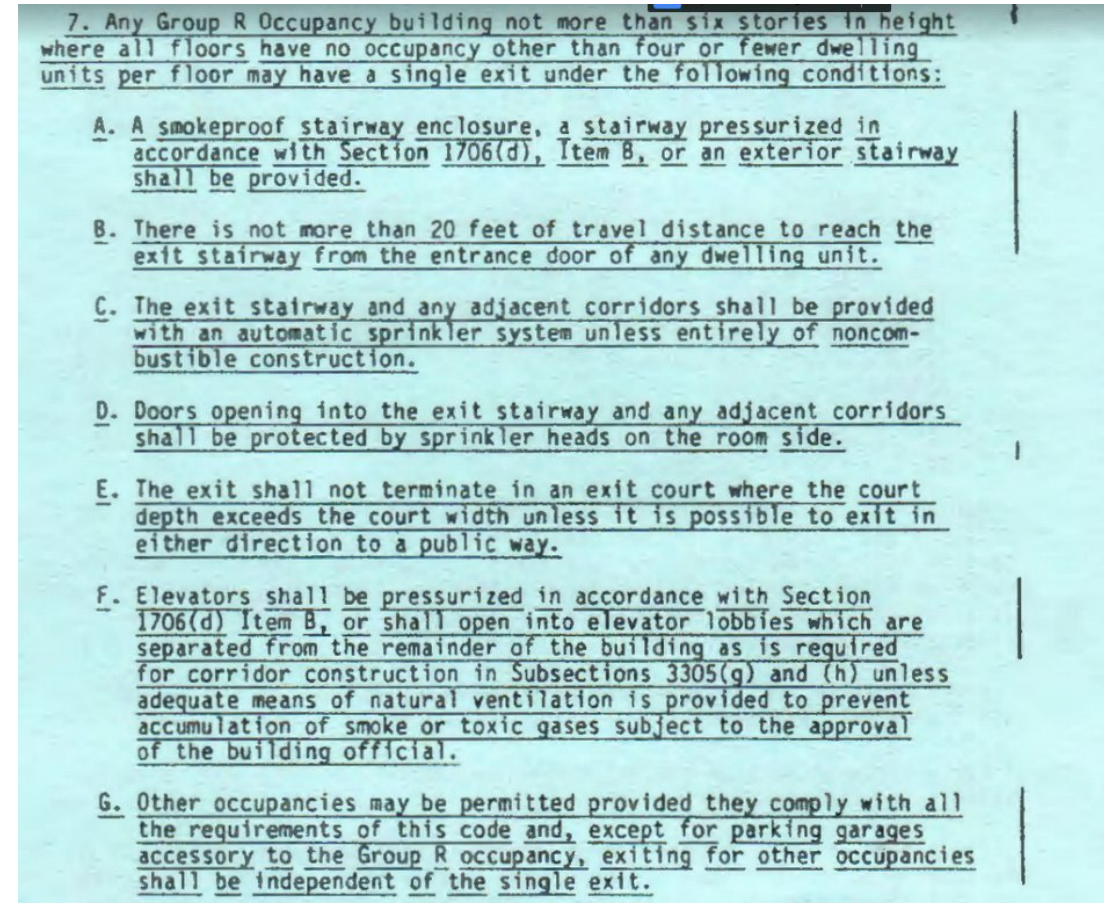


4. Any building of any height with not more than 4 living units per floor, with a smokeproof tower or an outside stairway as the exit, immediately accessible to all apartments served thereby, may have a single exit.

Source: Seattle Municipal Archives

1985 Seattle Building Code:

Reduced to 6 floors in height, 4 dwelling units per floor, **may have a single exit.**



7. Any Group R Occupancy building not more than six stories in height where all floors have no occupancy other than four or fewer dwelling units per floor may have a single exit under the following conditions:

- A. A smokeproof stairway enclosure, a stairway pressurized in accordance with Section 1706(d), Item B, or an exterior stairway shall be provided.
- B. There is not more than 20 feet of travel distance to reach the exit stairway from the entrance door of any dwelling unit.
- C. The exit stairway and any adjacent corridors shall be provided with an automatic sprinkler system unless entirely of noncombustible construction.
- D. Doors opening into the exit stairway and any adjacent corridors shall be protected by sprinkler heads on the room side.
- E. The exit shall not terminate in an exit court where the court depth exceeds the court width unless it is possible to exit in either direction to a public way.
- F. Elevators shall be pressurized in accordance with Section 1706(d) Item B, or shall open into elevator lobbies which are separated from the remainder of the building as is required for corridor construction in Subsections 3305(g) and (h) unless adequate means of natural ventilation is provided to prevent accumulation of smoke or toxic gases subject to the approval of the building official.
- G. Other occupancies may be permitted provided they comply with all the requirements of this code and, except for parking garages accessory to the Group R occupancy, exiting for other occupancies shall be independent of the single exit.

Source: Seattle Municipal Archives

Virginia Construction Code allows PABs

2018 VCC Table 1006.3.3(1):

Allows Point Access Blocks, up to 3 stories, with a maximum of 4 units per floor – if sprinklered.

**TABLE 1006.3.3(1)
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES**

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE
Basement, first, second or third story above grade plane	R-2 ^{a,b}	4 dwelling units	125 feet
Fourth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 3048 mm.

NP = Not Permitted.

NA = Not Applicable.

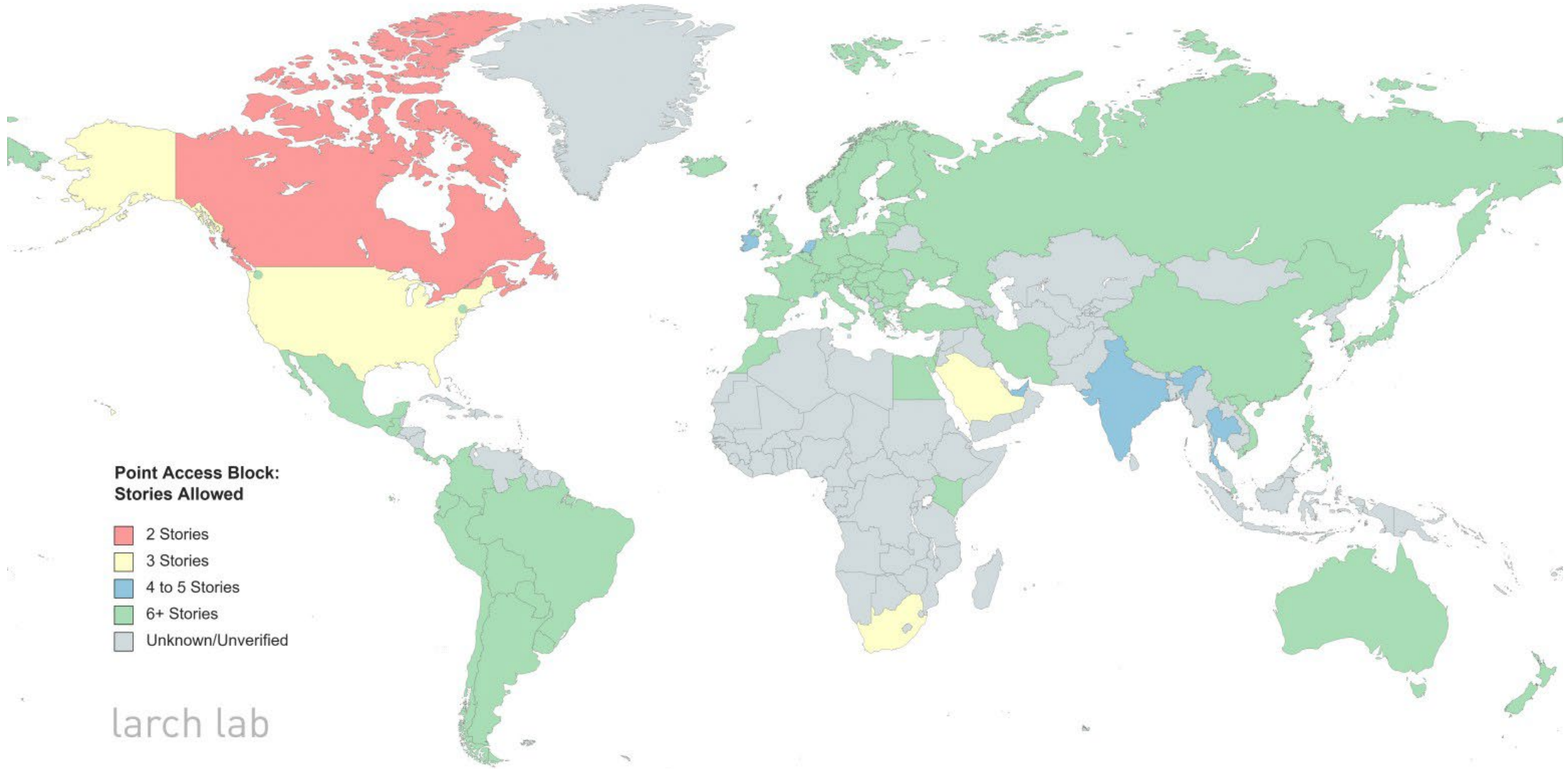
- a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
- b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).



Source: 2018 VA Construction Code

Source: Veridian at Country Farm

Does fire burn differently in the U.S. and Canada?



Global Context



Maximum Allowable Building Height with Single Egress for Residential Occupancies

Note: the drawing assumes a floor to floor height of 3m

Single Stair Buildings very common

Same for Single Loaded Corridor

Double Loaded is rare

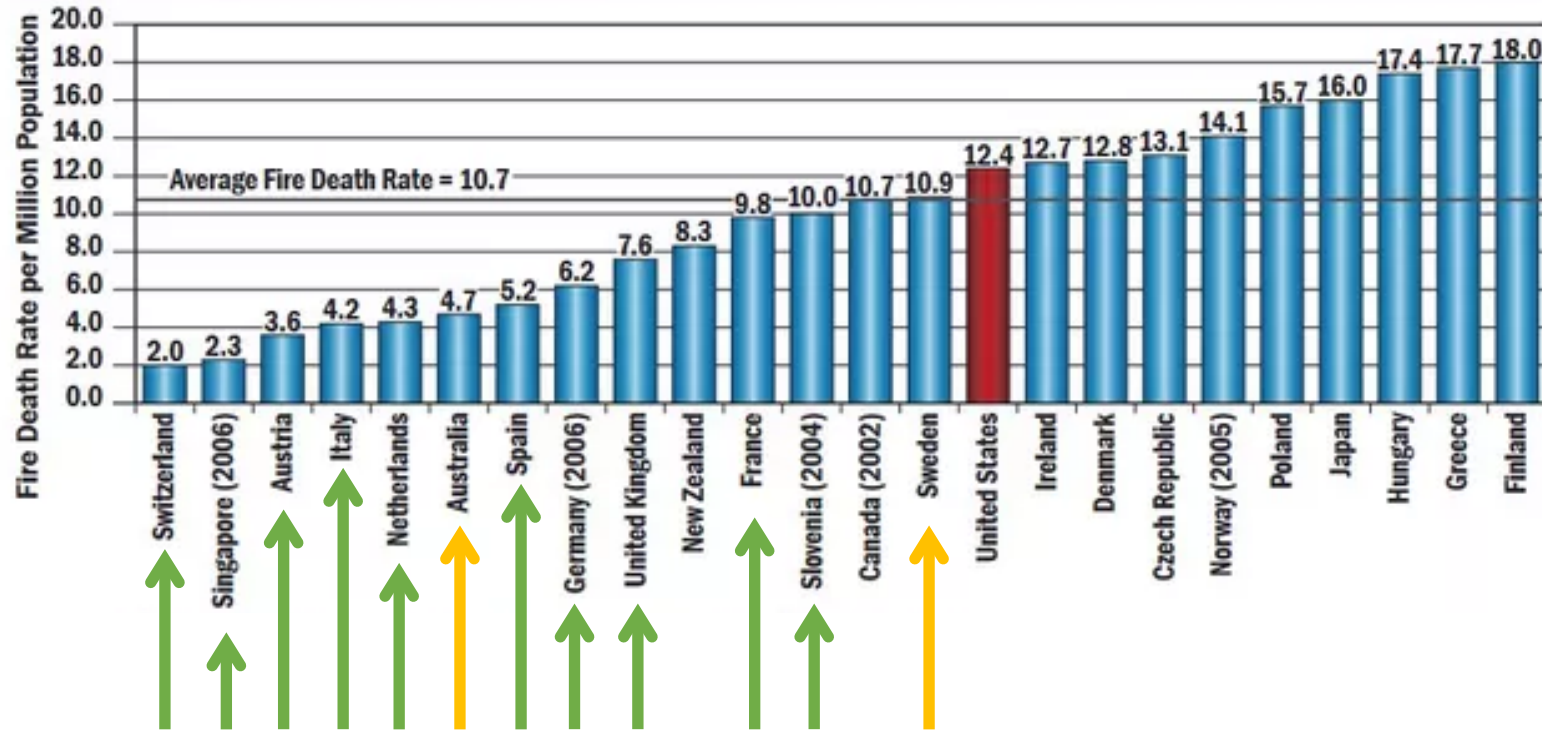
- max. nr of units/floor varies (DE=4)
- exit travel distance varies (DE=115')
- doors in stairway: varies
- sprinklered rare
- higher rated construction
- typ. max floor area per exit
- several instances on same lot

SecondEgress.ca

- Conrad Speckert's Master's Thesis

Safety considerations

Figure 1. 2007 International Fire Death Rates per Million Population



“For most of history buildings were short enough that stairs provided for access were sufficient for rapid egress in the event of fire. ***Even in single stair (mostly residential) buildings, experience showed that this stair was sufficient for fire egress as long as the fire did not expose or block access to the stair.***”

-Richard Bukowski, research fire protection engineer

Light, Cross Ventilation, Unit Mix

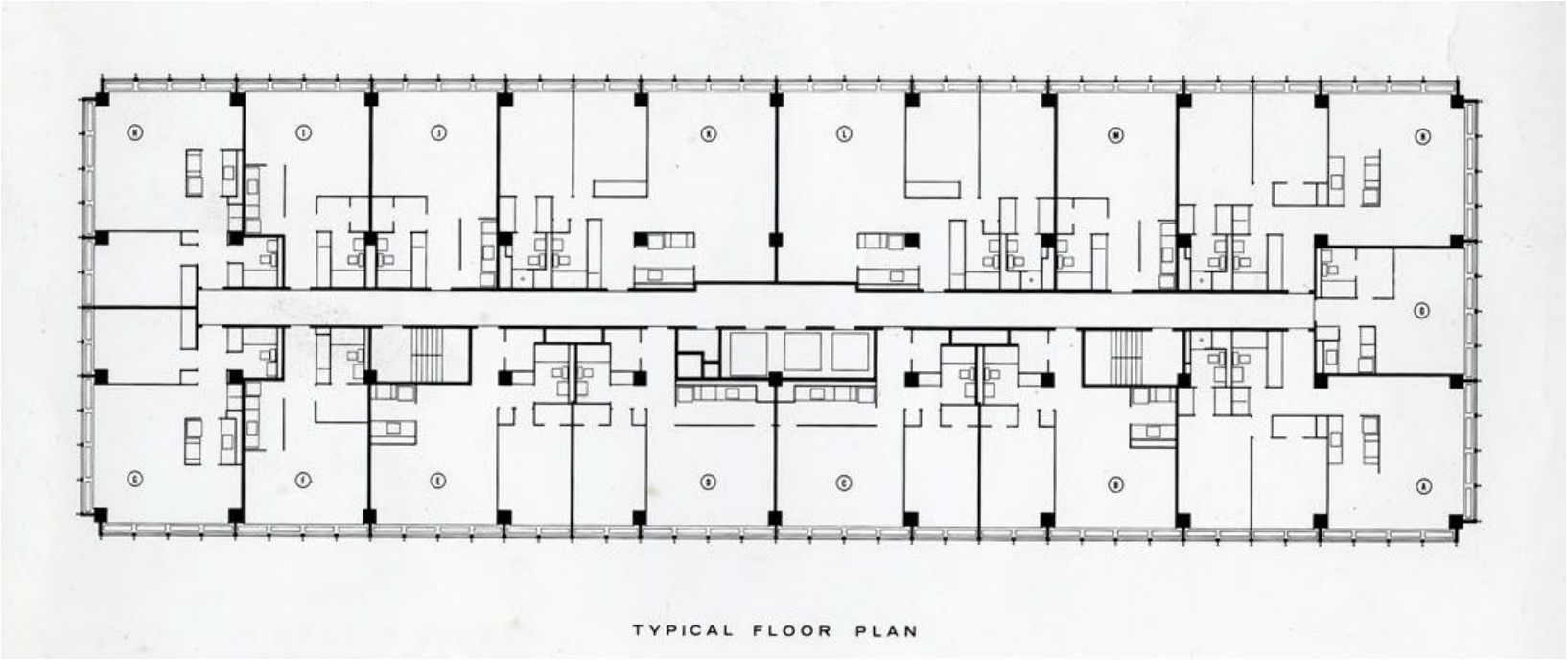


- + Light on 3 sides possible
- + Cross Ventilation for most units
- + ~ 95% Floor efficiency
- + Larger units or more Amenities

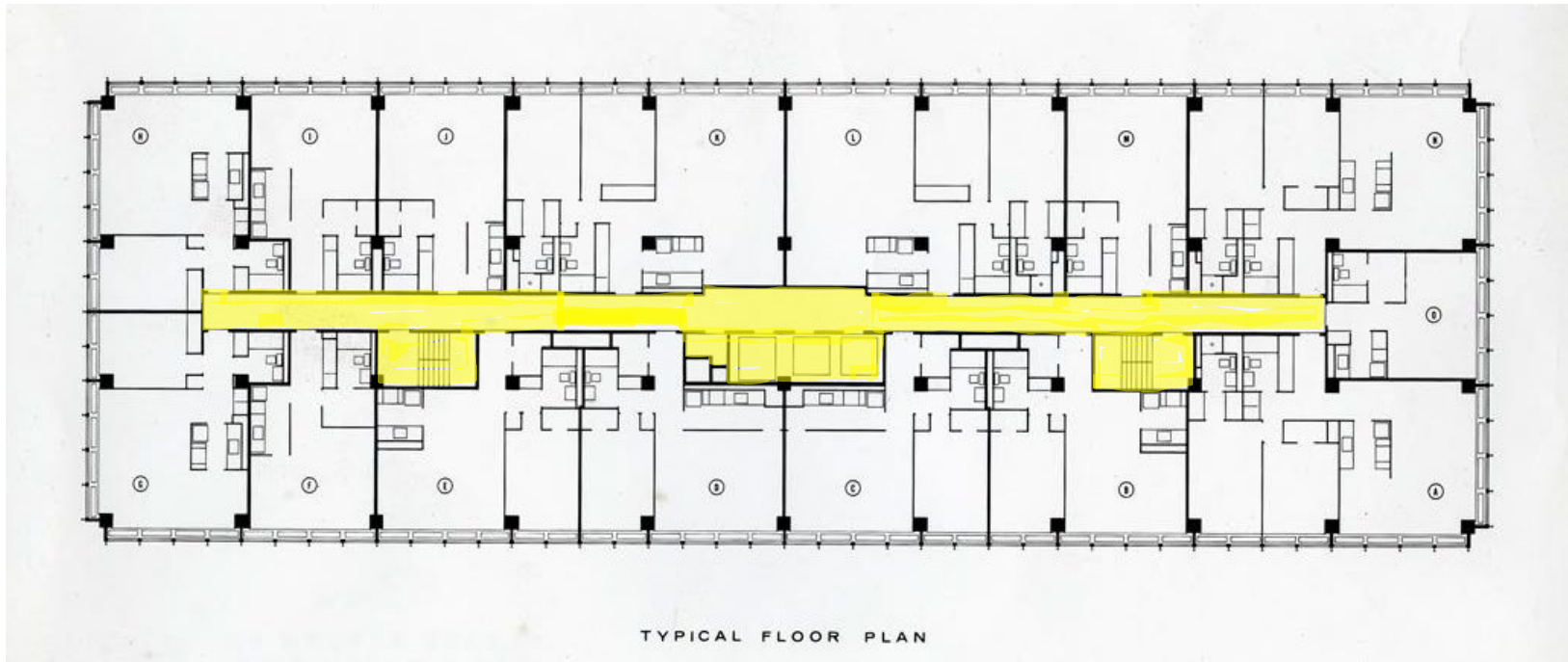


Grundriss: GWJ Architektur

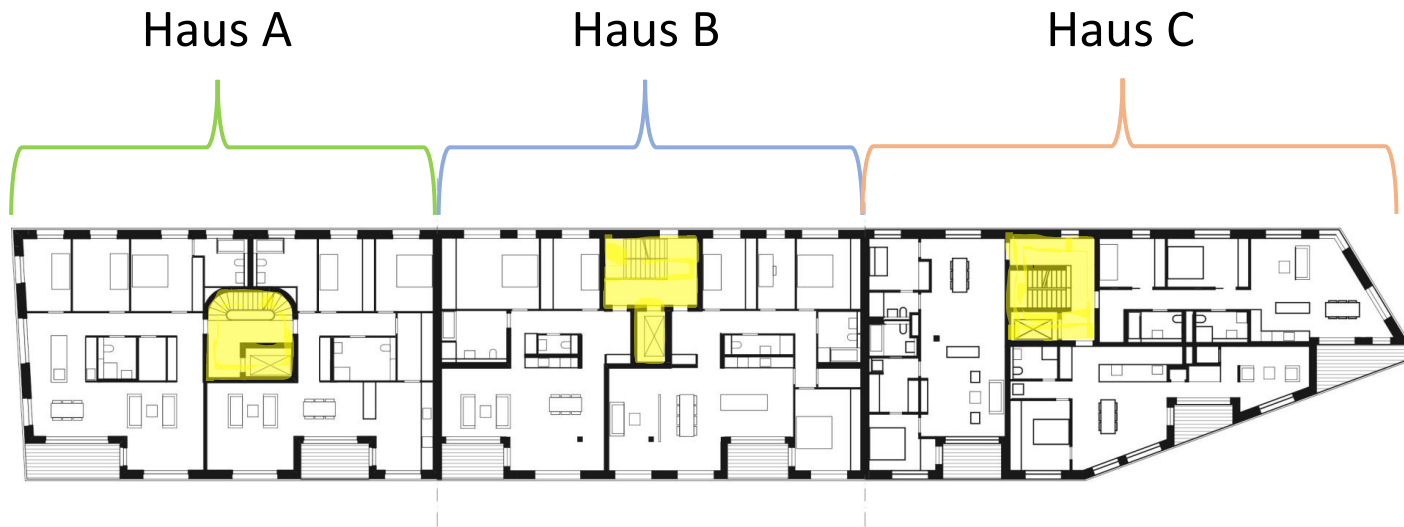
Single Stair v. Double Loaded Corridor



Single Stair v. Double Loaded Corridor

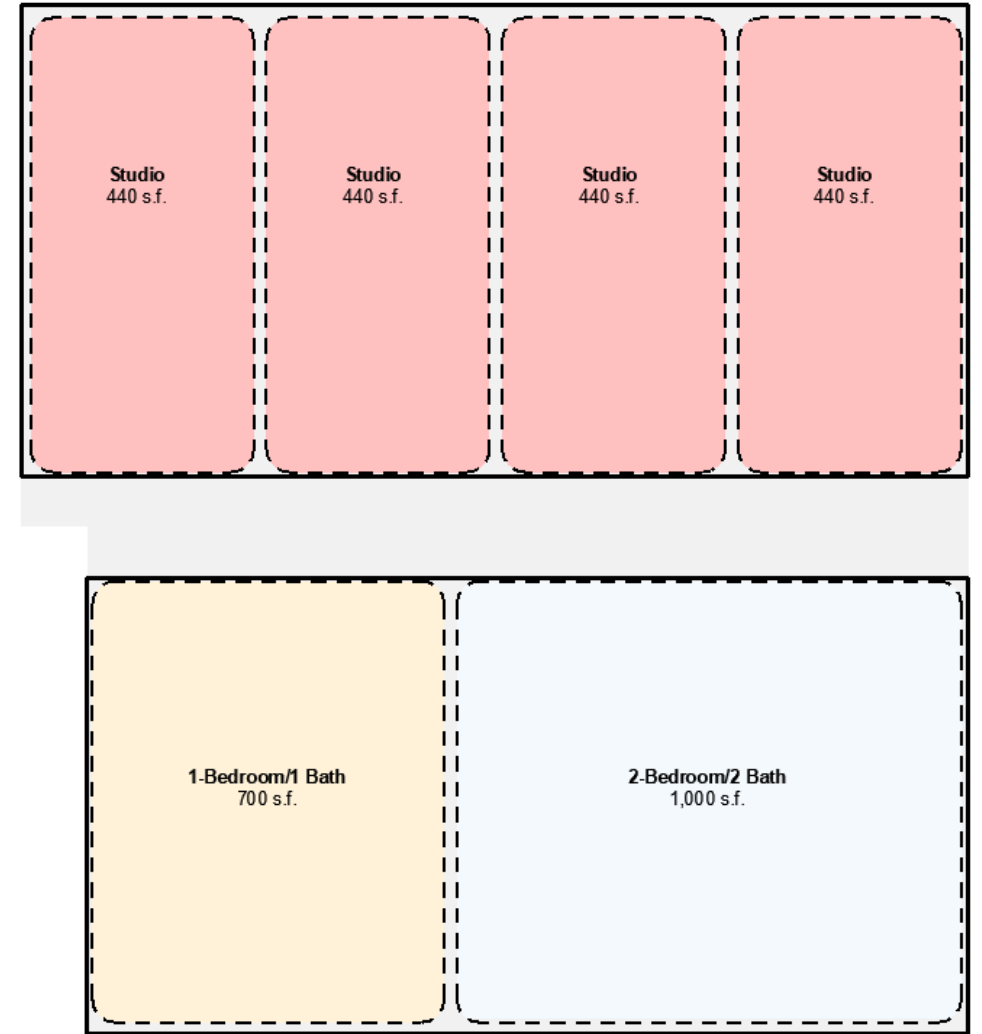
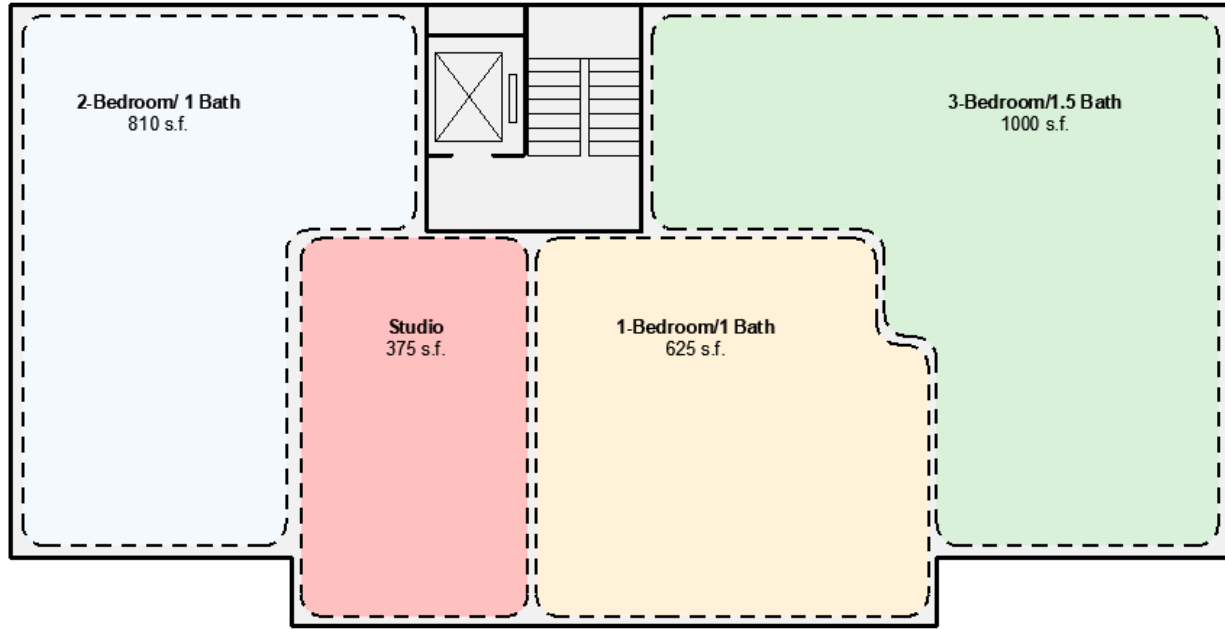


Dennewitz Eins, Berlin

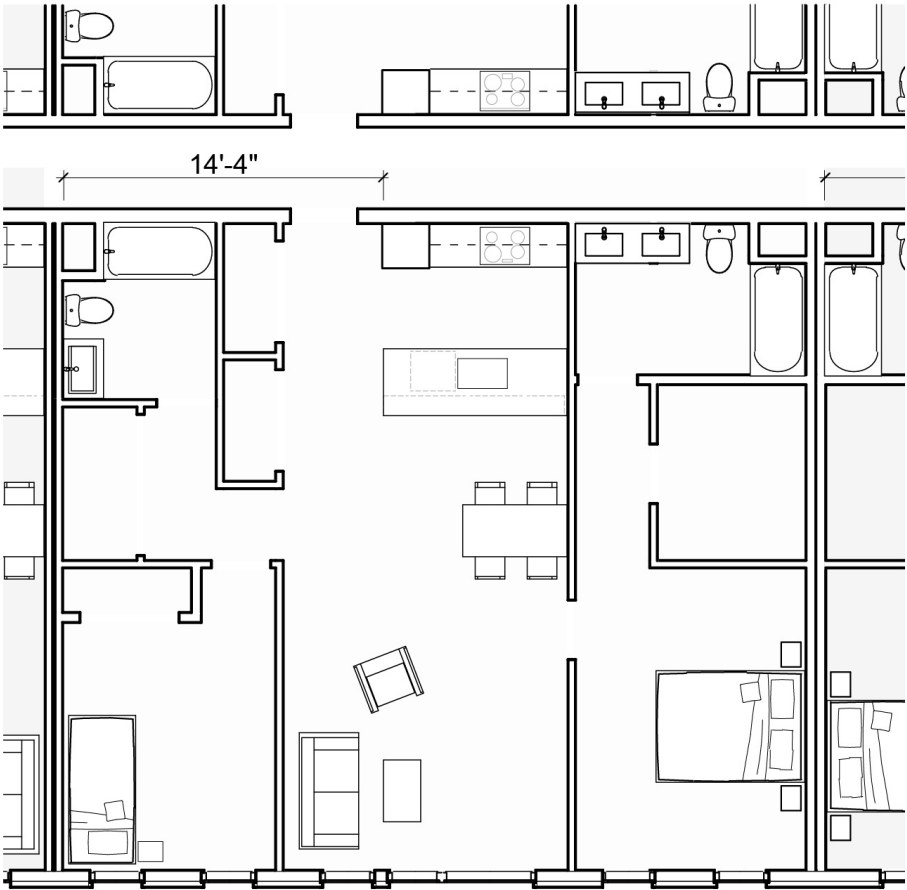


- + 3 different buildings
- + 3 different architects
- + baugruppe on difficult site
- + Flexible floor plans
- + mix of unit types
- + Cross Ventilation
- + Light on multiple sides

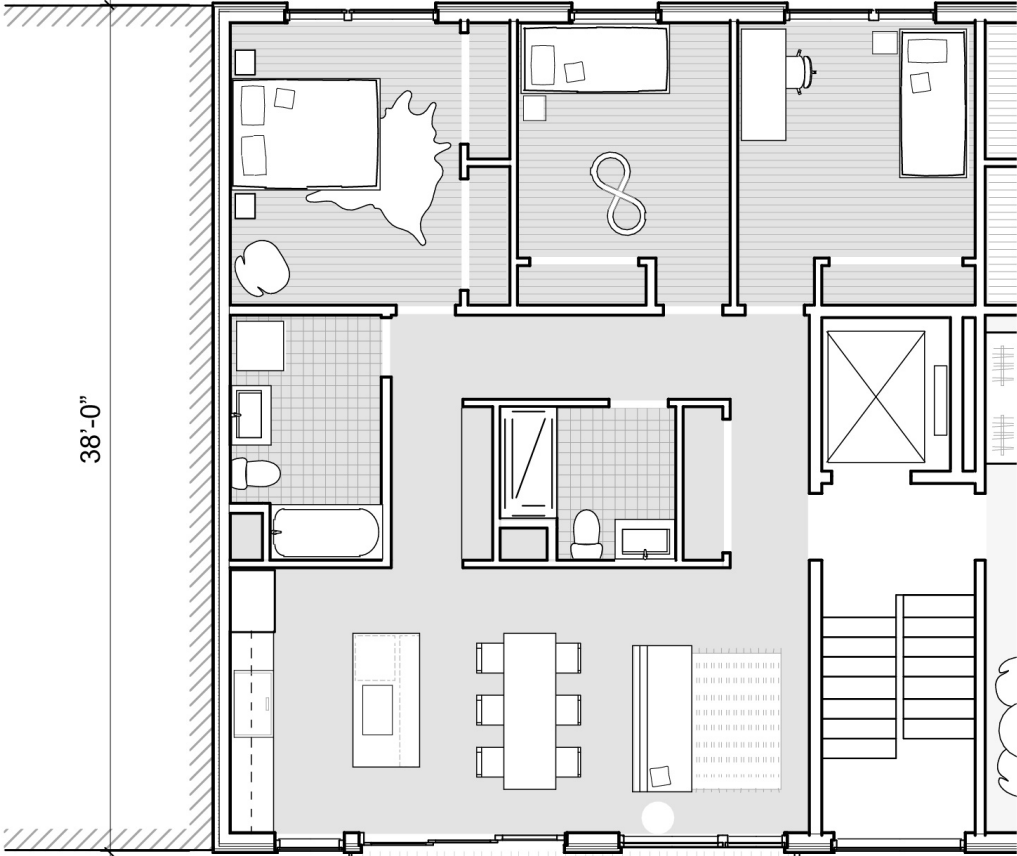
Same number of bedrooms. 1,000 s.f. savings



US: Large units. Wasted space. Poorer quality of life...

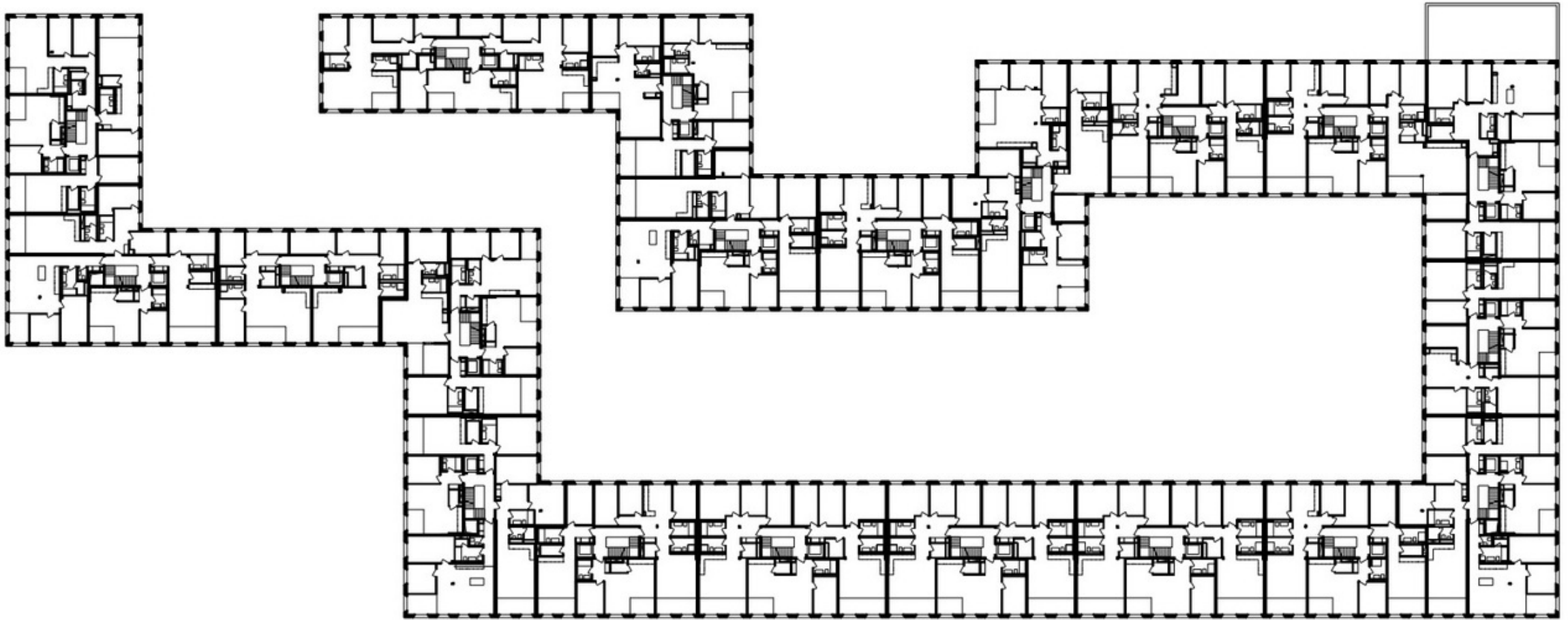


2-Bedroom/2 Bath
970 s.f.
60 s.f. (1/2 hall)



3-Bedroom / 2 Bath
1,040 s.f.

Sue&Til, Winterthur.



Source: weberbrunner architekten + soppelsa architekten

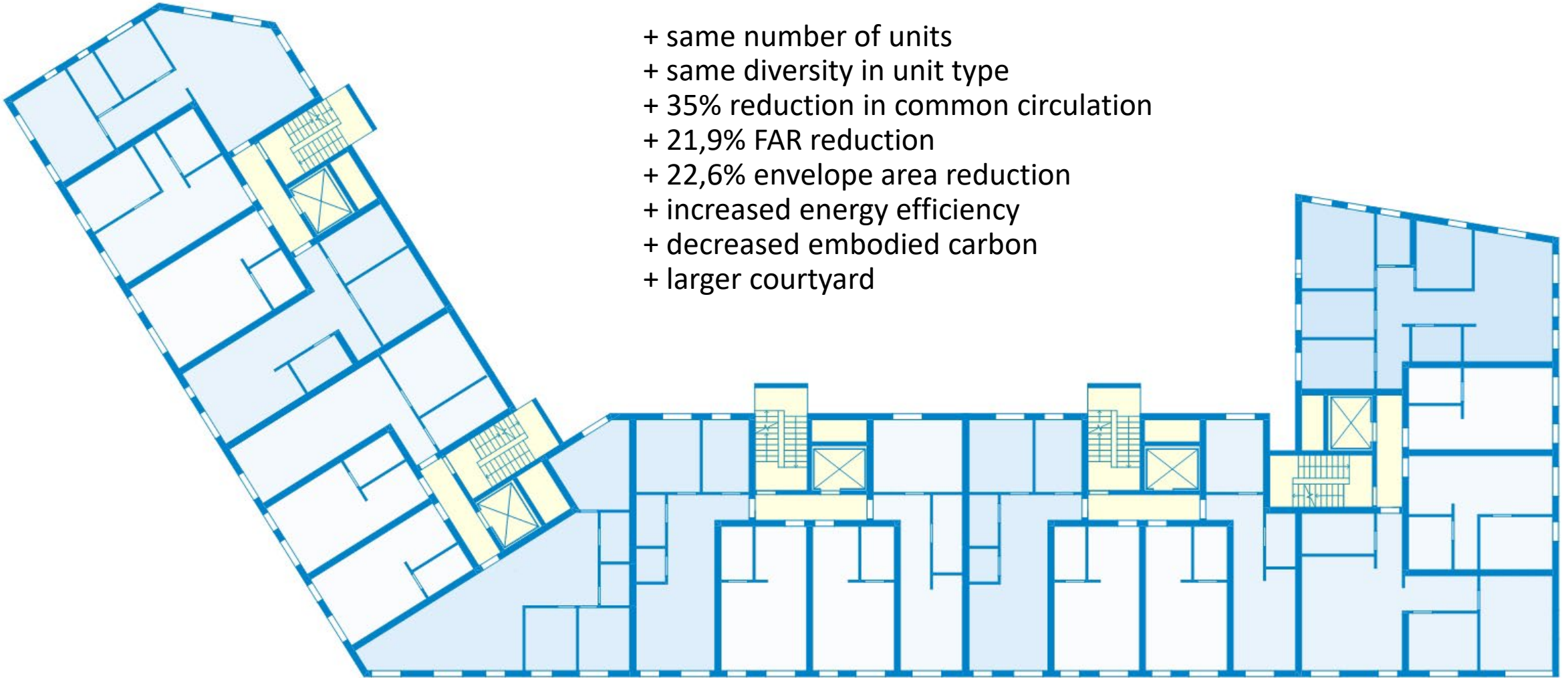
Sue&Til, Winterthur. TWENTY connected PABs



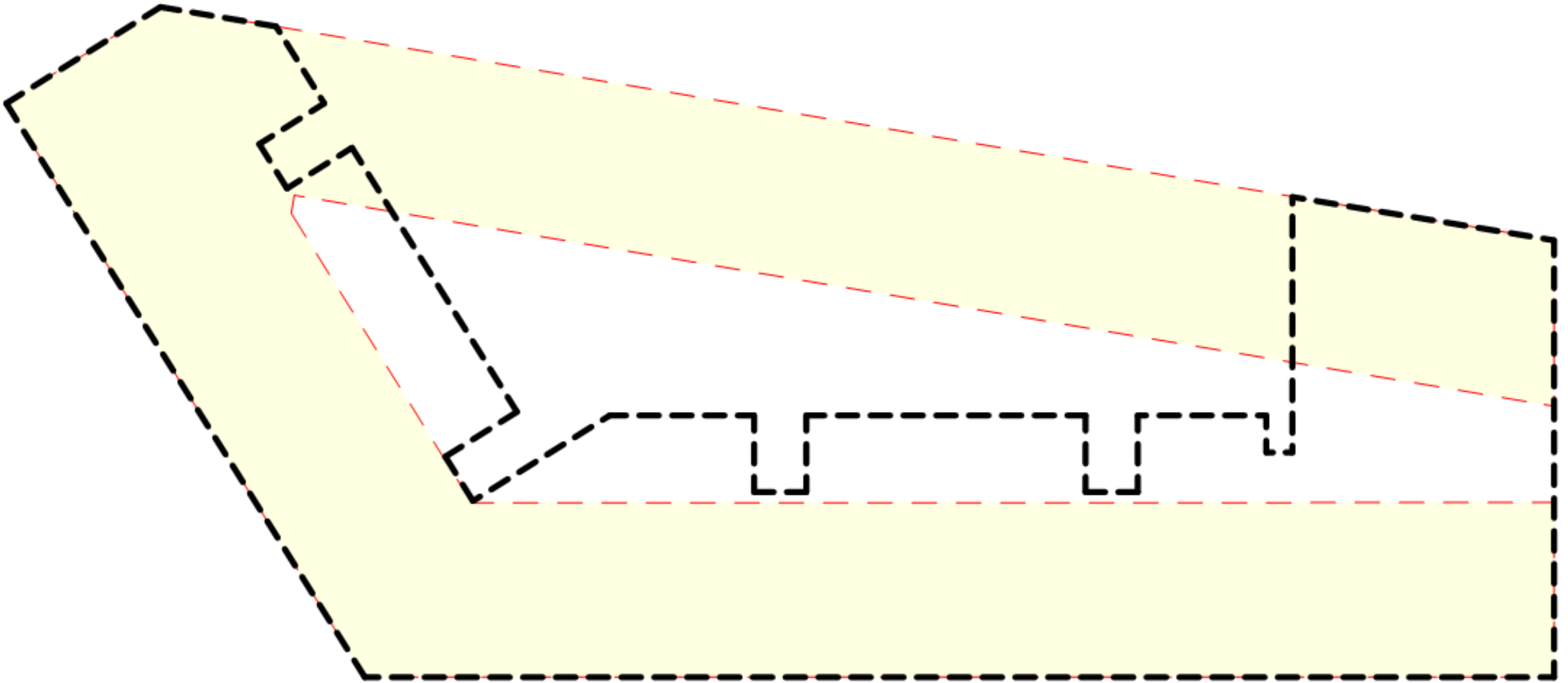
Source: weberbrunner architekten + soppelsa architekten

Vienna House / PAB study

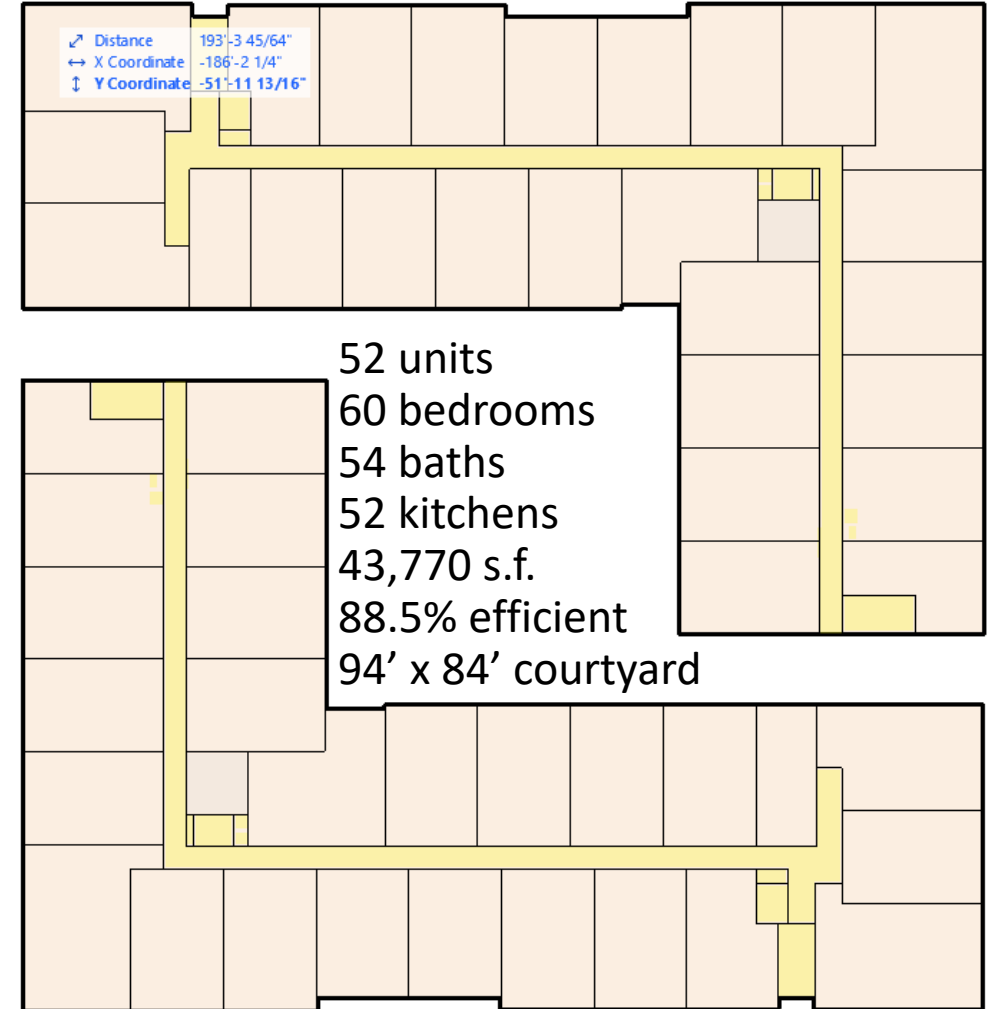
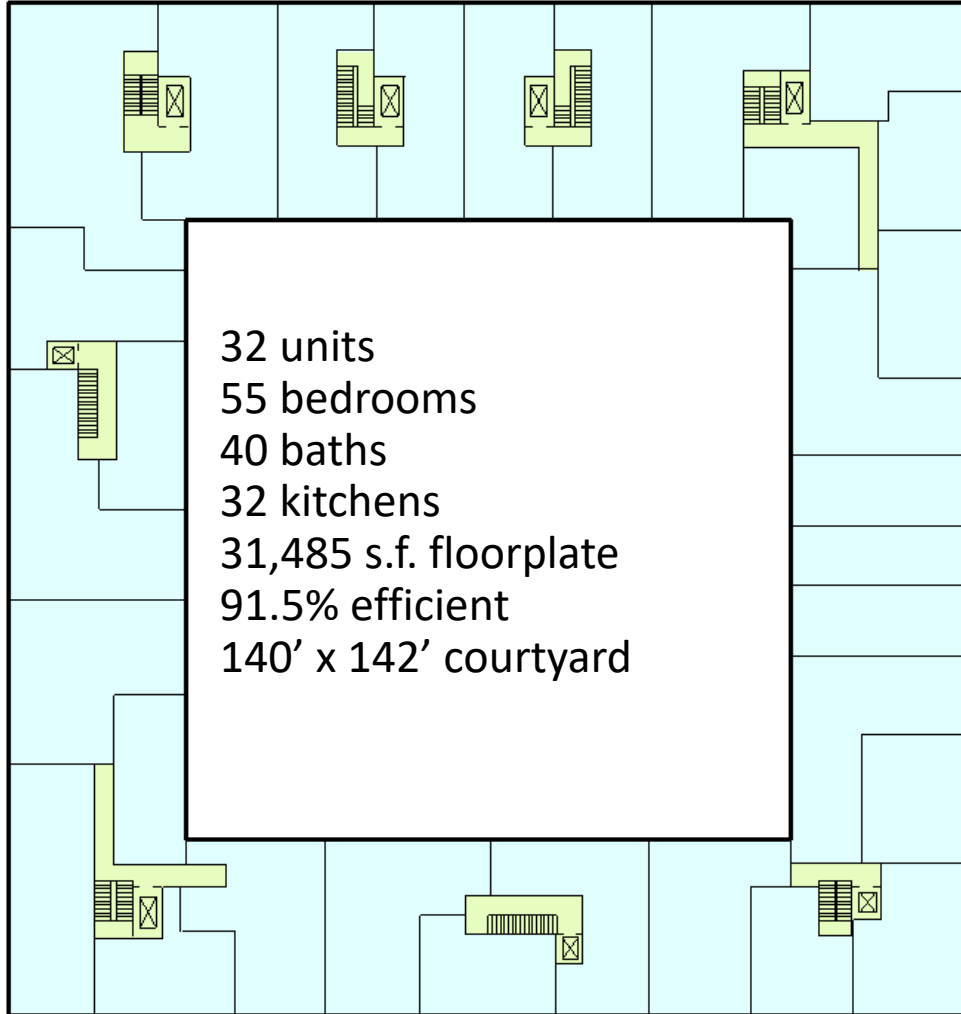
- + same number of units
- + same diversity in unit type
- + 35% reduction in common circulation
- + 21,9% FAR reduction
- + 22,6% envelope area reduction
- + increased energy efficiency
- + decreased embodied carbon
- + larger courtyard



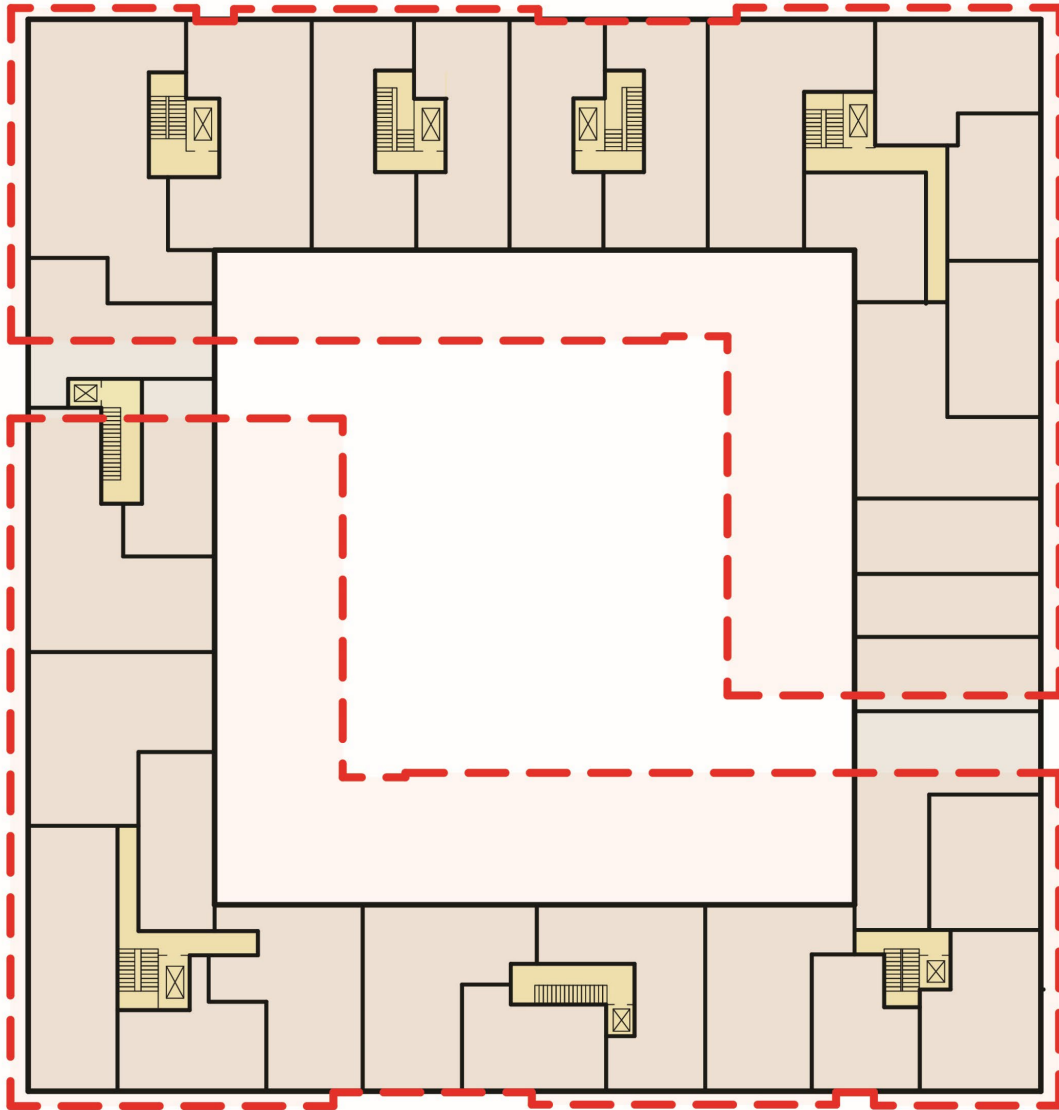
Vienna House / thermal envelope overlay



Floor Plate Width: Hamburg v. Seattle



Point Access Block: Thinner buildings, more green!



Seattle requires 12,885 s.f. for 5 more bedrooms

Construction cost:
 $\$375/\text{s.f.} * 12,285 \text{ s.f.} = \4.6M

PAB savings over 6 floors: \$27.6M

Hamburg's courtyard: 150% larger

Embodied carbon effects as well

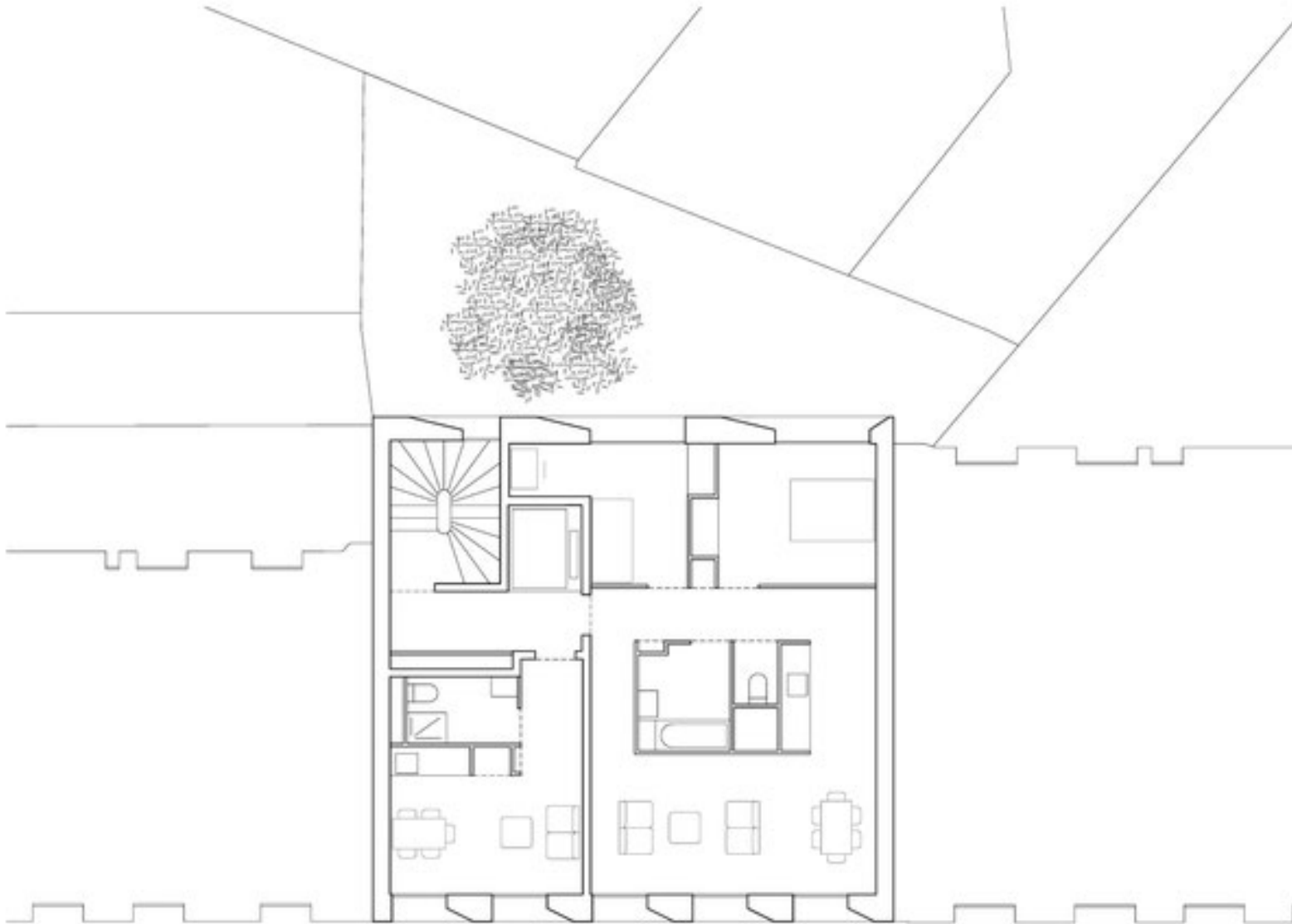
Single Stair Infill - Paris



- + Social Housing
- + FRES architectes
- + Cost-effective infill
- + 2,300 sf parcel
- + FAR 2.7
- + €1,9M (CA\$300k/unit)

Foto: Philippe Ruault

Single Stair Infill - Paris



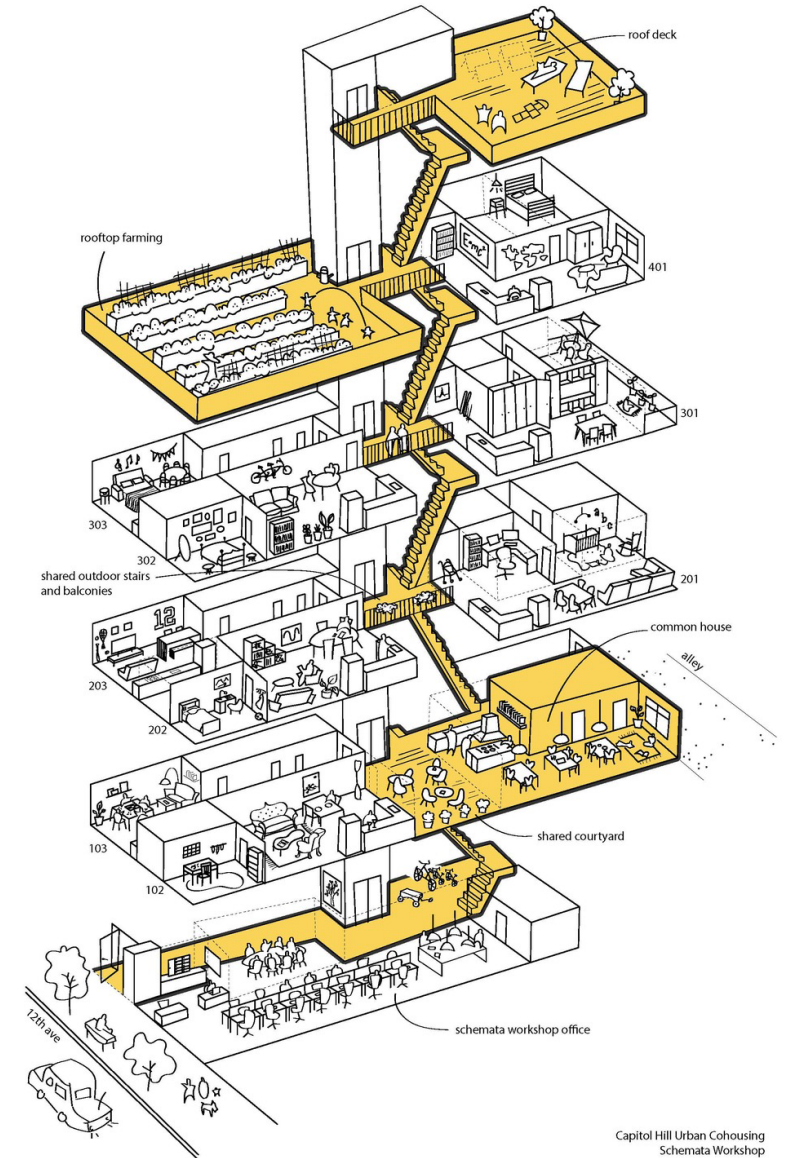
+ 1-2 units per floor
+ Feasibility with 2nd stair?

Grundriss: FRES Architectes

Seattle: CHUC – 4 floors + roof deck, over commercial



Foto: Schemata WS

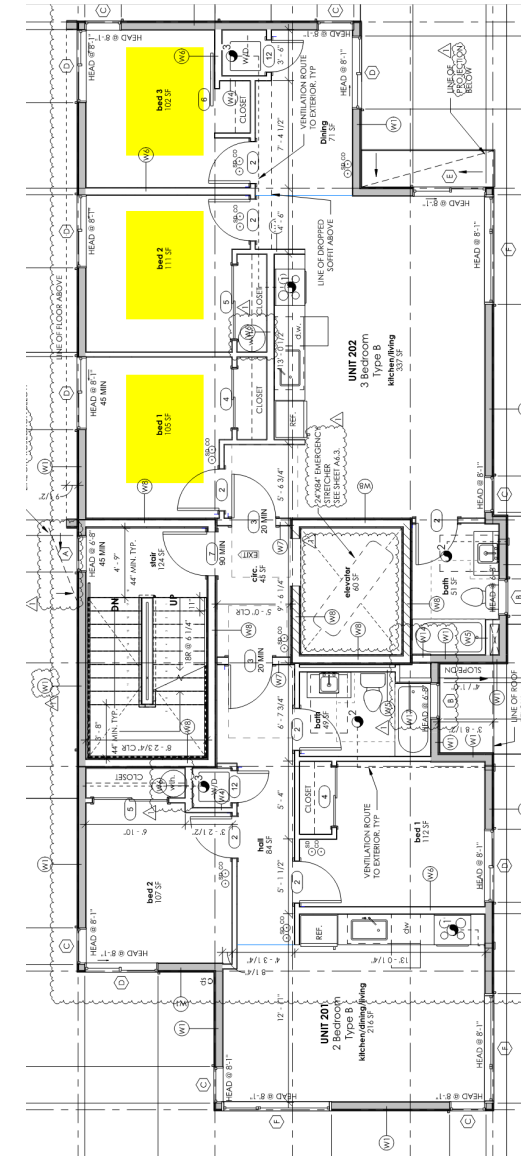


Capitol Hill Urban Cohousing
Schemata Workshop

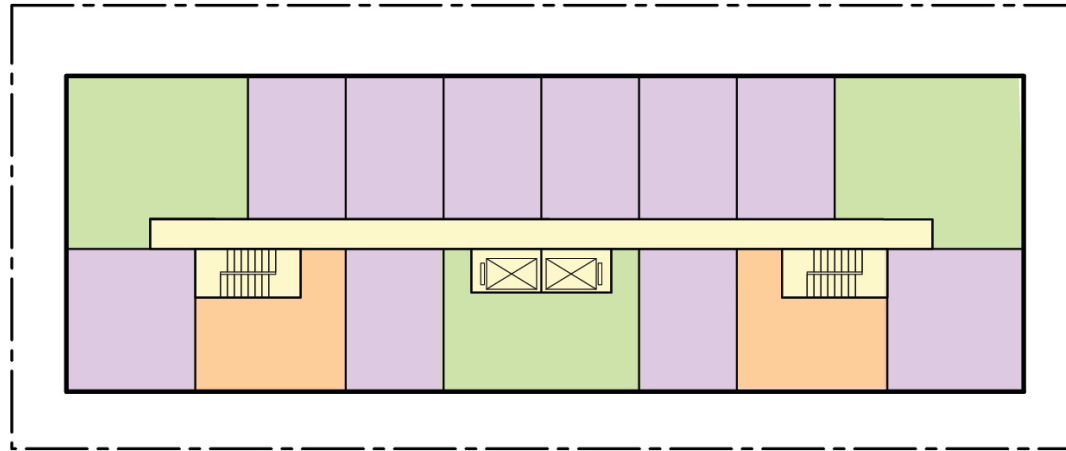
Seattle: Habitat for Humanity. 1-3BR homes. 4,000 s.f. lot



Foto: Habitat for Humanity, Seattle-King County



Larix: Mass Timber Passivhaus Baugruppe

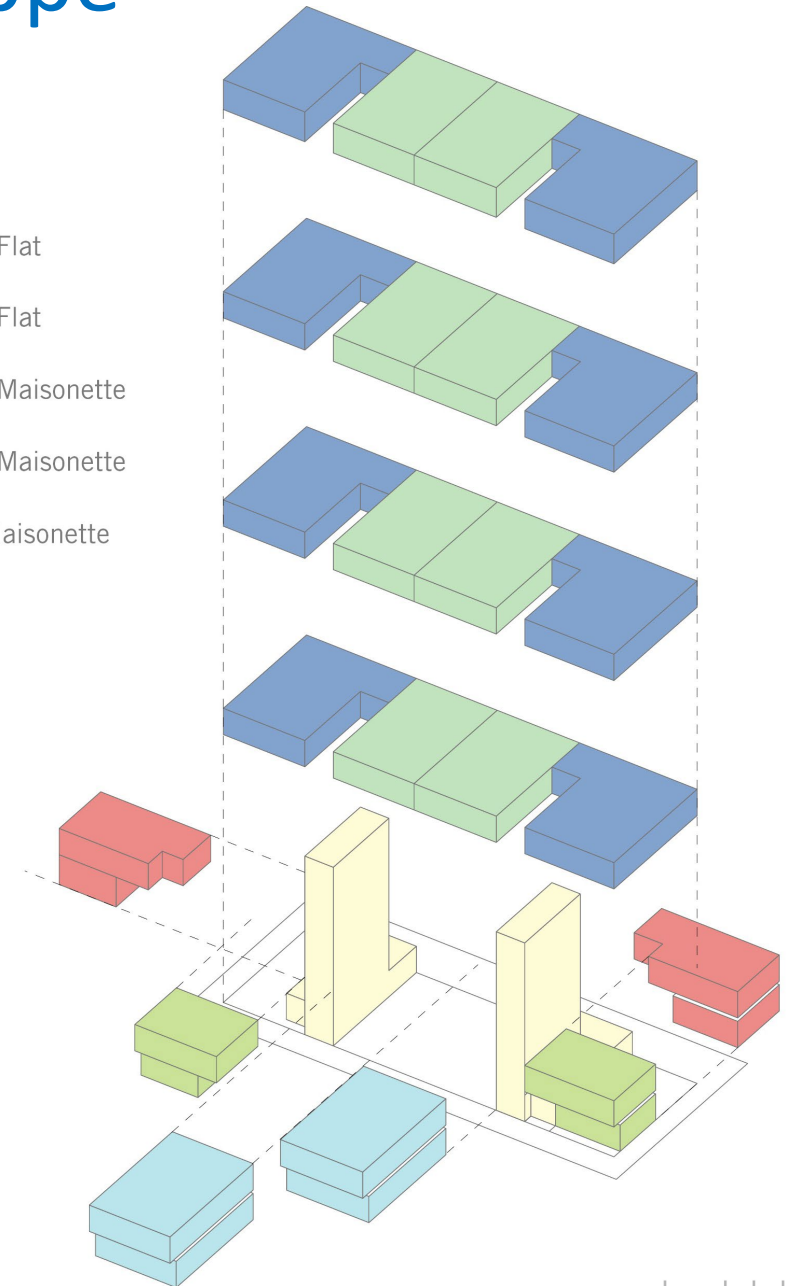


Typical Development Floor Plan

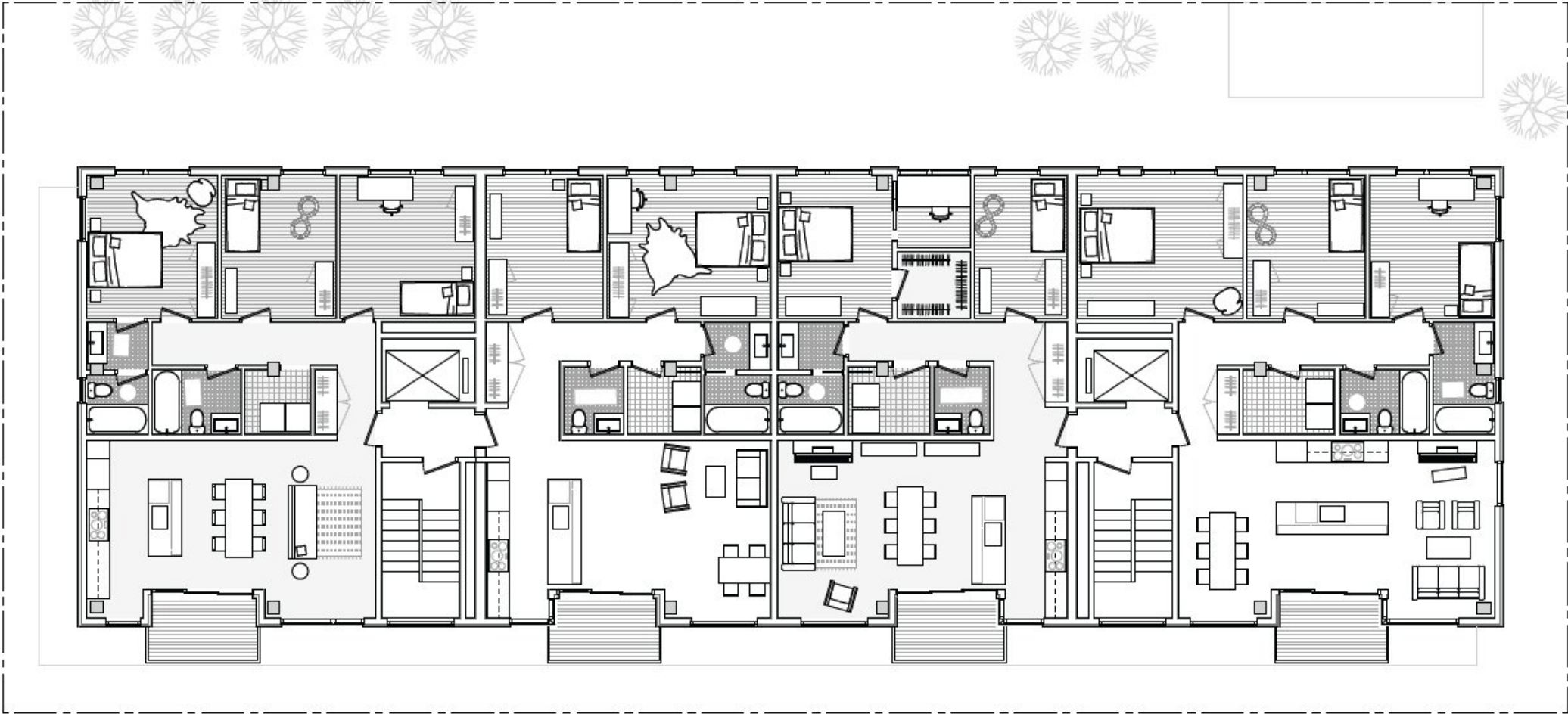


Larix Typical Floor Plan

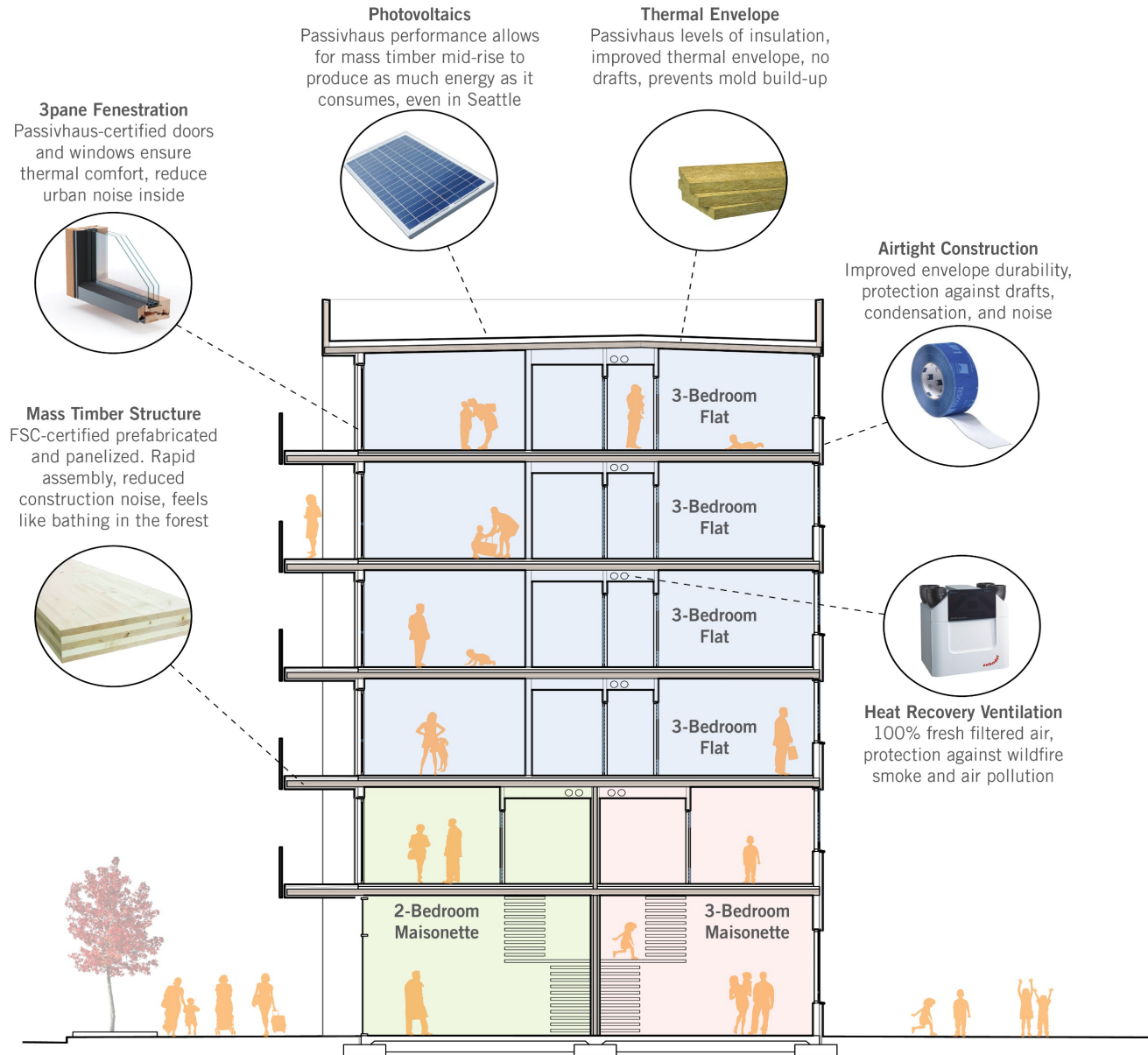
- 3-Bedroom Flat
- 2-Bedroom Flat
- 3-Bedroom Maisonette
- 2-Bedroom Maisonette
- Live-Work Maisonette
- Circulation



Twinned Point Access Blocks



Passivhaus + Mass Timber: Climate Adaptation?



Low-rise to Mid-rise: Seattle has 'Sausage Flats'



Foto: google earth

Prinz Eugen Park, Munich



Foto: google earth

Domagkpark, Munich



Building Circulation Effects

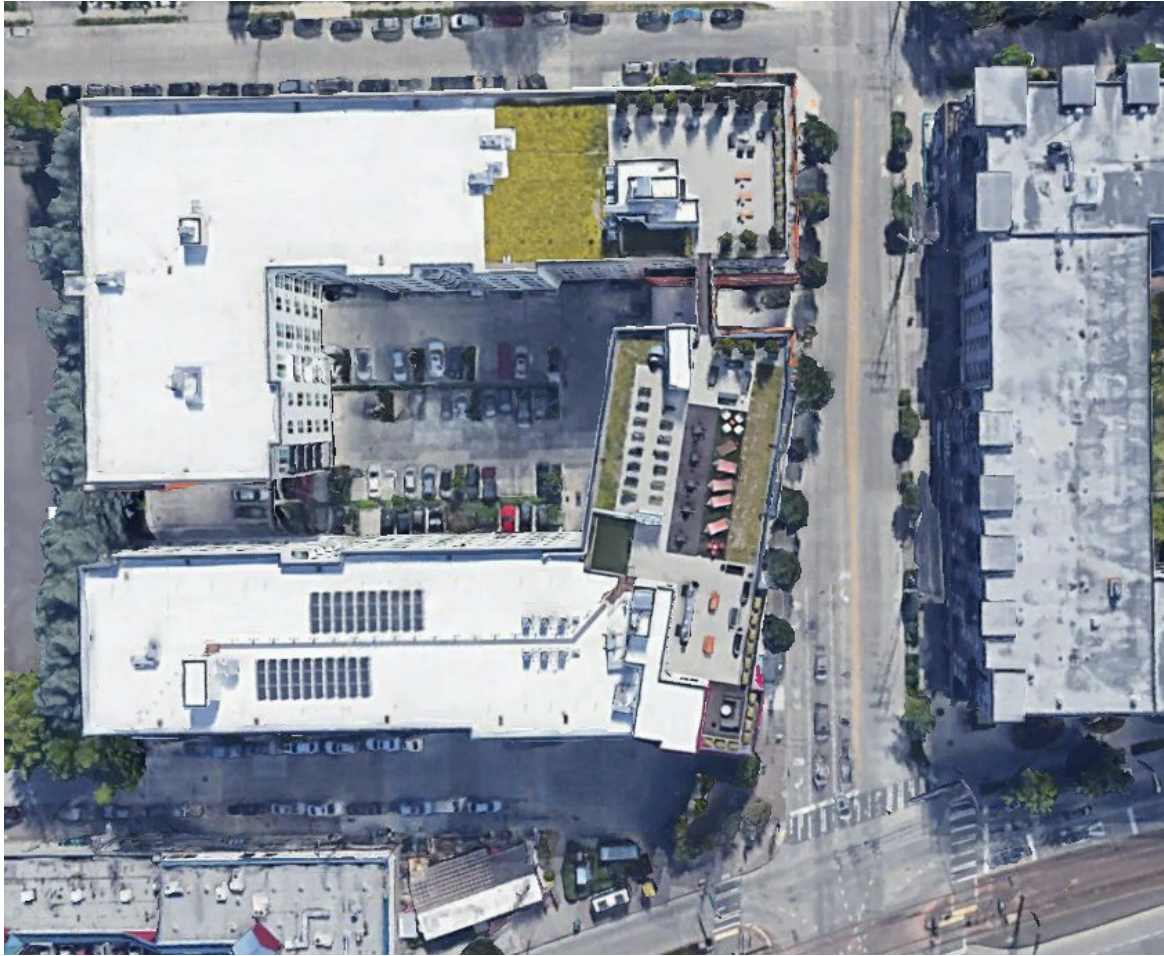


Foto: google earth

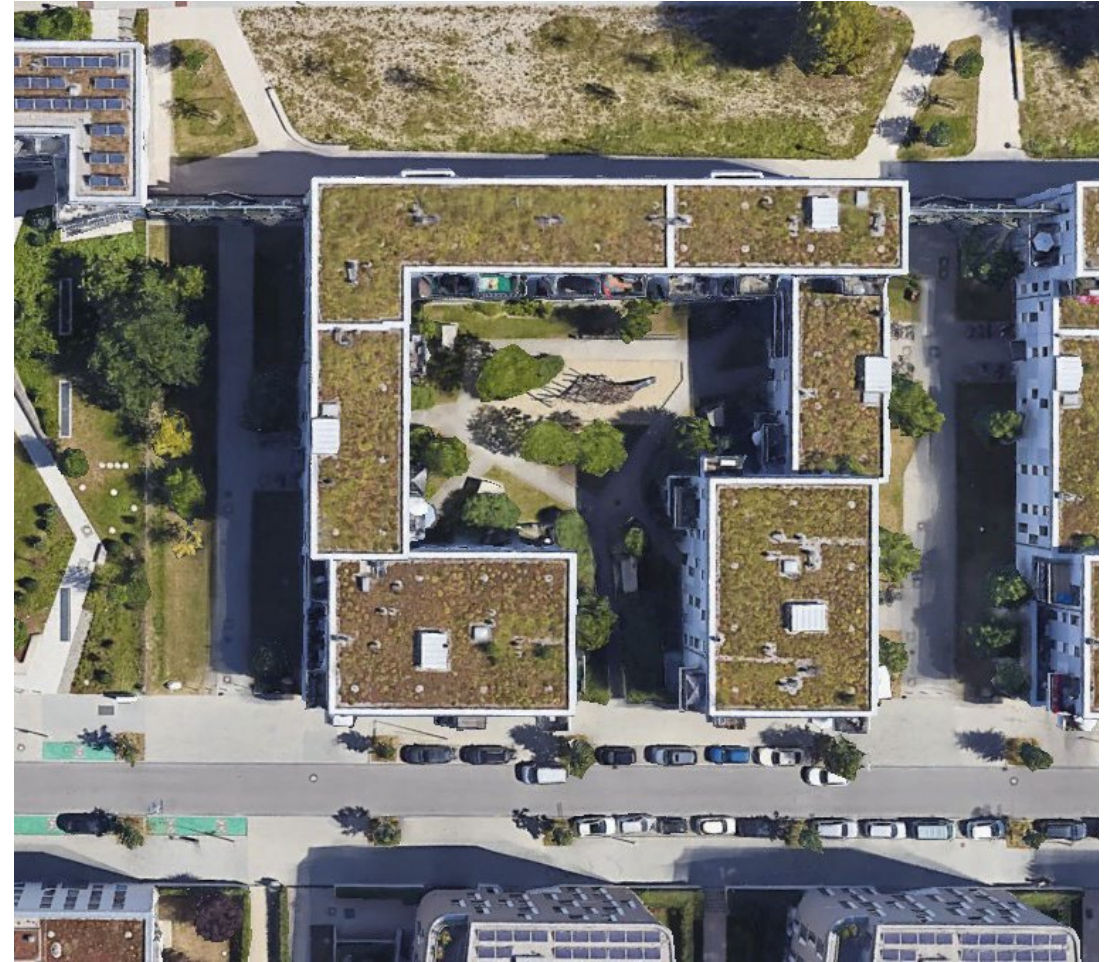


Foto: google earth

How do our codes affect quality of life?



Foto: Allstar/Warner Bros

What if Communicative Stairways were legal?



These buildings look different... Because they are!



Source: Woehr Autoparksysteme GmbH

Questions?

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 [@larch_lab](https://twitter.com/larch_lab)