

# WHAT WOOD WOULD

## ATTAINABLE HOUSING

**ATTAINABLE HOUSING:** What Wood Would explores what renewable wood CLT construction would offer the Bentonville region as a signature feature of this new housing initiative, and as a catalyst for a sustainable wood manufacturing economy in Arkansas. We take the challenge of “attainable” housing seriously. With a unit density range of from 36 to 55 units per acre in 12 residential types, our design meets and can exceed the program’s unit density objectives to minimize any development cost premium for CLT construction. Inspired by Osage wood culture and log house construction, this design offers developers a flexible range of unit densities and an organizing geometry that can be easily adjusted and re-configured on different sites.

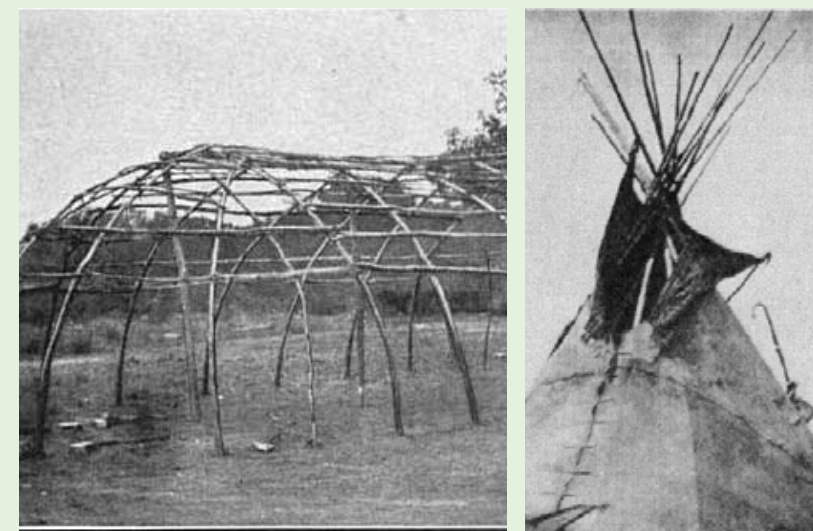
The **What Wood Would** project embraces fundamental design strategies that support affordable construction. We utilize a well-known “5 over 1” massing with wood residential ‘bars’ on a concrete plinth with retail, service, and parking on or above grade. Working with the logic of unit repetition based on CLT panel dimensions and efficiencies, spatial variation is created through stepped massing and a diagonal geometry of intersecting wood residential volumes or ‘bars’. By varying the angles of intersection, the design produces an urban variation of intimate exterior space and larger outward looking courtyards.

As seen in the section/elevations, the project imagery of continuity and scaled variation is achieved with two window types and unit balcony spaces which shift in plan. Based on CLT panel modules, a diagonal reading of vertical windows unifies the long wood faces of the residential volumes. The short ends offer larger windows and a signature natural cladding of local thicket branches, supporting pollinators and migrating birds.

In response to the temperate Ozarks climate, access circulation is covered, not conditioned. This lowers the building’s overall operational energy footprint and increases quality of space by doubling the daylight access of living units, providing unit cross ventilation and maximizing useful interior living space by eliminating long, interior corridors. Vertical circulation cores connect the plinth to the residential floors on the eight housing “bars”. A pairing of stairs connects from the 3-story to the 4 and 5-story residential bars providing a spatial inside/outside garden experience.

Our design offers a distinctive new public Greenway amenity that celebrates the karstic geology of the Springfield Plateau topography that is host to many rare, natural communities and is located along the Mississippi Flyway, a major bird migration route. To define the Downtown Edge District, this project integrates characteristics of the Springfield Plateau landscape with high-density mixed-use development. The northern edge along the SE 14th Street corridor, currently marked by high-tension wires and hard storm water retention basins, is transformed into an 80-foot wide wetlands Greenway. This seep-formed Greenway of bioswales is planted with ferns, blue stem, switch grass, and shaded by oak, pignut hickory and pine bosques. The Greenway absorbs storm water from SE 14th Street and the new residential development. Bridges provide public access to this new wetland where visitors can learn about native species and habitats. Retail activity along SW A Street establishes a more urban condition characterized by sidewalk pavers, formal oak bosques, rain gardens, and outdoor benches and seating.

On top of the parking and retail plinth is a landscape of Springfield Plateau native trees and grasses that cool and shade spaces in summer, to mitigate against an urban heat island effect. 30-inch planting beds, lined by benches, are shaded by tree bosques of Red Buckeye, Fringetree, Ironwood, and Sassafras. Internal courtyards allow families to enjoy outdoor eating and recreational play. The vernacular wetlands landscape is connected to an elevated “constructed ground” of the retail plinth by two “eroded” courts and generous public access. Public programming is designed to support the advancement of sustainable wood culture: the project provides Live/Work residences with Online work capabilities and light industrial studio space, a regional Innovation Hub and neighborhood Maker Spaces with educational outreach programs in local schools.



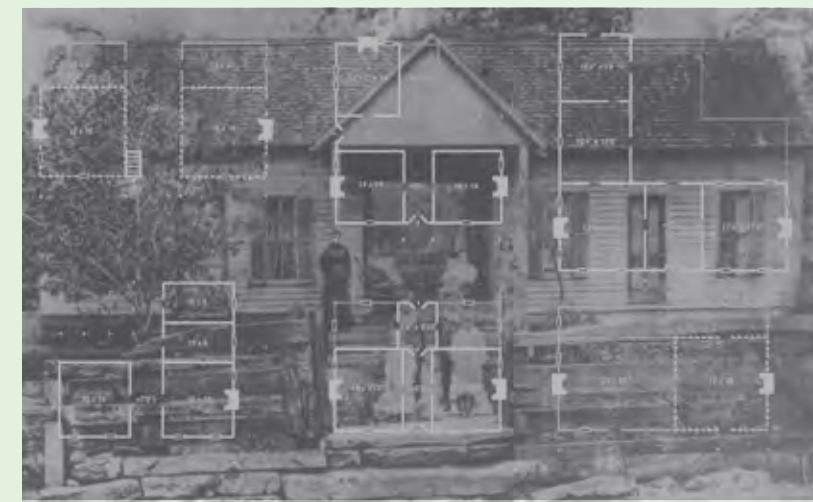
### Native Wood Building Cultures

The What Wood Would project draws inspiration from the highly adaptable diagonal intersecting organization of Osage wood lattice geometries. The Osage tribes established a sustained culture and knowledge of renewable wood building on the southern territory of their lands, now called NW Arkansas. Overlapping and intersecting wood wall and roof geometries were bundled together for stability. For summer hunting trips, the Osage used portable wood housing structures made of long intersecting bundles of small-diameter wood logs.



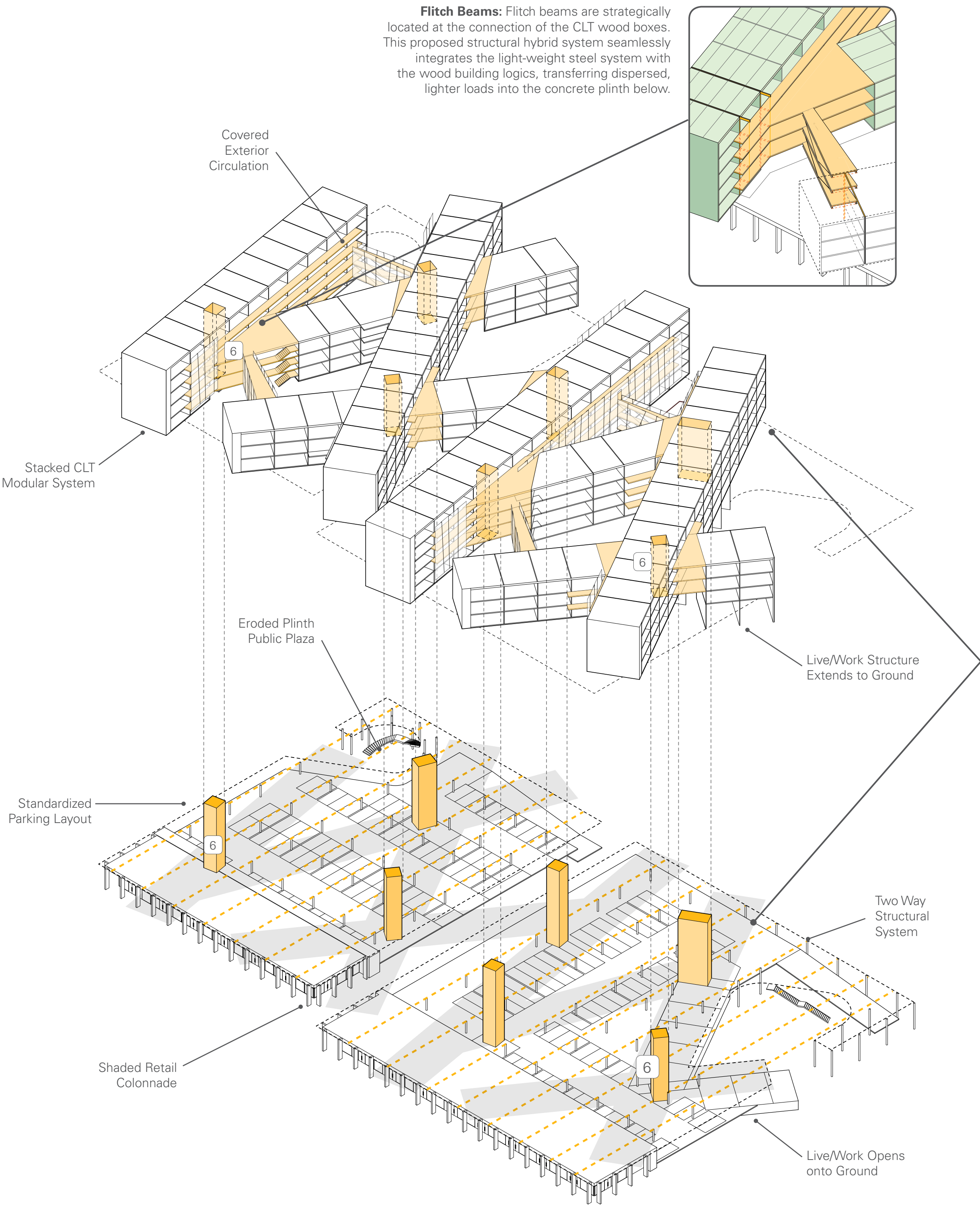
### Stacked Log Housing

We propose a new imaginary for wood ‘log’ construction in NW Arkansas. Historically associated with rural housing, wood can be elevated by design and transformed to become a sustainable and attainable housing future in NW Arkansas. Log houses signify subsistence, and the long-held tradition of and pride in “making do” with the renewable resources at hand. We draw upon the community-based construction traditions of stacked log housing through live/work programming for resident craft persons, neighborhood shared Maker Spaces, and educational and vocational public programs and outreach. By embedding wood craft and construction capabilities in this project we aim to jump-start a regional wood manufacturing base that could produce the CLT for this project.



### Wood Pattern Book Housing

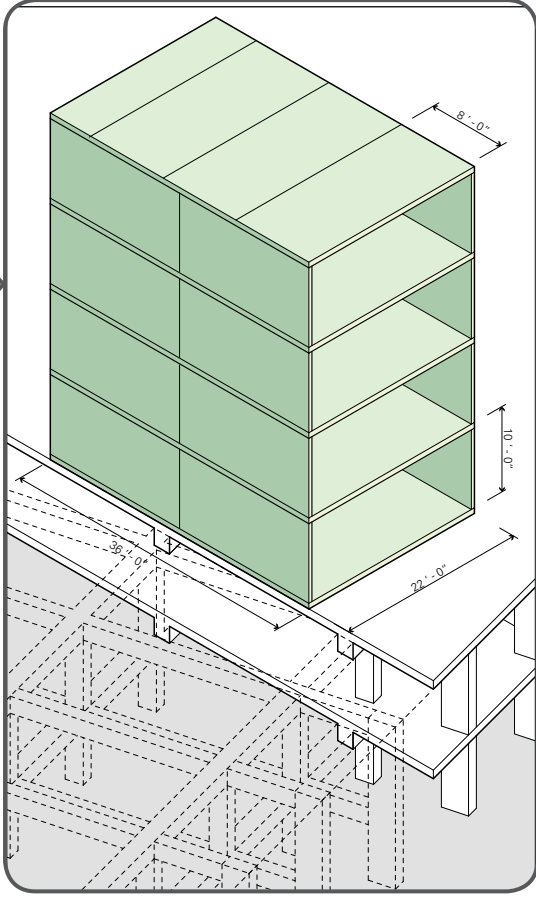
Our project is inspired by modular wood pattern book housing, which aggregates repeatable units and produces variation through crossing spaces and covered porches where circulation and social space occurs outdoors. The Wood Pattern Book was based on a collection of basic modular units of log construction. These single rooms or ‘pens’ (roughly 12’ to 16’ square) were planned as modular units that could be repeated to accommodate a range of program needs with simple massing configurations.



### Structural Logics

This project utilizes the common “5 over 1” housing construction methodology. The massing responds directly to CLT panel dimensions and construction process, enabling the project as solid wood construction ready. Alternatively, the project could also be built with more conventional wood stud construction using Forest Sustainability Certified wood stud construction. The wood CLT housing bars and raised plinth support the following structural logics:

- Provide a light-weight prefabricated building system allowing floors, roofs, and facades to be lifted in place at a rapid pace, condensing the construction timeline
- Express the regional identity and craft of local knowledge working with regional wood species
- Integrate concrete which is efficient in compression at the plinth
- Utilize lightweight metal construction in tension for exterior circulation elements

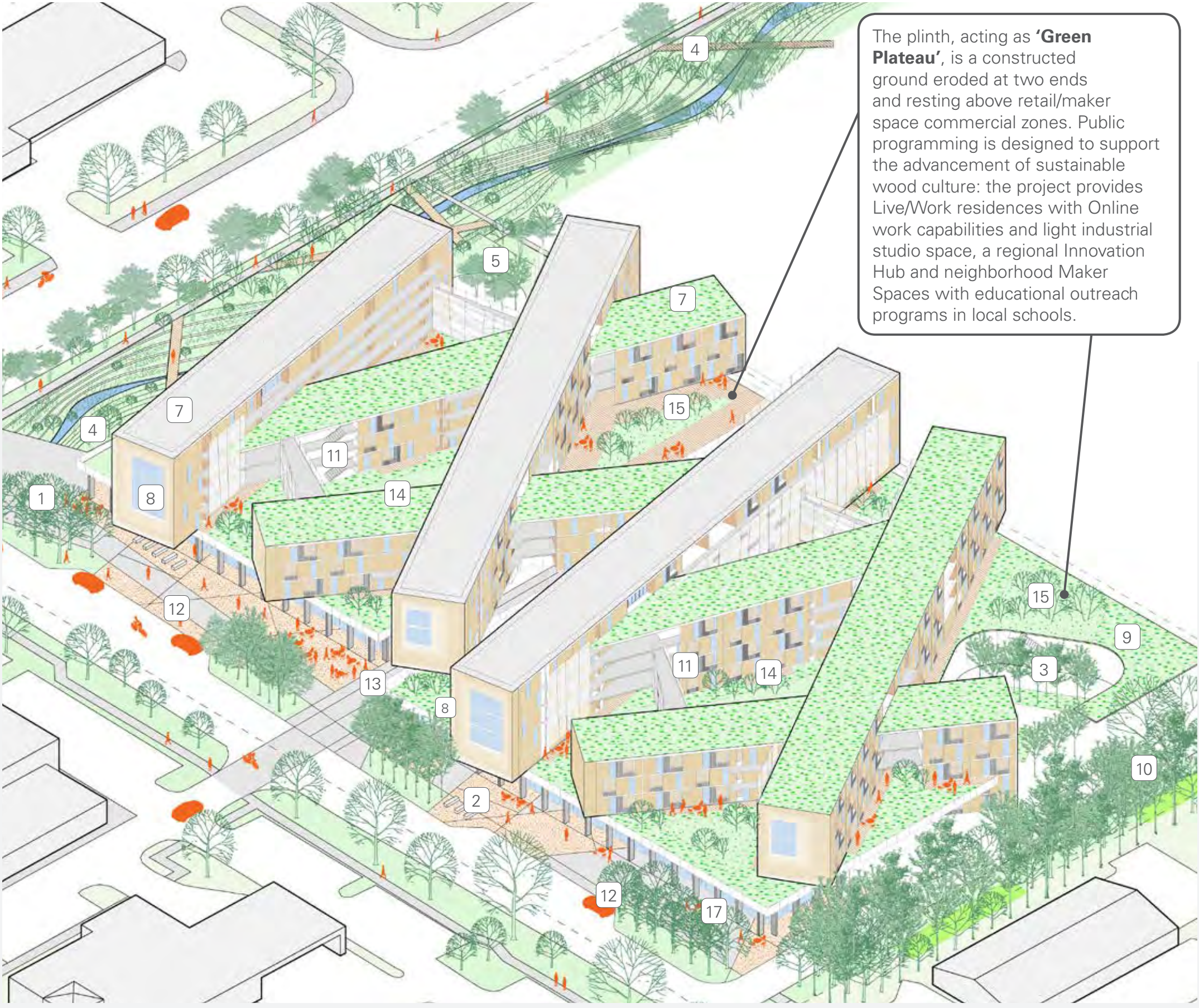


**5 Over 1:** The regular, efficiently stacked CLT wood boxes sit on the concrete plinth. The lighter loads from the upper levels are dispersed and transferred vertically to the concrete plinth.

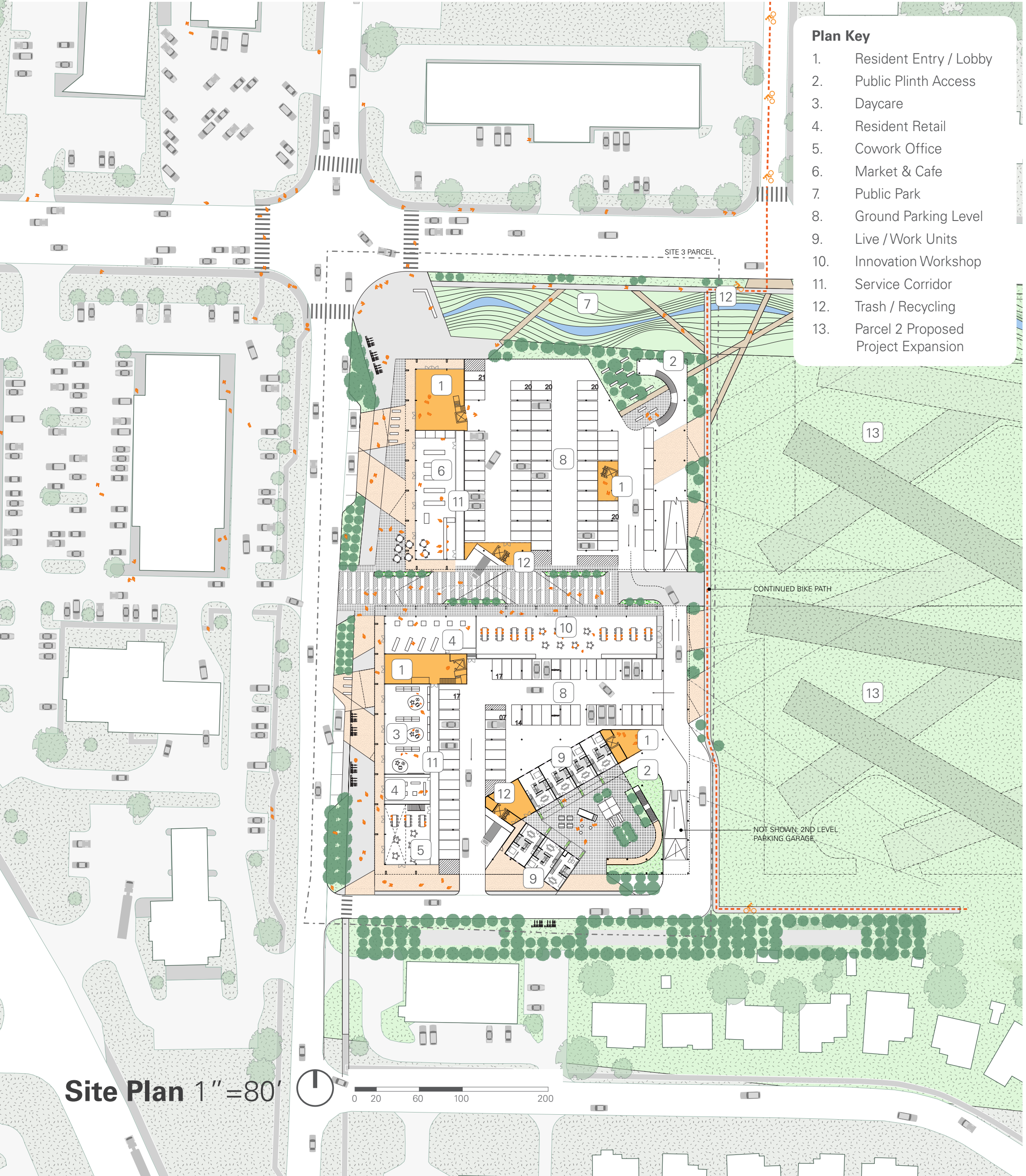
### Layered Circulation

A system of layered circulation nodes connect the residential bars and eliminates the standard convention of ‘double-loaded’ dark interior corridors between residential units. In response to the temperate Ozarks climate, the design ‘exports’ the circulation from the interior of the building to the exterior, where it provides a spatial and thermal buffer. The layered circulation:

- Significantly lowers the building’s overall operational energy footprint
- Enables cross-circulation and passive ventilation for the units
- Eliminates the need for conditioned circulation space
- Activates the exterior spaces of the public/entry side of the residence units
- Provides sun shading through the use of screens, walkways, and bridges



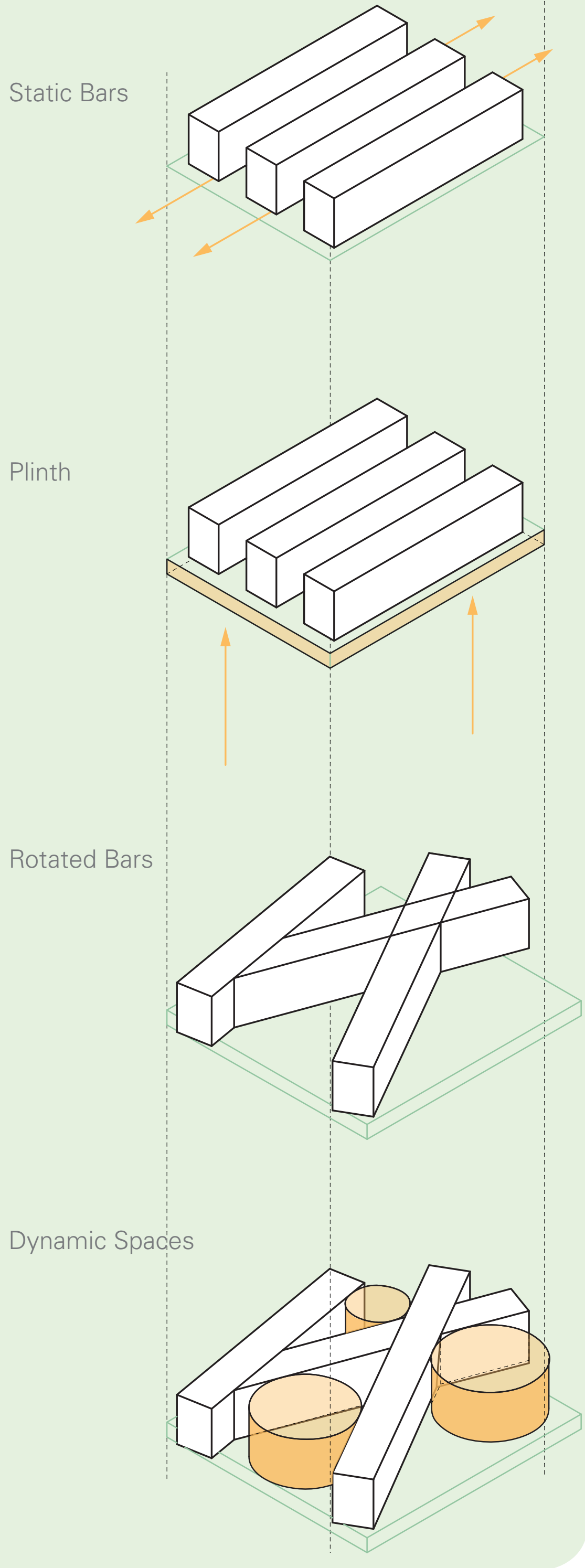
- Plan Key**
1. Resident Entry @ 14th Street
  2. Resident Entry @ SWA Street
  3. South East Live/Work Innovation Court
  4. Water Management Greenway
  5. North East Plaza
  6. Vertical Circulation Cores
  7. Sedum Roofs (Water Collection)
  8. Bird Thicket Facades
  9. Public Terrace
  10. Dog Park
  11. Exterior Circulation & Resident Bridges
  12. Retail & Commercial Corridor
  13. Maker's Lane
  14. Residence Court
  15. Raised Bosque
  16. 14th Street Corridor
  17. Residence Co-Work Space
  18. Maker Space
  19. Bike Racks





# Design Operations

The project utilizes a well-known "5 over 1" massing with wood residential 'bars' on a concrete plinth with retail, service, and parking on or above grade. Working with the logic of unit repetition based on CLT panel dimensions and efficiencies, spatial variation is created through stepped massing and a diagonal geometry of intersecting wood residential volumes or 'bars'. By varying the angles of intersection, the design produces an urban variation of intimate exterior space and larger outward looking courtyards.



Plinth Plan 1/32" = 1'-0"



Third Floor Plan 1/32" = 1'-0"



Section 1/16" = 1'-0"



The **Green Plinth Plateau** draws from the region's Springfield Plateau providing a landscape to host a range of bird species on the migration route along the Mississippi Flyway.

The **Bird Thicket** incorporates a system of salvaged tree branches and thin steel cables over the windows performing as a visual screen to detract birds from flying into the windows.

**Residence Entry** at the Corner of SWA Street and 14th Street exists at the intersection of an extended urban retail corridor and a new public Greenway.



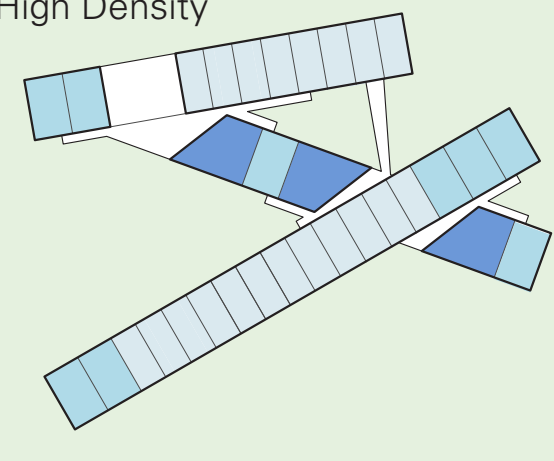
## Flexibility By Design

Each housing "Bar" can be subdivided to create a variety of housing densities. The units are based on a 22' structural grid but can be join or subdivided in order to create smaller or larger units. The unit core and wet wall is in a consistent location in all unit types which allows different units to easily stack for maximum flexibility by floor.

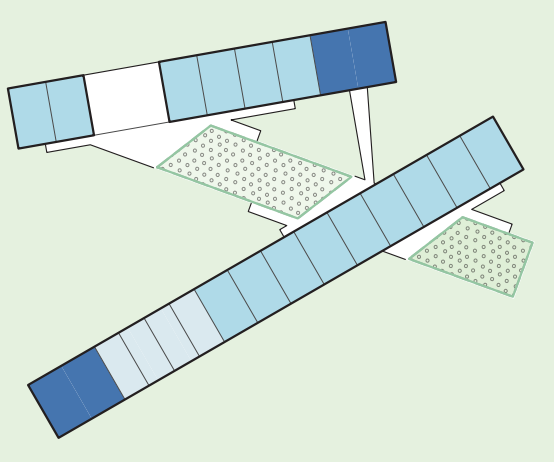
Key:

- Studio
- 1+ Bed Unit
- 2 Bed Unit
- 3 Bed Unit

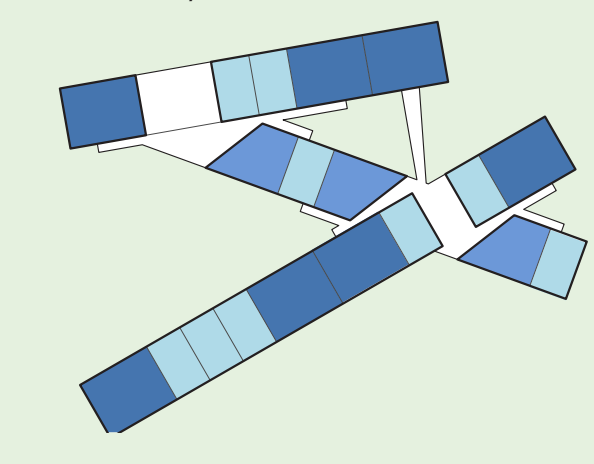
High Density



Mixed Density

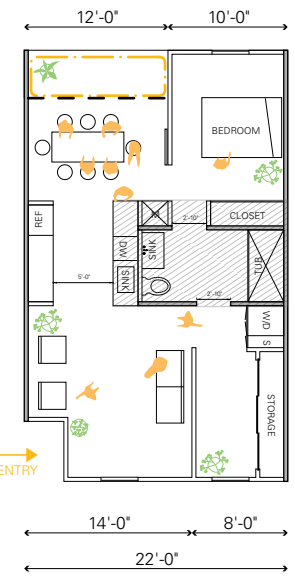


Low Density

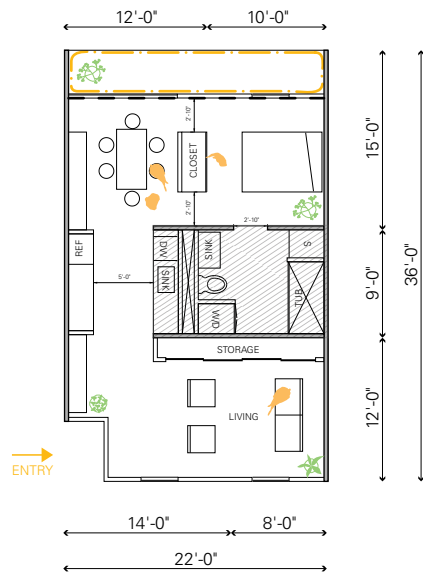


Interior View Typical 1.5 Bed + FLEX Unit

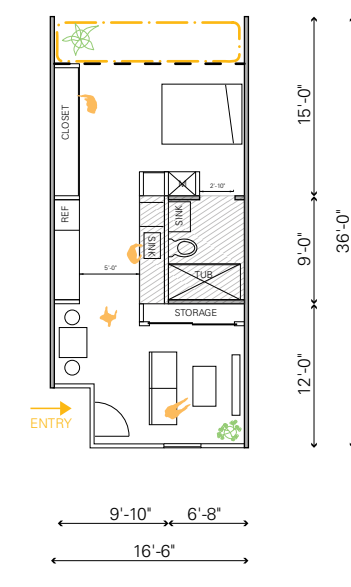
1.5\_A



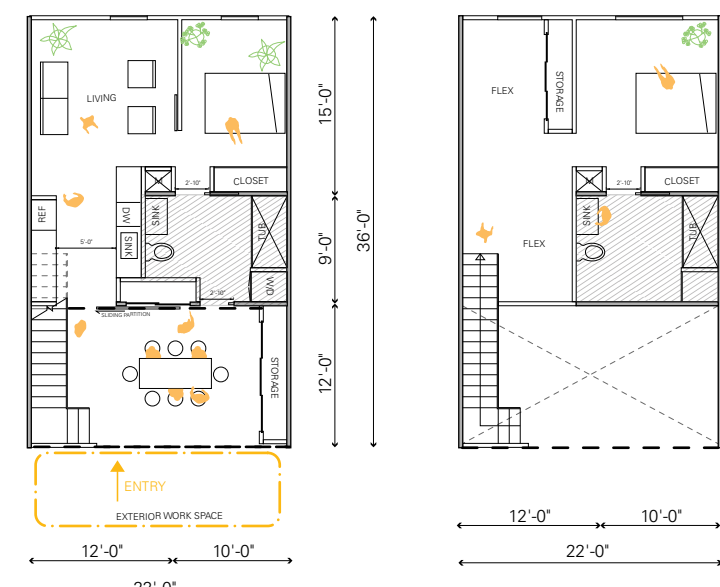
1.5\_B



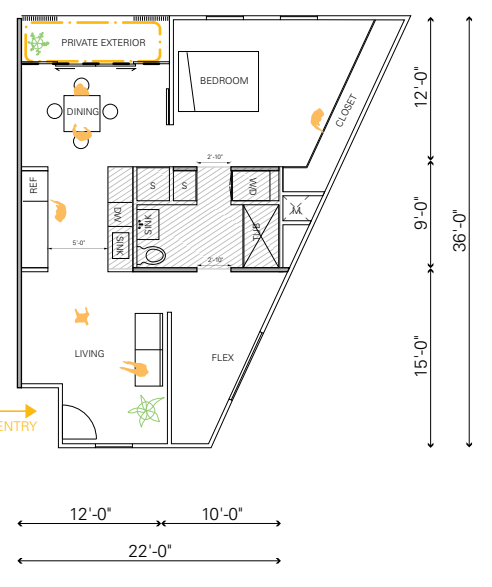
STUDIO



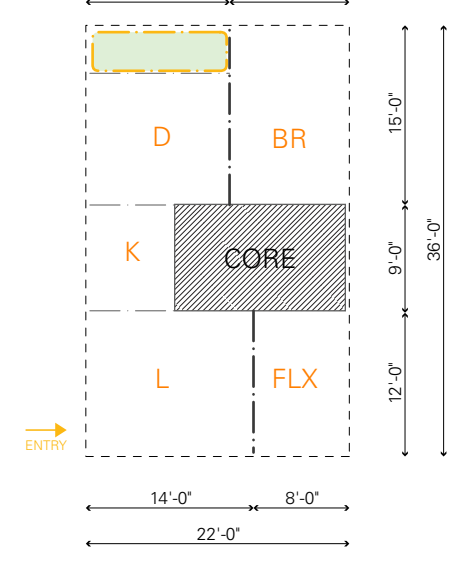
LOFT



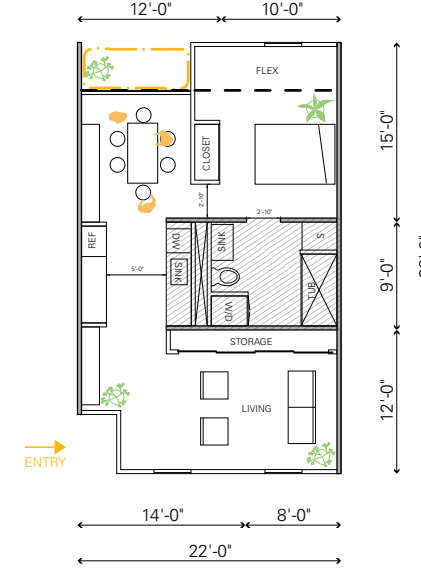
1.5\_D



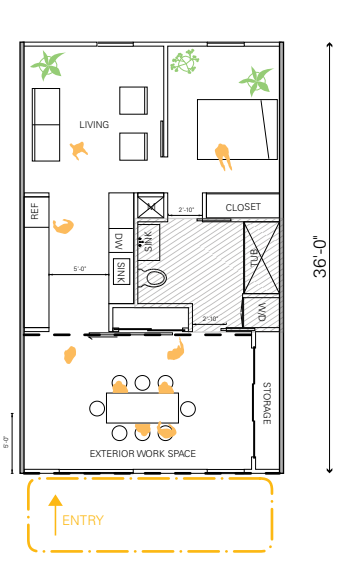
1.5



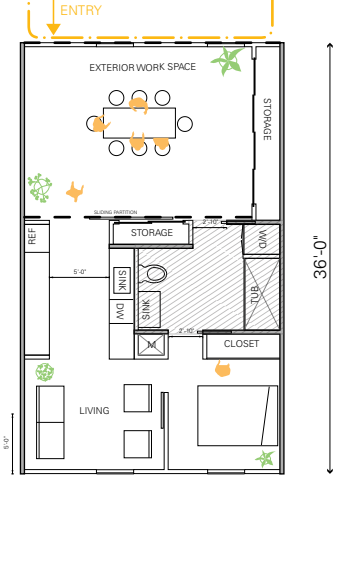
1.5\_C



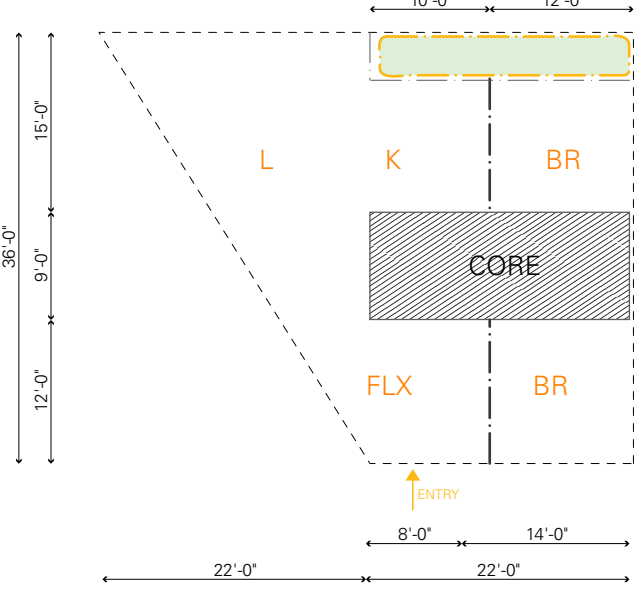
L/W\_A



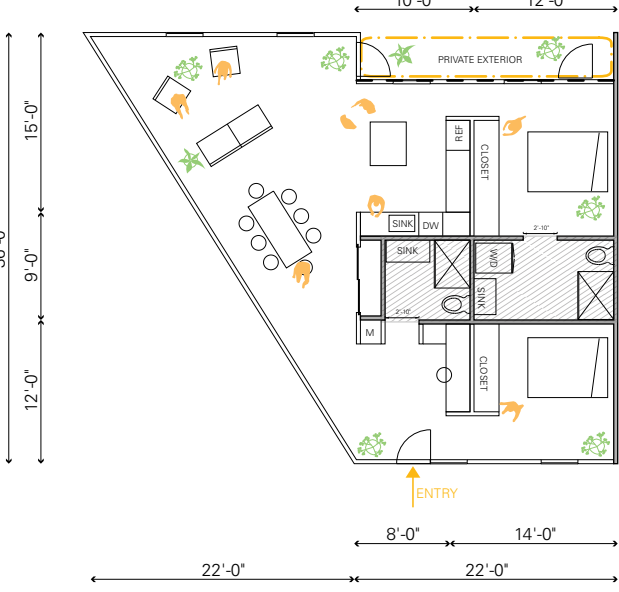
L/W\_B



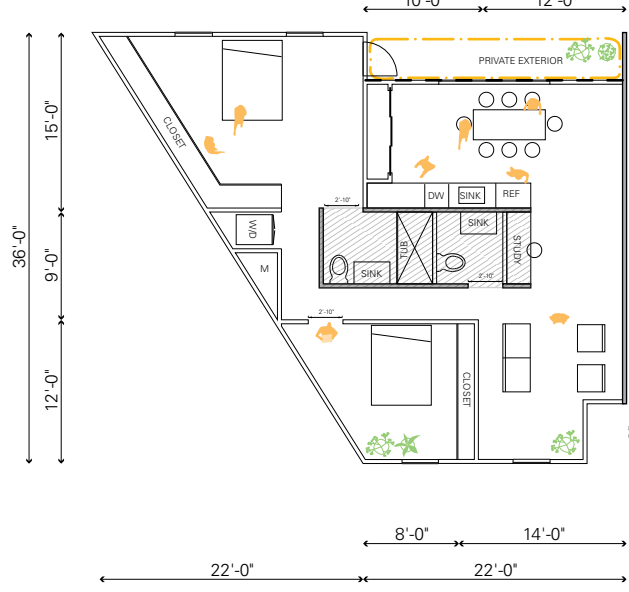
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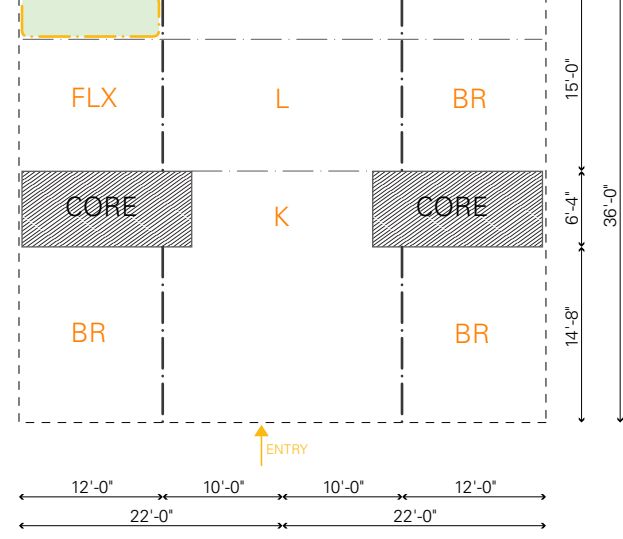
2\_A



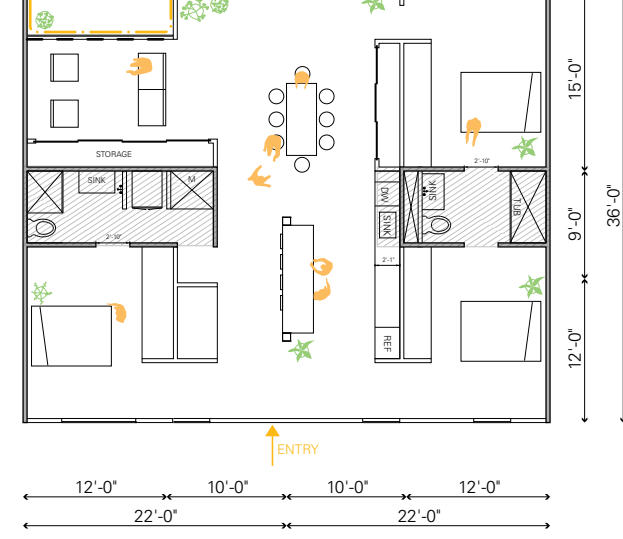
2\_B



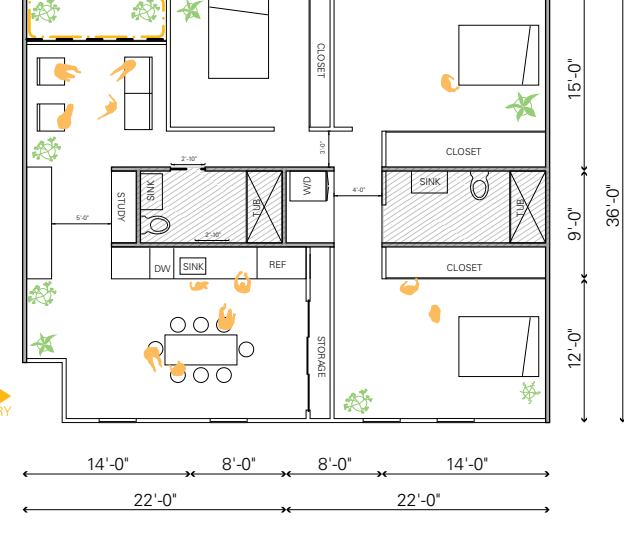
3



3\_A

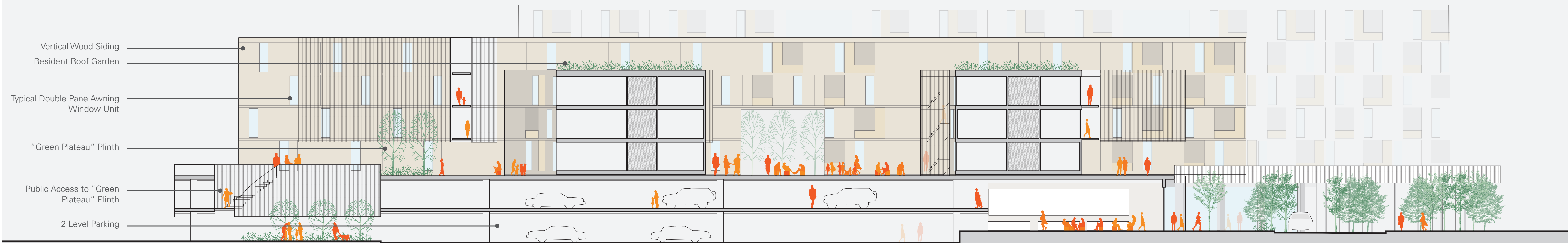
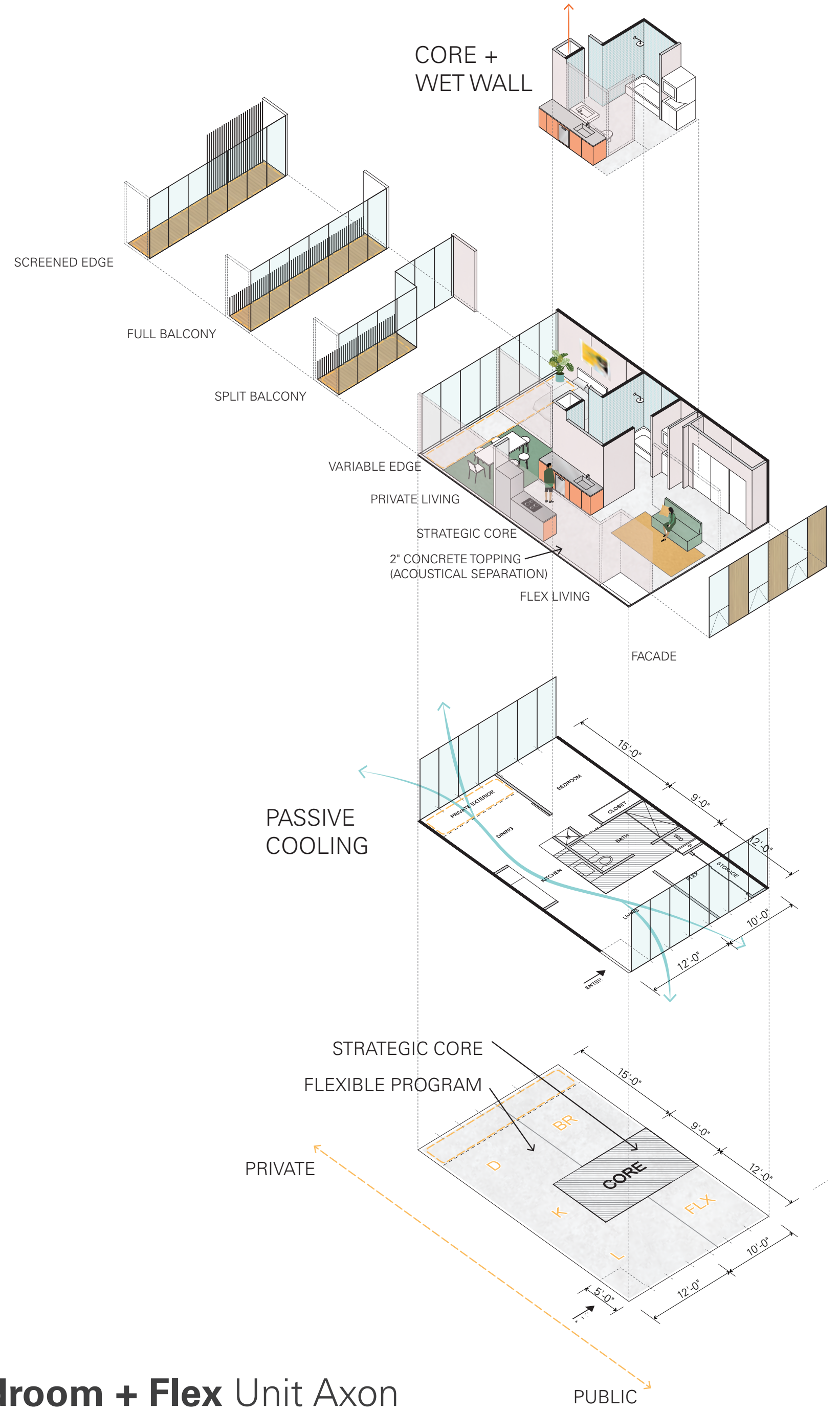


3\_B



Unit Variation 1/16" = 1'-0"

1 Bedroom + Flex Unit Axon

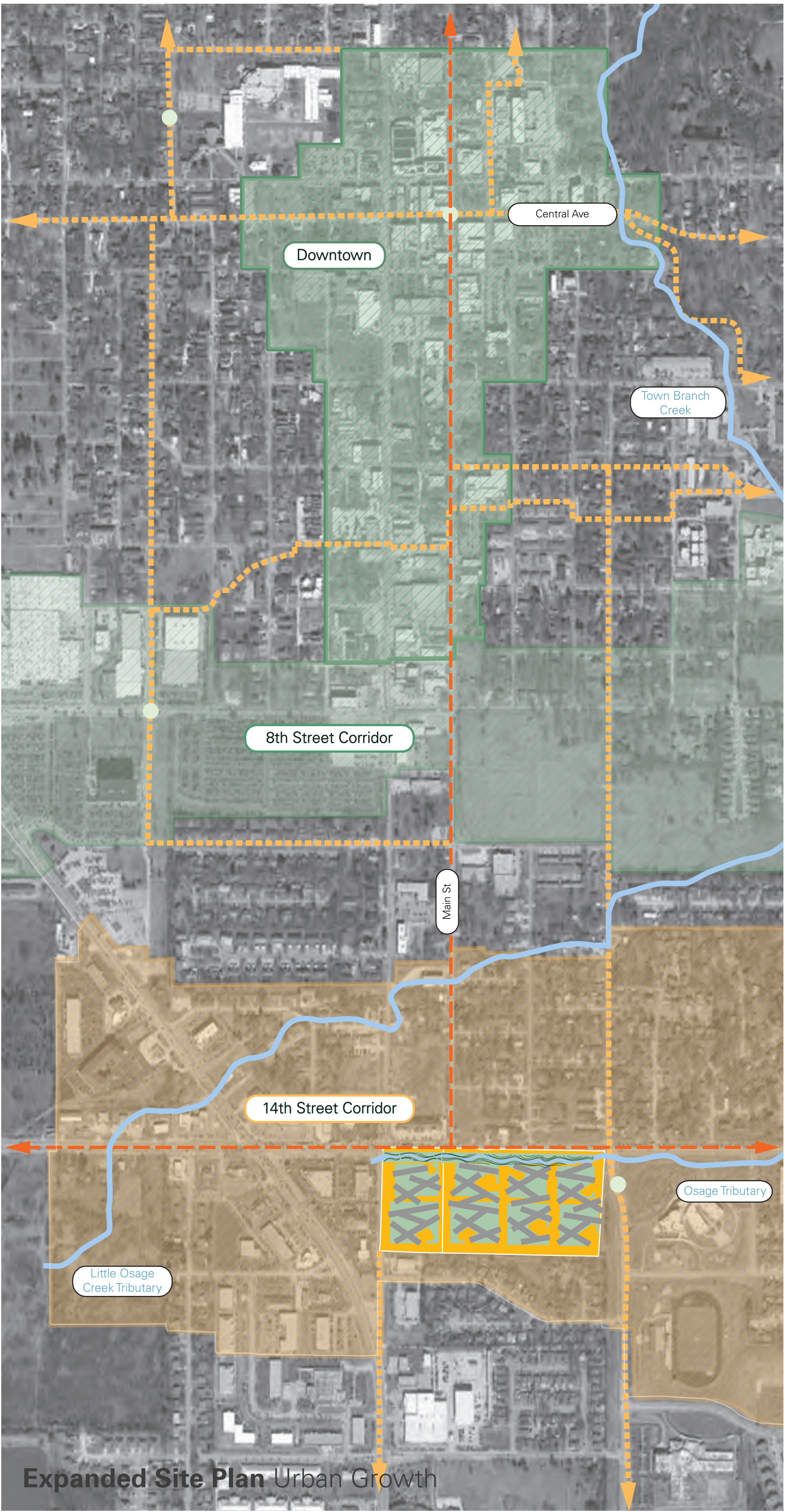


Section 1/16" = 1'-0"



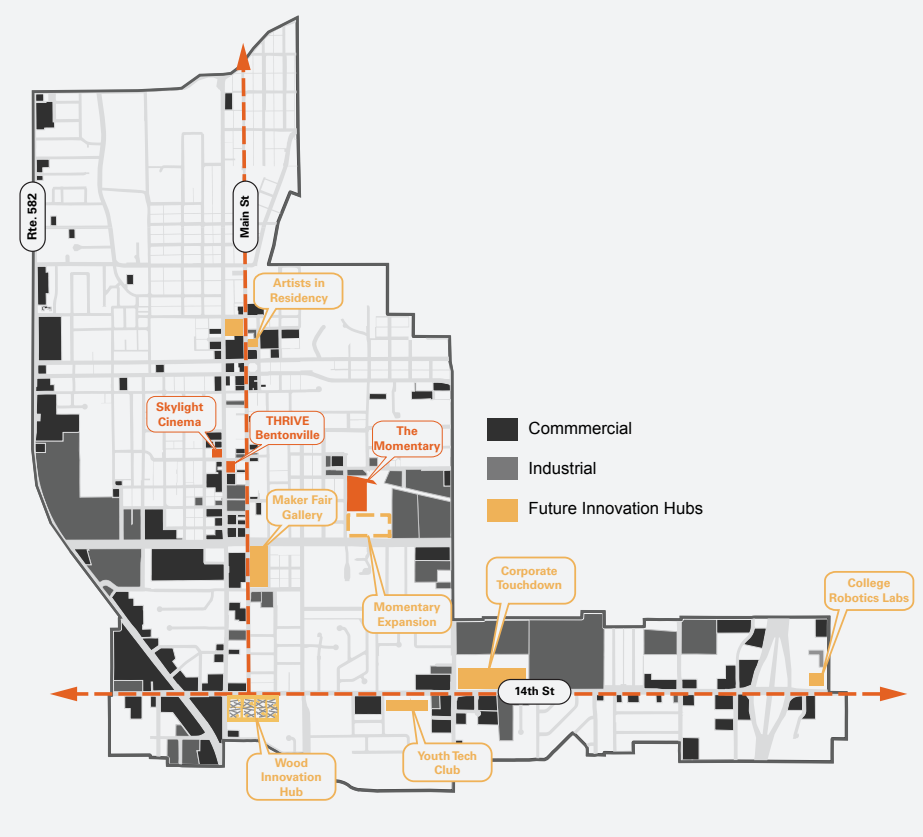
Board 3, Innovation Hub & Constructed Grounds





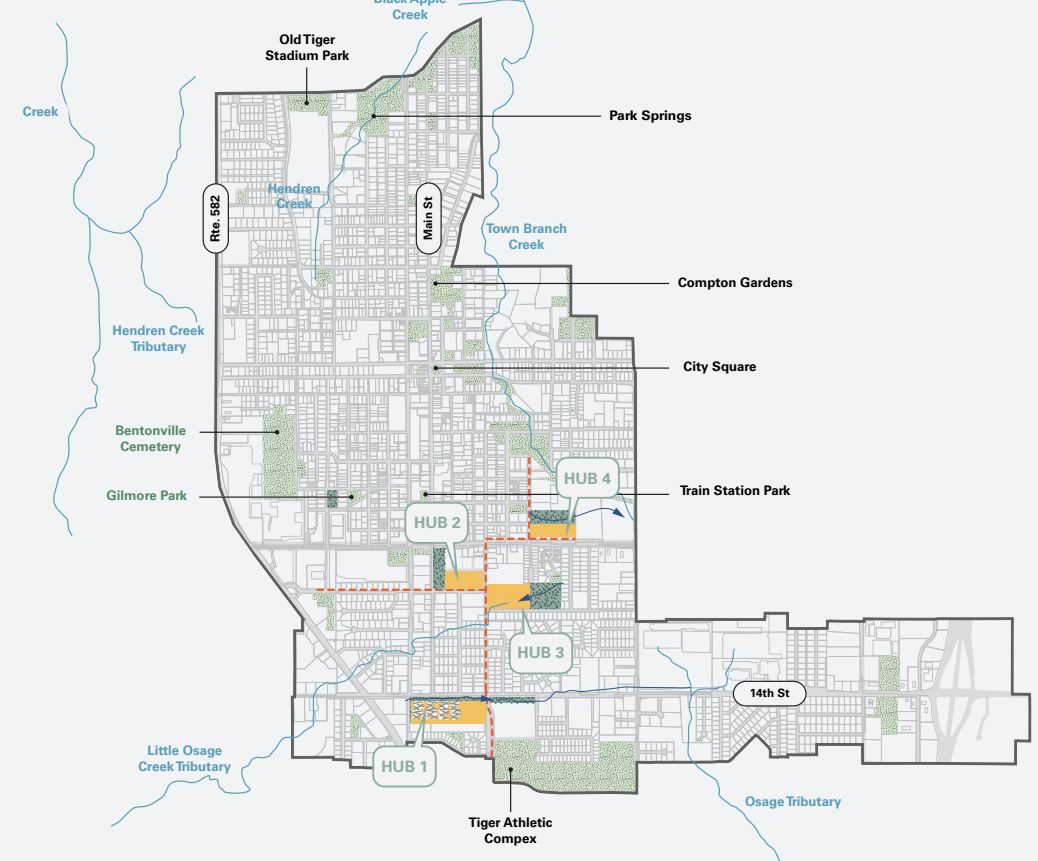
**CREATIVE CORRIDORS**

Bentonville, Arkansas is established as a global leader in innovation and retail. Responding to Arts District and Market District successes, the project simultaneously expands the urban grid living and commercial densities and in support of global innovation needs of local fortune 500 Companies J.B. Hunt Transport Services, Walmart Stores, Inc. and Tyson Foods.



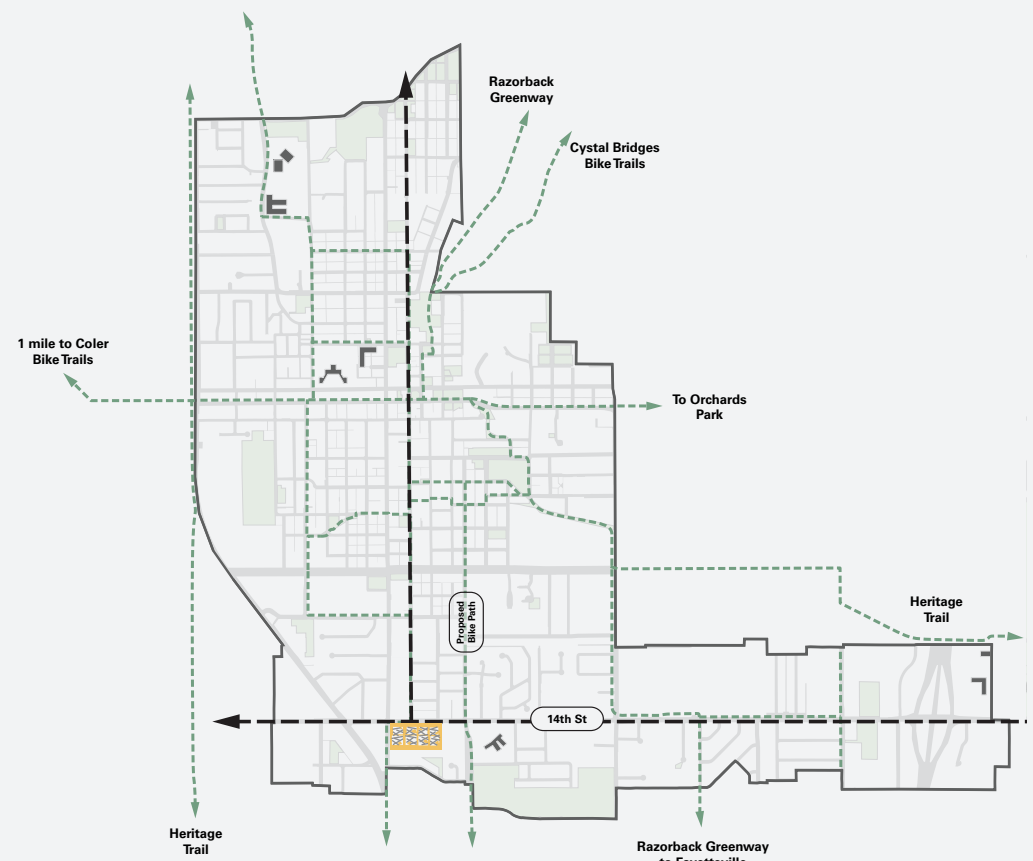
**COUPLED ECOLOGIES**

Our urban approach proposes a series of mixed-use developments dispersed throughout the Bentonville region, expanding the downtown core into the urban edge zone. The project proposes a coupled urbanism of innovation hubs/maker spaces with both live/work and typical resident developments.



**PROJECTIVE FLOWS**

Planning for increased living densities and urban growth, our project proposes sustainable solutions that include the expansion of existing bike paths, Ozark trails, and a collective water story.



**Regional CLT Wood Construction & Forestry Planning**

The project **What Wood Would** leverages the latent potential embedded within the biomass of the Arkansas forest coupled with the long history of wood construction in NW Arkansas and the increasing global interest in wood construction. The identity of craft in the region is based on a handed down knowledge of working with local species of wood (Oak, Maple, Hickory and Walnut) in baskets, fencing, small outbuildings, housing and large agrarian structures.

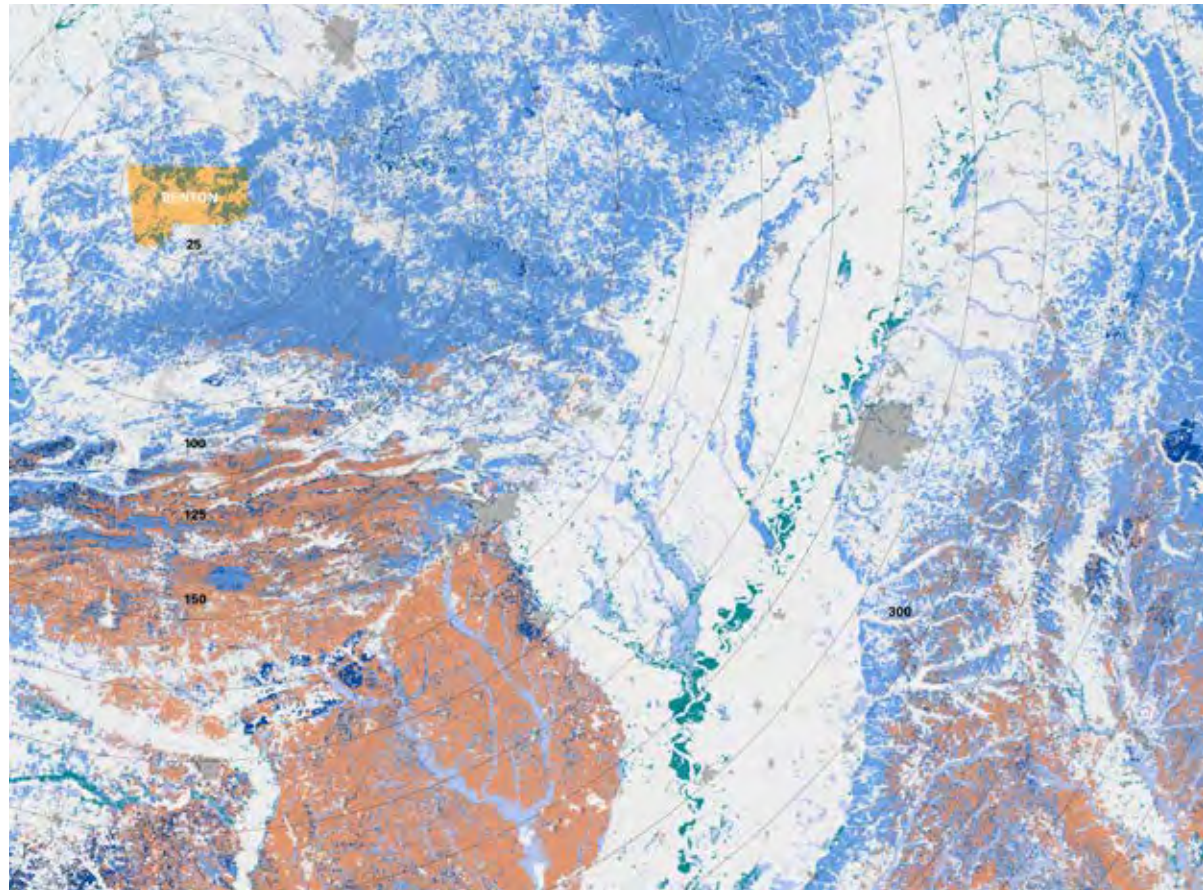
This project has the size and unit density to become a catalyst for sustainably harvested CLT construction materials in the region. Through the project's realization, the introduction of advanced CLT manufacturing works to diversify the state economy and create skilled new jobs. Arkansas has about 19 million forested acres with an added increase of 571 million tons of standing timber in the last four years. This produces a surplus of about 15 million tons per year, comparable with Germany which produces 12 billion board feet of advanced wood construction materials with 19 million tons per year. The Arkansas wood resource should be utilized, as it is producing an unsafe condition for forest fires. The regional use of wood for construction keeps the biomass closer to where it is grown, within its own watershed, and lessens transportation and manufacturing carbon footprints. The state's ecological systems and services will benefit from the prolonged carbon sequestering of forest biomass from the 25-35 years (for the current railroad tie industry) to 50-100 years for the contemporary building industry.

**Where the WOOD Is**



The state of Arkansas and the Ozark Region displays an underutilized forest biomass. Additional project diagrams and plans show the sustainable harvesting of this local resource catalyzed by **What Wood Would**.

**HardWOOD/SoftWOOD**



The Arkansas region contains a variety of wood species which have the potential harvesting of sustainable materials in building industry as flooring, FSC nominal lumber, and the expanded industry of CLT and solid wood construction.

**Technical Wall Section**

1/2" = 1'-0"

