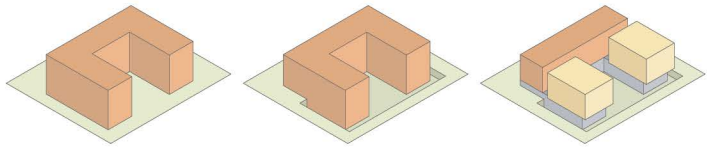
THE CO-FINITY VILLAGE

Co-Sharing Co-Living Co-Thriving

The world around us moves quickly to modernize and urbanize, new technologies surface that allow us to create long distance internet connections and powerful machines enable us to travel far distances, we spend money on consumer goods and hoard material goods in our homes. The future within the capitalist environment continues to promote expansion and densification but many people are reluctant to move to the fast paced urban environment of the city. Alternatively, they may seek out slower rural lives where they can join a small village to find that sense of community they were missing from the city. Now imagine if you could find that village environment within the urban fabric. A place where you know all your neighbours because you share a table at dinner with them almost every night. Where all you need to do is walk down the stairs to get to your local coffee shop, pub or community center. Where you can gather with your friends in the courtyard for live music. Where your kids don't have to leave your sight to go play at the park. Where you can grow your own garden or start a new hobby. A place where everyone works together, shares together, lives together and thrives together. The Co-Finity Village.

The building consists of mixed uses with public and commercial amenities sunken down on the lower two levels, two towers with residential apartments, a large central social co-housing facility that all surround a large public vegetated courtyard.



MAIN GOALS

CO-DWELL : Shared living facilities and resources

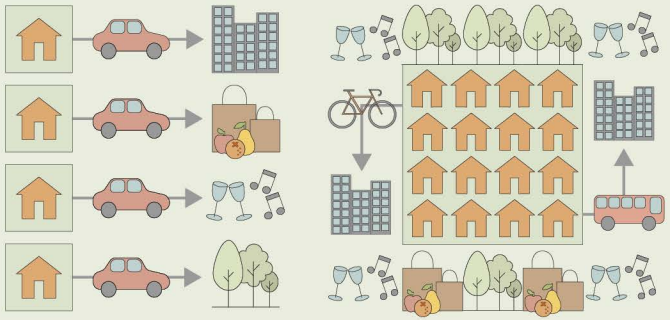
CO-OPERATE : Ample small business opportunities

CO-MINGLE : Options to gather and socialize

CO-DINE : Resources to garden, cook, and dine together

CO-TRAVEL : Program for sharing vehicles and cargo bikes

E-CO : Living sustainably with nature



Current Car Centric Individualistic Suburban Living Model

Proposed Localized Community Urban Village Living Model

Vancouver, BC Site A

60.8m x 38m 2310 m²

93 Residential Units

745 m² Commercial Space

645 m² Community Space

226 Max Occupants

975 m² Green Space

2,000,000 Litres of Rainwater Harvested Annually

800m² Solar Roof

200,000 kwh Produced Annually by Solar

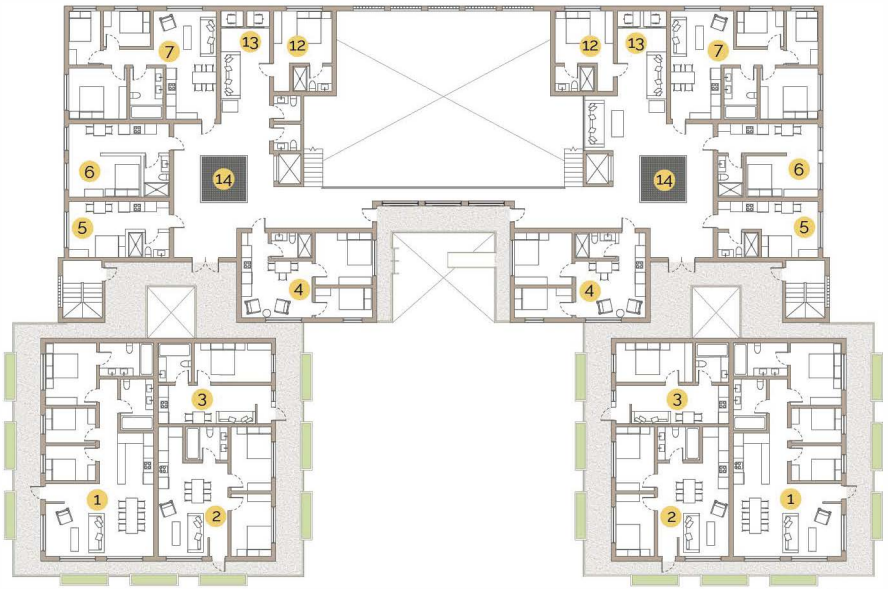
10 Electric Vehicles to Share

10 Electric City Bikes
5 Electric Cargo Bikes
85 Bike Parking Spots

Residential Floors Legend

1. Three Bedroom Apartment
2. Two Bedroom Apartment
3. One Bedroom Apartment
4. Two Bedroom Co-op
5. Studio Co-op
6. One Bedroom Co-op
7. Three Bedroom Apartment
8. Industrial Shared Kitchen
9. Communal Dining Hall
10. Communal Living Room
11. Play Courtyard
12. Guest Bedroom
13. Quiet Study Corner
14. Hang Out Net
15. Outdoor Adult Only Patio
16. Adult Only Billliard Room
17. Adult Only Kitchen
18. Four Bedroom Co-op
19. Communal Greenhouse
20. Chicken/ Rabbit Coop
21. Blue Green Roof
22. Outdoor Kitchen/Bar
23. Sand Pit
24. Sun Deck
25. Play Area
26. Picnic Area
27. Fire Pit Lounge

SECOND FLOOR



THIRD FLOOR

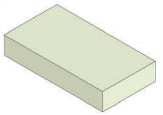
AFFORDABILITY IN THE VILLAGE

The floors above the public sector consist of two different housing typologies. The two wings on the side form five levels of apartments while the central portion houses a social housing co-operative. The two typologies are separate from each other asides from the outdoor balconies that connect the structures and the residents. By providing both options, the development allows for flexible buying options and various levels of co-sharing. The apartment units range from one bedroom to three bedrooms and are marginally smaller than conventional apartments making them cheaper without sacrificing comfort since spaces for laundry and storage are separate and shared with the co-housing residents. All residents also get discounted access to the gym and sauna, workshop, craft and work spaces and free access to the outdoor rooftop spaces and greenhouse.

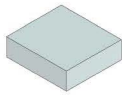
The units in the co-housing sector are even smaller, but where they lack in kitchen and living spaces, they make up for in the very spacious shared social spaces throughout the different levels. These shared spaces promote sociability and co-operation in organizing meals, planning events, coordinating childcare, and sharing household chores all while developing trust. The main shared double height space is large enough for two large kitchens, enough dining seating for all the co-housing residents, ample living room spaces for relaxing as well as opening onto a child play courtyard. Scattered throughout the levels are also quiet work pods for when residents need a space to get some work done as well as lounging nets that offer a playful alternative to the conventional living room. The upper levels each offer more kitchen and living spaces and even an adult only billiard hangout and outdoor patio.

One of the biggest reasons for the persistence of poverty is that poor people do not have the savings or space to buy bulk so they pay more. This is part of the poverty tax. By organizing the residents and possibly nearby residents, residents can buy in bulk. Living in such a localized environment and co-sharing on such a level saves significantly on time, allowing residents to enjoy the luxury of a relaxed, slow pace village life when they come home from working in the busy city. Although sharing is key to the project, residents still have access to their own private space that they can personalize and call their own. Everyone needs space to themselves or time with just their family.

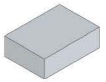
APARTMENT UNITS



10 Three Bedrooms
+ kitchen + 2 bathrooms
94 m²

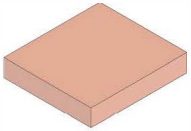


10 Two Bedrooms
+ kitchen + 1 bathroom
60 m²

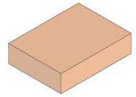


10 One Bedrooms
+ kitchen + 1 bathroom
37 m²

CO-HOUSING UNITS



2 Four Bedrooms
+ kitchen + 2 bathrooms
150 m²



10 Three Bedrooms
+ kitchenette + 1 bathroom
65 m²

10 Two Bedrooms
+ kitchenette + 1 bathroom
45 m²

16 One Bedrooms
+ kitchenette + 1 bathroom
30 m²

18 Studios
+ kitchenette + 1 bathroom
23 m²

60% cheaper home buying and renting options

30% increased purchasing power when shopping together

80% in hydro savings from solar and material construction

50% more small businesses and job creation within the neighborhood

ADDRESSING CLIMATE CHANGE

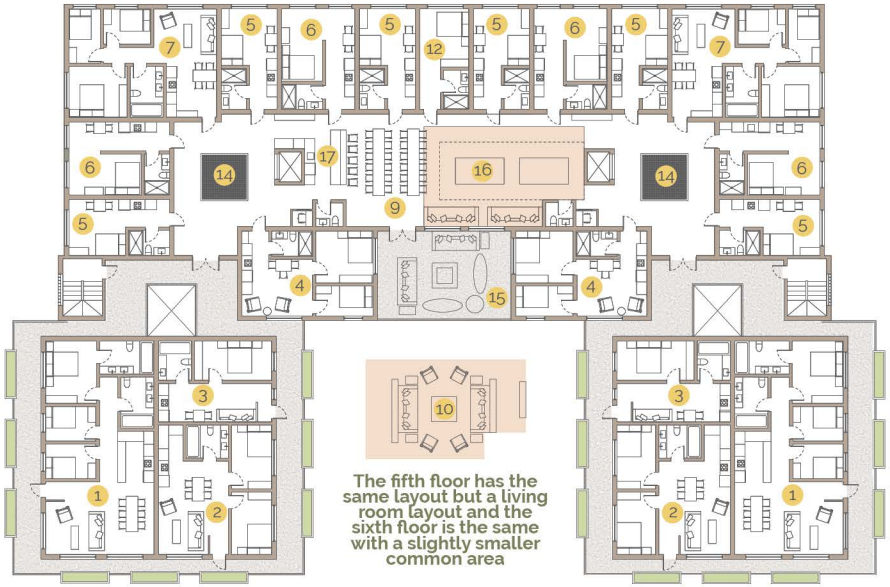
Current architectural practices are damaging to the environment. Thankfully new technologies and materials are helping to reduce this impact and new architectural developments such as this one can actually have a positive impact on their environment. Large operable windows allow for natural ventilation and ensure sufficient amounts of daylight as no space is deeper than 7 m. In the summer, overhanging balconies provide solar shading but during winter, the sun's heat warms the thermal mass of the hempcrete floors that are additionally heated by radiant coils powered by an underground heat pump. Within the common spaces are 9m^2 openings in each floor equipped with lounging loft nets allowing for stack ventilation to occur. In combination with discrete through wall mechanical ventilation, there is no need for expensive and outdated duct systems. Interior green walls also contribute to the air quality inside the building and promote good mental health, while an intensive green roof top helps mitigate the heat island effect and aids pollinators.

Electricity is harnessed on the upper most solar 'blue' green roof which also harvests rainwater that gets stored and used by the building for gray water or gardening. The accessible rooftop is also home to a large greenhouse, available to residents and equipped with 8 planter beds that each house 4 in bed vermicomposting units. These can process the organic food waste of all the residents and the restaurant. In return, with the help of some bumble bee pollinators, the residents are rewarded with fresh produce and herbs they can use in the kitchen to cook delicious shared meals. Other things the residents share include tools and materials in the woodshop and craft room where residents can learn to fix or mend things further reducing waste. Residents share 10 electric cars, which is sufficient in any neighborhood with a public transit hub nearby and a well connected bus route. Ample bike lanes throughout the neighborhood and bike storage with 5 shared electric cargo bikes further reduce the need of cars for small trips to the grocery store and encourage mixed use commuting.

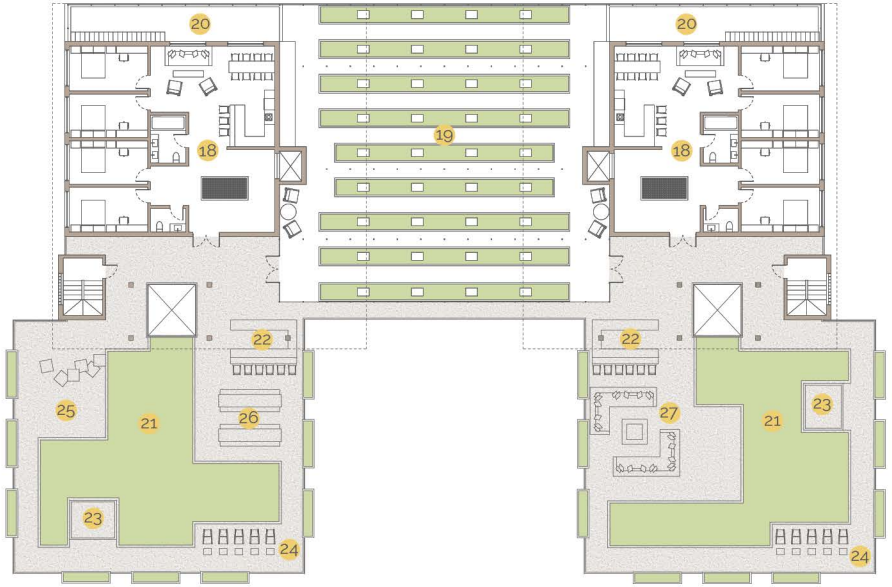
GREEN BUILDING MATERIALS

The foundation of the building is constructed of reinforced hempcrete. Although slightly more expensive than concrete, it is incredibly worth it. Hempcrete is antimicrobial and antifungal, it has a low thermal conductivity and a high R-value making it three times more energy efficient then concrete. When being farmed locally, the hemp plants are very low maintenance and their deep roots return nutrients to the soil after harvest and can even be planted in areas damaged by industrious activity to remove contaminants from the soil. The plant also grows to maturity in approximately 100 days making it a much faster renewable material when compared to timber or even bamboo. Hemp farms absorb enough carbon from the atmosphere to actually make hempcrete a "carbon-negative" product when considering the greenhouse gas emitted during production and application. At the end of the building's life cycle, hempcrete is also completely biodegradable making it a zero waste product that's initially even made from the waste product of making other hemp materials such as insulation and fabrics or even food.

Where hempcrete falls short is in its structural integrity and therefore it needs to be reinforced by timber. Mass parallel strand lumber posts and beams made from structural composite lumber of recycled flaked wood are used in larger open spaces due to their high bending strength. The walls for the residential portions of the building will be prefabricated off site to cut labor costs by 50% and will be made from laminated strand lumber, another form of structural composite lumber. These walls will be prefabricated with hemp insulation which has an R-value of 3.5 per inch. Additionally, its ability to compress allows a 5.5" thick piece of insulation to fit into a 3.5" thick wall stud, equating to an R-value of 19.25. The prefabricated wall panels will be equipped with triple pane, argon filled, energy efficient windows. Areas with larger openings will use glass blocks filled with argon gas for increased energy efficiency, resulting in the building requiring minimal mechanical heating and cooling. The blocks are also more fire resistant than classic windows and have been used in places with fire safety in mind such as the stairwells.



FOURTH FLOOR



SEVENTH FLOOR

"We need to become good citizens in the global village, instead of competing. What are we competing for - to drive more cars, eat more steaks? That will destroy the world"

-Yuan T. Lee

VILLAGE ECONOMY

Besides reducing costs, Co-Finity is designed to offer ample economic opportunity. If residents need office space to start a business, they can go to the co-working space where they have access to computers, printers and copying machines. There are conference rooms so clients can meet in a professional environment. Other creative small businesses can use the tools in the workshop and craftspace and then sell their goods during the market. Businesses can also use the storage rooms to hold their inventory. Classes can be taught in the meeting rooms, workshops, or the flexspace. Small retail trailers and food trucks can take turns hooking up to the building's electricity and hydro, providing residents with ever changing variety. The other flexible commercial spaces can be used for small business startups that want to try operating a store front. These spaces contribute to offsetting the cost of construction resulting in lower residential prices. Other amenity services such as the gym and laundromat have also been converted into businesses that the community can use, this way the costs are lower and the service quality is higher than if it were included for free. All of these commercial opportunities equate to around 50 job opportunities on site that will prioritize employing the residents.

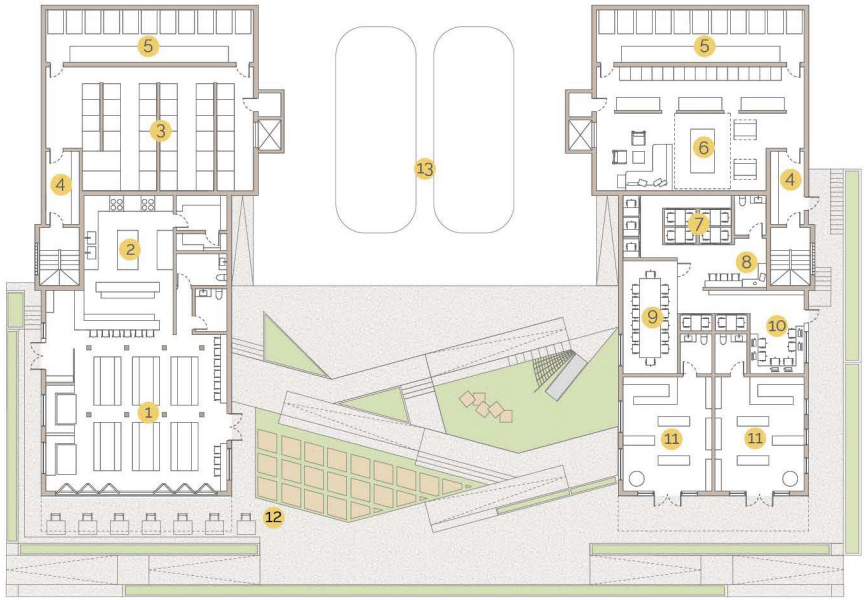
PROPOSED APPROVAL PROCESS

- City to explore and develop several missing-middle Sample Approved Plans (SAP), which contains site plans and permit drawings that developers can utilize within sites with similar site attributes as those contemplated on the SAP.
- Instead of circulating plans within individual departments of the City, it should implement Project Managers to expedite the entire process and dictate on speed of review as well as inter-departmental communications and decisions.
- Implement Online permitting, which can create accountability for stakeholders to track progress and be held accountable to reasonable timelines for their part in the review process. Furthermore, this online process should include a public-facing portal that makes department metrics and timelines public.
- Legislation to impact on speed of approval: This could include requirements that towns and cities report on permitting metrics and performance; limits on the amount of time for reviews before a permit is automatically granted; and rules that consolidate or streamline the public comment process.

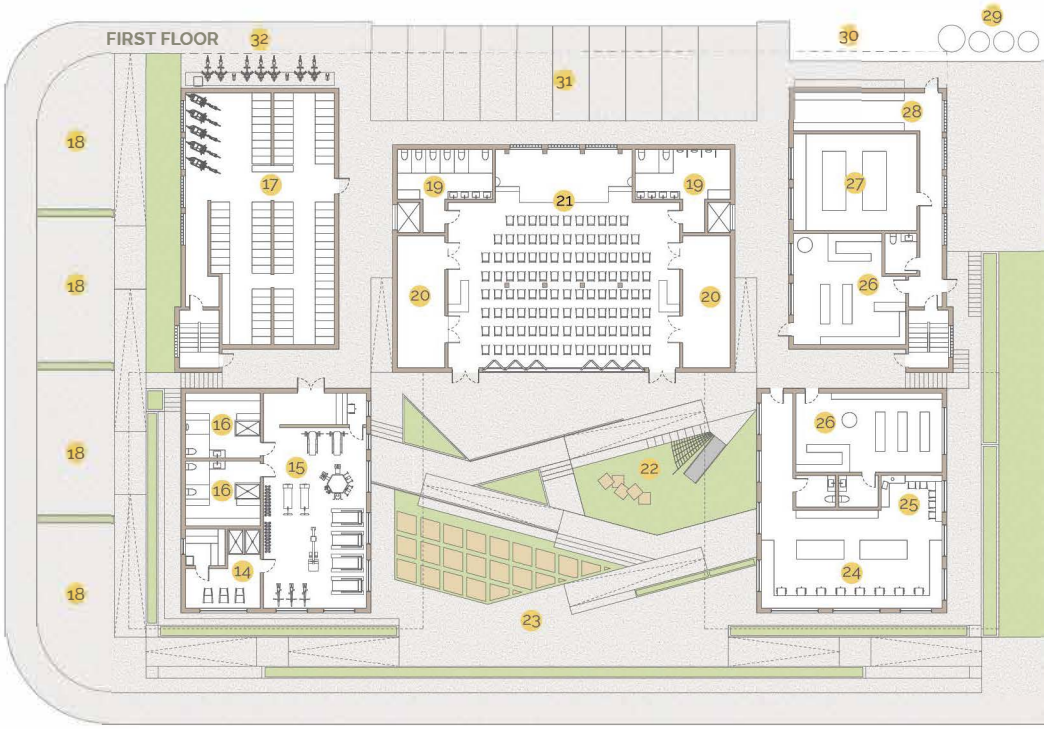
PRO FORMA

Building Type	Mixed Use Residential
FSR	3.4
Lot Size	24868.91 square feet
Gross Building Size	85068.72 square feet
Net Building Size	75863.89 square feet
Efficiency	89%
Average Unit Size	816 square feet
Hempcrete	7 246 250 $
Prefabricated Mass Timber	12 284 725 $
Elevator	640 000 $
Total Cost	28 377 717 $
Commercial Offset	51 96 111 $
Cost per Bed	144 885 $

GROUND FLOOR



FIRST FLOOR



"What Suburbia cries for are the means for people to gather easily, inexpensively, regularly, and pleasurably - 'a place on the corner'" - Ray Oldenburg

SOCIABILITY IN THE NEIGHBORHOOD

Suburban neighborhoods lack third spaces, social surroundings that are separate from the home and the workplace. They are places that offer an opportunity for self expression, where individuals can participate in being members of a community which is very important for mental health. When people are socially connected and have stable and supportive relationships they are more likely to make healthy choices and to have better mental and physical health. The coffee shop/pub is a great place for socializing where residents and neighbors alike can grab a morning coffee before work or meet up with some friends on the weekend to enjoy the secluded patio. Other amenities that help with reducing stress include a small gym with dry sauna, a crafting makerspace, a greenhouse, an office and study space, and a laundromat that doubles as a games room with a ping pong and foosball table will also be available to not only the residents but the community at large to avoid the sense of exclusivity by the surrounding neighborhood. By not providing vehicle parking, mostly the local neighborhood will use these facilities since they will be walking and biking distance from their homes, encouraging strong localized bonds to form.

Ground and First Floor Legend

1. Local Pub/ Cafe
2. Industrial Kitchen/Bar
3. Shared Storage
4. Mail Foyer
5. Mechanical
6. Public Laundromat
7. Public Quit Study/Work Pods
8. Lunch Break Kitchenette
9. Meeting Room
10. Public Internet Lounge
11. Flexible Commercial Space
12. Outdoor Patio
13. Rain Water Retention Tanks
14. Sauna/ Relax Space
15. Public Gym
16. Changerooms
17. Bike Storage
18. Vendor Truck Parking
19. Washrooms
20. Storage
21. Multipurpose Hall/ Stage
22. Outdoor Play Area
23. Public Courtyard
24. Public Crafting/ Makers Space
25. Lunch Break Kitchenette
26. Flexible Commercial Space
27. Work Shop
28. Used Items Exchange
29. Garbage/ Recycleing Disposal
30. Pick up/ Drop Off Zone
31. Car Share Parking
32. Mobi Bike Share Station

Residents will also have the opportunity to open their own retail shop within one of four designated spaces provided on site. This allows for business startups to be possible with little upfront cost while bringing revenue to the building. Existing mobile businesses can rent out the food truck parking spaces where they can hook up to water and electrical supply, this reduces their cost and climate impact while further increasing business densification. At the center of all these public amenities is a flexible community hall and a beautiful outdoor courtyard. The community hall is paired with ample storage space to accommodate various seating arrangements and activities such as weddings or conferences, it can even be used to facilitate a daycare, sport activities such as yoga classes, movie nights or small theater acts, and religious congregations. The courtyard features ample vegetation, a play area, and lots of deck space to accommodate outdoor activities such as a farmers market or flea market, community BBQ and small live music acts. All together, these spaces perform as a small hub and can facilitate larger community gatherings for the whole neighborhood.

	Current
Zoning Type	R1-1
Max FAR	1.0
Max Units	8
Residential	Yes
Commercial	Only Grocery Store
Max Height	11.5 m / 3 storeys
Minimum Set Backs	F: 4.9m S: 1.2m R: 0.9m

	Proposed
Zoning Type	C-2
Max FAR	3.5
Max Units	No max
Residential	Yes
Commercial	Yes to most types
Max Height	19.8 m / 6 storeys
Minimum Set Backs	F: 2.5m S: 10.5m R: 4.6m

	Project
Zoning Type	C-2
FAR	3.0
Units	86
Residential	Yes
Commercial	Yes
Height	19.5 m / 7 storeys
Set Backs	F: 4m S: 5m R: 3.6m

COMPLIANCE WITH THE CODE

Most of the city of Vancouver's area is currently classified as residential inclusive or R1-1 which is arguably one of the most restrictive zoning types catering mostly to small scale residential buildings while adhering to the single lot character of the area. Although some other uses are allowed they are limited and conditional. The Co-Finity Village would have to ignore most of the building requirements of this zoning type and therefore a proposition to change the zoning type to a mixed use commercial or C-2 zoning is the plan of action. The intent of this zoning type is to provide a wide range of commercial uses as well as residential uses along arterial streets while limiting impact on adjacent residential sites and contributing to pedestrian interest and amenity. The design is made to be built on the intersection of two arterial roads so in some areas where this zoning change has already happened it would even fit into municipal plans.

In reference of the C-2 guidelines, there are many ways it does not comply. In reference to the Building Form and Placement table 3.1.2 some minor rule breaks are evident. The building for the most part is 6 storeys. An additional 7th level was added to increase FSR but the building height would still only measure 19.5m at the rear and 18m at the front where it is only 6 storeys. In terms of setbacks it is only 3.6m from the rear property line rather than 4.6m.

The side yard facing other residential lots is supposed to be 3.7m for portions of the building below the fourth floor and and 10.7m for portions of the building above the 4th floor. In this design the side yard depth at grade is a generous 7m but the residential levels are only 5m from the setback line. Complience can easily be acheived by removing the 6m wide food truck parking spots on the other side. The front yard depth is considered a "build-to" boundary of 2.5 m for non residential uses as outlined in section 4.3. Currently the front yard depth is 4m but is designed in a way to improve and widen the sidewalk for the public realm. Part (a)(i) also states an increased front yard is allowed for the purpose of a pedestrian courtyard at grade.

Pedestrians are able to move through the courtyard and commercial sector of the building using outdoor corridors in all directions to comply with sector 2.1 (a). Facing into the courtyard are some living rooms which does not comply with section 2.3 (a) but the courtyard is 16m x 18m making it much larger than the 6.1 minimum outlined in part (b). Since the development is located on a major intersection it is important to comply with section 2.5 regarding noise and hence another reason why hempcrete and hemp insulation is used throughout the building. Hemp building materials are very good at absorbing noise rather than reflecting it like concrete and wood. In accordance with section 2.6, privacy is improved with the use of visually distorting glass blocks. Some balconies overlook into residential blocks however they are not private balconies but circulation balconies.

Section 2.7 outlines crime prevention which is achieved by clearly defining public and private sectors since they are on different levels and do not share circulation paths. Implementation of Jane Jacobs "eyes on the street" philosophy also ensures that public areas are casually surveilled visually at all times.

Circulation and pedestrian access were key designing factors, yet the design does not comply with section 2.8 because some commercial units are accessed via a gently sloped vegetated ramp that invites people into the sunken courtyard. This path is meant to heighten the experience of pedestrians and adds to the architectural expression of the building. In compliance with section 4.2 (c), semi private outdoor rooftop spaces and smaller courtyards are integrated to improve liveability. In total they equate to 730 m^2 which is equal to 8.5 m^2 per unit. This is almost double the requirement outlined in section 6.2 (d) that requires 4.5 m^2 of outdoor semi private space per unit. However there are no fully private balconies so it still does not comply with section 6.2. The development is designed to discourage vehicle use, therefore no underground vehicle parking will be implemeted. Instead, 10 electric vehicle ports are directly accessed by the lane as part of the car share program used by the residents. This is a significant reduction from the 43 parking spots that would otherwise be required as outlined in section 4.2.1.13 of Vancouver's off street parking space regulations.

CATALYST FOR CHANGE

The existing housing crisis is a complex issue intertwined with problems related to affordability, social inequality, and the impact of climate change. Co-Finity addresses this multifaceted challenge and underscores the necessity for flexibility in the current rigid urban planning structures. It is an initiative centered around promoting inclusivity and community while establishing equitable access to housing and economic activity, promoting healthy living and stimulating creativity. Currently many people live individualistic car centric lives and have negative preconceived notions about what co-housing is because existing examples are few and far between and usually disconnected from the neighbourhoods they are tucked away in. But the more people that experience the benefits communal living offers the more demand there will be for mixed use social housing projects. Co-Finity is a start to the missing middle and the missing third space problem within suburban neighborhoods. By providing affordable housing and amenities within a communal context while also improving the walkability of its surrounding neighborhood, Co-Finity will become the future. A future where people have the opportunity to:

co-share
co-live and
co-thrive.