

**What if** we designed housing and retrofitted intersections for:

- The Loneliness Epidemic p.6
- Autonomous Vehicles p.29
- Climate Change p.48
- The Shrinking Middle Class p.78

**What if** we started at the intersection of By Pass Road and Jackson Highway where Covington, GA meets Newtown County?

# RETROFITTING SUBURBIA'S MISSING MIDDLE

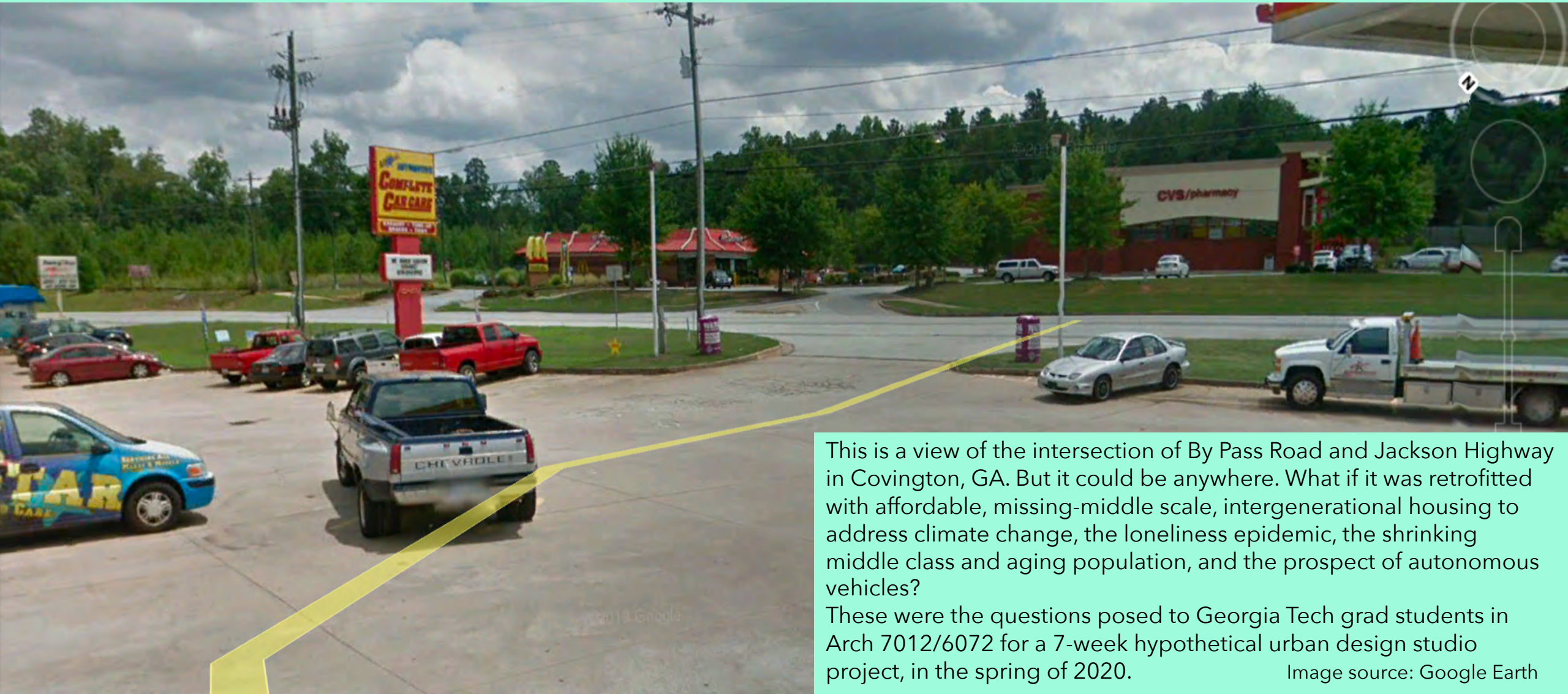
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# SUPER PRACTICAL / SUPER VISIONARY

## retrofitting suburbia's missing middle

Prof. Ellen Dunham-Jones with John Anderson & Randy Vinson



This is a view of the intersection of By Pass Road and Jackson Highway in Covington, GA. But it could be anywhere. What if it was retrofitted with affordable, missing-middle scale, intergenerational housing to address climate change, the loneliness epidemic, the shrinking middle class and aging population, and the prospect of autonomous vehicles?

These were the questions posed to Georgia Tech grad students in Arch 7012/6072 for a 7-week hypothetical urban design studio project, in the spring of 2020.

Image source: Google Earth

# retrofitting suburbia's missing middle

**Missing Middle Housing is a transformative concept that highlights the need for diverse, affordable housing choices in sustainable, walkable places.**



Source: [www.opticos.com](http://www.opticos.com)

## Missing Middle Housing types:

- Expand housing choices for smaller and aging households while providing opportunities for homeowners to generate income from an attached or detached rental unit
- Fit into neighborhoods of detached single-family dwelling units with gentle transitions in scale
- Provide shared lawns, patios, and courtyards that enable more social interaction and reduced costs

# retrofitting suburbia's missing middle

## Covington, GA

- 35 miles east of Atlanta
- Newton County Seat
- Fear of sprawl coming along I-20 from Atlanta in the late 1990's fostered interest in preservation of the historic town square and new urbanist planning.
- Clarks Grove has proven the market for new urbanism, including this cottage court below



# retrofitting suburbia's missing middle

## Covington GA Today

- Revitalized historic downtown square
- Slow-growing population of 13,728
- Approximately ½ black/white population
- 32% obese
- 30% poverty rate
- 41% home ownership
- Median hh income: \$40k
- Industrial jobs dominate and are growing
- No transit. 2 cars/household

For more details and sources, see the Appendix.



**What if** we designed housing and retrofitted intersections for...

# THE LONELINESS EPIDEMIC



**Covington's Intergenerational Village**

ADITI BHARADWAJ | EMILY KHALID | ELENI KROI

# What if the Loneliness Epidemic was the driver of our design?

In 2017, the former U.S. Surgeon General declared that our country was heading into a loneliness epidemic.<sup>1</sup> Loneliness is often a consequence of social isolation and sparse human connection. Its rise can be attributed to shrinking social circles, lack of mobility, and limited accessible activities. Its long-term effect on health can be as damaging as smoking 15 cigarettes a day, and can severely threaten longevity.<sup>2</sup> Honing in on who specifically experiences loneliness, the trend peaks in adolescence and young adulthood, declines through middle age, and rises again in old age.<sup>3</sup> Is loneliness widespread in Covington and similar rural counties across the country?

Twenty-eight percent of Covington's population self-report themselves to show little interest or pleasure in doing things, twenty-eight percent feel down, depressed, or hopeless, and five percent are experiencing suicidal thoughts.<sup>4</sup> The two age groups that are highest afflicted, teenagers and the elderly, also happen to be very underserved in the Covington community. Local teenagers lack spaces to gather other than a singular YMCA, and existing senior housing is at capacity with an ever-growing waitlist. Furthermore, Bypass Road and Jackson Highway are busy roads that limit walkable interaction between a string of local middle schools, high schools, and 55+ communities.

Our solution caters to and integrates teenagers and seniors, seemingly on opposite ends of the spectrum but equally dis-served by auto-dependent urbanism. Instead, we propose a lively Intergenerational Village which is anchored by a pedestrian-only walking + biking loop that connects to proposed local trails as well as area schools. The loop integrates a variety of recreational spaces for teens, civic gathering spaces, and other everyday uses with senior and missing middle scale housing. We incorporate elements of small-scale walkable urbanism to foster social interaction throughout. Smaller communal spaces are shared by different intergenerational housing types, while the larger town green is lined with community-oriented uses and is programmed to cater to different age groups. Such elements are expected to reduce the loneliness factor for both demographics.<sup>5</sup>

Our goal is to provide opportunities for social engagement through our design. Be it through seniors feeling less alone while overlooking a movie night on the lawn, or the opportunity for teenagers to easily walk to their favorite frozen yogurt place from their high school. As our Intergenerational Village develops, we hope that it not only transforms the existing intersection into a thriving community, but also connects with larger trail networks and surrounding neighborhoods.

<sup>1</sup> McGregor, Jena. This Former Surgeon General Says There's a 'Loneliness Epidemic' and Work Is Partly to Blame. 4 Oct. 2017, [www.washingtonpost.com/news/on-leadership/wp/2017/10/04/this-former-surgeon-general-says-theres-a-loneliness-epidemic-and-work-is-partly-to-blame/](http://www.washingtonpost.com/news/on-leadership/wp/2017/10/04/this-former-surgeon-general-says-theres-a-loneliness-epidemic-and-work-is-partly-to-blame/).

<sup>2</sup> The 'Loneliness Epidemic.' Official Web Site of the U.S. Health Resources & Services Administration, 10 Jan. 2019, [www.hrsa.gov/eneews/past-issues/2019/january-17/loneliness-epidemic](http://www.hrsa.gov/eneews/past-issues/2019/january-17/loneliness-epidemic).

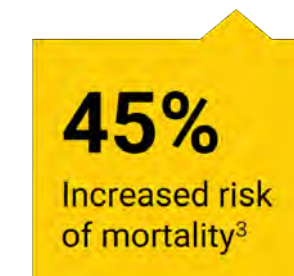
## The Problem | What is the Loneliness Epidemic?



1 in 4 Americans feel lonely on a regular basis<sup>1</sup>



Loneliness can be more lethal than **obesity**



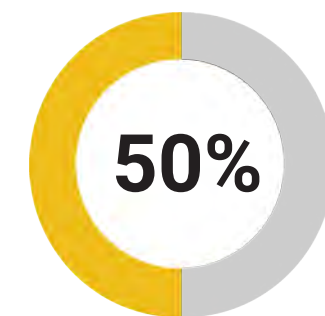
In people who report **feeling lonely**



Out of 20,000 Americans...



Have felt loneliness often or everyday



Have stated they have no meaningful daily in person social interactions

<sup>3</sup> Yang, Keming. Loneliness: a Social Problem. Routledge, Taylor & Francis Group, 2019

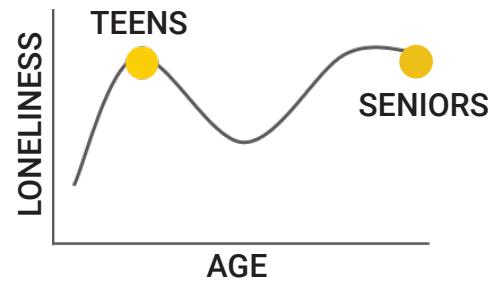
<sup>4</sup> "Health and Nutrition of Covington, GA Residents." Health and Nutrition of Covington, GA, [www.city-data.com/health-nutrition/Covington-Georgia.html](http://www.city-data.com/health-nutrition/Covington-Georgia.html)

<sup>5</sup> "Green Space May Lead to Less Depressed Teens." National Institute of Environmental Health Sciences, U.S. Department of Health and Human Services, [http://www.niehs.nih.gov/research/supported/centers/core/spotlight/green\\_space/index.cfm](http://www.niehs.nih.gov/research/supported/centers/core/spotlight/green_space/index.cfm).

# The Problem | Who does the Loneliness Epidemic effect?

# Teens + Seniors

Loneliness acts in nonlinear U-shaped curve - where it peaks in adolescence, dips down in mid-life, then peaks again in later life. Thus it can target two specific age groups - **teenagers and seniors**.



## Teens



- Teens **spending more time on digital devices and gaming** leads them to avoid in-person interaction.<sup>1</sup>
- Teens are still forming a sense of identity, which comes with **insecurity and self-doubt**, leading to self isolation.<sup>1</sup>
- Teens **take loss particularly hard**. I.e. a breakup, loss of a job, or leaving a community like a school or neighborhood.<sup>2</sup>



## Seniors



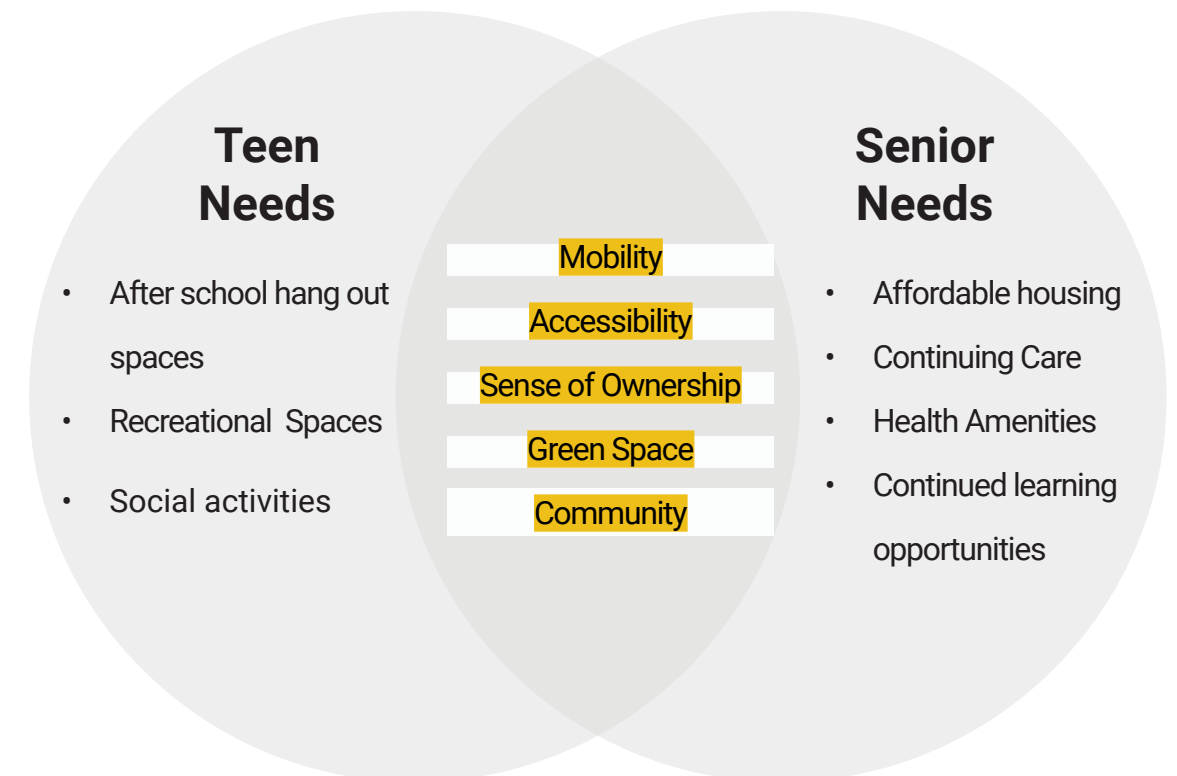
- **Shrinking social circles**. Friends, significant others and family members may move away or pass away.<sup>3</sup>
- Difficult to meet with in person due to **changes in mobility**. I.e. when senior stops driving for safety reasons.<sup>3</sup>
- **Age-related health conditions**, such as hearing loss and eye diseases, can make it difficult to communicate.<sup>3</sup>



While teenagers and seniors are seemingly on opposite ends of the spectrum, their needs regarding characteristics of a successful space overlap significantly. While they definitely do have their own unique interests that pertain specifically to their age group, such as after school spaces to do homework for teenagers or nearby health amenities for seniors, a majority of needs are shared by both.

To begin, mobility and accessibility are both important factors for teenagers and seniors alike. Teenagers are often limited in mobility due to not having a license or relying on a schedule of a driving parent, therefore driving distance locations are often not accessible to them. For seniors, because they either limit or stop driving due to safety reasons, they also can not always access places that require driving. Both age group also seek a sense of ownership because it allows them to make a space truly their own, as well as give them a reason to up keep it. For teens, this may be curating a weekly art gallery or mural wall. For seniors, this may be expressing themselves through individual window box planters hanging from their home. Next, both age groups can benefit from access to public green space because it can benefit health, wellbeing and social connection among peers<sup>1</sup>. Ultimately, teens and seniors are looking for a community that fosters a sense of belonging and opportunities to engage with others. This can be done through both candid encounters, such as running into an acquaintance at a store, or planned activities, such as attending a weekly book club at a cafe.

<sup>1</sup> Government, HM. A Connected Society A Strategy for Tackling Loneliness – Laying the Foundations for Change. Department for Digital, Culture, Media and Sport, 2018, A Connected Society A Strategy for Tackling Loneliness – Laying the Foundations for Change, assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/750909/6.4882\_DCMS\_Loneliness\_Strategy\_web\_Update.pdf.



<sup>1</sup>. Beresin, Eugene. "Why Are Teens So Lonely, and What Can They Do About It?" Psychology Today, Sussex Publishers, 26 July 2019, www.psychologytoday.com/us/blog/inside-out-outside-in/201907/why-are-teens-so-lonely-and-what-can-they-do-about-it. <sup>2</sup>. Beresin, Gene. "Why Are Teens So Lonely and What Can They Do to Combat Loneliness?" The Clay Center for Young Healthy Minds, www.mghclaycenter.org/parenting-concerns/teenagers/why-are-teens-so-lonely-and-what-can-they-do-to-combat-loneliness/. <sup>3</sup>. Botek, Anne-Marie. "Combatting the Epidemic of Loneliness in Seniors." AgingCare.com, 2 Mar. 2020, www.agingcare.com/articles/loneliness-in-the-elderly-151549.htm.

ABOVE Venn Diagram outlining Teen vs. Senior needs



# The Problem | How is the Loneliest Epidemic evident in Covington?

28%

of population 18 years old and older usually have **little interest or pleasure in doing things.**



28%

of population often feel down, **depressed,** or hopeless.



5%

of population have **suicidal thoughts.**



[www.city-data.com/health-nutrition/Covington-Georgia.html](http://www.city-data.com/health-nutrition/Covington-Georgia.html)

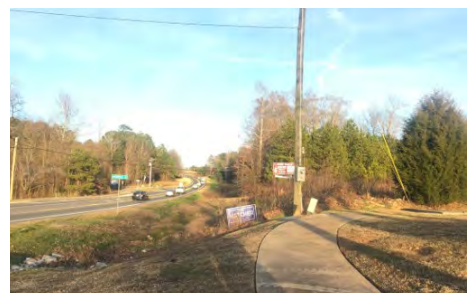
## Existing Conditions

at Intersection of Bypass Road and Jackson Highway



- Not walkable
- Not accessible
- No local businesses
- No places to linger
- Not healthy

The car centric intersection has disconnected strips of sidewalk discouraging walkability. It also lacks a diversity of businesses and engaging outdoor spaces that encourage people to stay.



## Site Analysis

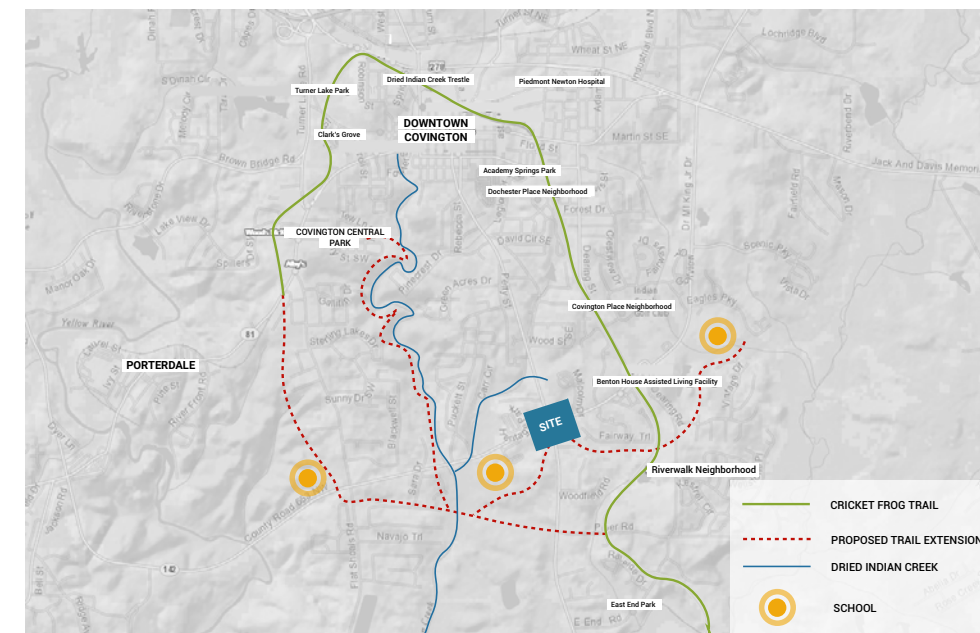
### Proximity to Schools, Parks, and Neighborhoods



- 3 schools within walking distance, 2 schools within short drive
- Several residential neighborhoods within walking distance
- Lack of public parks within walking distance to the site

ABOVE Our intent is to attract and create amenities for neighboring schools and residential clusters within a close proximity of the site. We also want to provide additional green space in our site due to the lack of public parks within walking distance to locals.

### Proposed Connections to Existing Trail Network

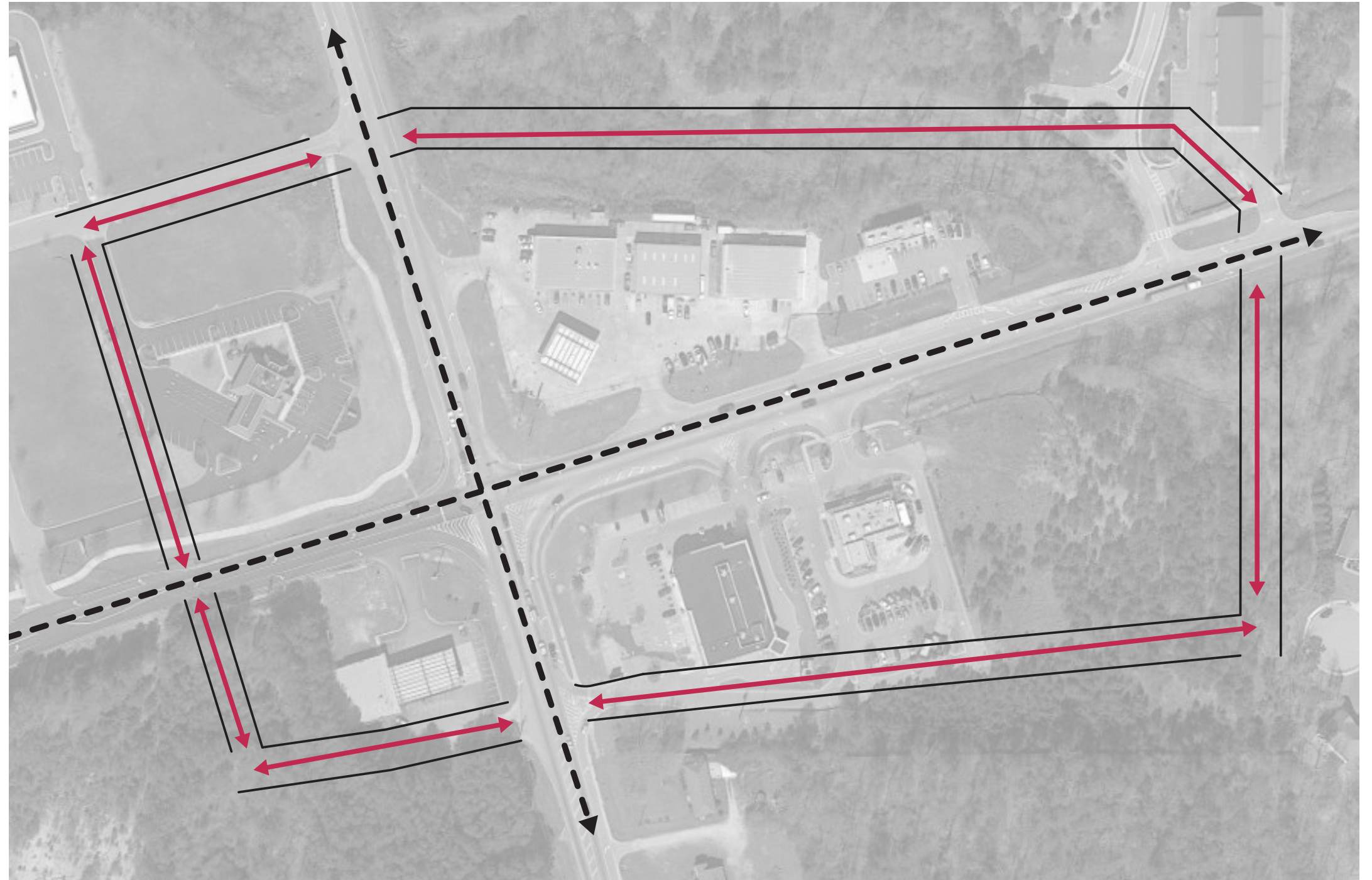


- Expand the walkable network to surround existing schools
- Connect to Covington Central Park (under construction)
- Propose a new trail alongside Dried Indian Creek

ABOVE Our intent is to attract and create amenities for neighboring schools and residential clusters within a close proximity of the site. We also want to provide additional green space in our site due to the lack of public parks within walking distance to locals.

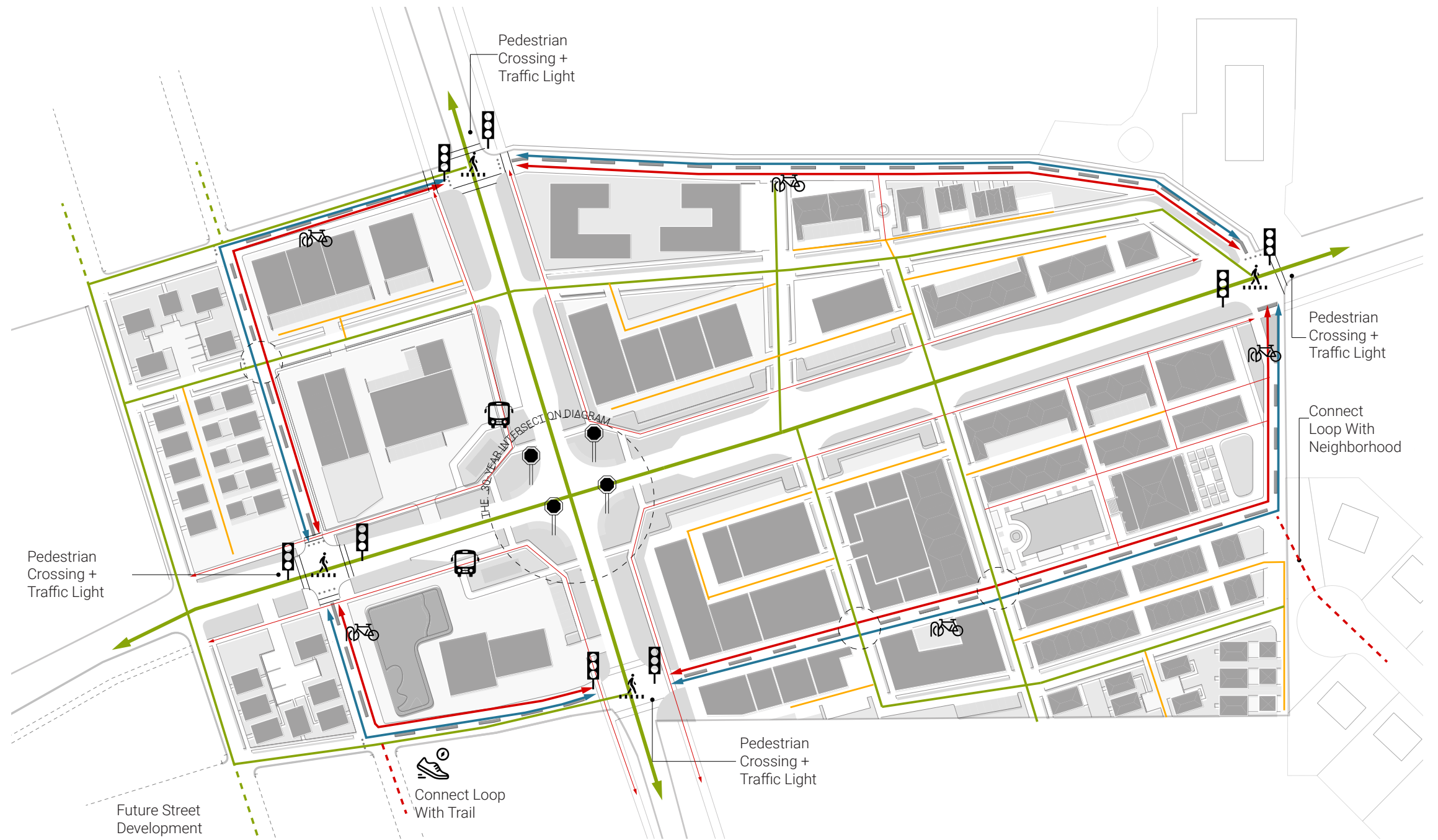
## The Solution | Proposed Pedestrian Loop

- Intergenerational Village will be anchored by a pedestrian-only walking + biking loop that connects to proposed local trails as well as area schools.
- The loop integrates a variety of recreational spaces for teens, civic gathering spaces, and other everyday uses with senior and missing middle scale housing.
- By creating a pedestrian loop around the intersection, it produces a new way of physically and socially **connecting** all four quadrants that is **accessible** to pedestrians











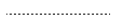


# The Solution | Circulation & Framework Diagram

- The circulation prioritizes the loop and has the vehicle streets be secondary.
- By having the pedestrian crossing be before the intersection, it will slow down cars and give right of way to the pedestrians.
- Add shuttle buses on By Pass Rd. and Jackson Highway to allow mobility to those who do not have access.
- Connect existing trails and neighborhoods to the Loop

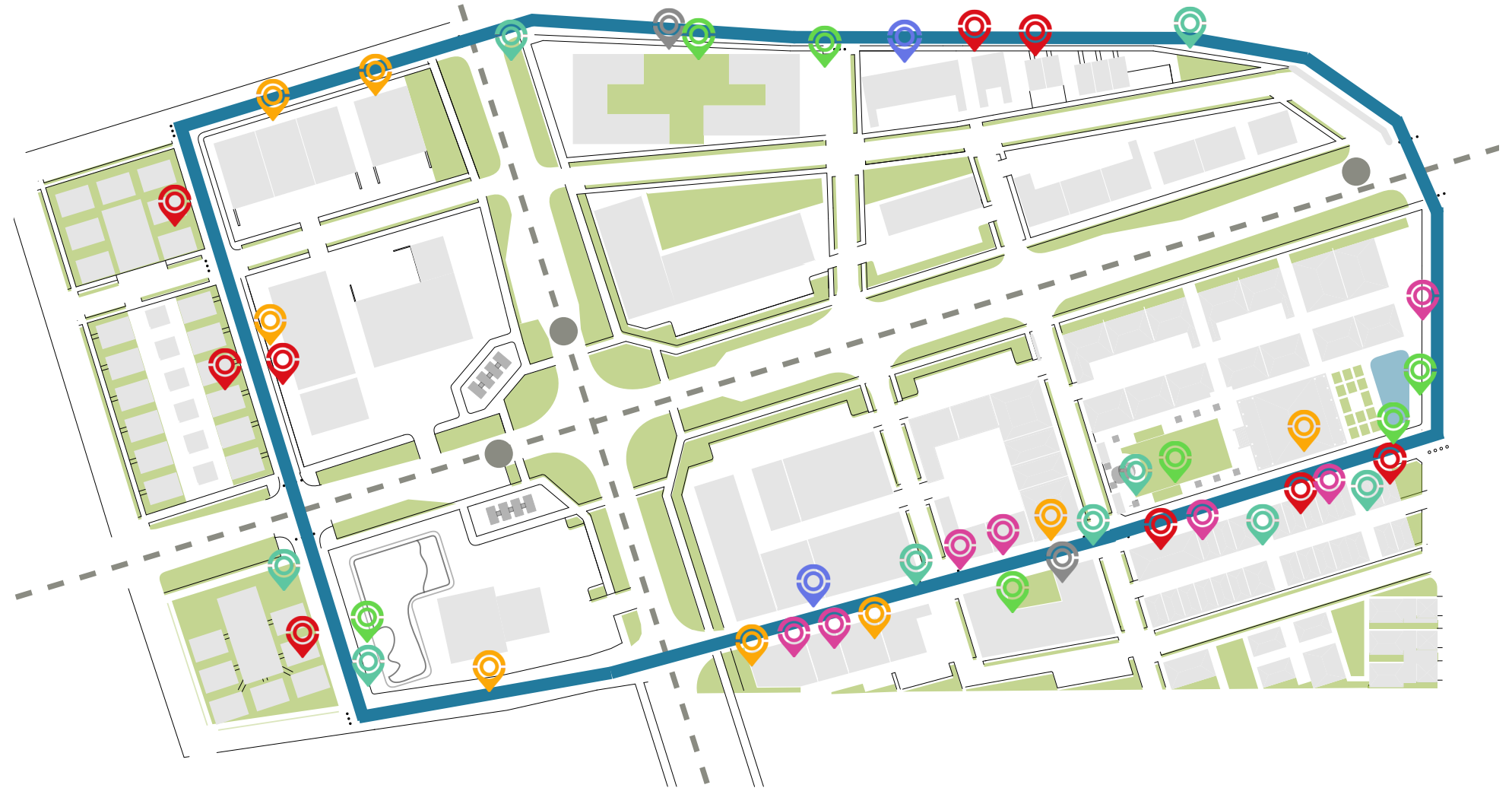


## LEGEND

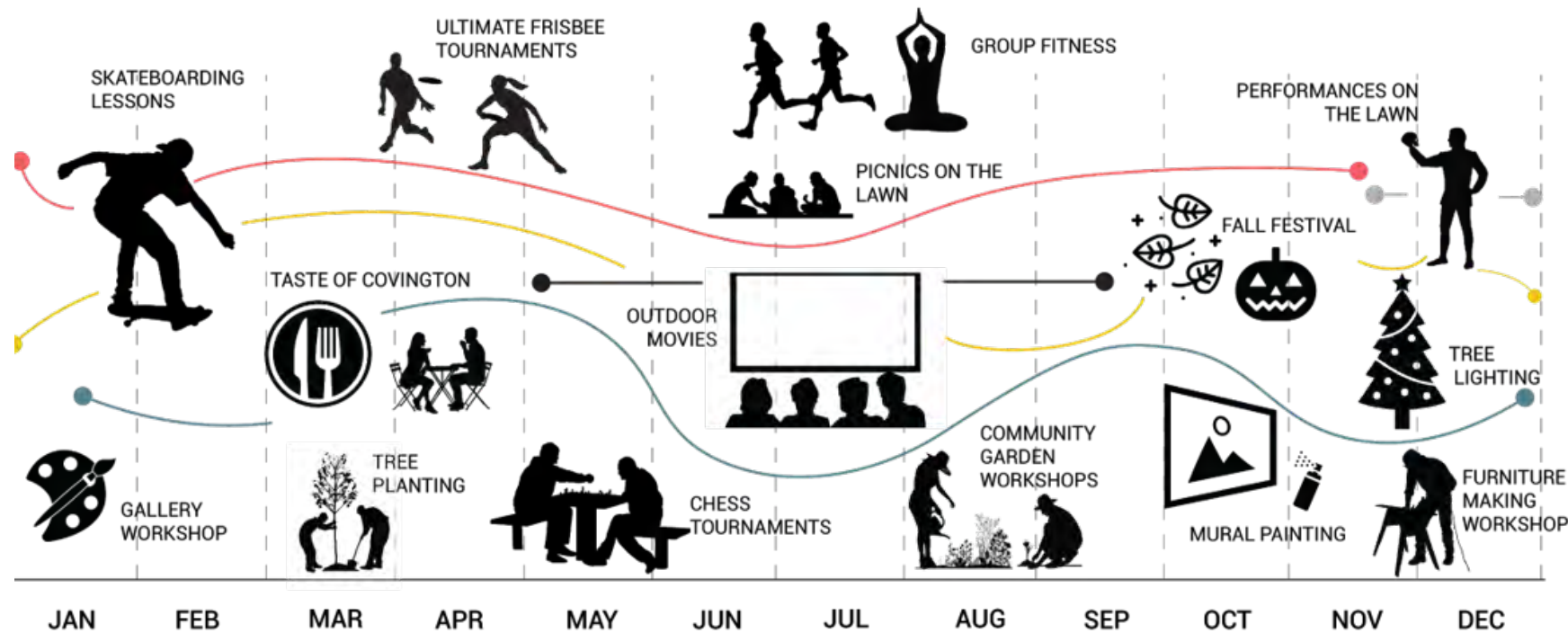
- |                                                                                       |                 |                                                                                       |                        |                                                                                       |                              |
|---------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|------------------------------|
|  | Pedestrian Path |  | Proposed Traffic Light |  | Proposed Stop Sign           |
|  | Bike Path       |  | Bike Shelter/Parking   |  | Proposed Pedestrian Crossing |
|  | A Streets       |  | Proposed Bus Stop      |  | Proposed Trail Connection    |
|  | Alleys          |                                                                                       |                        |                                                                                       |                              |
|  | Future Streets  |                                                                                       |                        |                                                                                       |                              |

## The Solution | Activating the Loop

- Journey through a variety of **experiences** and **activities** while meandering through the Village
- By incorporating and having all the storefronts face the loop in all four quadrants, it will further enhance the loop and stimulate the sense throughout.
- Different activities and event are planned throughout the year



## ACTIVITIES AT THE VILLAGE ALL YEAR ROUND



### LEGEND

- Loop
- Added Green Space
- Major Road
- Pick up + Drop off
- Commercial + Retail
- Live + Work
- Recreation
- Public Art
- Affordable Housing
- Nursing/Pharmacy
- Senior Housing

# The Solution | Activating the Loop



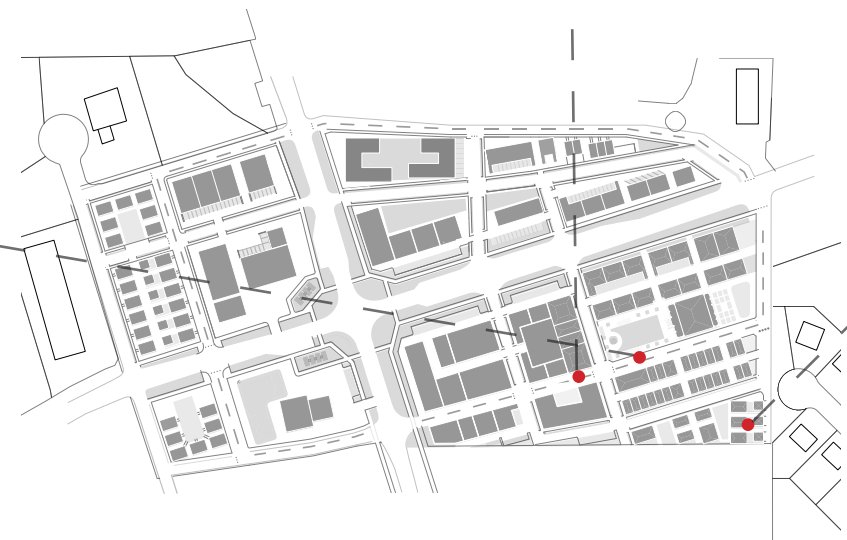
Providing a shaded walkway to increase activation along the lawn with small-scale daily activities



Building a sense of owning the community by allowing the public to paint murals on the loop and facilitate activities



Creating human scaled streets alleys between housing to make them interesting and charming



## The Solution | Activating the Loop



Outdoor programs at the lawn achieves maximum accessibility for multi-ethnic teens and seniors.

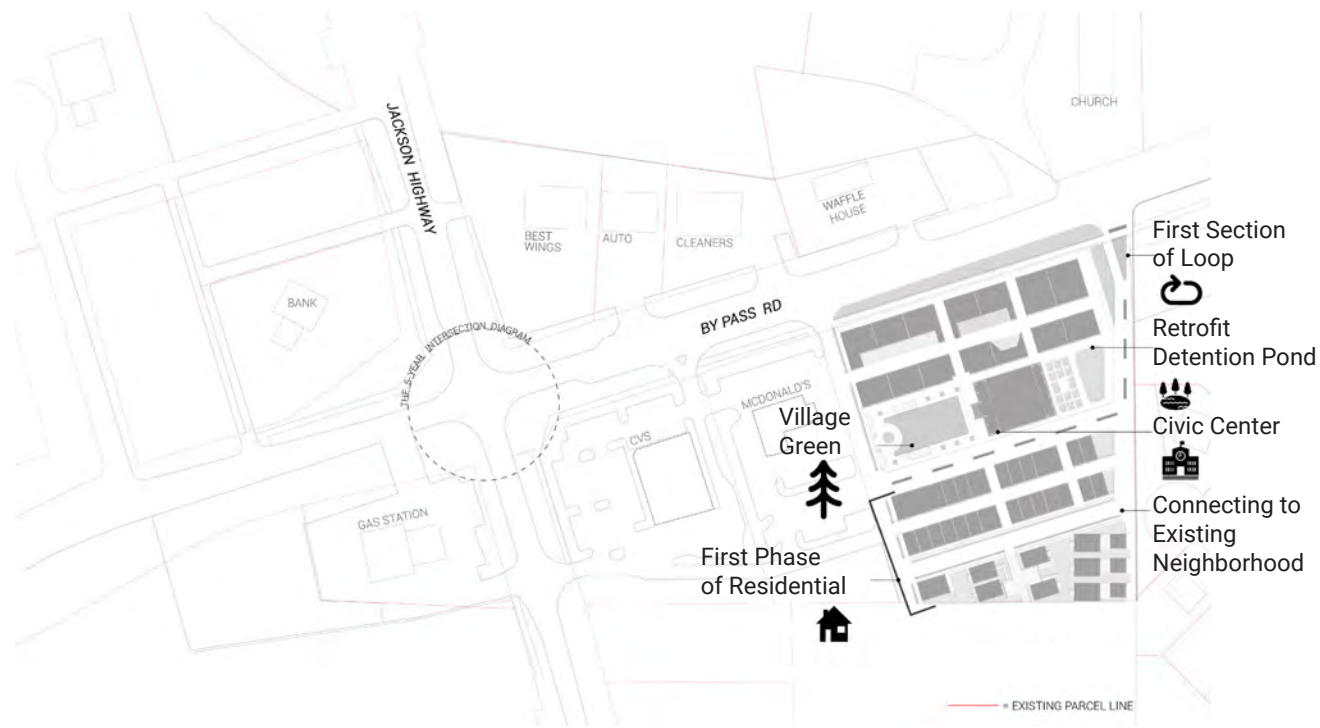


Retrofitting the gas station to a diner for the seniors alongside a skate park for teens.

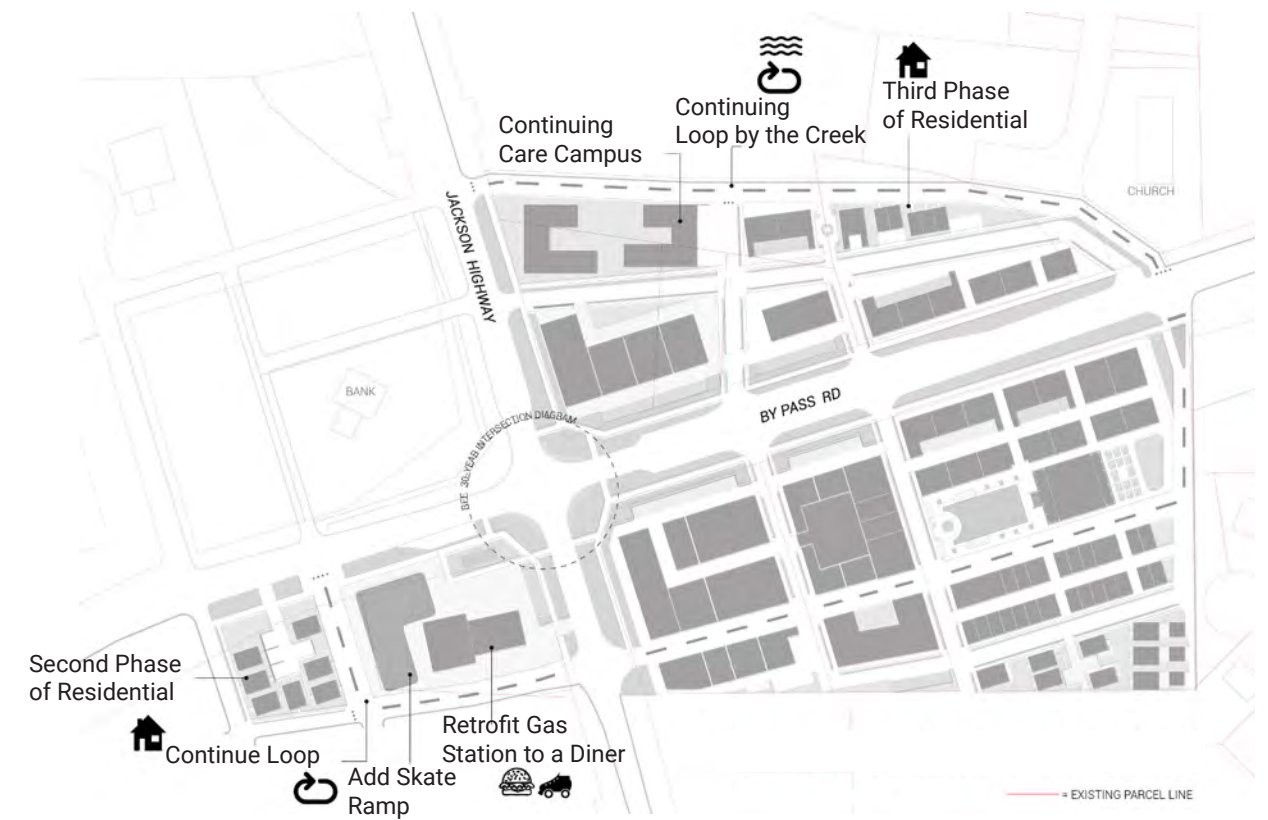


A bright and safe alley system for exploration of activities and is more comfortable for pedestrians

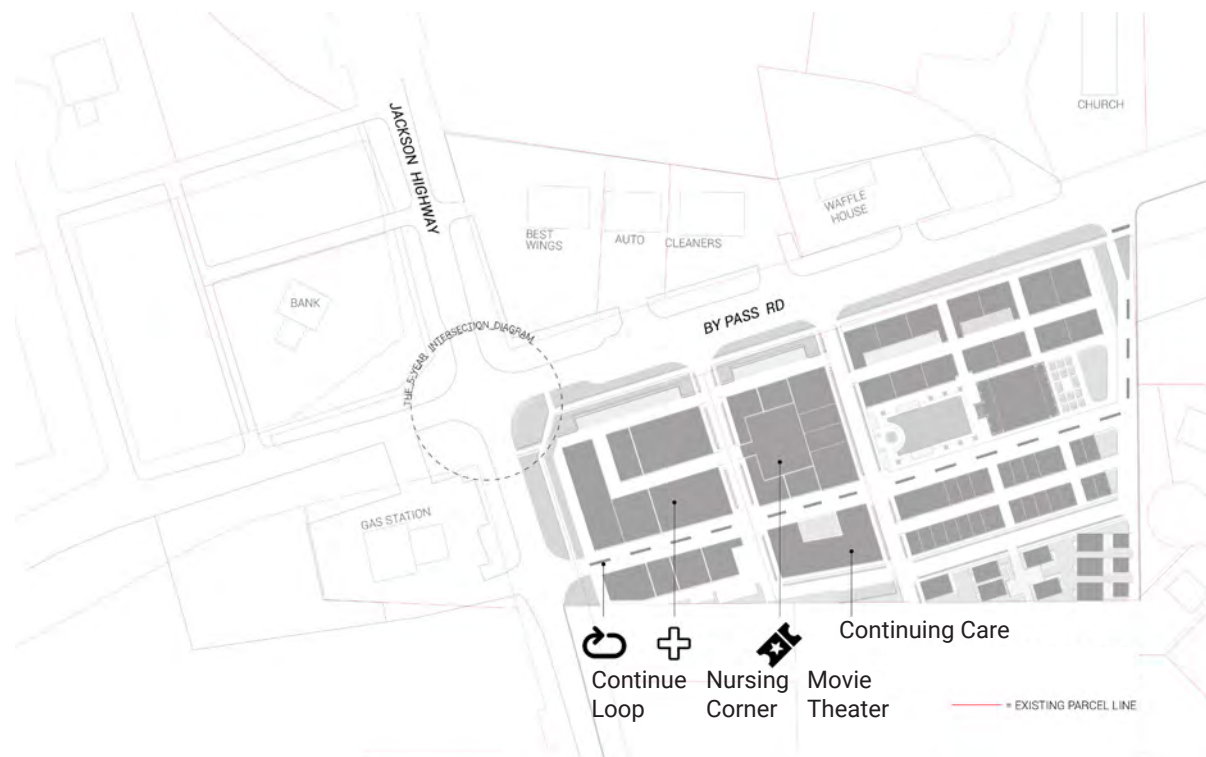
# The Solution | Development Phasing



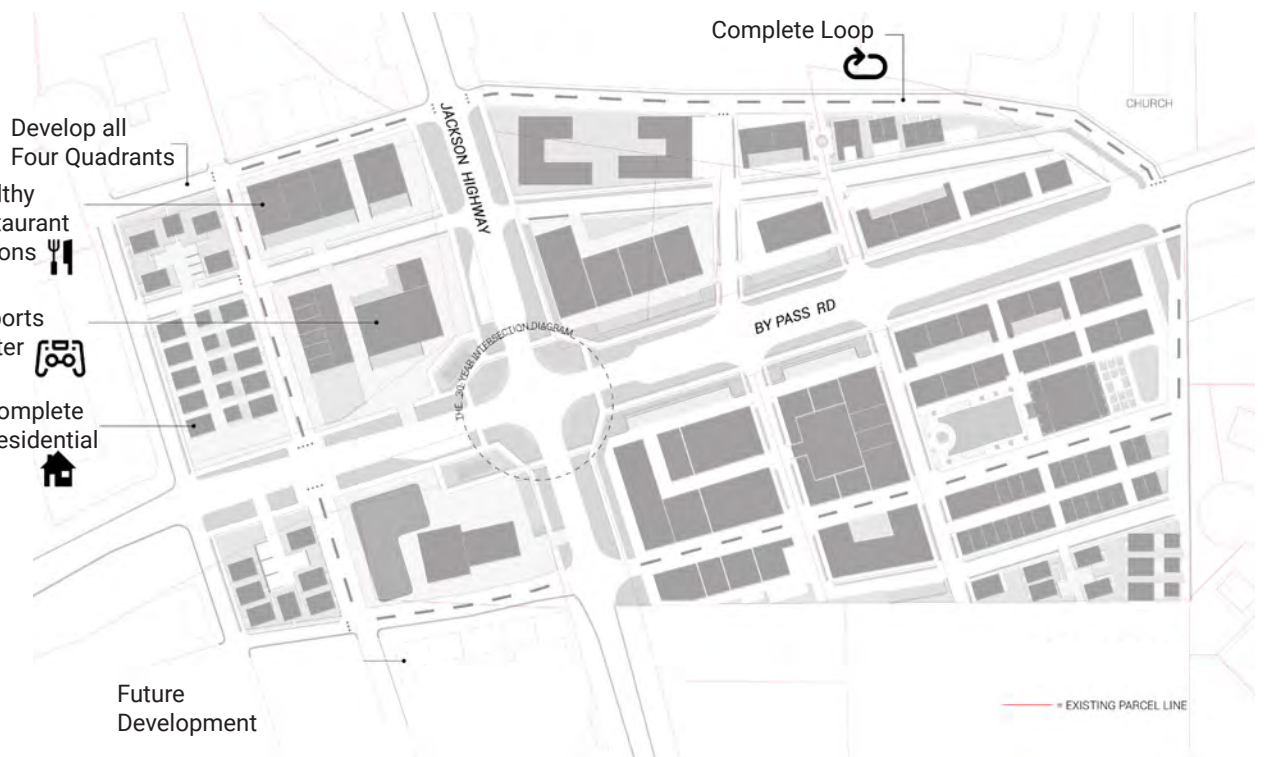
**I. Five Year Plan I** Establish the Loop, complete the first phase of residential cottages and townhouses, create the Village Green and Civic Center.



**III & IV. Scenic Path & Retrofit the Gas Station I** Continue the Loop and incorporate the existing creek and gas station to be provide more variety, gathering spaces, and more residential.




**II. Complete Quadrant I** Demolish the CVS and McDonald's and replace them with a Nursing Corner and a Movie Theater.



**V. 30 Year Plan I** Complete the Loop and demolish the bank to provide an E-Sports Center for video gaming. Also begin setting the future development footprints to reflect the four quadrants.

## LEGEND

-  Commercial/Office
-  Mixed Commercial/  
Residential Building
-  Cottages
-  Public Facilities/  
Institutions
-  Townhouses
-  Public Space
-  Continuing Care
-  Existing Parcel Line



## Regulatory Plan

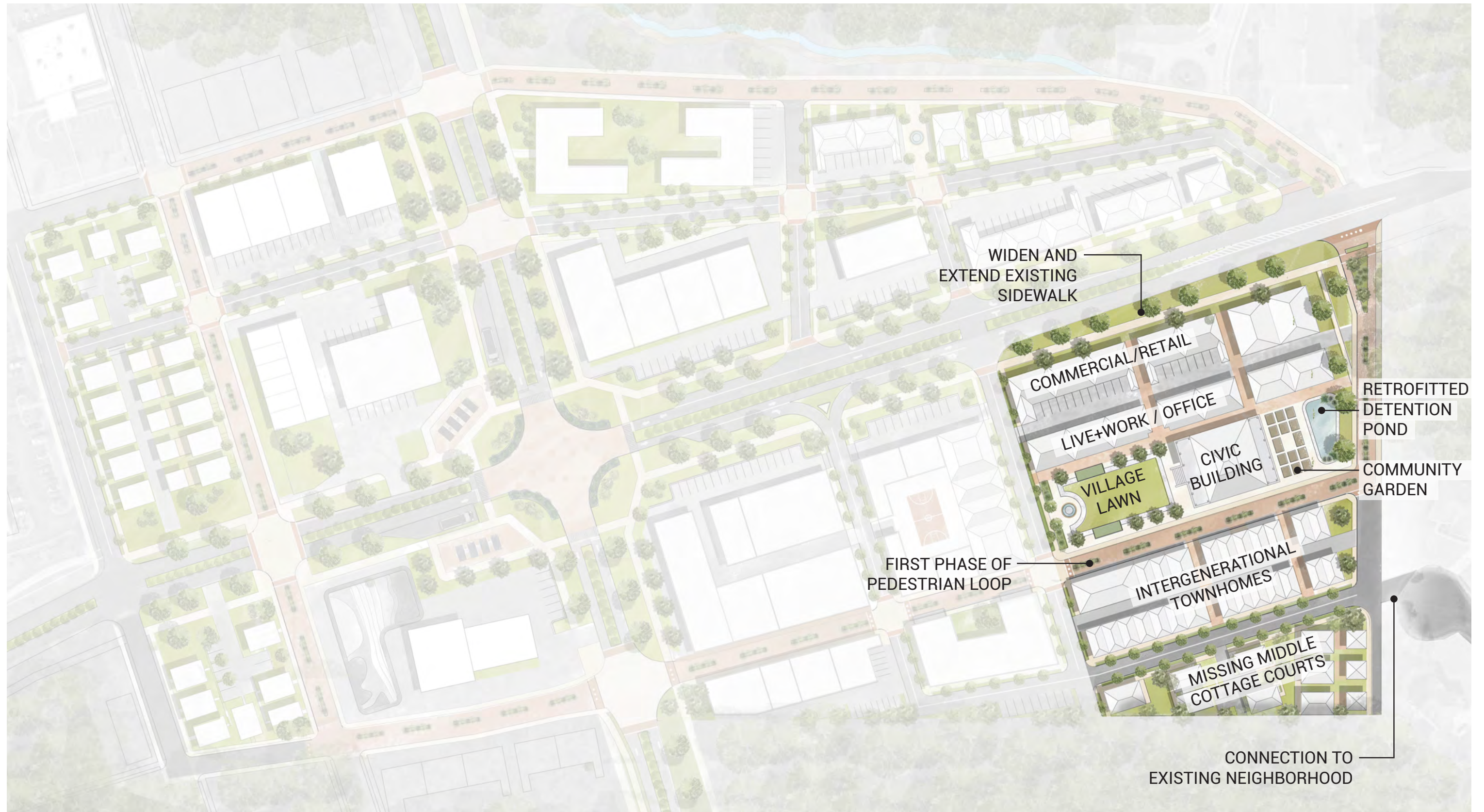
The existing parcel lines determined the future blocks, streets, and Loop. The the building fronts either face the intersection or the loop with their backs and sides to streets and alleys. The Regulatory Plan demonstrates that most of the space will be of public use with the private lots being around the border of the site to maximize their privacy from the intersection.





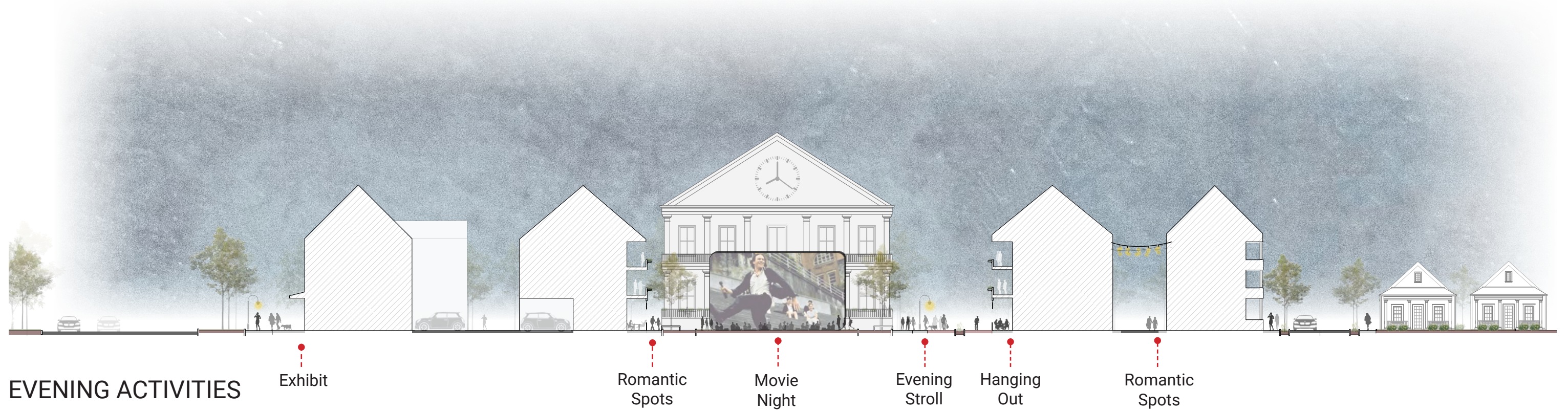
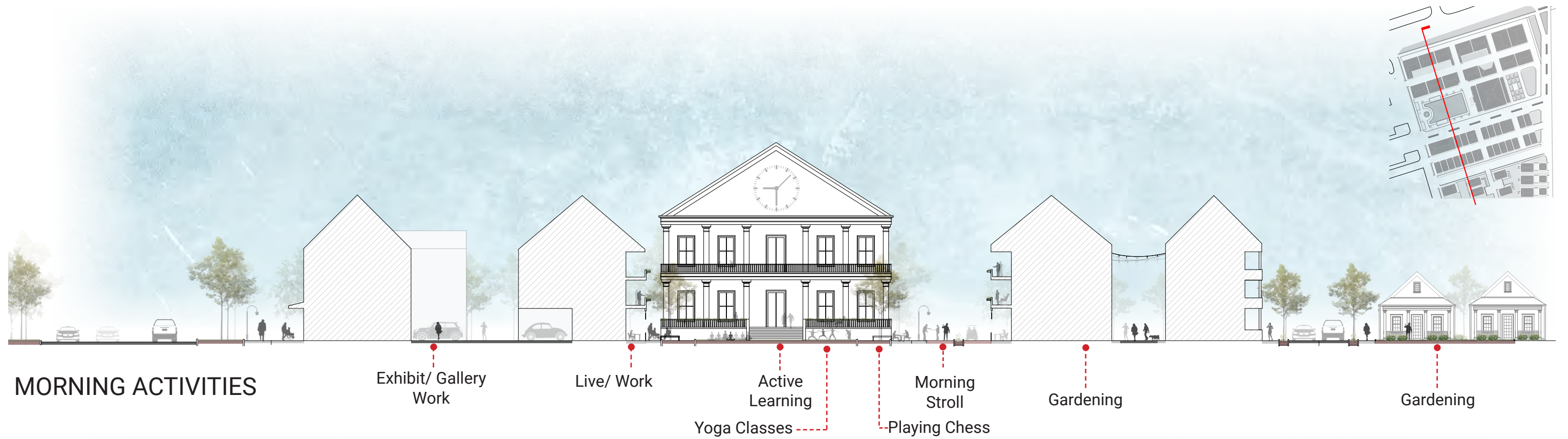
**Full Build Out | 30 Year Vision**

In the 30 year vision, the Intergenerational Village has transformed all 4 quadrants surrounding the intersection into a walkable, engaging destination for people of all ages. The Pedestrian Loop has also been completed, allowing people to explore the entirety of the Village by foot, bike, or golf cart. There also been a substantial amount of Missing-Middle and Intergenerational type housing added to diversify options currently available in the Covington market.



**The Starting Point | 5 Year Vision**

In the 5 year vision, the Intergenerational Village has a flexible Lawn to host recreational activities by day and outdoor movies by night. The Lawn is anchored by a Civic Building that can host after school study sessions, adult education workshops, and more. Behind it, the detention pond has been retrofitted to be a enjoyable amenity alongside a community garden. There is added Live + Work and Office space facing the Lawn, as well as additional Commercial/Retail buildings facing Bypass Road. The first phase of intergenerational townhomes and cottage courts have been built in the southern portion of the site. Finally, the first phase of the pedestrian walking + biking loop as been established at the center of the site.

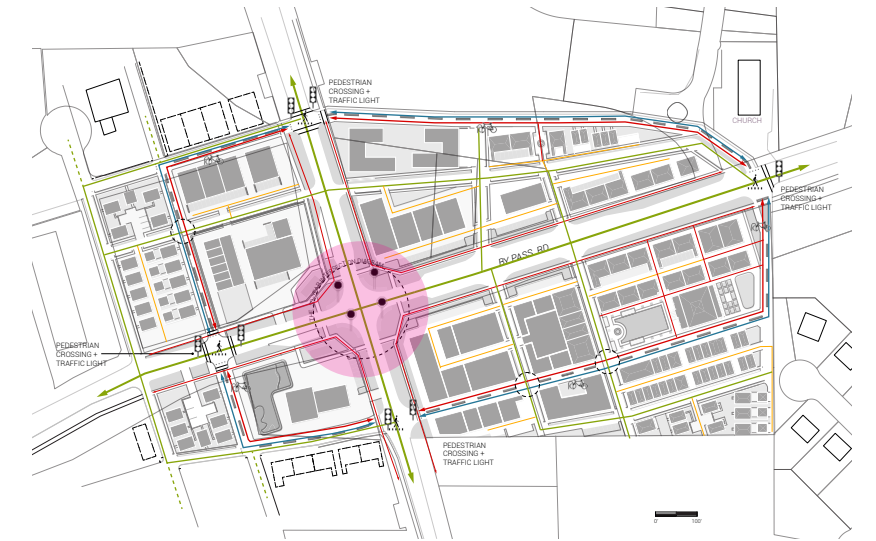


**Activity Sections**

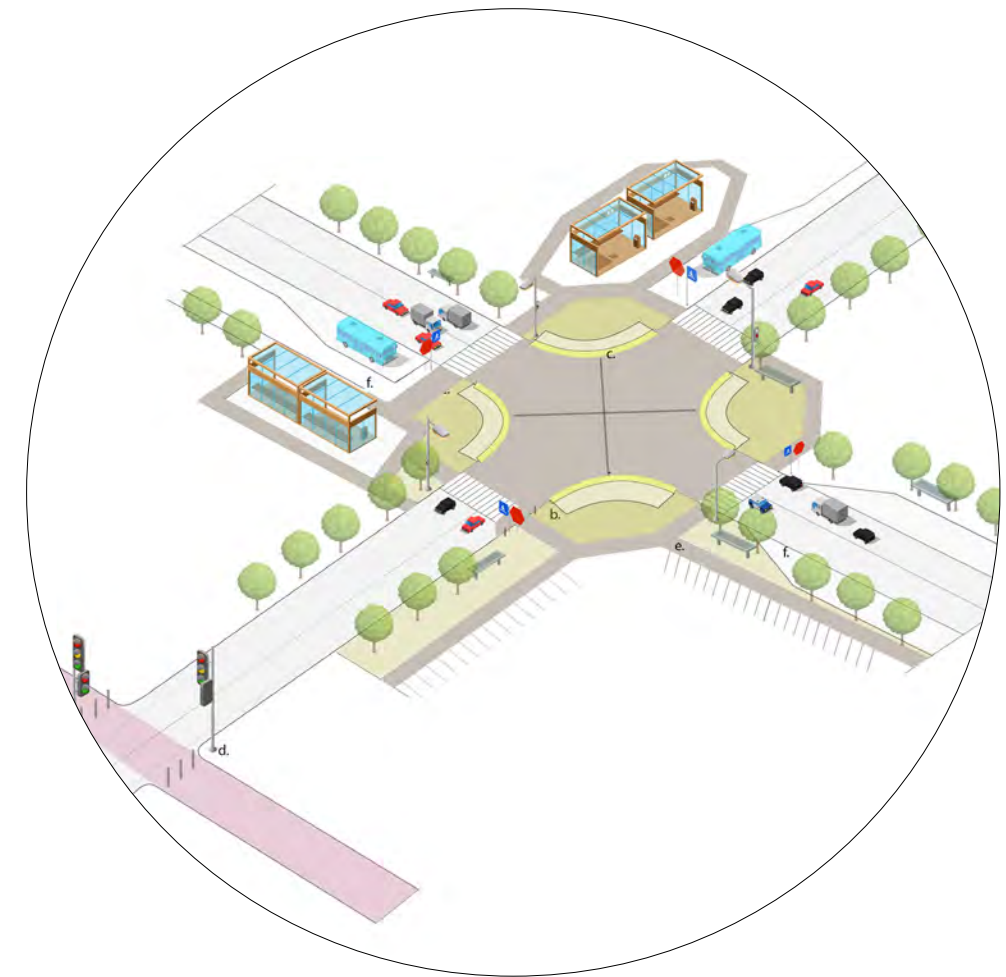
These two sections cutting vertically from By Pass Rd to the cottages demonstrate how activities can change throughout the day. During the morning, the village will provide activities oriented to seniors such as morning strolls on the loop and yoga sessions on the lawn. Later in the day, the village will provide activities for teens such as movie nights and more secluded spots for those who want to socialize in a more private area.

## The Solution | Interventions on Intersection

The aim is to tackle methods of designing communities. Putting schools and shopping on big arterial roads that are designed to be high-speed thoroughfares for long-distance drivers and commuters should be accessorized by connecting grids for local activities. The existing condition at the intersection has multiple turning lanes, and dizzying traffic levels. Our solution proposes ways to get the pedestrians safely through this environment.



**5 YEAR PLAN** Eliminating the slip turn helps create a pedestrian path. This facilitates eye contact by moving pedestrians directly into the driver's field of vision.

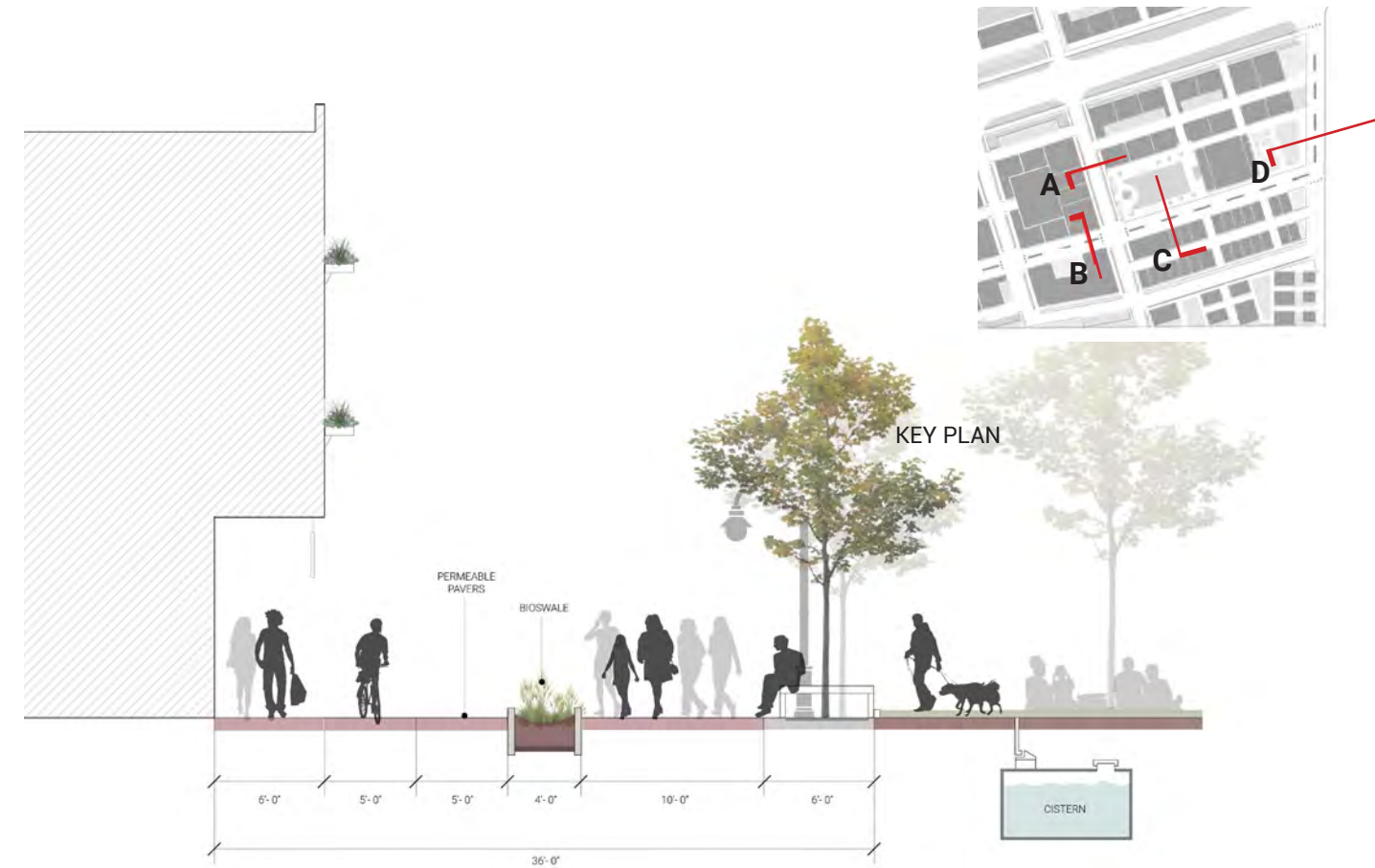


**30 YEAR PLAN** By stopping all traffic at once, scramble crossings provide better separation of cars and people, allowing foot traffic to move in any direction—even diagonally—in relative safety

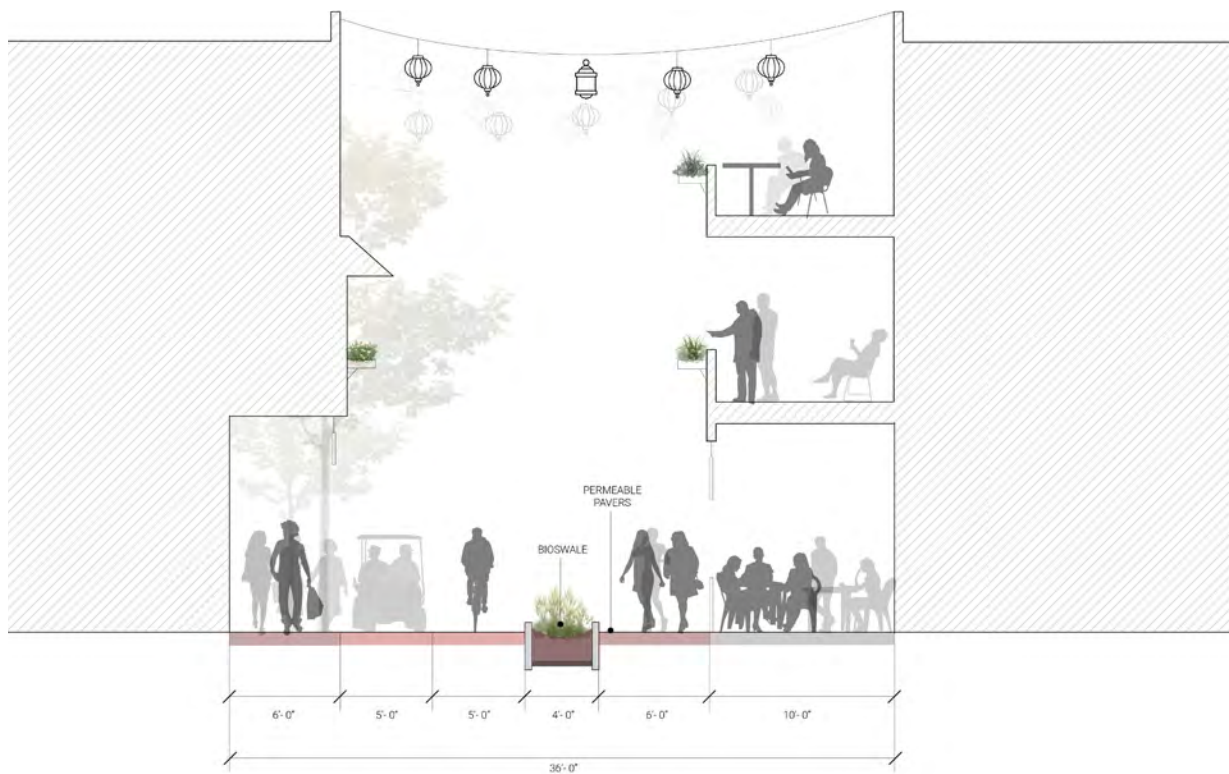
# The Solution | Street Sections



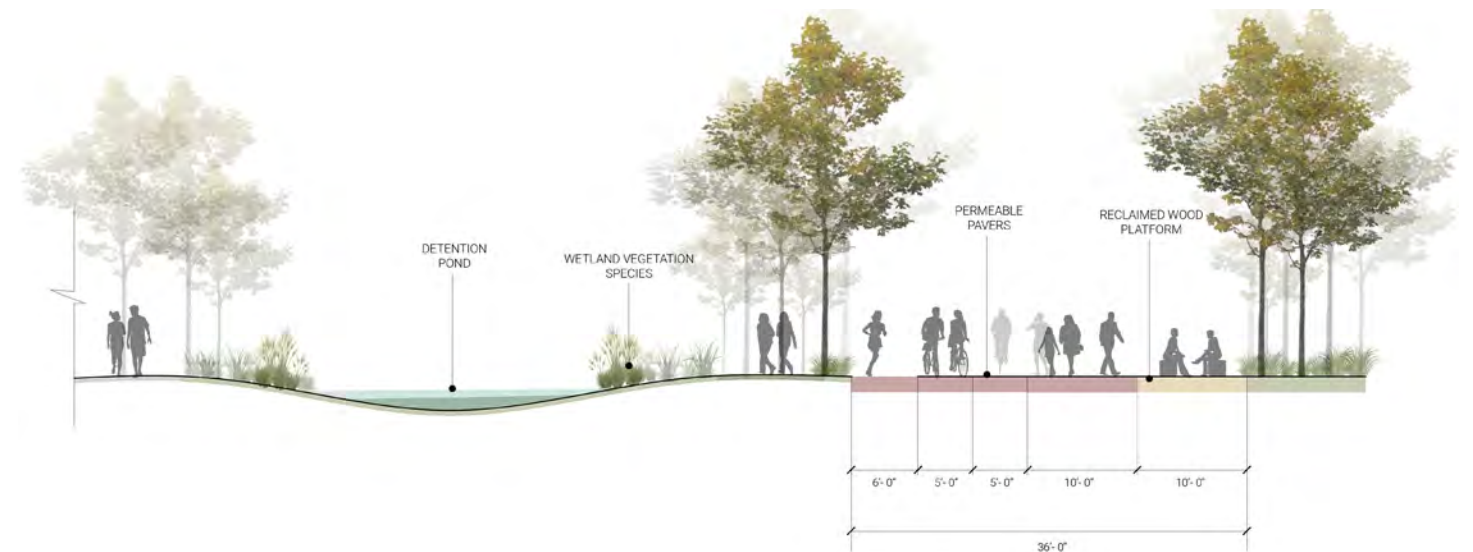
**A. 42' Section | 2-Way Vehicular**



**C. 36' Section | Section at Lawn**

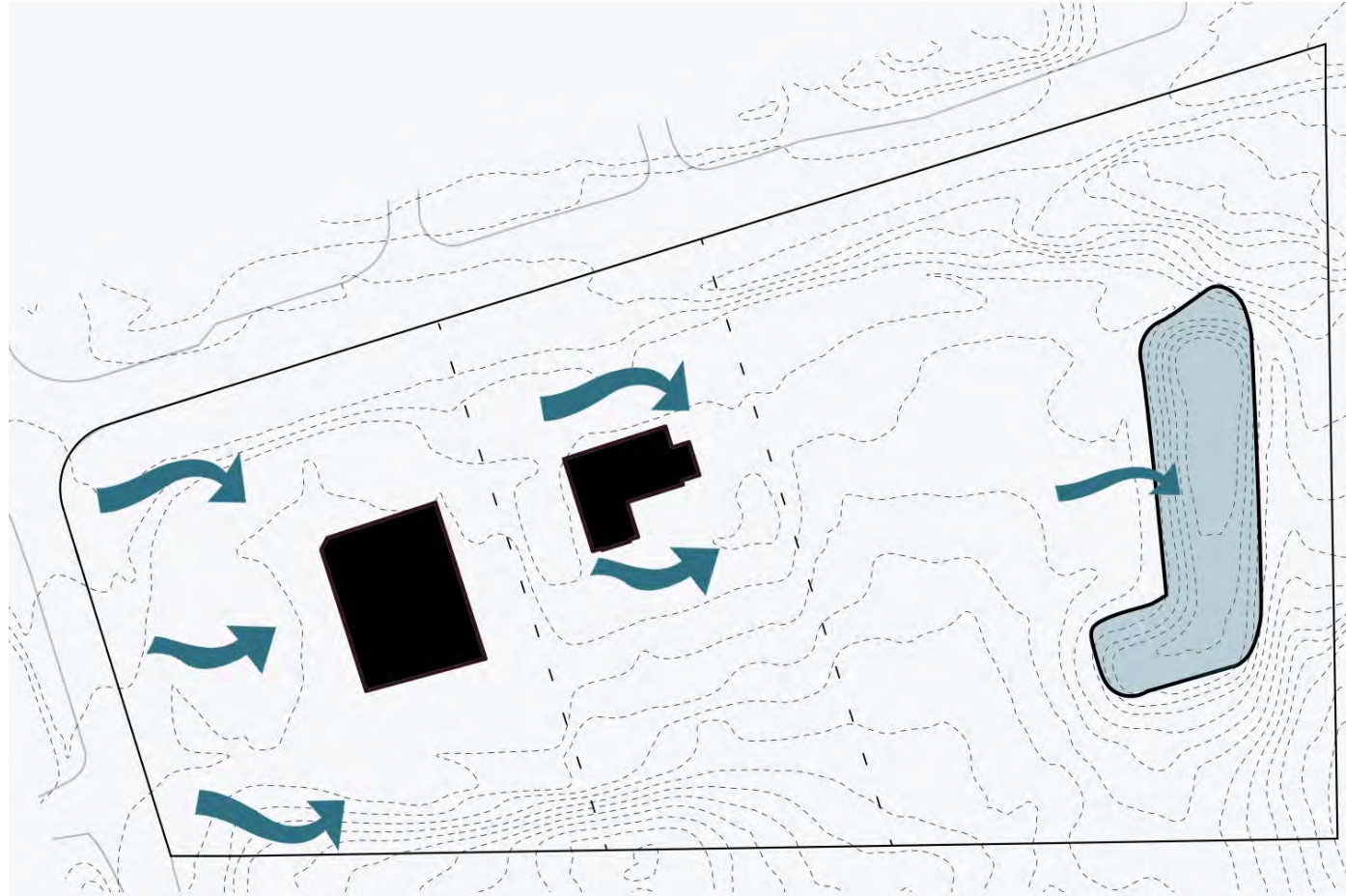


**B. 36' Section | Pedestrian Loop at Buildings**



**D. 36' Section | Section at Detention Pond**

## The Solution | Stormwater Diagrams



All surface runoff directed to a large **detention pond**

**Existing** Stormwater Diagram



### **LEGEND**

- a drains water out with vegetative buffer
- b bio- filtration planters
- c raingarden
- d bioswales with shrubs
- e raised overflow drain as catch basin
- f cistern underneath lawn

**New** Stormwater Diagram

# Housing | Townhouses

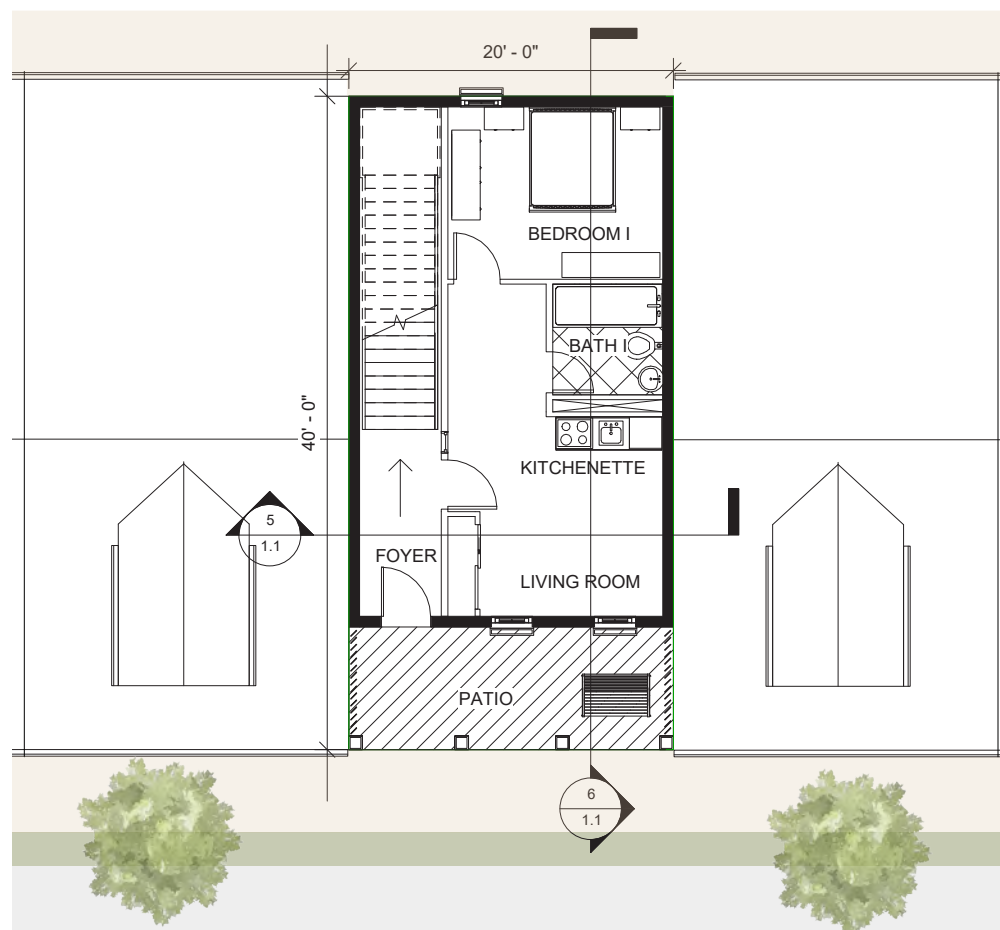
- 3 levels
- 2nd & 3rd level unit can be **rented** or for the owner's use
- garage on first floor converted into an **ADA accessible** bedroom
- **shaded porch** on two levels



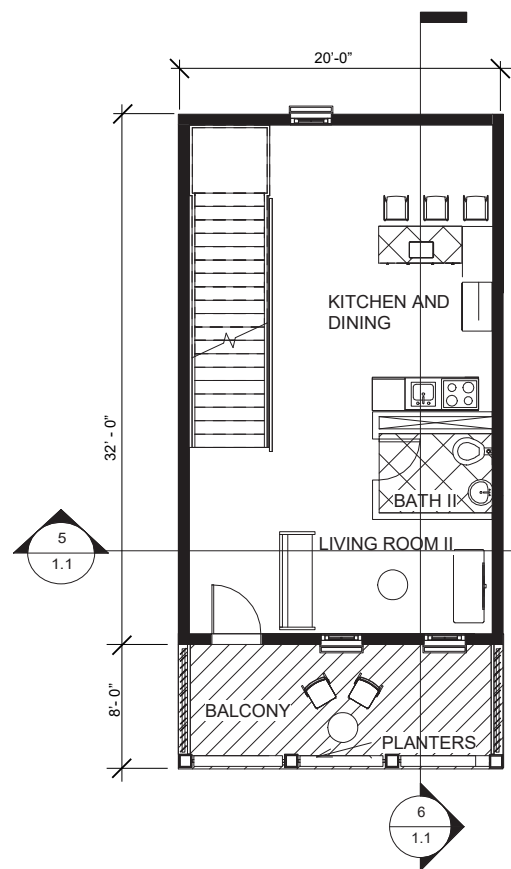
4 TOWNHOUSE ELEVATION



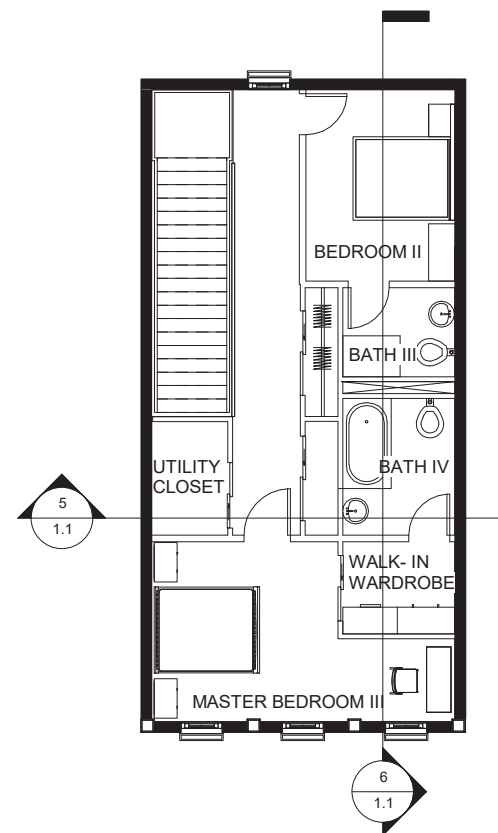
KEY PLAN KEY PLAN



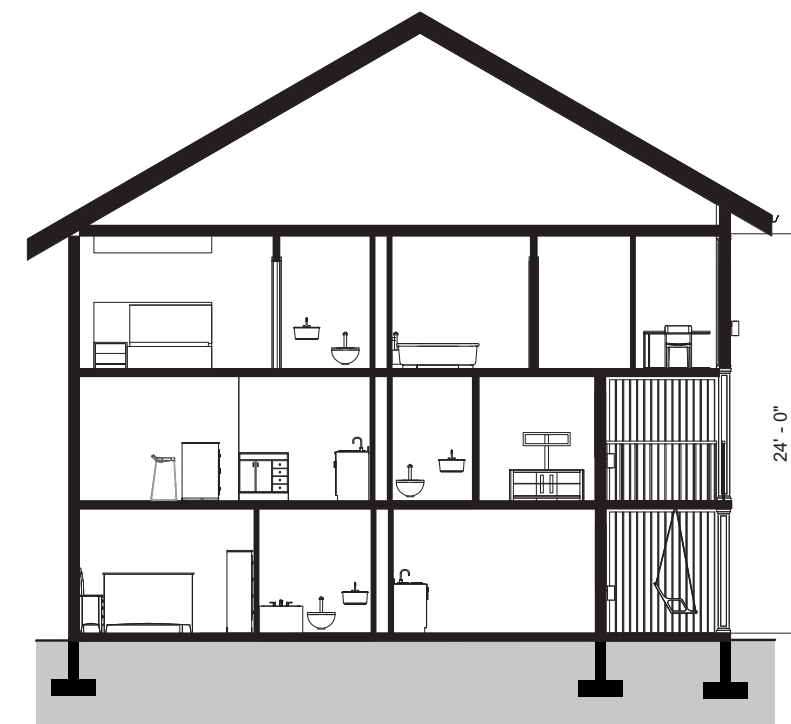
1 FIRST FLOOR PLAN



2 SECOND FLOOR PLAN  
1/4" = 1'-0"



3 THIRD FLOOR PLAN



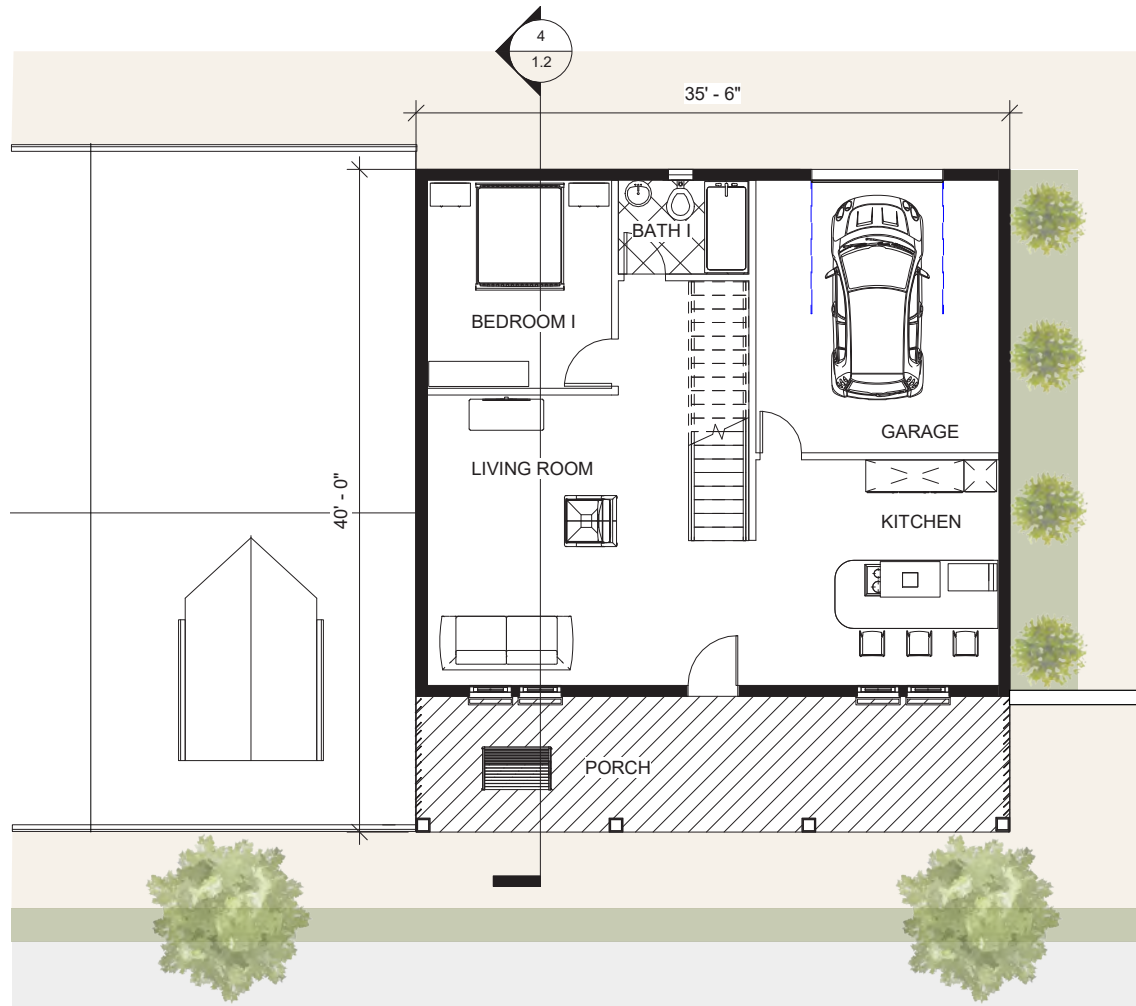
5 LONGITUDINAL SECTION

# Housing | Townhouses

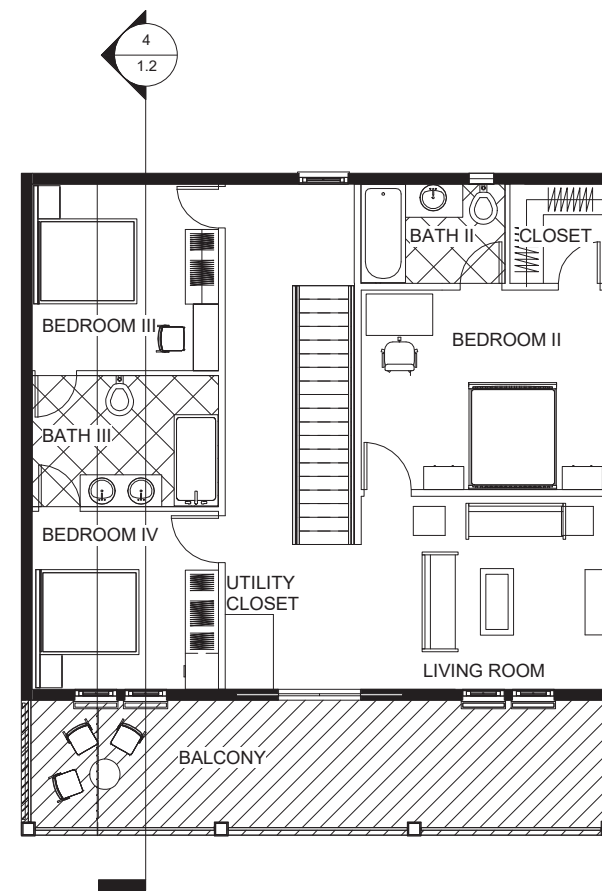
- 2 levels
- Garage can be converted to first level ADA accessible bedroom
- end unit adjacent to an activated alley



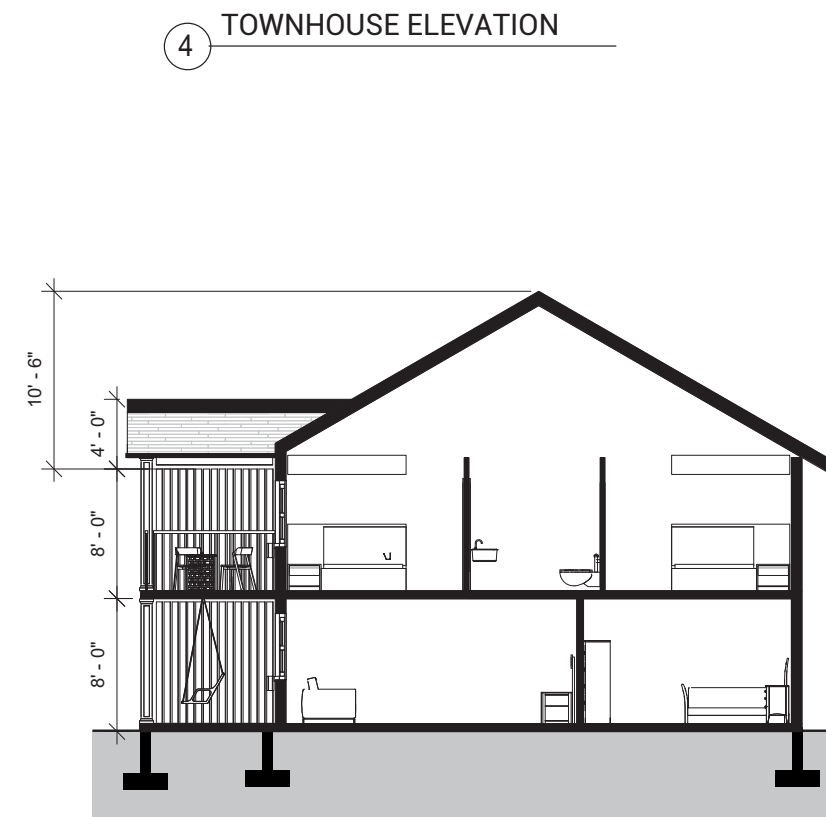
KEY PLAN



1 FIRST FLOOR PLAN - OPTION TWO



2 SECOND FLOOR PLAN



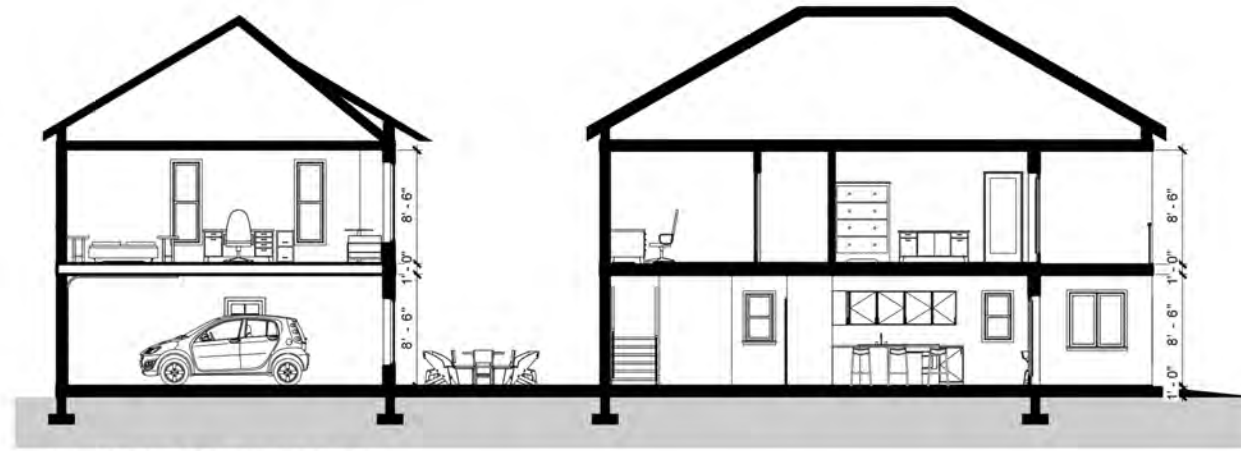
3 LONGITUDINAL SECTION

4 TOWNHOUSE ELEVATION

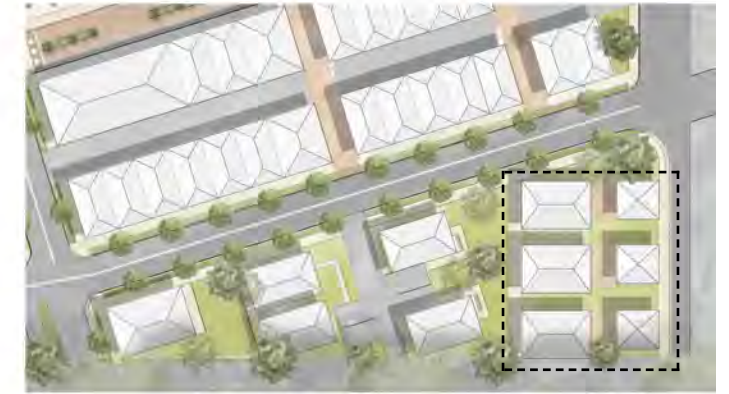


# Housing | Cottage + ADU

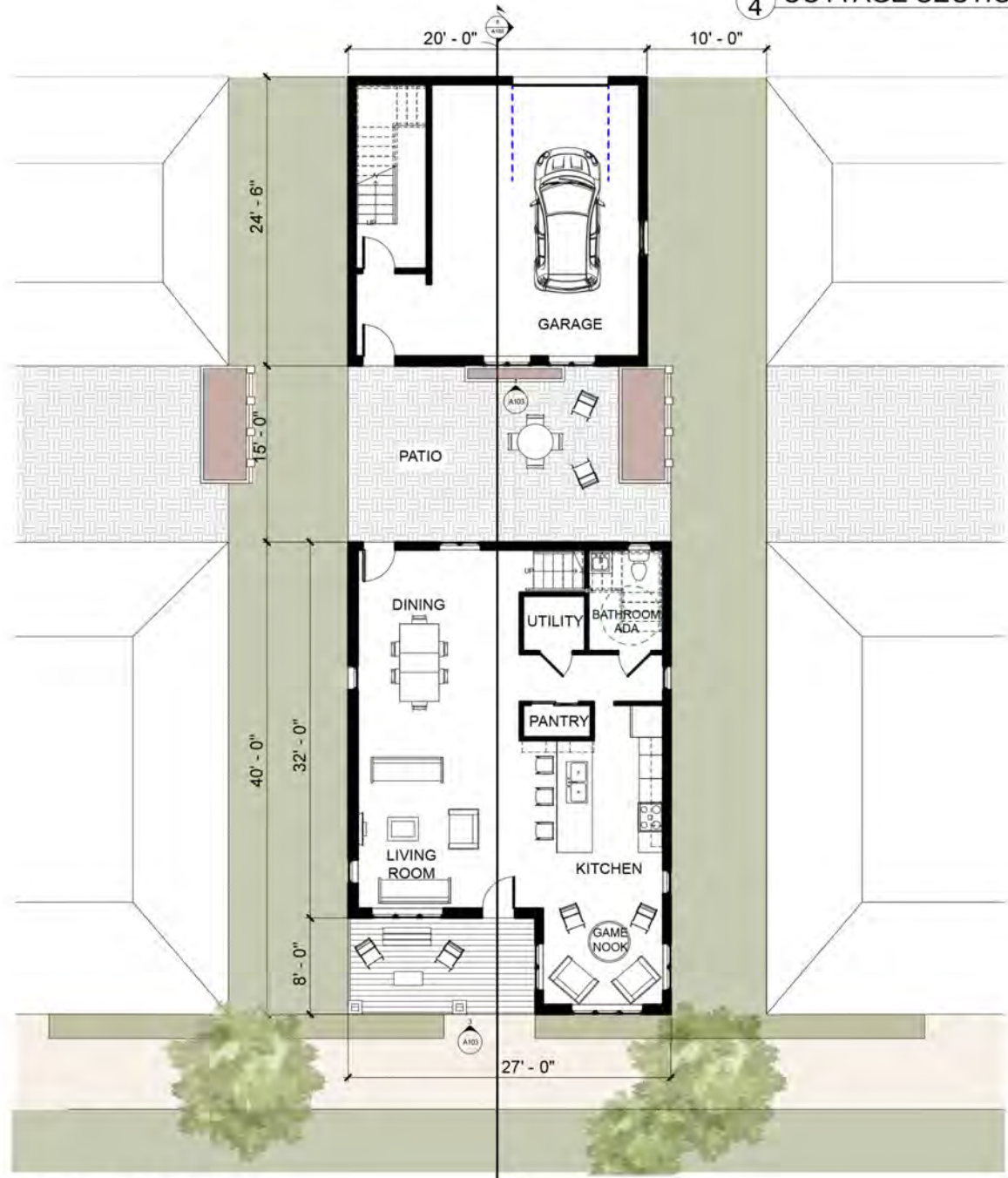
- 2 levels
- ADU unit can be used as garage or office on ground level, second level can be rented or for the owner's use



4 COTTAGE SECTION



KEY PLAN



1 FIRST FLOOR PLAN



2 FIRST FLOOR PLAN OFFICE OPTION



3 SECOND FLOOR PLAN



5 ADU ELEVATION



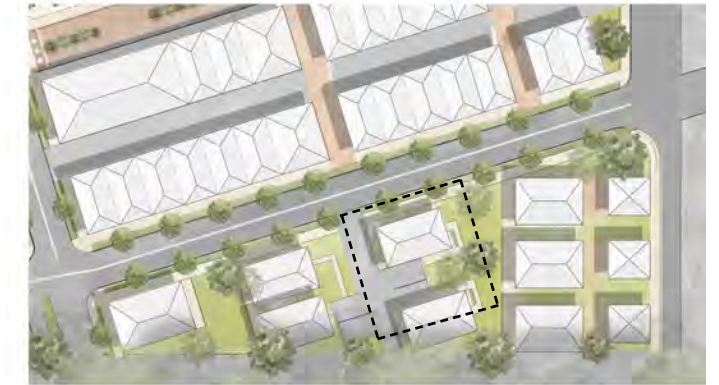
4 COTTAGE ELEVATION

# Housing | Cottage + ADU

- 1 levels
- shared parking
- All amenities are ADA accessible

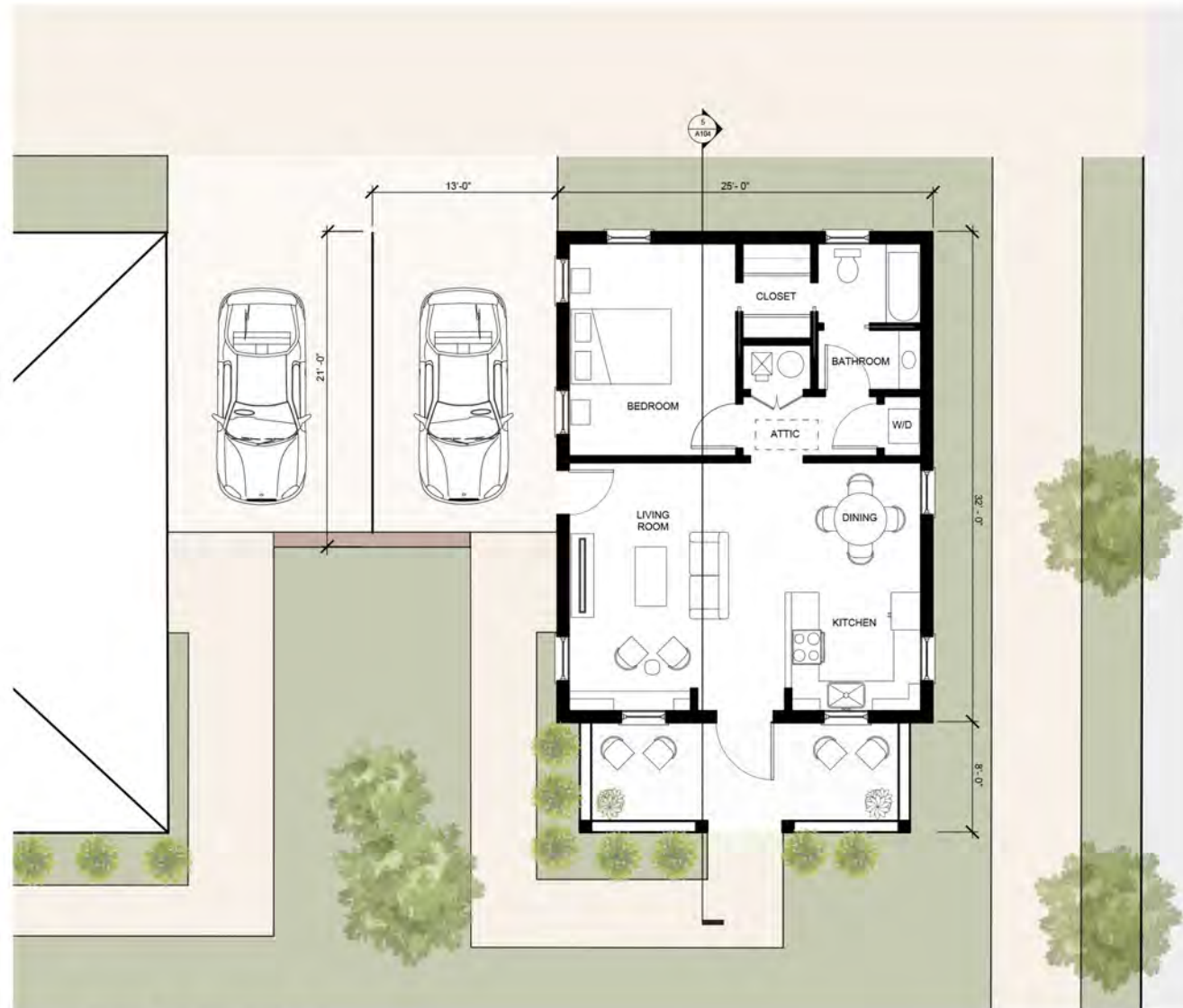


2 COTTAGE ELEVATION



KEY PLAN

KEY PLAN



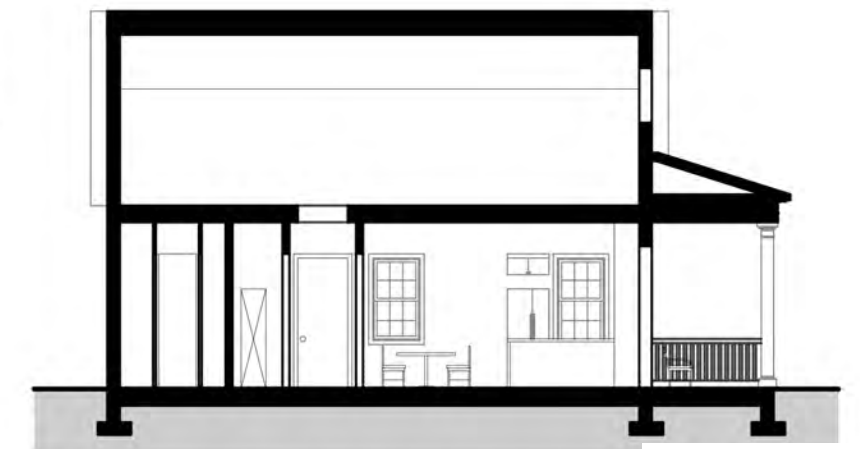
1 FIRST FLOOR PLAN  
1/4" = 1'-0"



5 FIRST FLOOR PLAN - OPTION TWO  
1/4" = 1'-0"

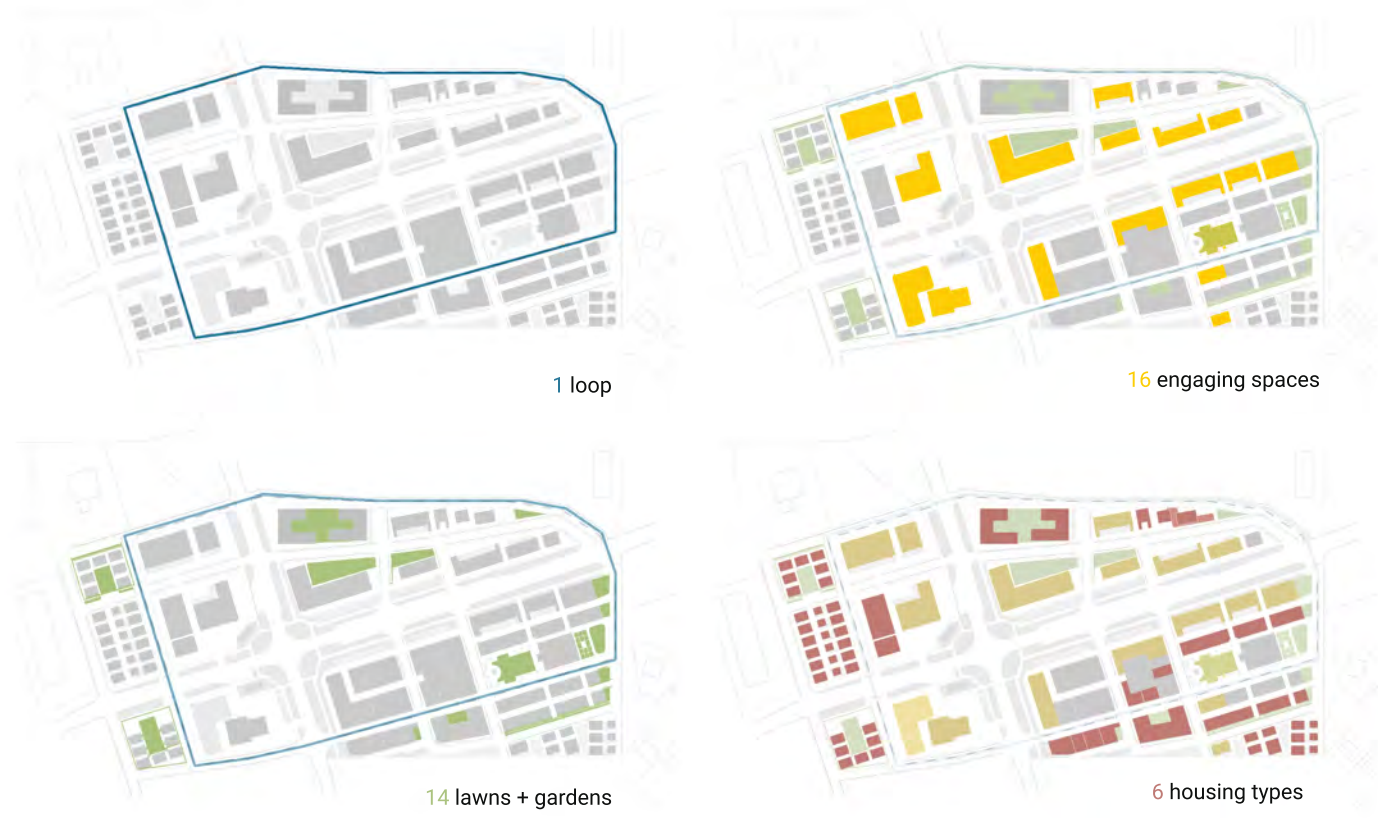


3 COTTAGE ELEVATION



4 LONGITUDINAL SECTION  
1/4" = 1'-0"

# The Conclusion | The Big Picture



TEENS + SENIORS 

E- SPORTS ARENA + HEALTHY FOOD CAFE

FOOD TRUCKS + OUTDOOR SEATING

SKATE PARK + DINER

OUTDOOR THEATRE AT LAWN + GROUP CLASSES AT LAWN

LIBRARY CAFE + GARDEN

MANUAL LABOUR + COMMUNITY GARDEN

GROUP FITNESS CLASSES + HOME SCIENCE CLASSES

COLLABORATIVE LOOP + PEDESTRIAN LOOP

VOLUNTEER CAREGIVERS + HEALTHCARE WING

**What if** we designed housing and retrofitted intersections for...

**THANK YOU!**



**Covington's Intergenerational Village**

ADITI BHARADWAJ | EMILY KHALID | ELENI KROI

What if we designed housing and retrofitted intersections for...

# THE AUTONOMOUS VEHICLE



AV Sustainable Neighborhoods

JUN WANG | WANLI GAO

## A MORE SUSTAINABLE FUTURE WITH MORE INTELLIGENT VEHICLES

Location	Year
Covington, GA, U.S.A.	2020 Spring
Duration	Collaboration of
7 weeks	Jun Wang Wanli Gao
Advisor	
Ellen Dunham-Jones ellen.dunham-jones@design.gatech.edu	

## WHAT IF AUTONOMOUS VEHICLES WERE THE PRIMARY DRIVER FOR THE DESIGN OF HOUSING AND RETROFITTING THE INTERSECTION?

The automotive and IT industries are investing heavily in autonomous vehicles (AVs) but their impact on communities remains unknown. Transportation experts often refer to their potential to deliver Heaven or Hell.<sup>i</sup> The hell scenario is generally associated with private AVs replacing driven cars and the likelihood of doubled congestion.<sup>ii</sup> The heaven scenario focuses much more on shared AVs – primarily AV shuttle buses, such as Toyota’s e-Palette. Our proposal demonstrates how Covington and Newton County might leverage a shared AV transit system to retrofit less sustainable suburban intersections into walkable, urban neighborhoods, (akin to Covington’s Downtown Square), providing more residents with more housing choices, more affordable and accessible transportation, and more opportunities to enjoy the twin benefits of urbanism and countryside that so distinguish this community.

The problems that a well-designed AV transit system can improve:

- **The lack of transit.** Newton County’s low density makes it very difficult to support current transit systems. However, by eliminating the 50-85% operating cost that goes to drivers, a shuttle system could operate efficiently and economically.
- **Increased mobility for those who are too young, too old, or too disabled**
- **The high economic and environmental cost of commuting by private car.** Approximately half of Covington residents are spending significant time and money commuting to Atlanta, polluting air, water, and soil and contributing to climate change.
- **Lack of housing options.** AV-based neighborhoods can provide a range of housing types not currently available in Covington or Newton County. We see opportunities for missing middle scale housing types that fit the needs of the area’s growing senior and other small household population.

Solving these problems allows for additional improvements to the quality of life for residents at several scales. We present forward-looking proposals at the regional scale, as well as at the neighborhood and building scale. Our model of an ideal AV-serviced neighborhood informs our proposal for the Jackson Highway- Bypass Road intersection. There we create a **sustainable** neighborhood by providing a **high-tech** data-based transportation system and a **connected, safe, and walkable** street network, where a diversity of **affordable** housings, **efficient** mobility choices, and **convenient** services together form a **livable** neighborhood. At the building scale, we show how access to the AV shuttle system enables new housing types to convert automobile-oriented spaces over time to more convivial spaces.

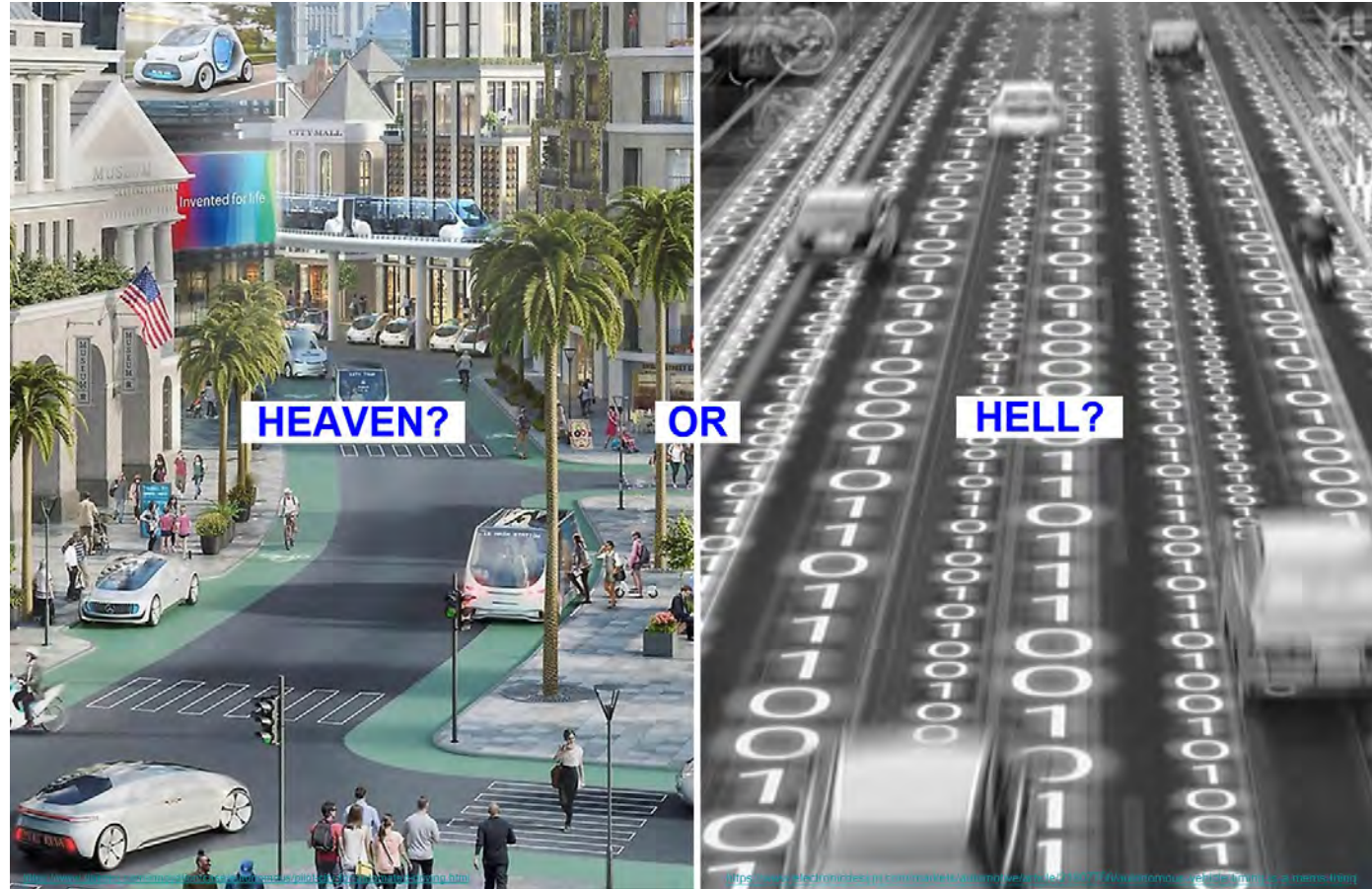
Based on our visionary AV sustainable neighborhood design rules, we adjust the logic to the intersection and try to make a practical design by eight strategies: market, transit, mobility, street and public realm, parking, land use, housing, and infrastructure. In five years, we will keep and retrofit some of the existing buildings. And in thirty years, we will have more development and increase density on the blocks close to the intersection.

<sup>i</sup> Jeff Tumlin, Episode 1 Redesigning Cities, <https://www.youtube.com/watch?v=iIXY5owFHgM>; Robin Chase, Self-driving Cars: The Hell Scenario, <https://www.youtube.com/watch?v=qkMDVV4I3tM>.

<sup>ii</sup> Zachary Lancaster, Ellen Dunham-Jones, Best Practices for Improving User Experience in AV Shuttles.

# HEAVEN OR HELL?

The industries are investing heavily in autonomous vehicles (AVs) but the impact on communities are still unknown.



Shared Rides, Safe, Quiet, Clean Streets?

- Reduction in Infrastructure Spending
- Energy Conservation
- Increase in Productivity
- Less Dependency on Cars
- Safer Multitasking
- Shipping & Deliveries
- Shared Public Transportation
- Emergency Transportation
- Potential for New Design
- 



All Private AVs, More Sprawl, 2X congestion?

- Major Urban Planning Changes Necessary
- Possibility of increasing cars
- Responsibility for car accident
- Privacy at Risk
- Higher Cost
- Legal Issue
- Time Consuming Legislation
- Cyber Attacks
- Computer Errors
- 



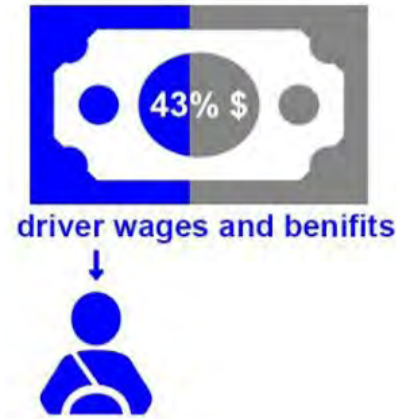
<https://www.fix.com/blog/driverless-car-revolution/>; <https://www.landmarkdividend.com/self-driving-car/>  
 Picture left: <https://www.arcweb.com/industries/smart-cities/>; Picture right: <https://www.shutterstock.com/q/portfolio>

# PROMISES OF AUTONOMOUS VEHICLE

## 1: MOBILITY

By increasing the options of transportation and promoting shared AVs, we can just move people not cars

### Money Saving



Average monthly payment on a new car:

**\$6276/year**

For vehicles driven 15,000 miles a year car ownership costs:

**\$8,469/year**

### Time Saving



**30% ↓**

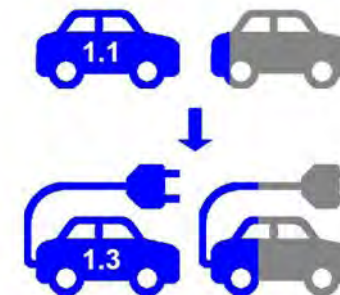


multiple uses while travelling

## 2: LIVABILITY

AV can help us to create a people based neighborhood where is quieter, safer and more walkable.

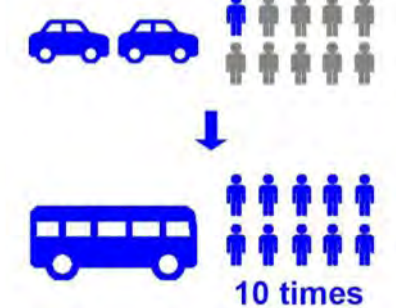
### Higher Occupancy Rate



### Multi-Modal Mobility



### Less Space on the Road



## 3: AFFORDABILITY

We can save money on driver wages, and ownership of a car, also save time on multiple uses while travelling on the road.

### Safer Neighborhood



Over 80% of car crashes in the US are caused by driver error

### More Sustainable & Livable Environment

pedestrianization  
 accessibility  
 mobility

**LIVABLE SUSTAINABLE**

a good quality place to all its inhabitants

### Healthier Lifestyle

**8.6** min/day walking **33% ↑** mental health

**4-24** min walk per day **14% ↓** cardiovascular disease&diabetes

**WALKING REGULARLY**

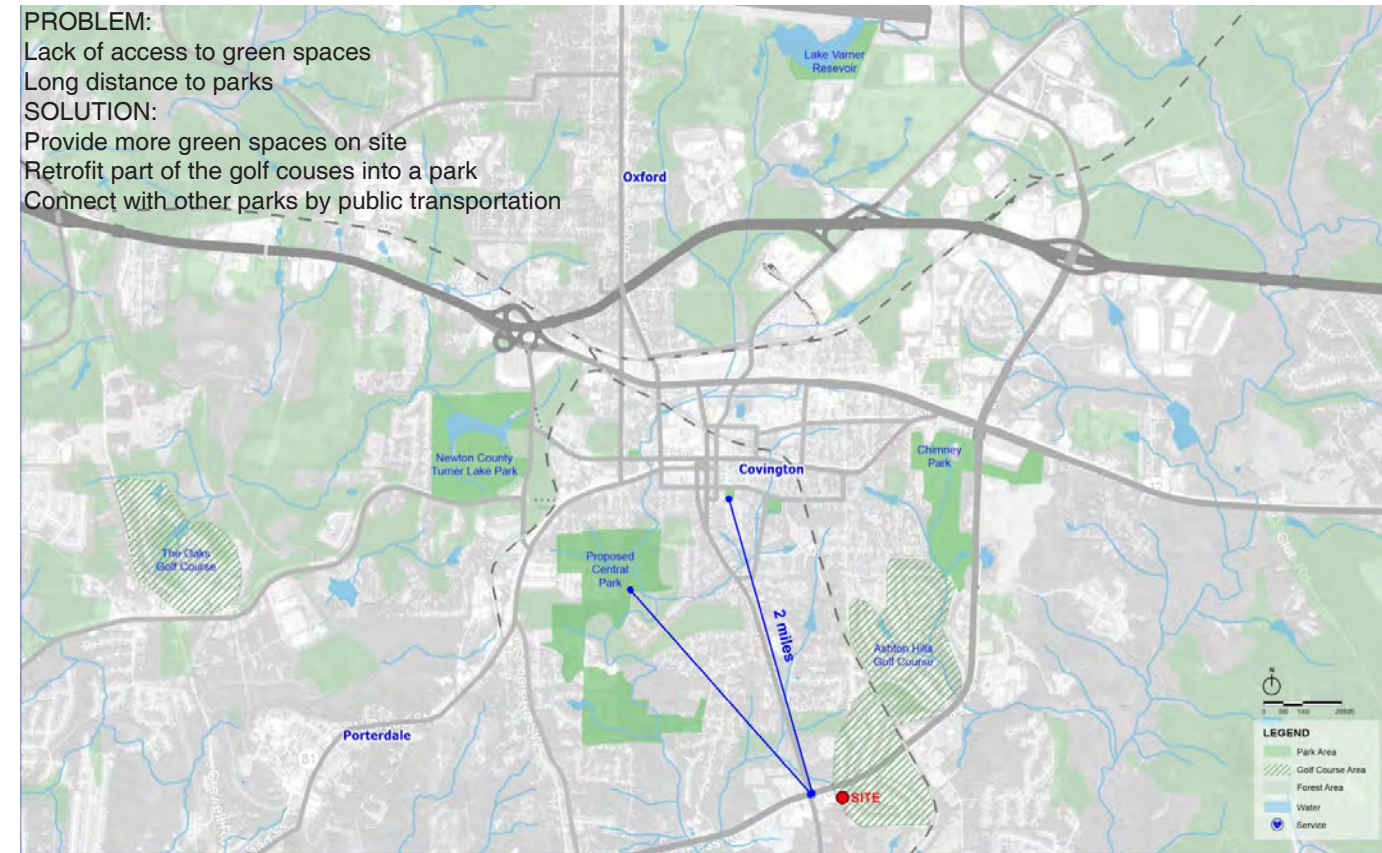
decrease the risk of type 2 diabetes coronary heart disease, AND stroke

## COVINGTON AS A SUBURBAN SMALL TOWN

### DISTANCE TO GREEN SPACES

**PROBLEM:**  
Lack of access to green spaces  
Long distance to parks

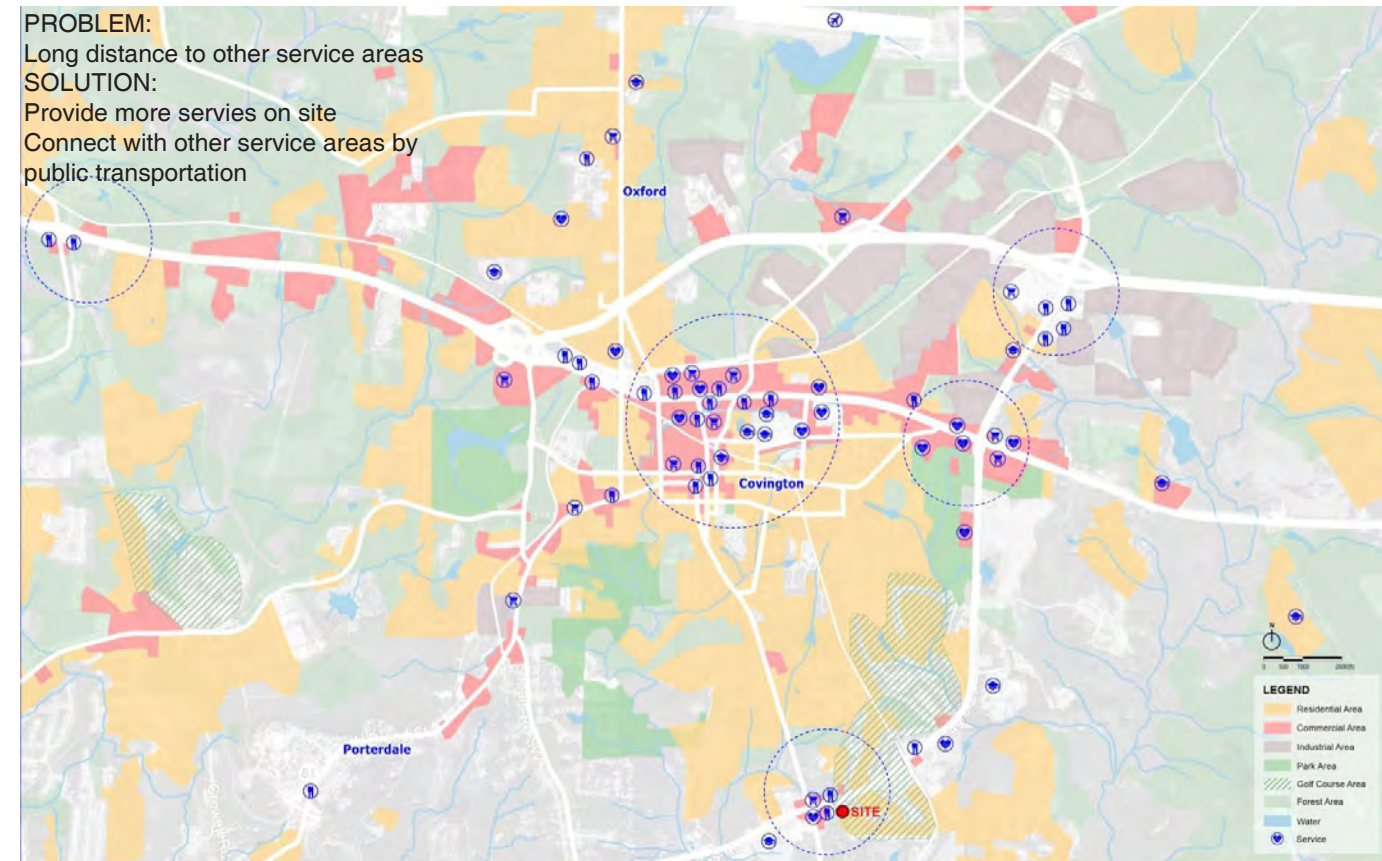
**SOLUTION:**  
Provide more green spaces on site  
Retrofit part of the golf courses into a park  
Connect with other parks by public transportation



### TOO FAR TO ANY SERVICES

**PROBLEM:**  
Long distance to other service areas

**SOLUTION:**  
Provide more services on site  
Connect with other service areas by public transportation



## UNABLE TO DRIVE

**PROBLEM:**  
Around 1/3 of the population are not able to drive

**SOLUTION:**  
Pay attention to those people who can't drive  
Provided diverse living options for different types of people

### Rate of Disability

US: 12.8%



Covington: 13.6%

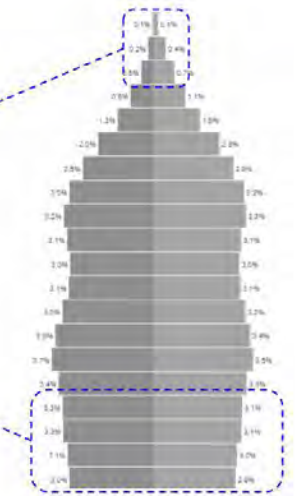


### Ability to Drive



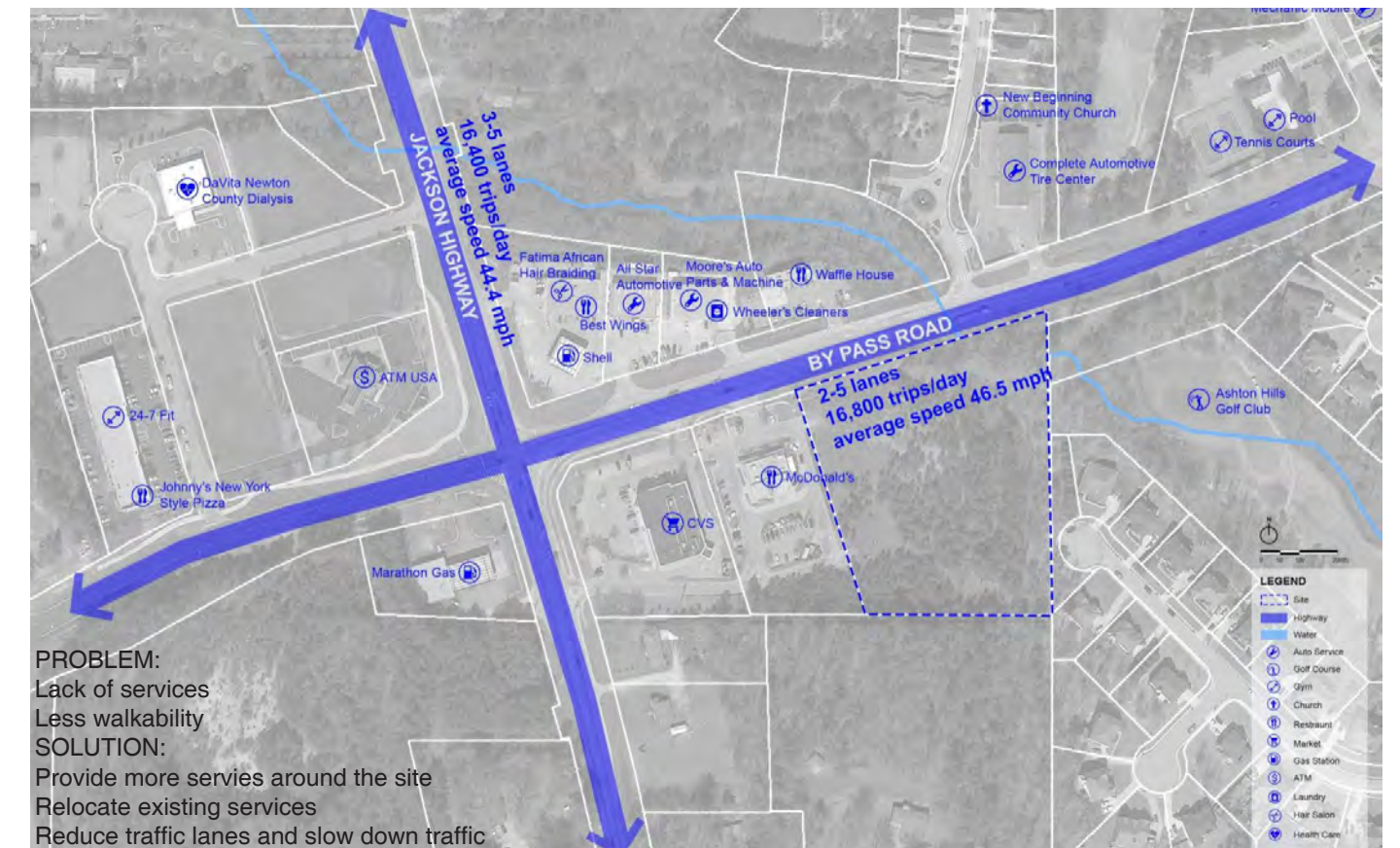
**US:**  
75% are able to drive (age 15-75)  
25% are not able to drive (age <15 or >75)

**Covington:**  
68% are able to drive (age 15-75)  
32% are not able to drive (age <15 or >75)



[https://disabilitycompendium.org/sites/default/files/user-uploads/2017\\_AnnualReport\\_2017\\_FINAL.pdf](https://disabilitycompendium.org/sites/default/files/user-uploads/2017_AnnualReport_2017_FINAL.pdf), <https://worldpopulationreview.com/us-cities/covington-ga-population/>

## LACK OF ACCESS TO SERVICES













**PROBLEM:**  
Lack of services  
Less walkability

**SOLUTION:**  
Provide more services around the site  
Relocate existing services  
Reduce traffic lanes and slow down traffic



# CREATE AN AV SUSTAINABLE NEIGHBORHOOD

-  **Connected**
-  **Livable**
-  **High Tech**
-  **Diverse**
-  **Safe**
-  **Efficient**
-  **Affordable**
-  **Convenient**
-  **Walkable**
-  **Sustainable**

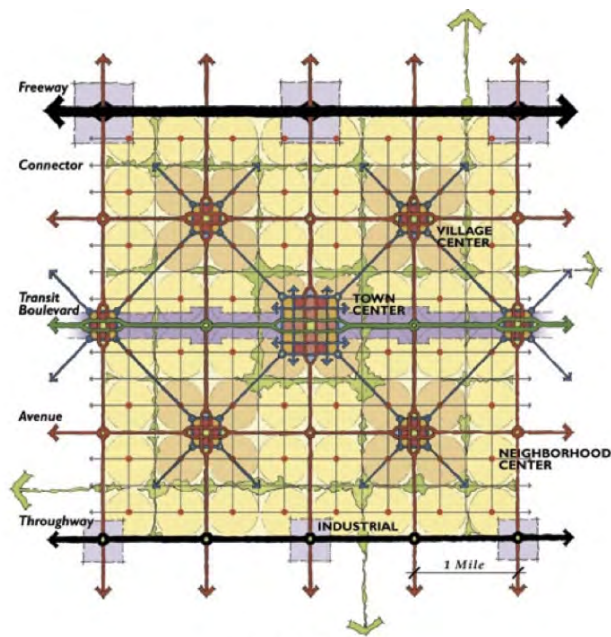


Illustration 1: The Urban Network

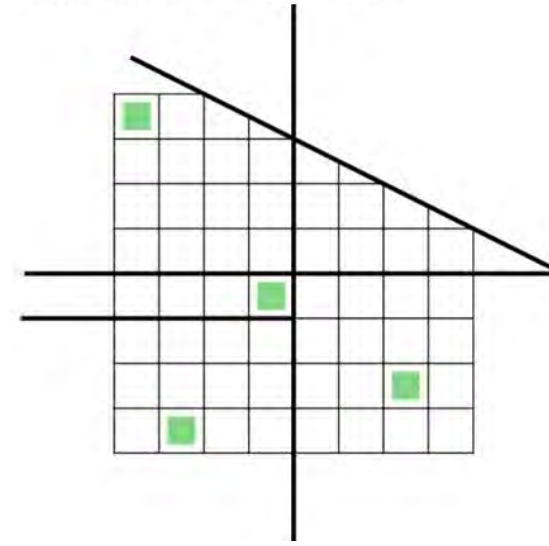


Precedent: Peter Calthorpe, The Urban Network: A New Framework for Growth

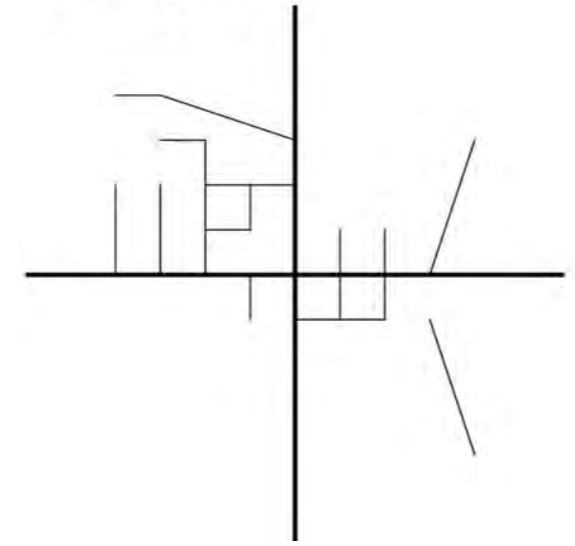
# STUDY OF GRIDS AND NODES

Take example of the grid of Savannah and the block dimension of Downtown Covington

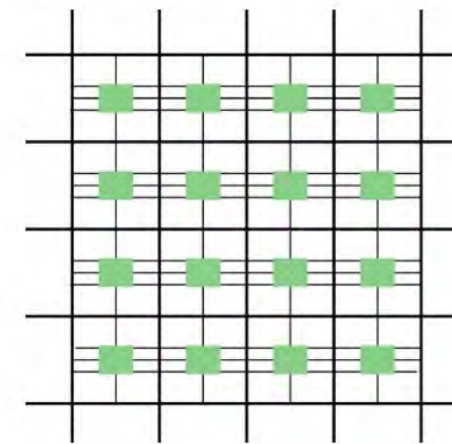
Downtown Covington Grid



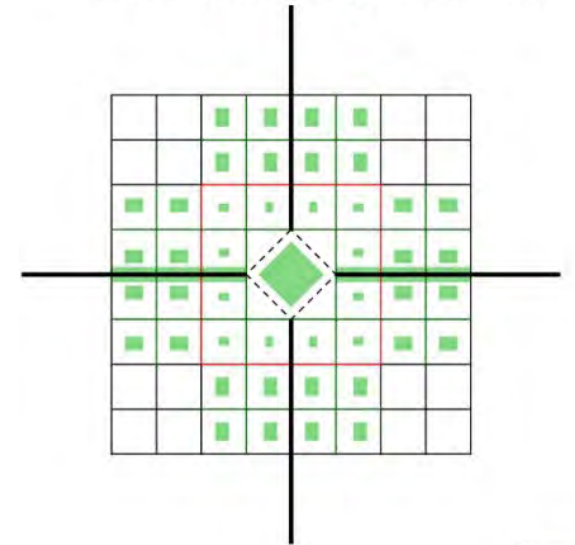
Existing Grid



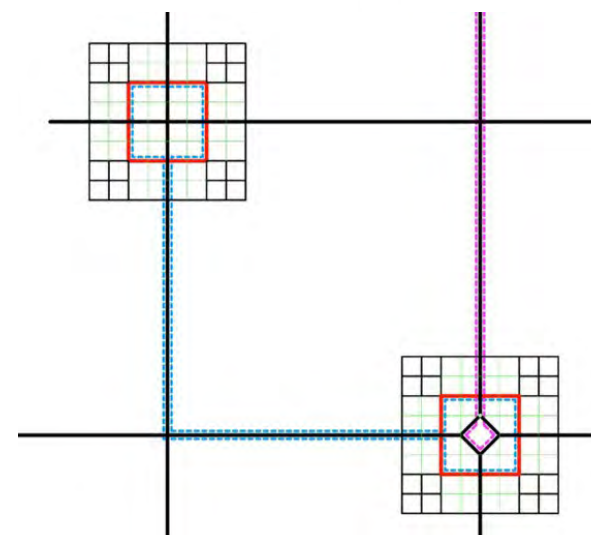
Savannah Grid



AV Sustainable Neighborhood Grid

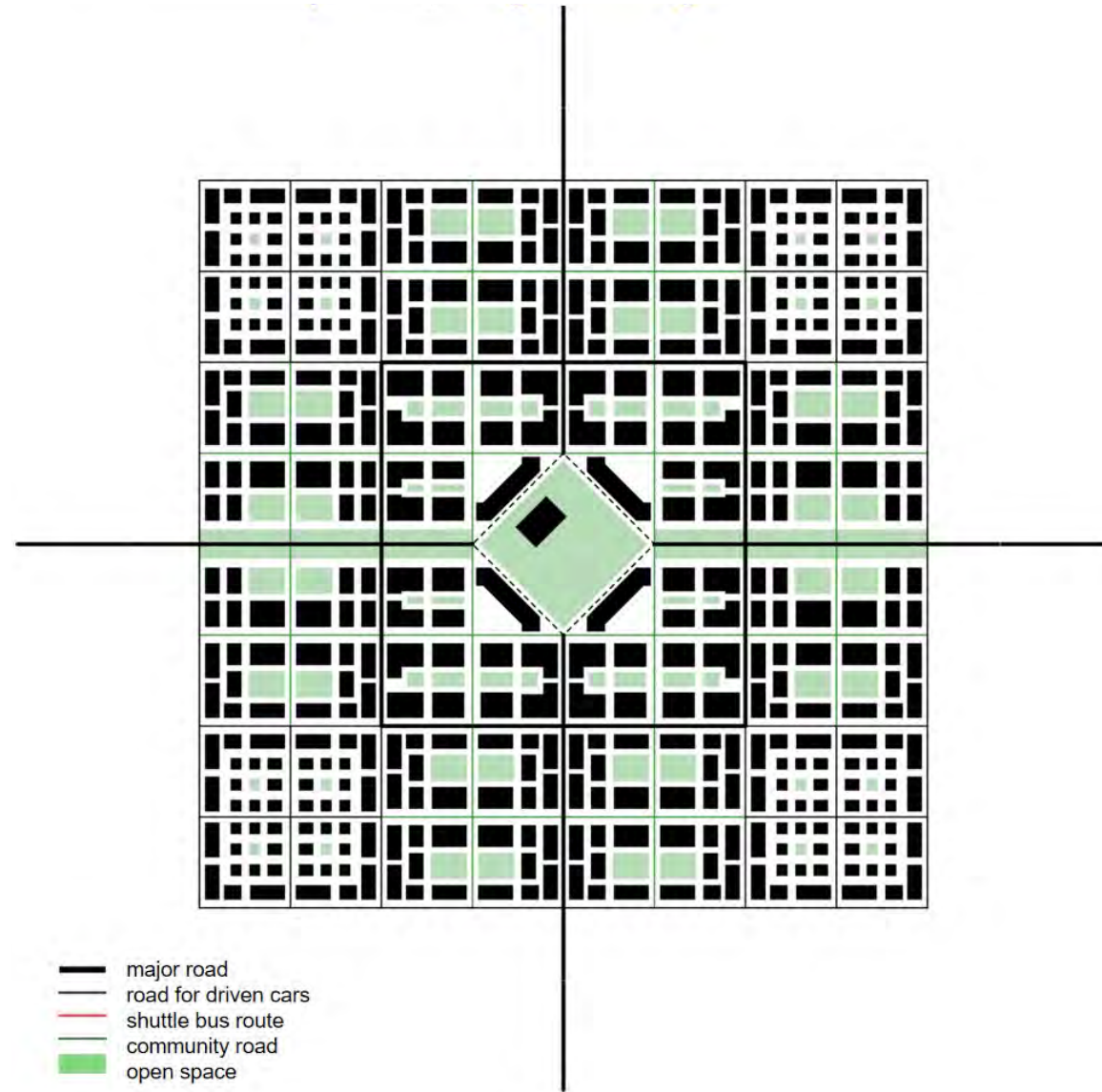


250ft



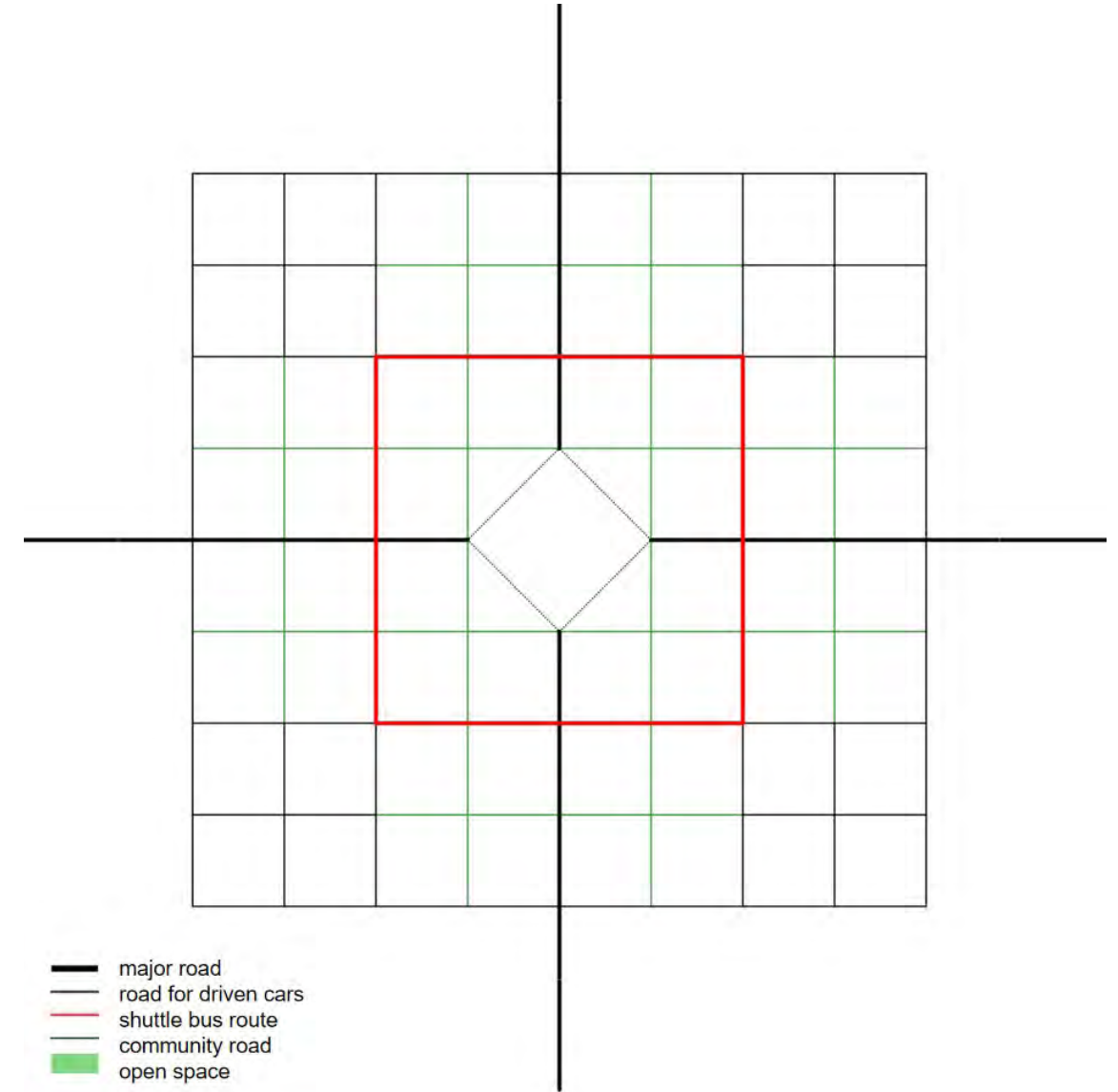
-  major road
-  road for driven cars
-  shuttle bus route
-  community road
-  open space
-  neighborhood shuttle bus
-  regional shuttle bus
-  major road
-  road for driven cars
-  shuttle bus route
-  community road

# TRANSPORTATION SYSTEM



- major road
- road for driven cars
- shuttle bus route
- community road
- open space

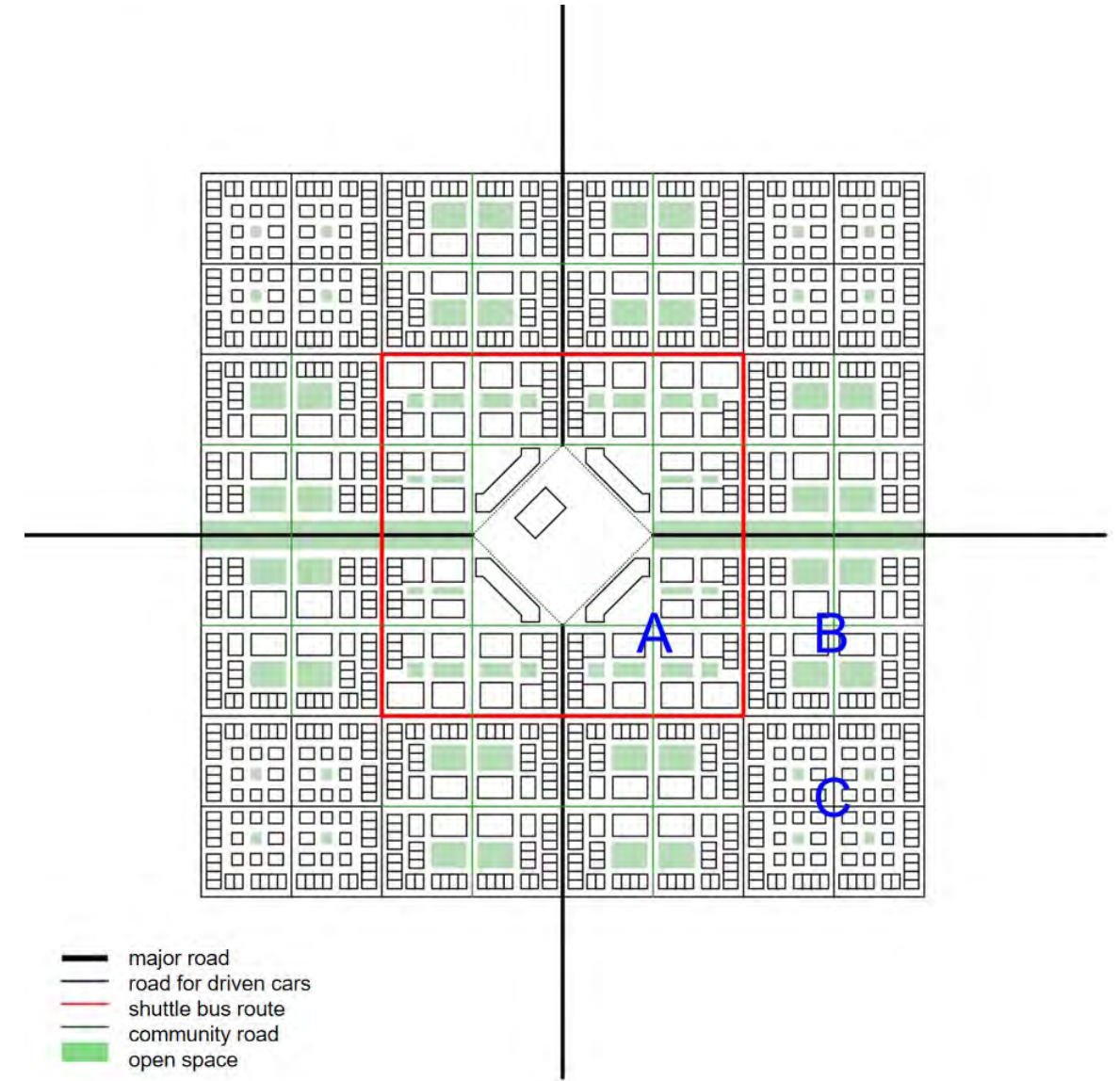
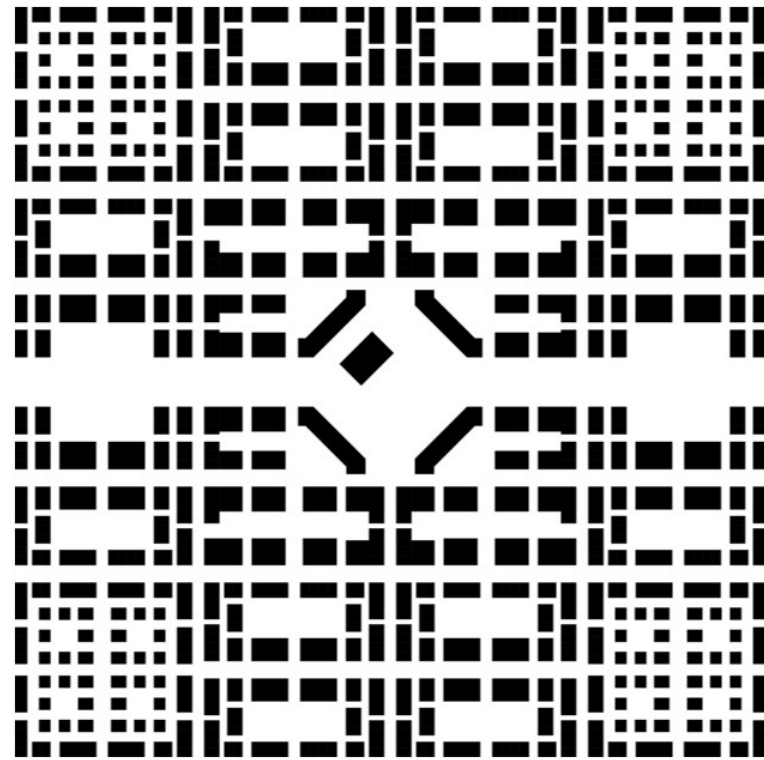
# LIVING PATTERNS ON STREETS



- major road
- road for driven cars
- shuttle bus route
- community road
- open space

	<p><b>Regional Shuttle Bus</b> Between Atlanta-Covington-Site 30-70mph Every 30 min (peak time) Every 1 h (other daytime)</p>		<p><b>Neighborhood Bus</b> Between nodes 15-40mph Every 15 min (daytime) Every 30 min (other time)</p>
	<p><b>Community Road</b> Shared by pedestrians, bikes, AVs, and driven cars Safe walking and biking environment with specific lanes and street lights</p>		<p><b>Driven Car Street</b> Shared by pedestrians, bikes and AVs Connect green spaces A boulevard transformed from a highway</p>

	<p><b>Major Road</b> Two lanes for shuttle buses A boulevard changed from a highway A round/square about at the intersection</p>		<p><b>Downtown Street</b> A lane for neighborhood shuttle buses Ground floor retails Outdoor dining tables</p>
	<p><b>Driven Car Street</b> A lane shared by driven cars and AVs A shared street Low speed traffic</p>		<p><b>Community Road</b> A curved lane for AV A shared street More green and playful space</p>



**Round/Square About**

A bus stop at each of the corner  
Ground floor retails behind the stops  
A 1-2 floors bar/cafe at the round/square  
about with a roof top

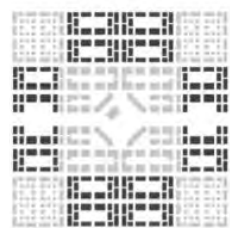
**FAR: ~ 0.4**



**Mid Density Mixed Uses**

4-6 floors Mixed used commercial and  
residential building with small units  
2-3 floors live&work building for young  
people

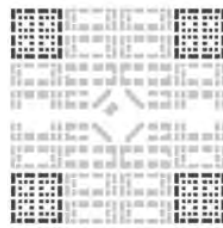
**FAR: ~ 2.0**



**Missing Middle Town Houses**

A shared green space  
2-3 floors townhouse  
3-4 floors multi family house  
Ground floor units transformed from  
garages

**FAR: ~ 1.2**



**Low Density Single Family**

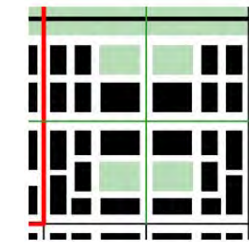
2-3 floors townhouses and single family  
houses with ground floor units  
transformed from garages  
1 floor unit transformed from detached  
garage

**FAR: ~ 0.9**



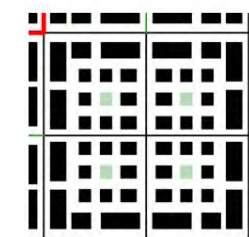
**A - Mixed Used Building**

Live&Work units for young people  
More collaborative space



**B - Shared Courtyard**

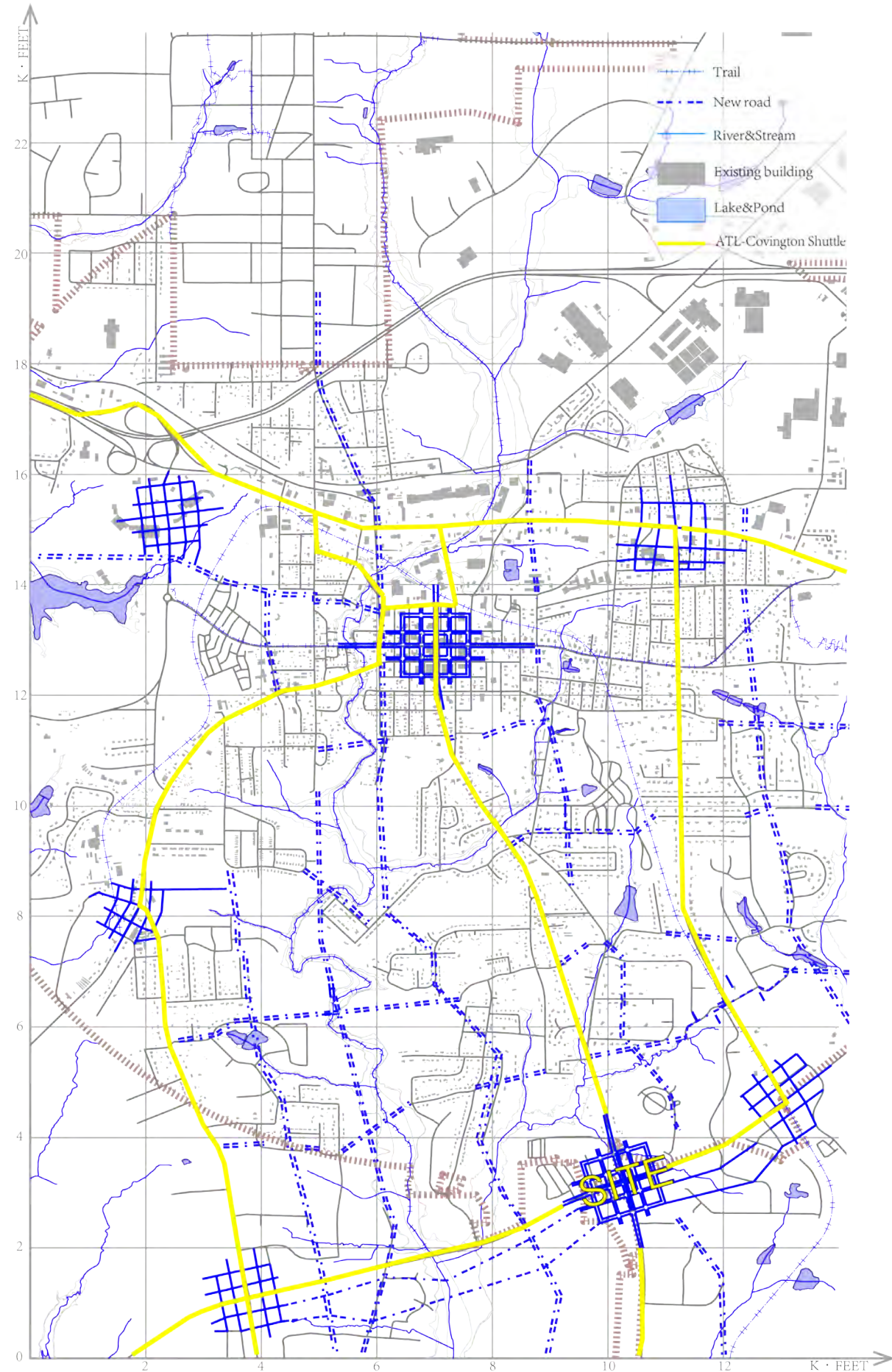
A shared open space  
Townhouses and Mix used building



**C - Single Family**

A detached garage that can be  
transformed into a living unit

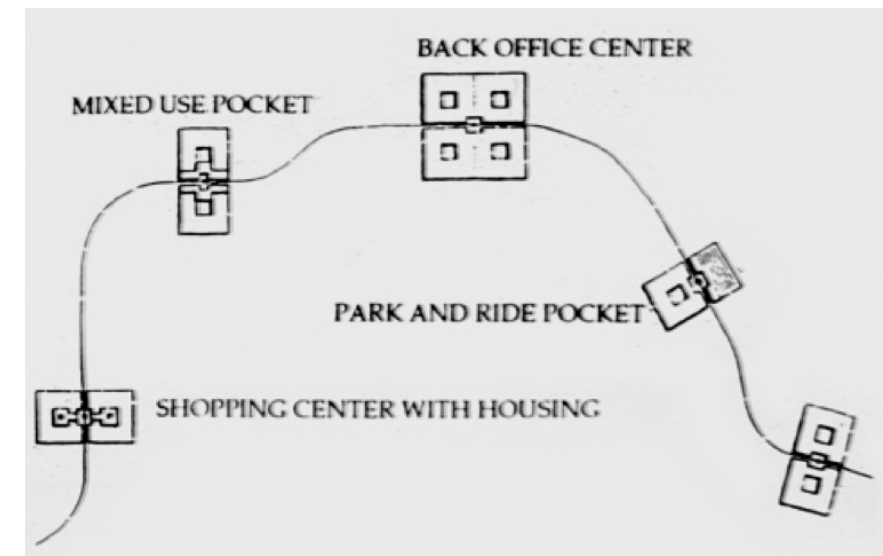
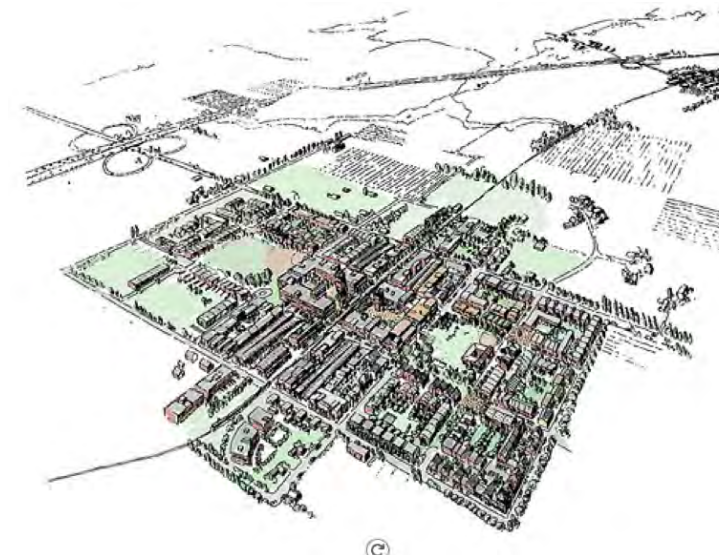




### POLYCENTRIC TRANSIT-SERVED SMALL TOWN URBANISM

We propose a regional plan throughout Newton County to show the applicability of our ideal AV neighborhood into a larger transit system at key intersections. We also propose a more connected street network in Covington expanding access to the transit. Shuttle bus routes are intertwined into this system.

This regional plan shows the possibility of mass operation of autonomous vehicles in small towns like Covington.



Precedent: Peter Calthorpe, *The Pedestrian Pocket Book*, transit neighborhoods with different mixes of uses

Build the first phase of the AV Logistics Hub (red) and the lower-density, mostly residential buildings to the East.  
5 YEARS PLAN



Infill with higher-density, mixed-use buildings on a walkable street grid around the retrofitted intersection

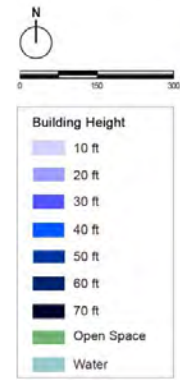
30 YEARS PLAN



REGULATORY PLANS



LOT DIVISION



Building Height	
Lightest Blue	10 ft
Light Blue	20 ft
Medium Blue	30 ft
Dark Blue	40 ft
Very Dark Blue	50 ft
Black	60 ft
Black	70 ft
Green	Open Space
Light Blue	Water

BUILDING HEIGHT



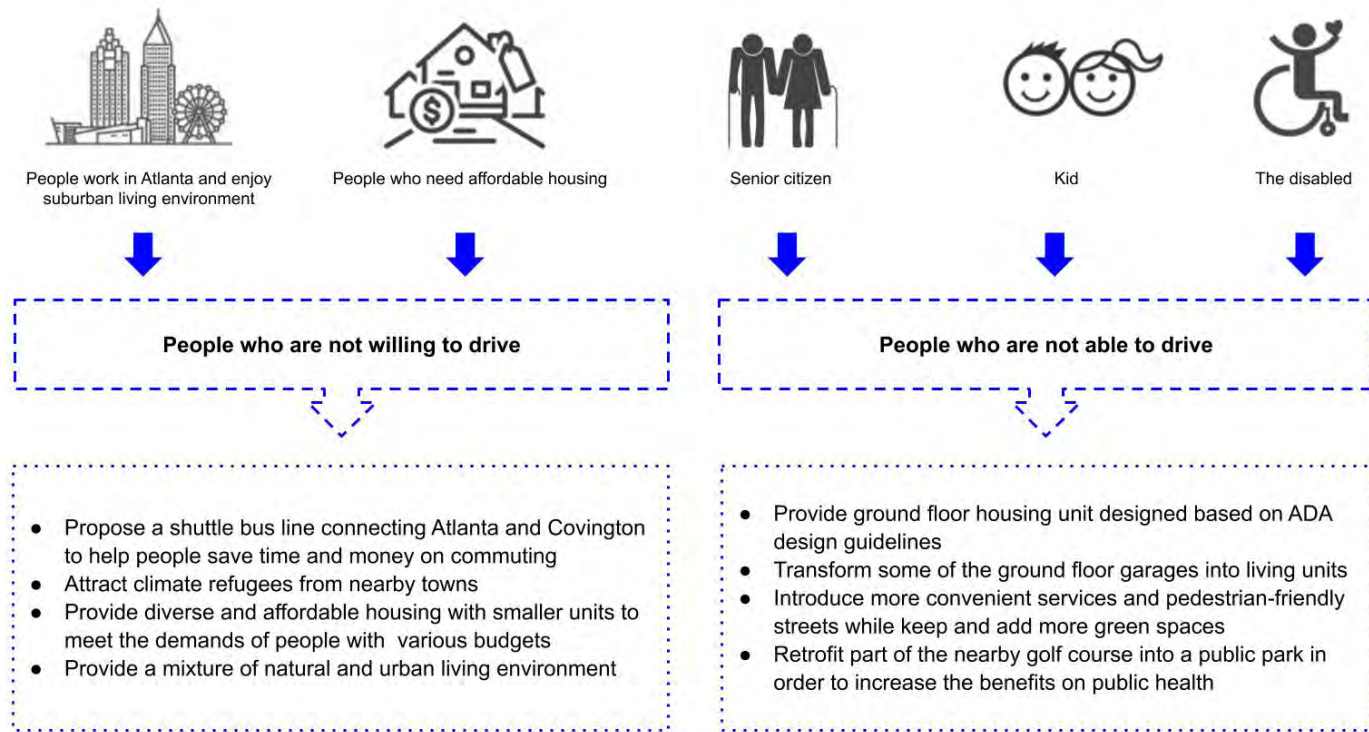
Building Type	
Light Brown	Transformed Garage
Yellow	Single Family
Orange	Townhouse
Dark Orange	Complex
Red	Mix-used
Pink	Live&Work
Purple	Civic Building
Blue	Logistics Hub
Grey	Roof Structure
Green	Open Space
Light Blue	Water

LAND USE

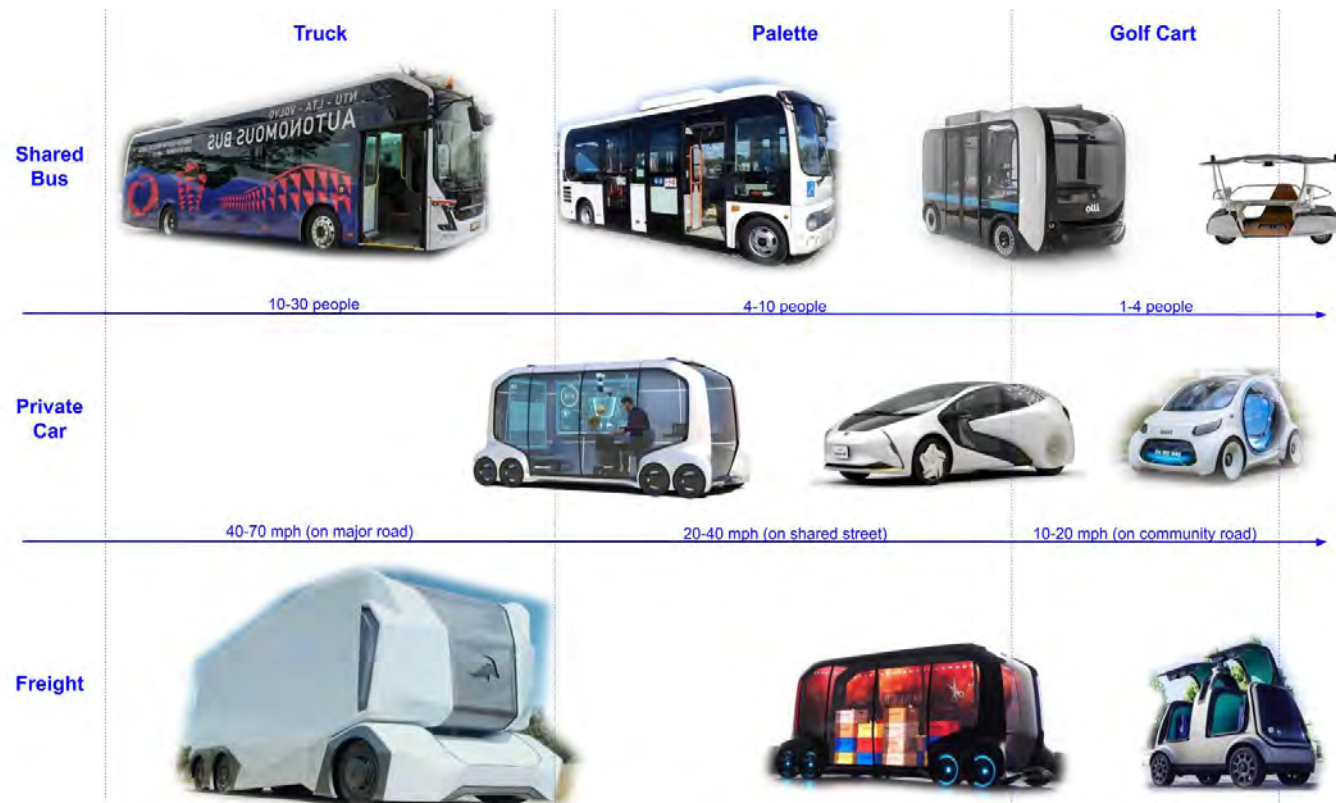


## POTENTIAL MARKET

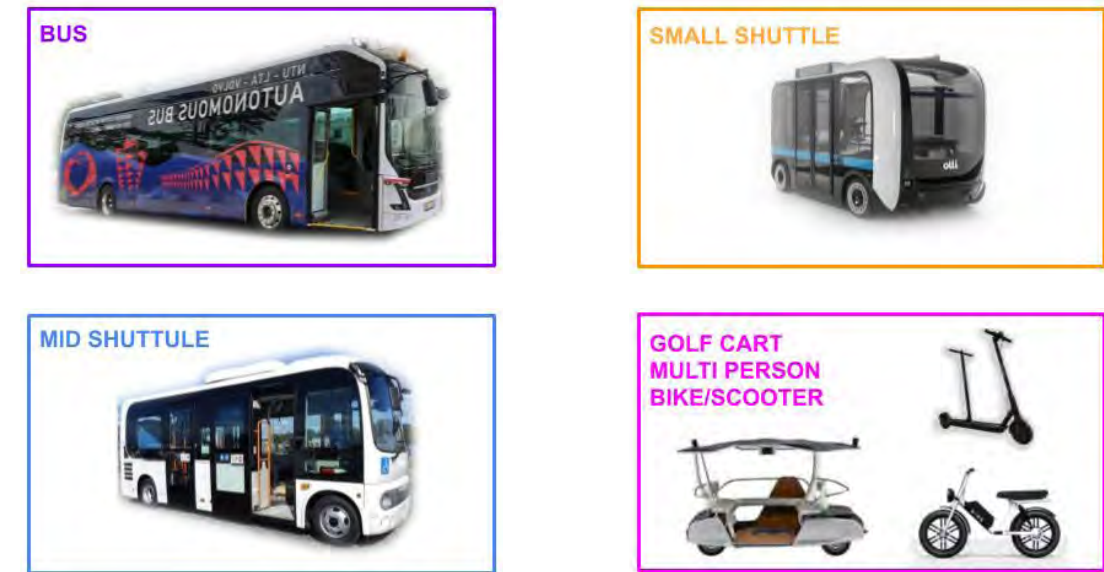
Who are not willing to drive or those how are too old, too young or too disabled to drive.



## MULTI-MODAL MOBILITY

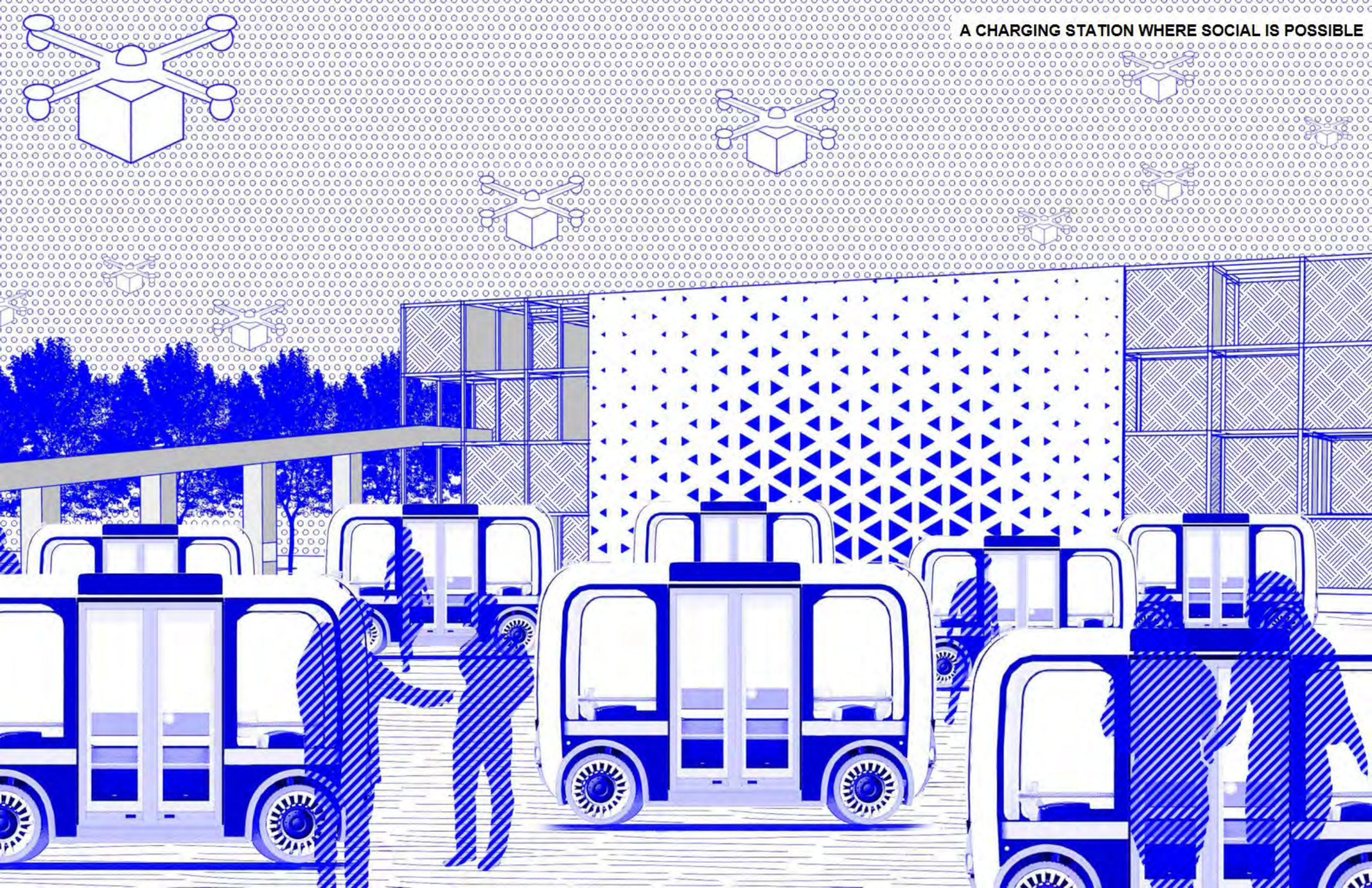


## AUTONOMOUS TRANSIT SYSTEM

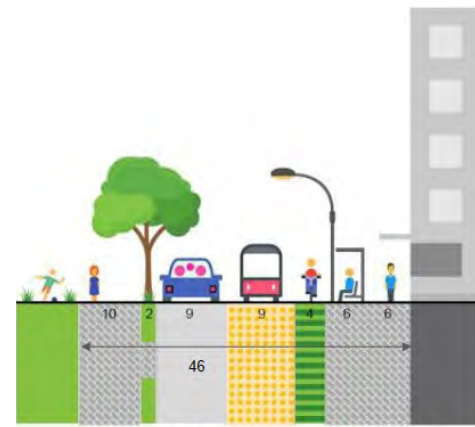




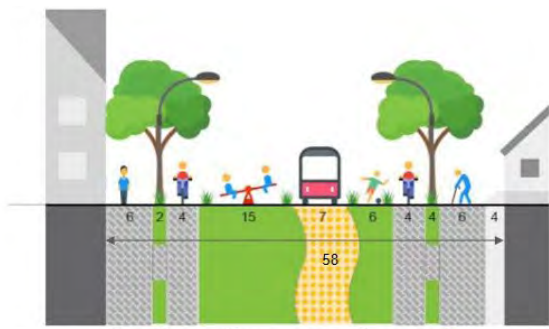
A CHARGING STATION WHERE SOCIAL IS POSSIBLE



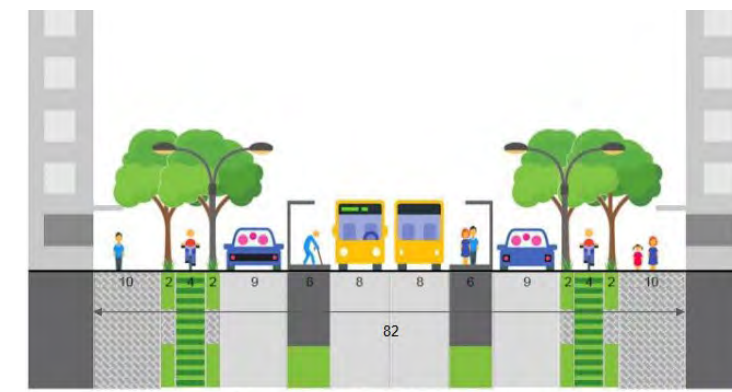
STREETS IN NEIGHBORHOODS



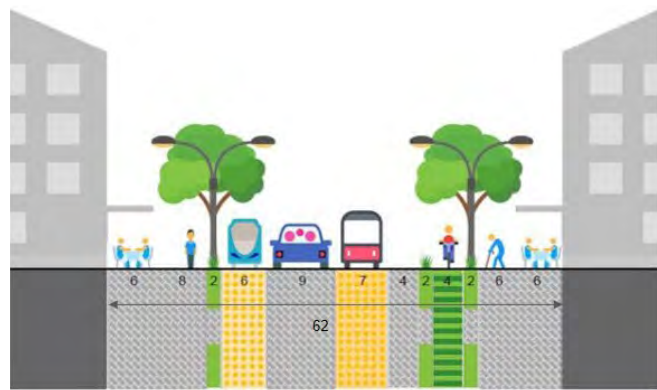
Section of the round about



Section of community road ·····



Section of Jackson Hwy ·····

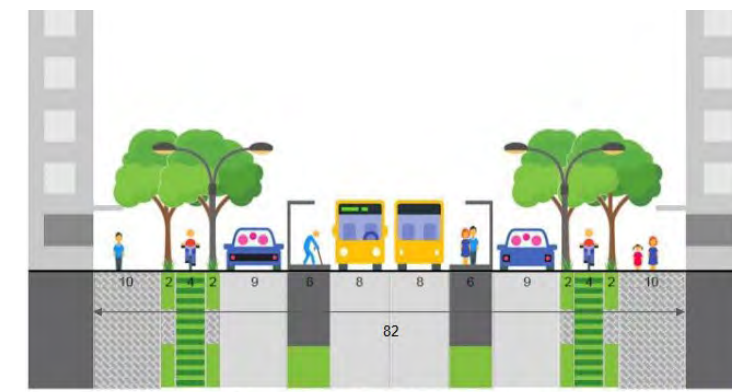


Section of the loop ———

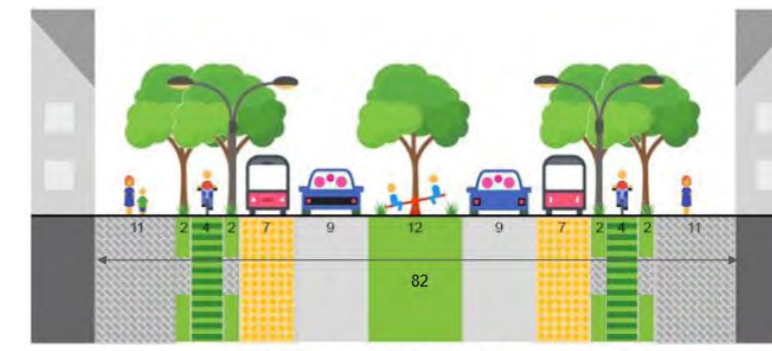


Section of the driven car road - - - -

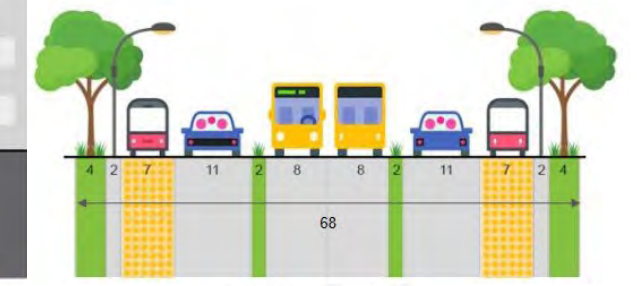
STREETS IN PUBLIC REALM



Section of Jackson Hwy ·····

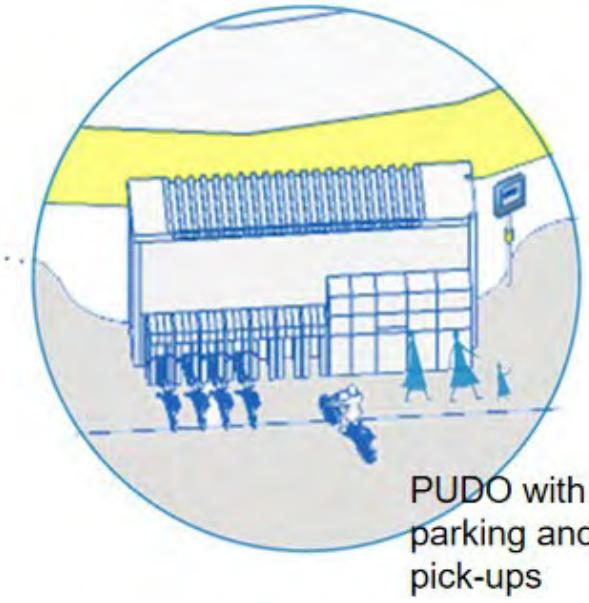
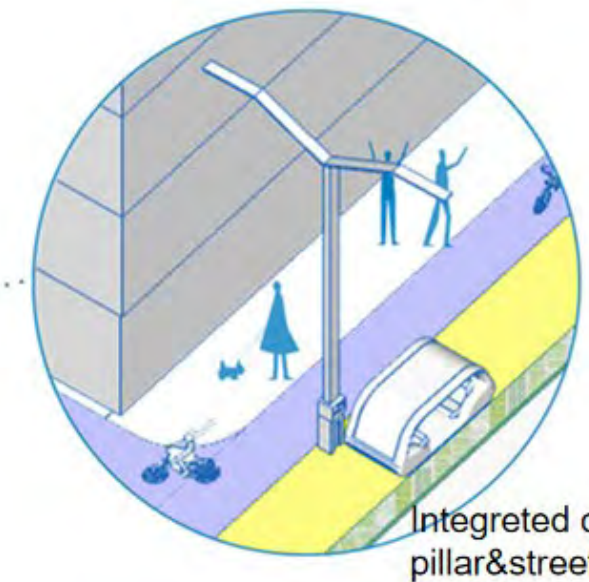
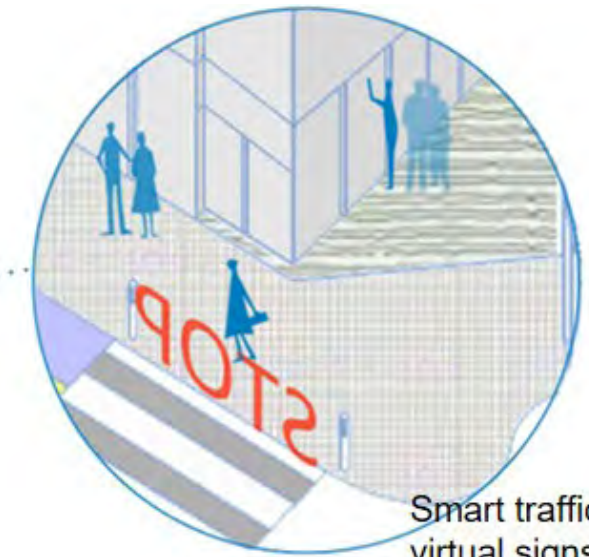
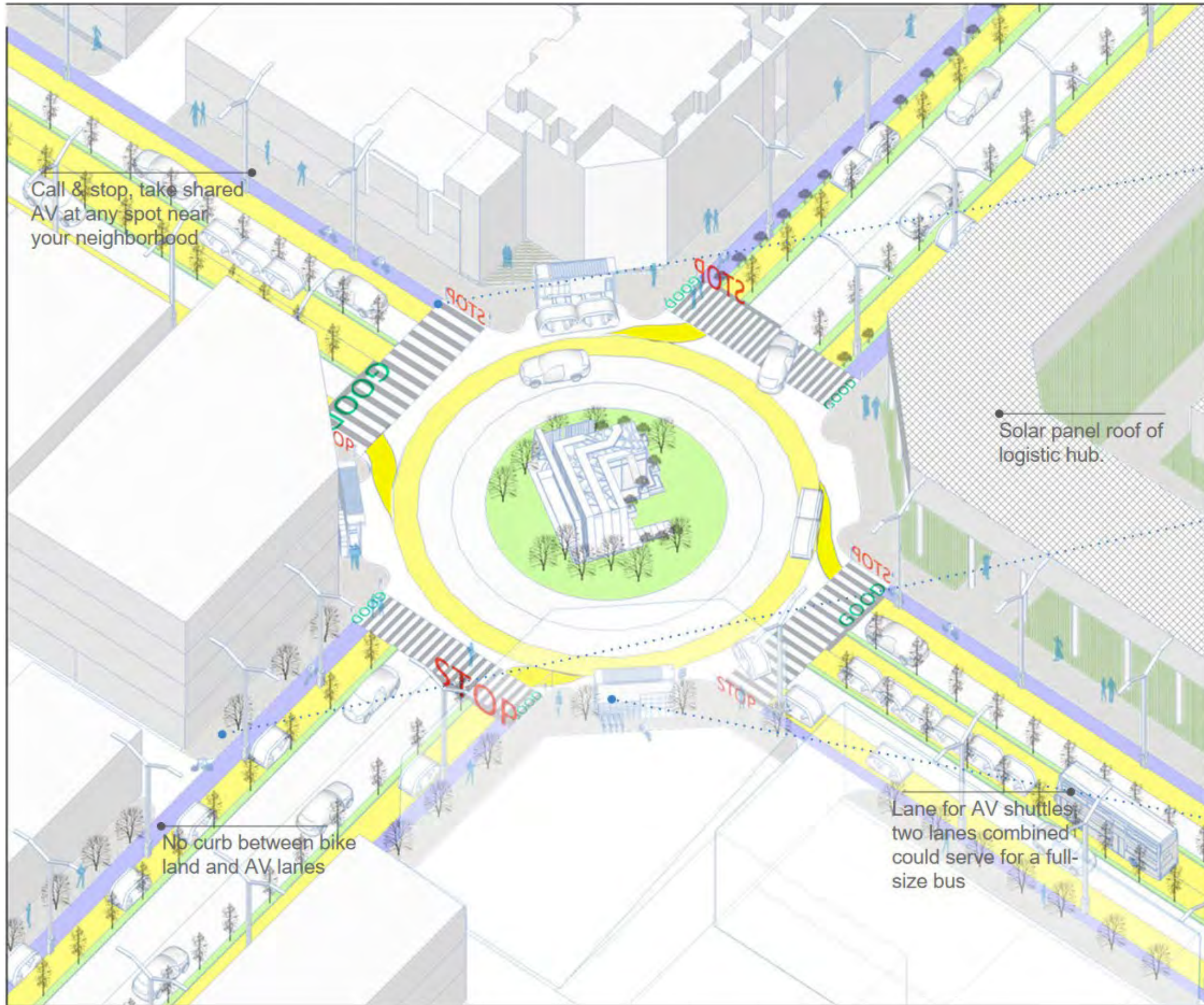


Section of Bypass Road - - - -



Section of I-20

INFRASTRUCTURE INNOVATION



## SHIFT PARKING SPACE TO USEFUL PLACES

Because of the development of autonomous vehicles, we assume that the needs of parking space will reduce in the future. Our parking space in 5-year plan should be capable of transforming to parks and other useful spaces to accommodate the new lifestyles involving less car ownership in the future.

Upon finishing of the 30-year plan, the site will have 264-280 parking spaces contributing by automated stacking parking, night time street side parking and dynamic parking lots.



5 YEARS PARKING



30 YEARS PARKING



## FROM STREET SIDE PARKING TO AV LANES



## FROM DETACHED GARAGE OF SINGLE FAMILY HOUSE TO LIVING UNIT

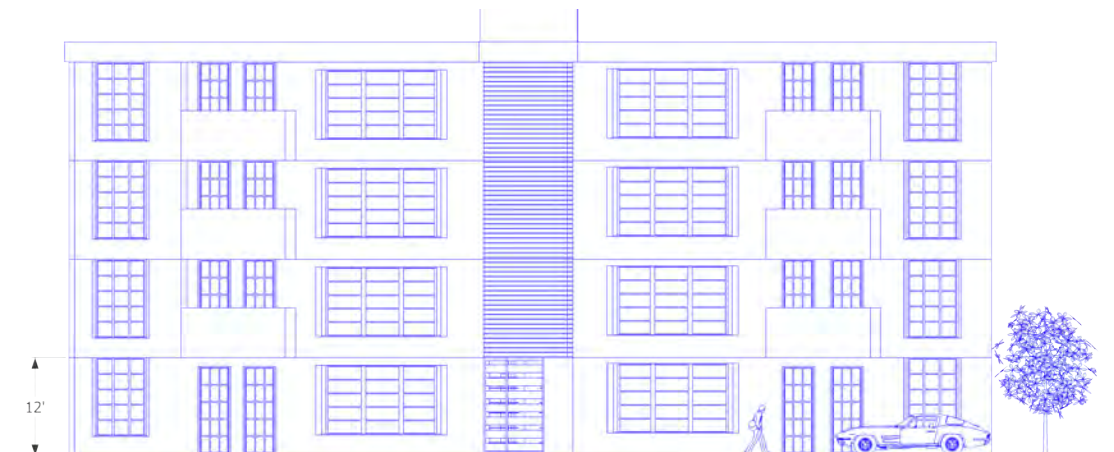


## FROM PARKING LOT TO NEIGHBORHOOD GARDEN



# MISSING MIDDLE HOUSING TYPES

Housing types with walk-in no stair units on the ground level to meet special needs.

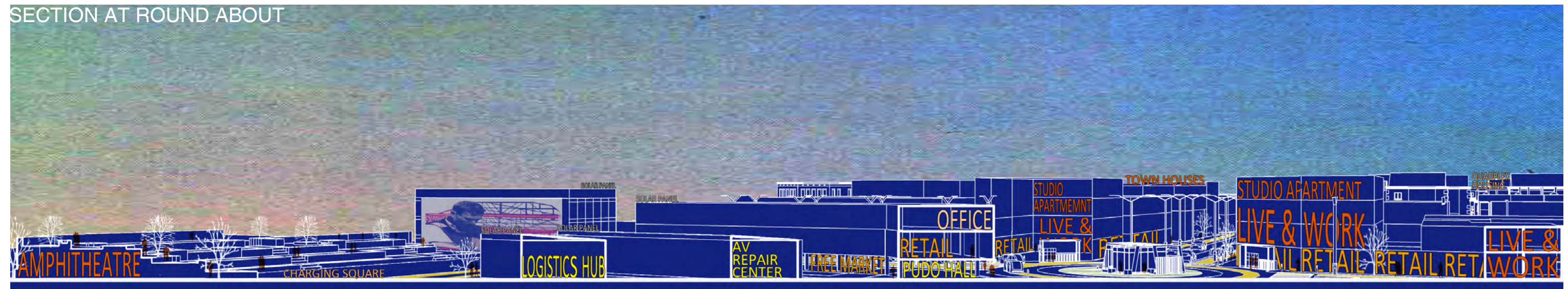


**Cottage plan, Stacked Flats**

**2-level Townhouse above Ground Floor Flat**

**Dual-fronted Stacked Flats**

## SECTION AT ROUND ABOUT

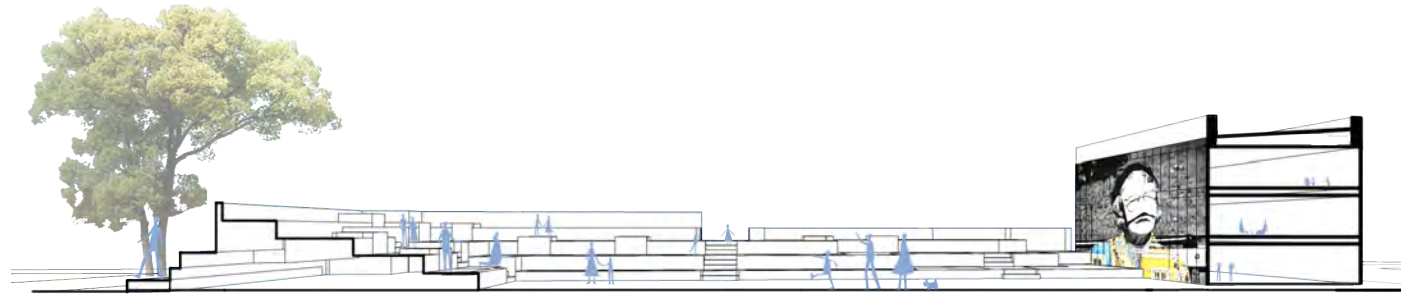


## LANDSCAPE AND BUILDINGS

In terms of public realm, we insert little neighborhood garden along the street to make the walking experience on straight street less tedious and more interesting visually.

The golf course to the east side of our site is redesigned with a new trail to be more suitable for the residents to take recreations.

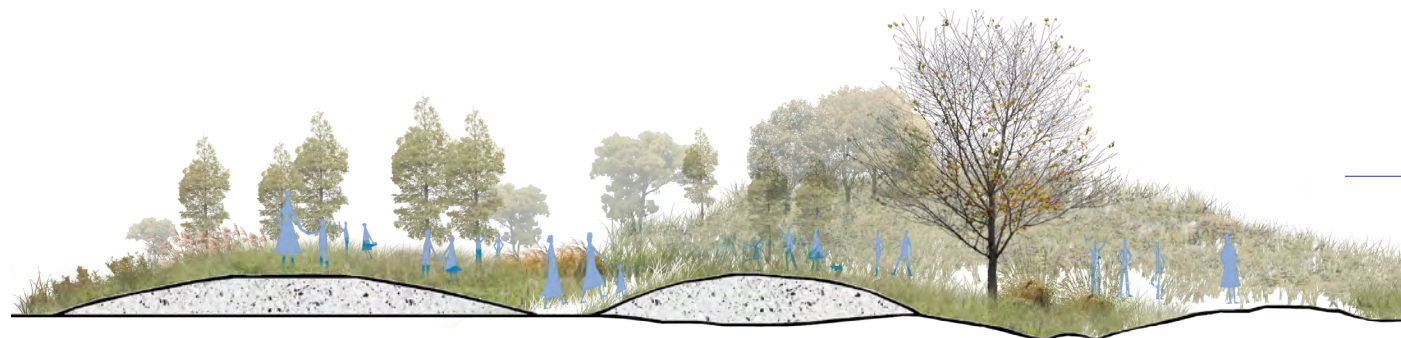
The public realm should make socializing possible and promotes interactions of people.



AMPHITHEATRE

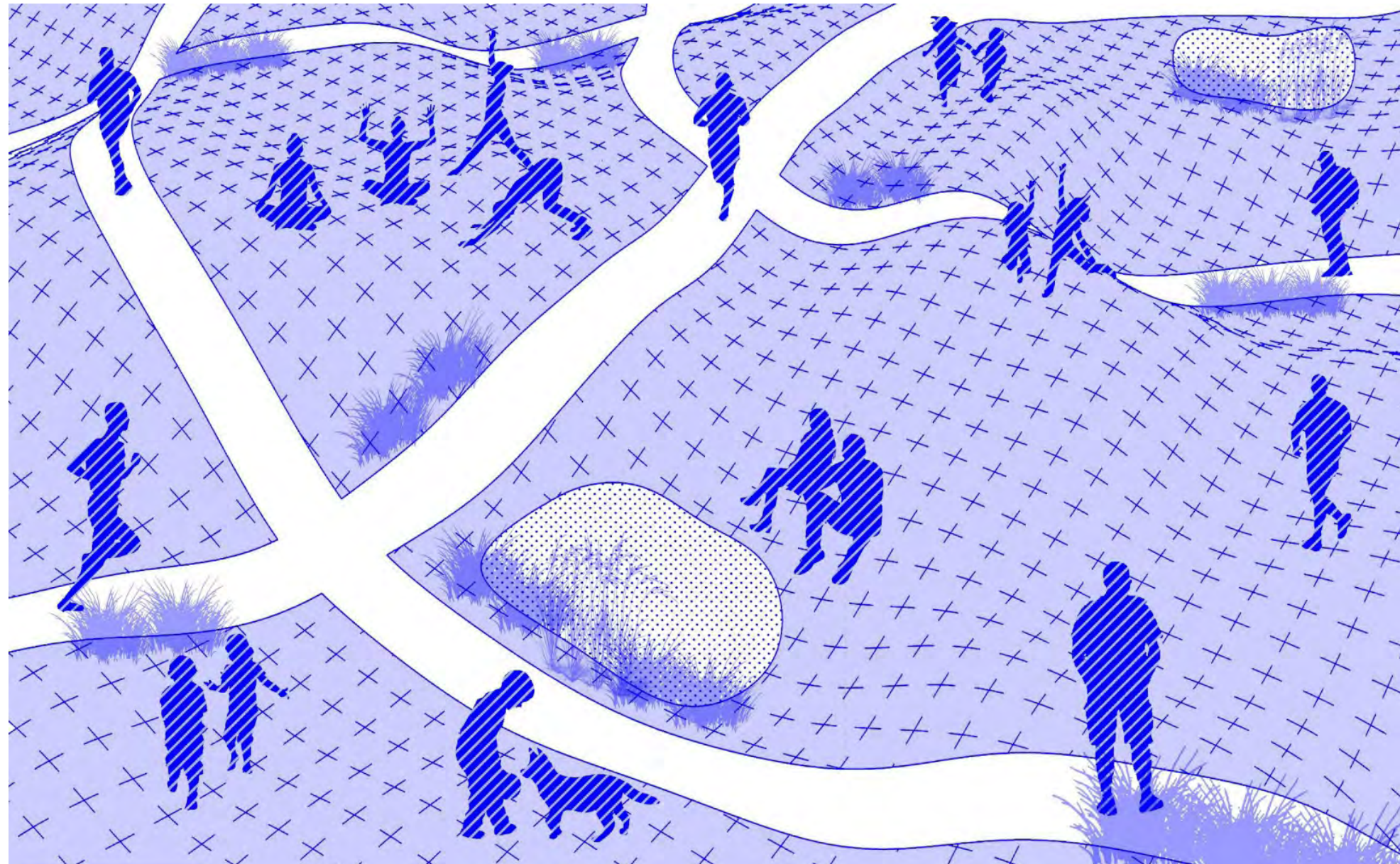


NEIGHBORHOOD GARDEN WITH DETENTION POND



REDESIGNED GOLF COURSE TRAIL





**What if** we designed housing and retrofitted intersections for...

# CLIMATE CHANGE



**LIVE . GROW . SHARE**

**CREATING A CLIMATE RESILIENT COMMUNITY**

SHREYA HAREESH KUMAR | JOSHUA MACBETH



# LIVE . GROW . SHARE

## What if addressing climate change was the primary driver for the design of housing and retrofitting the intersection?

US EPA predicts that climate change over the next few decades will make Georgia experience more flooding as well as droughts, retreating shorelines, and increased risk of heat stroke and heat-related illnesses. The development patterns of the intersection of Jackson Highway and Bypass Road illustrate how these risks may be exacerbated.

### Climate migration:

The sea-level rise due to global warming can render many coastal cities underwater and Florida is our closest state which can face this problem. People moving out of these cities then need to take shelter elsewhere and Atlanta along with several other cities can have a large influx of people in need of food and shelter.

### Floods and Droughts:

The increasing number of impermeable surfaces such as asphalt causes runoff which then contaminates the water. This in turn pollutes the waterbodies it flows into. This runoff along with increasing severe storms results in flooding. The other threat due to lack of water management is the rise of drought-prone areas during long spans without rain causing heavy loss of agriculture and thus food insecurity.

### Heatwaves:

A growing concern is rising temperatures which can later result in threats like droughts

and loss of ecosystems. It is predicted that by midcentury, the coldest and warmest daily temperatures are expected to increase by at least 5°F in most areas and by 10°F by late century. It is necessary to tap this resource to course through harsh periods such as hotter summers due to rising in temperatures brought by global warming.

In addition, residents of Covington and Newton County in the census block of our site area contribute to climate change by their average emission of 10.71 tonnes of greenhouse gases, largely due to their 25,806 average annual vehicle miles traveled. This high level of auto dependency consumes 26% of the residents' income, slightly higher than the 25% they spend on housing.

**How might Covington and Newton County simultaneously mitigate climate change, adapt the built environment away from conditions that exacerbate runoff and urban heat island impacts, while enhancing affordability and sustainability?**

### THE PROPOSAL:

As a response to manage these pressing concerns, we propose to prepare to adapt to these changing scenarios and thus mitigate the scale of their impact. Creating a climate resilient neighborhood which can not only sustain itself through farming but generate development that provides a safe environment which promotes physical and mental well-being and thus helps bring people together. The core concepts which come together to make this community are as follows:

### URBAN FARMING

- Growing food in individual plots or larger plots for farming.
- Green houses and raised beds
- Protecting the soil

### WATER MANAGEMENT

- Storage of water in cisterns through rainwater collection systems
- Distribution through the site and its resultant filtration
- Permeable surfaces

### WALKABILITY

- Smaller blocks and shared street systems
- Reducing dependence on automobiles by promoting use of bikes



### Creating a climate resilient community

The proposal concentrates on farming as a source of nutrition and a binding concept for community development. As water is an important source for this and its efficient storage and distribution forms the core of the design. Housing with emphasis to passive systems for wind and sunlight are proposed to occupy the center of the site while the front, rear and the NE side are dedicated to farming. The housing has a small portion of their dedication to small scale growing and gardening in the spirit of the communal concept. The site also features community-building established on cultivation such as barns, restaurants and communal kitchens. These then extrapolate to create a food-based community thus urbanizing the intersection with the understanding of its existing conditions of use. The four quadrants of the intersection prosper from the idea of growing food and feature market spaces for the selling of food, food halls for the supply of processed food and expanded housing communities which develop on this food system.



Illustration: R Fresson/The Guardian

Why would a **half-degree** rise in temperature create a climate concern?



## EXTREME WEATHER

100% INCREASE IN FLOOD RISK

→ 170%



## WATER AVAILABILITY

350 MILLION URBAN RESIDENTS EXPOSED TO SEVERE DROUGHT BY 2100.

→ 410 MILLION



## MELTING ICE CAPS

ICE-FREE SUMMERS IN THE ARCTIC AT LEAST ONCE EVERY 100 YEARS.

→ EVERY 10 YEARS.



## SEA-LEVEL RISE

46 MILLION PEOPLE IMPACTED BY SEA-LEVEL RISE OF 48CM BY 2100.

→ 49 MILLION PEOPLE

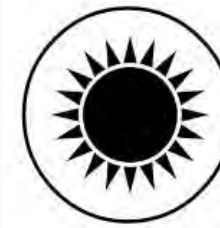


## CORAL BLEACHING

70% OF WORLD'S CORAL REEFS ARE LOST BY 2100.

→ ALL CORAL REEFS ARE LOST

DATA SOURCE: <https://www.wwf.org.uk/updates/our-warming-world-how-much-difference-will-half-degree-really-make>



## HEAT WAVES

9% OF THE WORLD'S POPULATION (700 MILLION PEOPLE) WILL BE EXPOSED TO EXTREME HEAT WAVES AT LEAST ONCE EVERY 20 YEARS.

→ 28%



## SPECIES

6% OF INSECTS, 8% OF PLANTS, 4% OF VERTEBRATES WILL BE AFFECTED.

→ 18% INSECTS, 16% PLANTS, VERTEBRATE



## FOOD

EVERY HALF DEGREE WARMING WILL CONSISTENTLY LEAD TO LOWER YIELDS AND LOWER NUTRITIONAL CONTENT IN TROPICAL REGIONS.

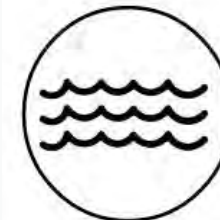
→ LOWER YIELDS AND LOWER NUTRITIONAL CONTENT



## COSTS

LOWER ECONOMIC GROWTH AT 2°C THAN AT 1.5°C FOR MANY COUNTRIES, PARTICULARLY LOW-INCOME COUNTRIES

→ LOWER ECONOMIC GROWTH



## OCEAN

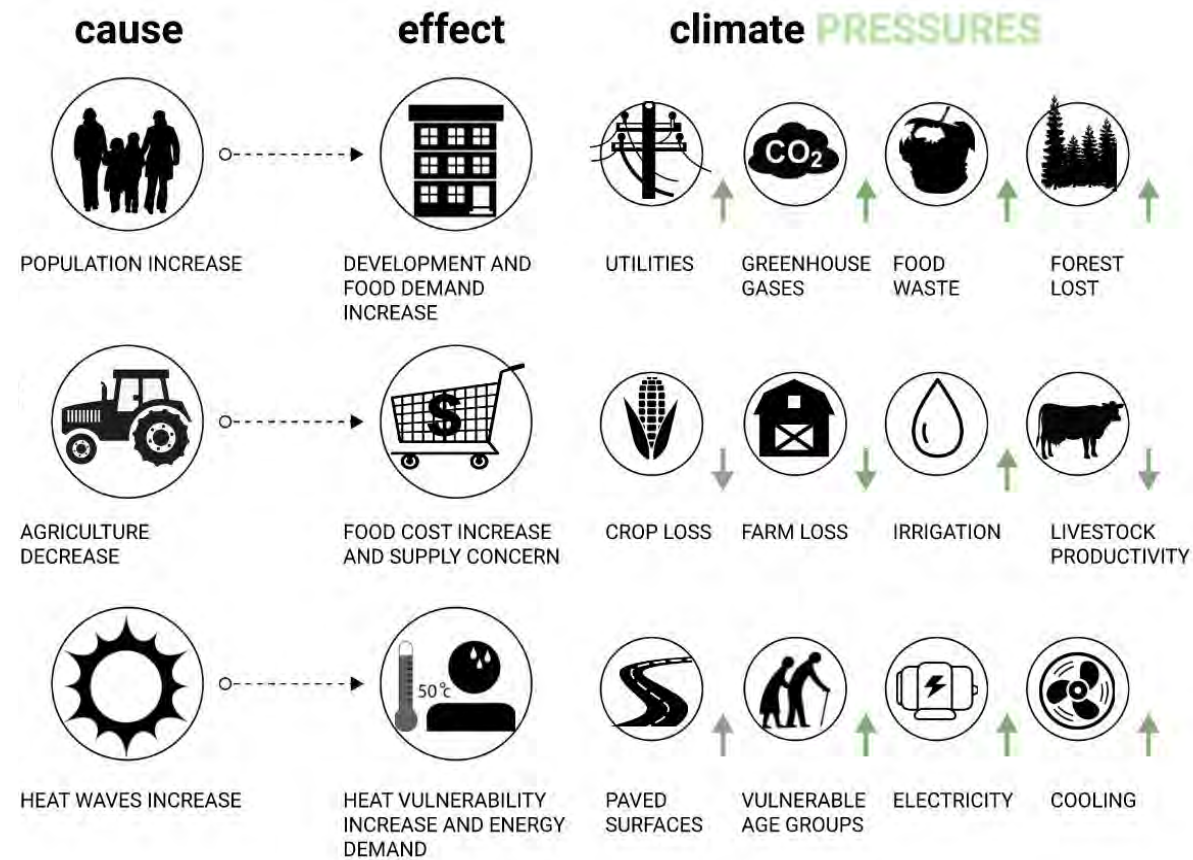
LOWER RISKS TO MARINE BIODIVERSITY, ECOSYSTEMS AND THEIR ECOLOGICAL FUNCTIONS AND SERVICES AT 1.5°C COMPARED TO 2°C.

→ HIGHER RISKS TO ECOSYSTEMS

A **half-degree** rise in temperature would affect millions of people.

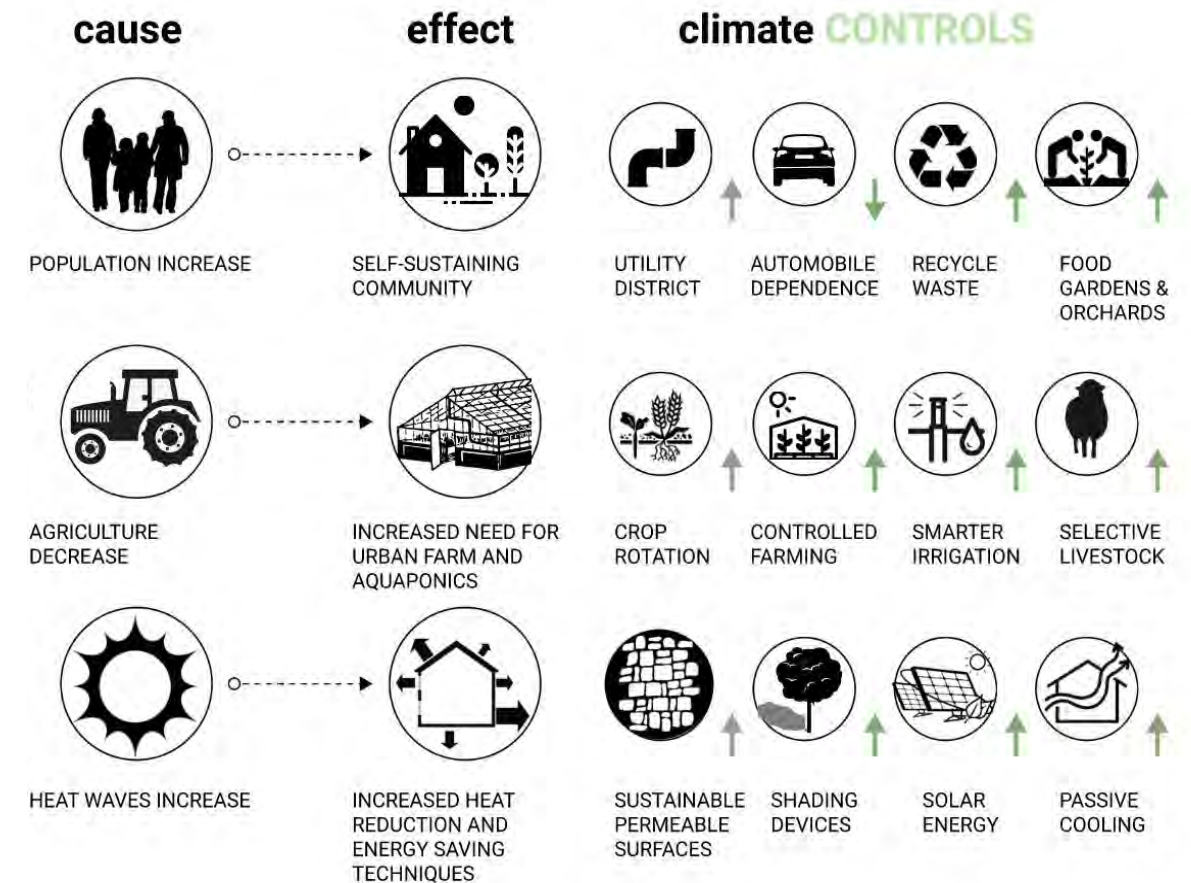
# DEGREE OF CONCERN: REGIONAL

## IDENTIFYING CLIMATE PRESSURES TO PREVENT



# DEGREE OF CONCERN: LOCAL

## IDENTIFYING CLIMATE CONTROLS TO IMPLEMENT



### CLIMATE MIGRATION

As sea levels rise due to global warming, many coastal cities will be forced to migrate. Georgia's urban areas are attractive for these refugees and will see an influx in population.

### FLOODS AND DROUGHTS

Increasing severe storms can result in flash flooding during growing seasons as well as periodic droughts which can greatly affect farmers' abilities to harvest crops.

### URBAN HEAT ISLAND

As temperatures rise due to global warming, vulnerable populations have seen deaths from extreme heat. The energy consumption of buildings has greatly increased to meet the cooling demands.

### CLIMATE MIGRATION

As populations increase from climate migration, we can begin to design smarter communities that are self-sustaining.

### FLOODS AND DROUGHTS

To combat the increased floods and droughts, we want to control water at both periods in time to reduce crop impact and save on irrigation.

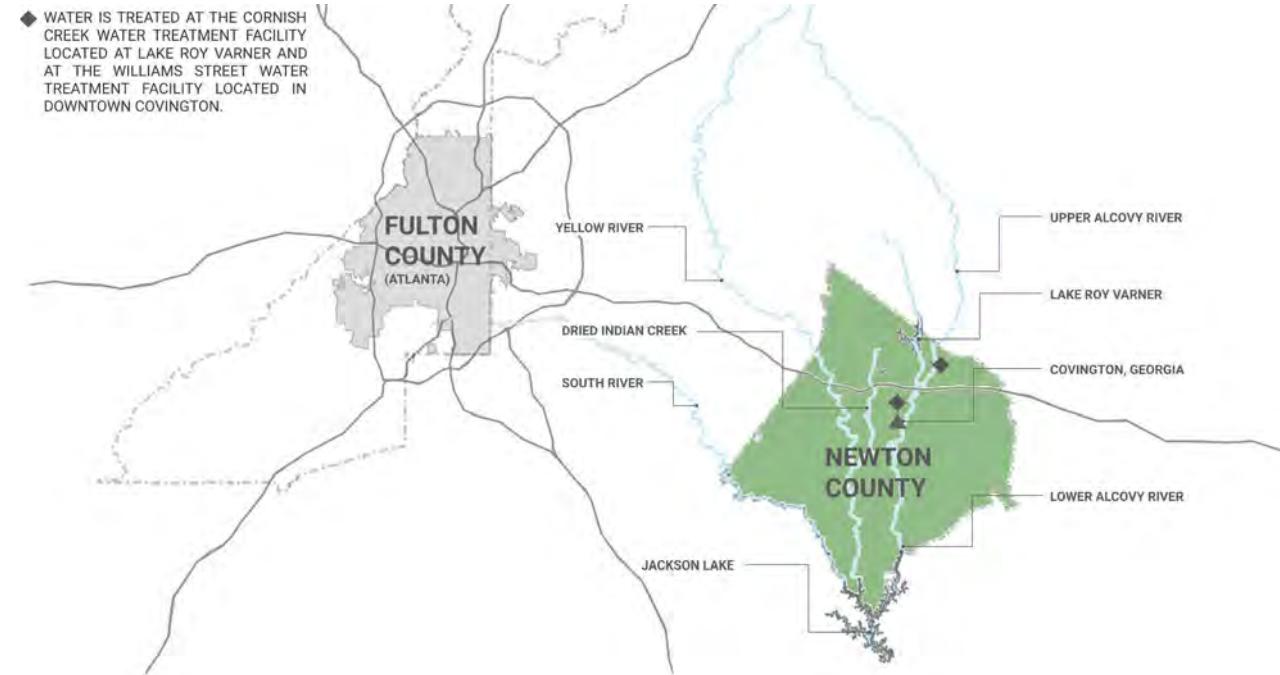
### URBAN HEAT ISLAND

As we experience extreme heat waves, we want to implement heat reduction and energy saving techniques that will create a more walkable environment and sustainable home.

# REGIONAL ANALYSIS

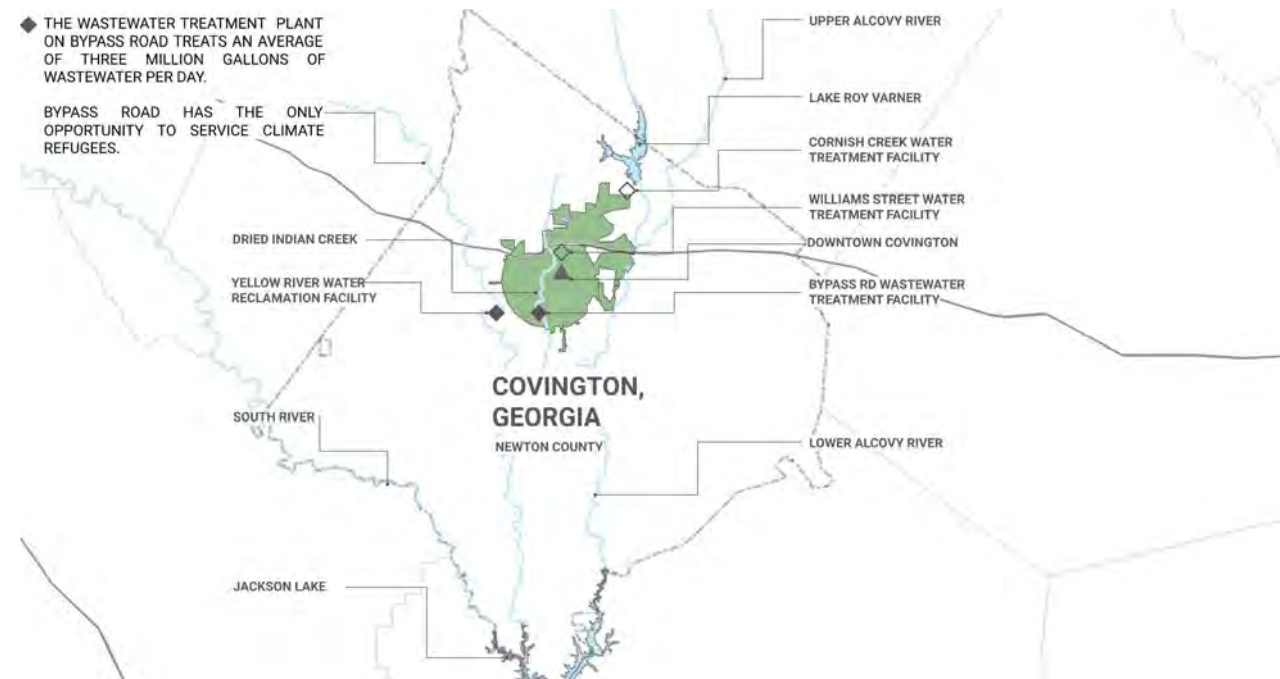
## IDENTIFYING REGIONAL WATER AND CONNECTIVITY

### REGIONAL



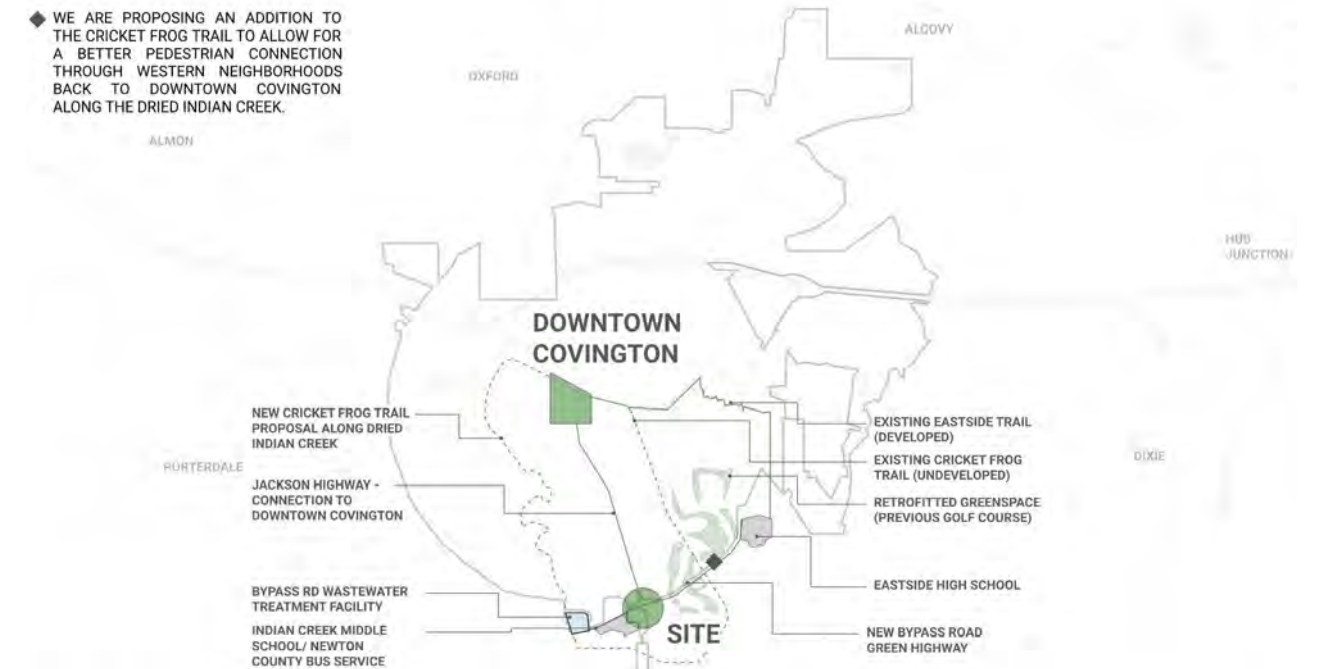
IDENTIFYING WATER SOURCES AND SUPPLIES TO PROTECT

### NEWTON



IDENTIFYING WASTE MANAGEMENT TO CREATE UTILITY NETWORK

### COVINGTON



IDENTIFYING CONNECTIONS TO DOWNTOWN COVINGTON

### SITE



PROPOSED KEY RELATIONSHIPS AT THE SITE LEVEL

# SITE ANALYSIS

## DECONSTRUCTING THE 30-YEAR REGULATING PLAN



30-YEAR PROPOSAL

- |                       |                |
|-----------------------|----------------|
| COMMUNITY             | SINGLE         |
| LIVE/WORK             | DUPLEX         |
| MIXED USE             | QUAD           |
| FARMING               | STREETS        |
| MARKET/PRODUCE        | RECREATION     |
| RESTAURANT/FOOD TRUCK | GROW           |
| COMMERCIAL            | GREENHOUSE     |
| LEARNING              | ORCHARD        |
| PRIMARY FRONTAGE      | TERMINAL VISTA |
| QUADRANT BOUNDARY     | LOT LINES      |

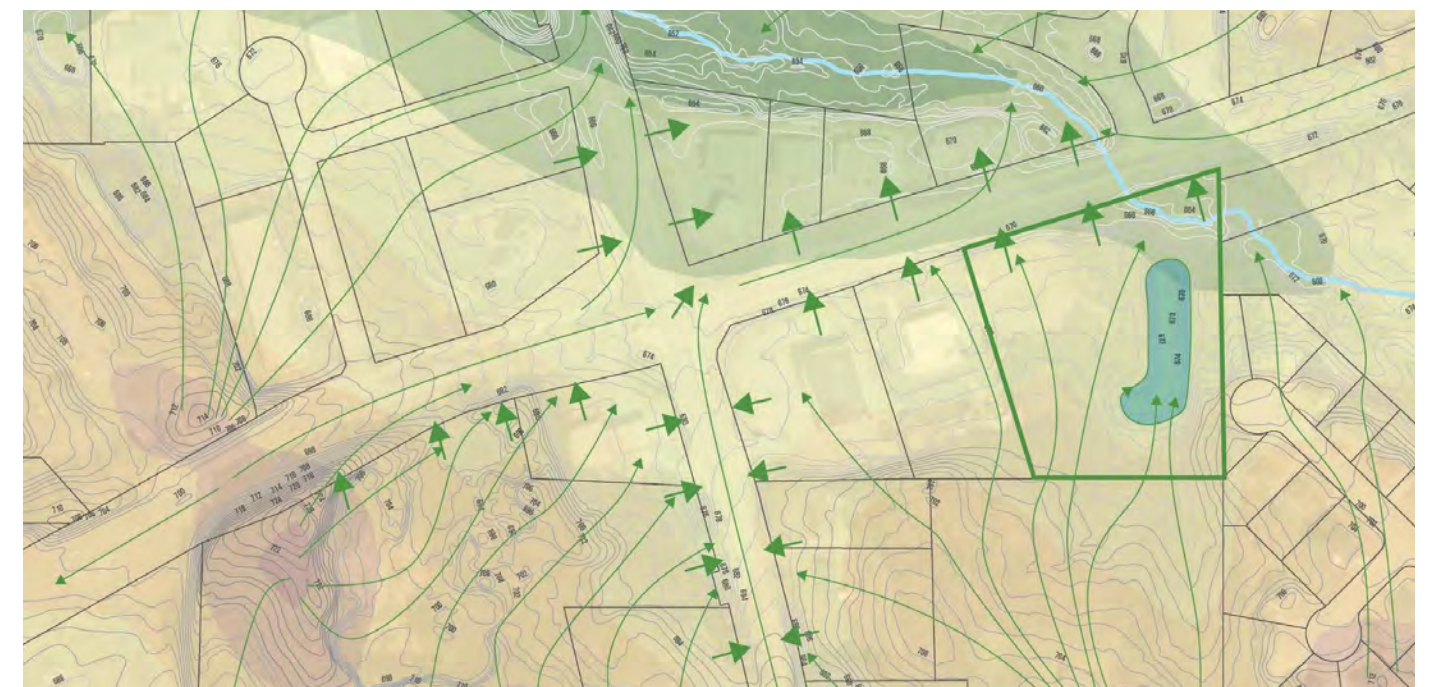
### 30-YEAR REGULATING PLAN

THE CITY OF COVINGTON NORTH SIDE FOCUSES ON AN URBAN INNER CORE FACING THE MAIN ROADS AND A FARMING OUTER CORE. THE FARMING COMPONENT ACTS AS A GREEN BARRIER TO THE CREEK.

THE NEWTON COUNTY SOUTH SIDE MAINTAINS AN URBAN INNER CORE, THAT BEGINS TO INTEGRATE A RESIDENTIAL INTO THE FARMING OUTER CORE.



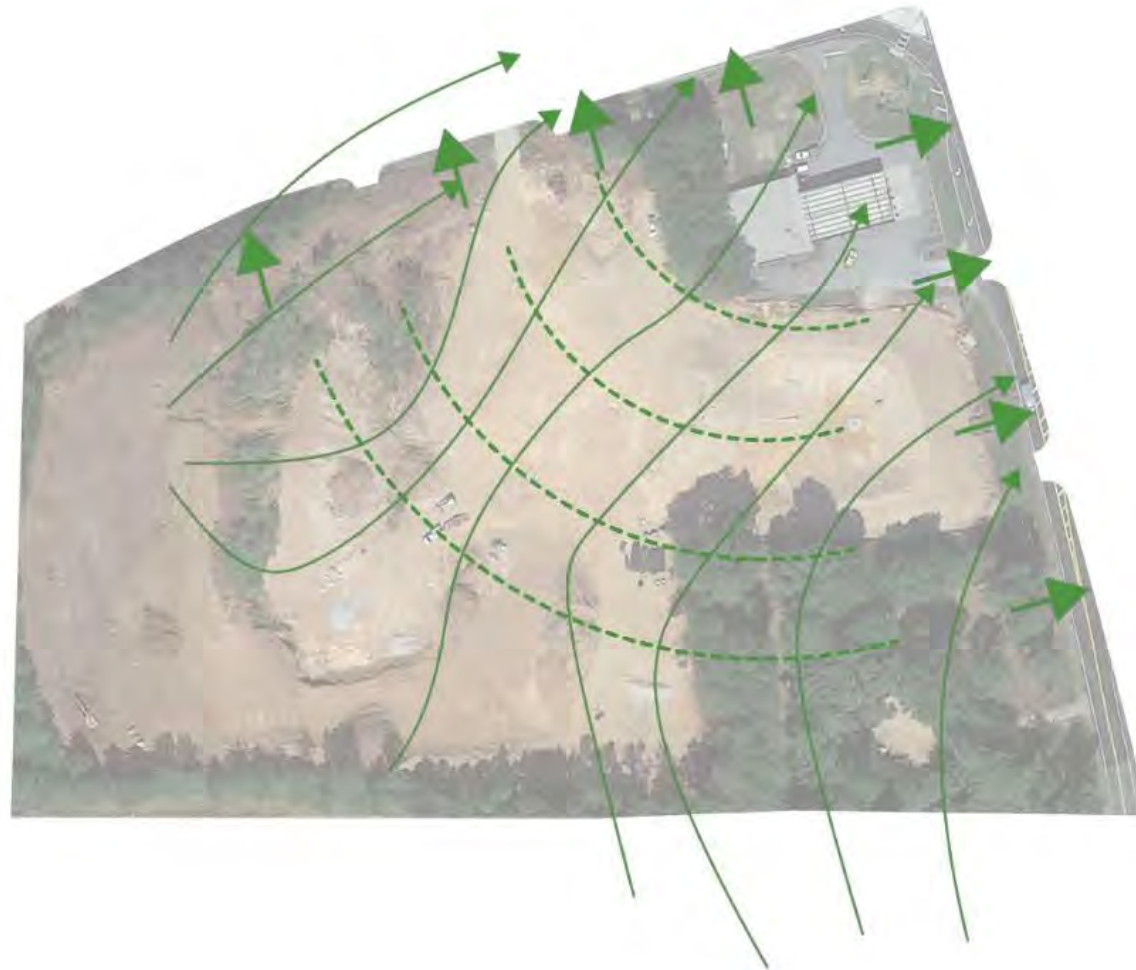
IDENTIFYING SOIL QUALITY FOR FUTURE FARMING AND DEVELOPMENT



IDENTIFYING WATER MANAGEMENT FOR LOCATING URBAN FARMING

# SOUTHWEST QUADRANT

REGROWING THE FOREST AS AN ORCHARD



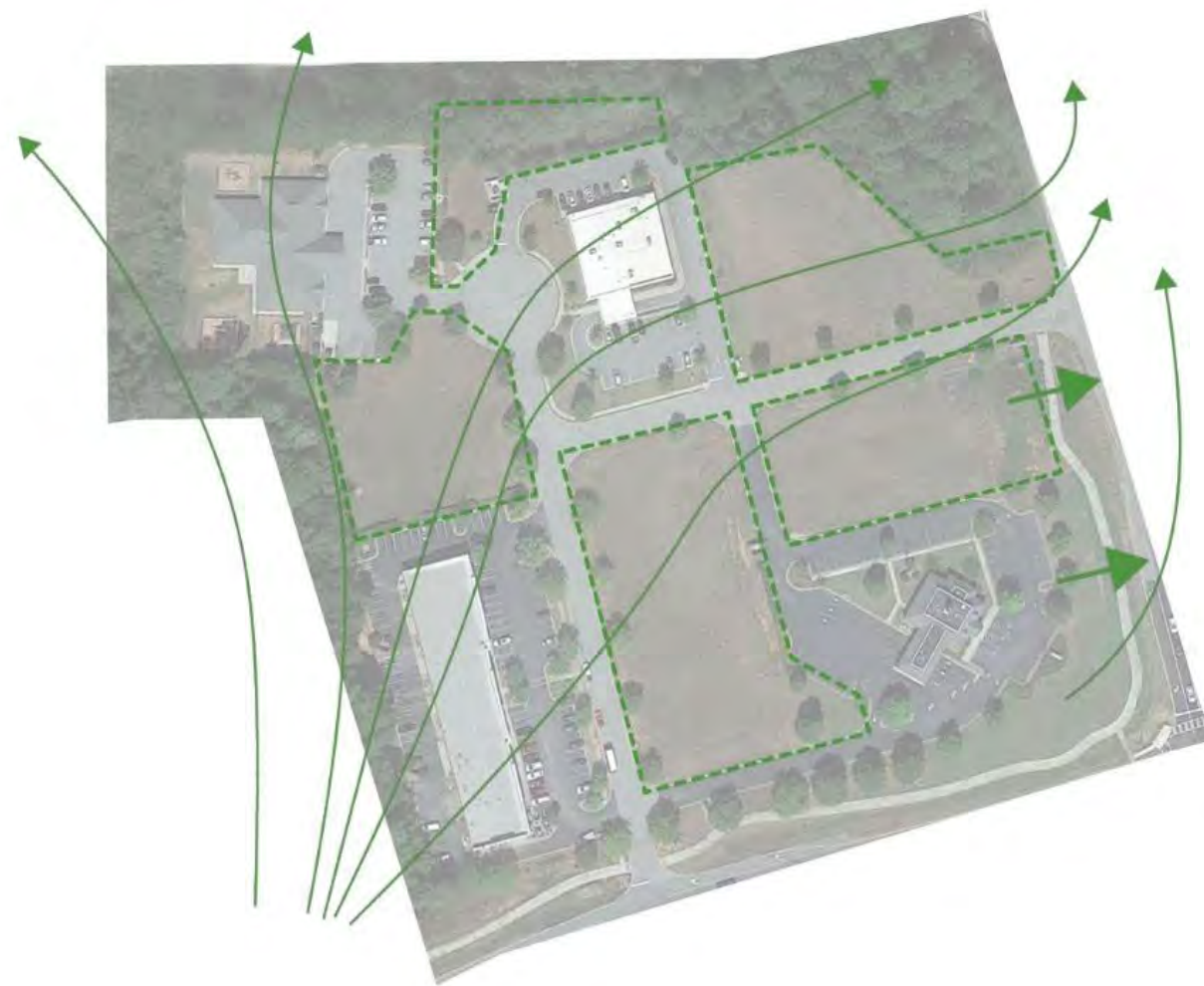
- WATER FLOWS FROM THE SOUTHWEST CORNER TO THE NORTH AND EAST SIDES OF THE DEVELOPMENT. CLEANING AND CAPTURING THIS WATER BEFORE IT REACHES THE MAIN STREETS IS IMPORTANT TO THE DESIGN.
- WE WANT TO MAINTAIN AN ORCHARD ON THE SOUTHWEST SIDE OF THE DEVELOPMENT TO RESTORE TREES AND PROVIDE FOOD FOR THE AREA.
- THE ORIGINAL GAS STATION IS A CONTAMINATED SOIL SITE, GROWING HERE WILL BE DIFFICULT. WE SUGGEST A RECREATION SPACE AND RESTAURANT CORNER THAT COMPLIMENT THE RAW PRODUCE SALES ACROSS THE STREET.



COMMUNITY	SINGLE	MARKET/PRODUCE	RECREATION
LIVE/WORK	DUPLEX	RESTAURANT/FOOD TRUCK	GROW
MIXED USE	QUAD	COMMERCIAL	GREENHOUSE
FARMING	STREETS	LEARNING	ORCHARD
QUADRANT BOUNDARY	LOT LINES	PRIMARY FRONTAGE	TERMINAL VISTA

# NORTHWEST QUADRANT

BUILDING ON THE PARKING AND GROWING ON THE LAWNS



- WATER FLOWS FROM THE SOUTHWEST CORNER TO THE NORTH SIDE OF THE DEVELOPMENT. CLEANING AND CAPTURING THIS WATER BEFORE IT REACHES THE CREEK IS IMPORTANT TO THE DESIGN.
- THE EXISTING DISTURBED SOIL CAN BE CONVERTED TO GROWING PLOTS THAT UTILIZE THE WATER FLOW PATTERNS FOR IRRIGATION.

COMMUNITY	SINGLE	MARKET/PRODUCE	RECREATION
LIVE/WORK	DUPLEX	RESTAURANT/FOOD TRUCK	GROW
MIXED USE	QUAD	COMMERCIAL	GREENHOUSE
FARMING	STREETS	LEARNING	ORCHARD
QUADRANT BOUNDARY	LOT LINES	PRIMARY FRONTAGE	TERMINAL VISTA

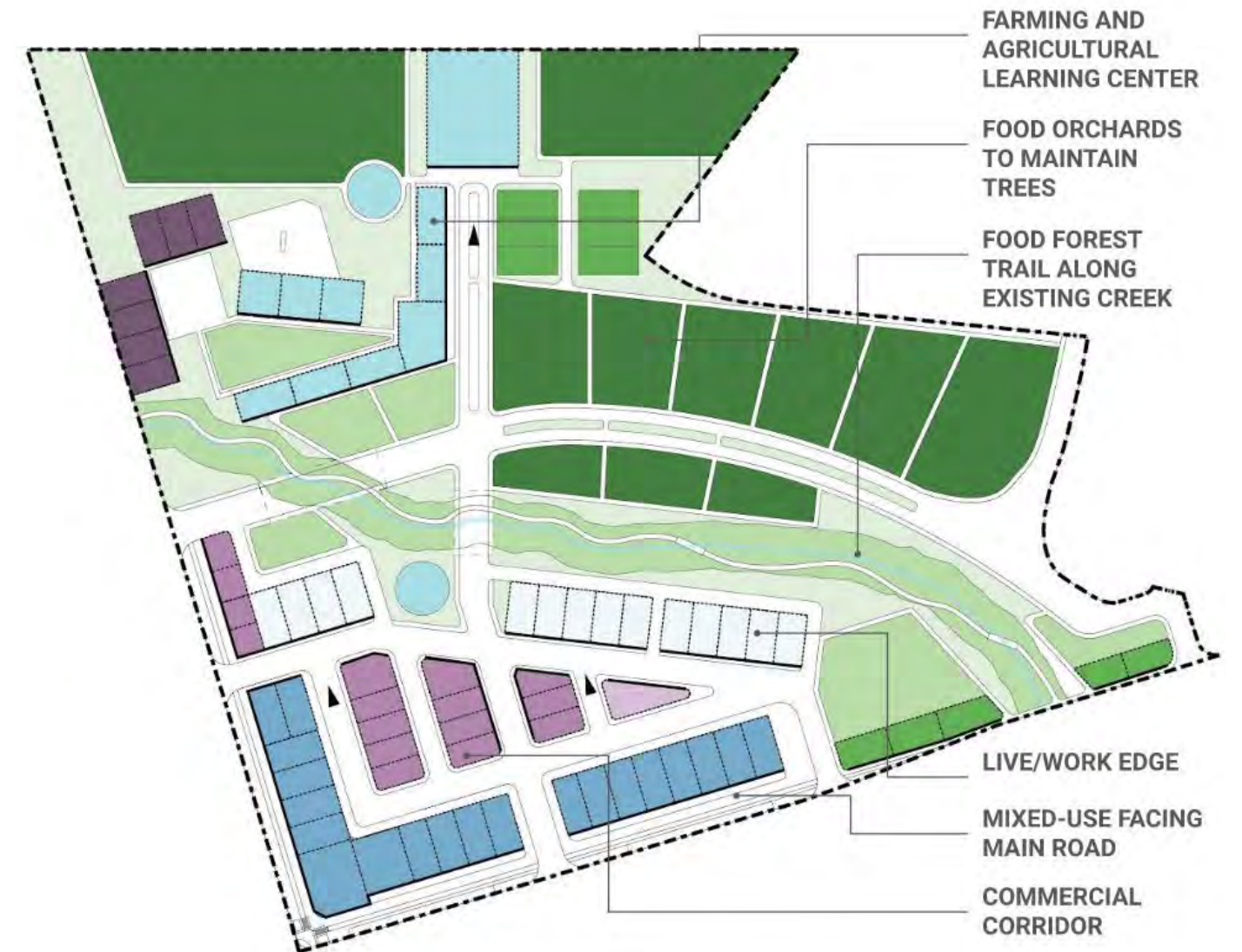


# NORTHEAST QUADRANT

PRESERVING THE FOREST AND MAXIMIZING THE CREEK



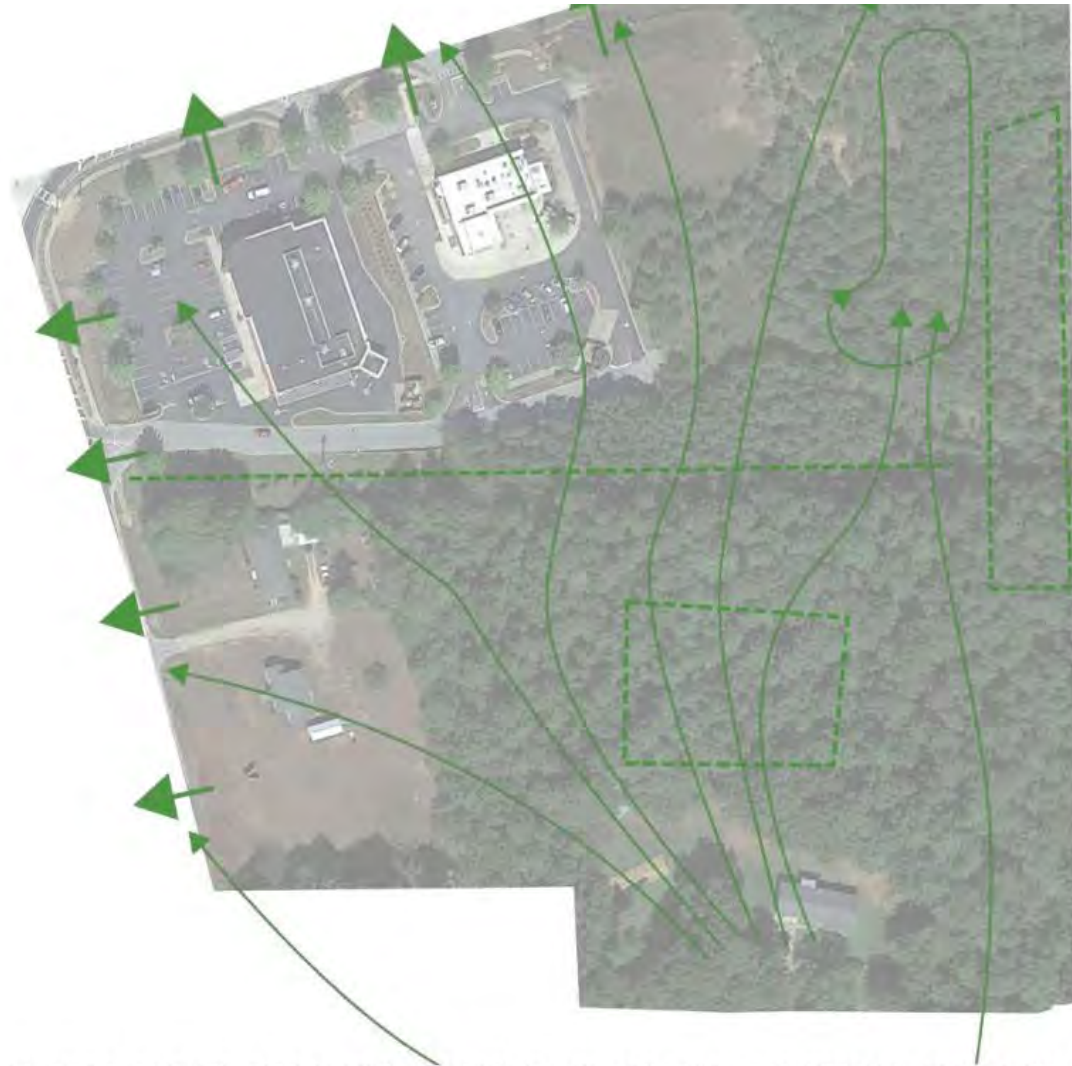
- STOPPING THE CONTAMINATED WATER FROM THE SOUTHWEST PORTION OF THE SITE FROM ENTERING THE CREEK AND MAXIMIZING THE GROWTH POTENTIAL OF BUILDING ON THE ENRICHED SOIL NEAR THE CREEK ARE KEY TO THIS DESIGN.
- MAINTAINING AS MUCH AREA FOR THE GROWTH OF TREES WITHOUT FURTHERING DEVELOPMENT NORTH IS A CONSCIOUS CLIMATE CHANGE CONTROL WE ARE EMPLOYING.



COMMUNITY	SINGLE	MARKET/ PRODUCE	RECREATION
LIVE/WORK	DUPLEX	RESTAURANT/ FOOD TRUCK	GROW
MIXED USE	QUAD	COMMERCIAL	GREENHOUSE
FARMING	STREETS	LEARNING	ORCHARD
QUADRANT BOUNDARY	LOT LINES	PRIMARY FRONTAGE	TERMINAL VISTA

# SOUTHEAST QUADRANT

LIVE. GROW. SHARE.

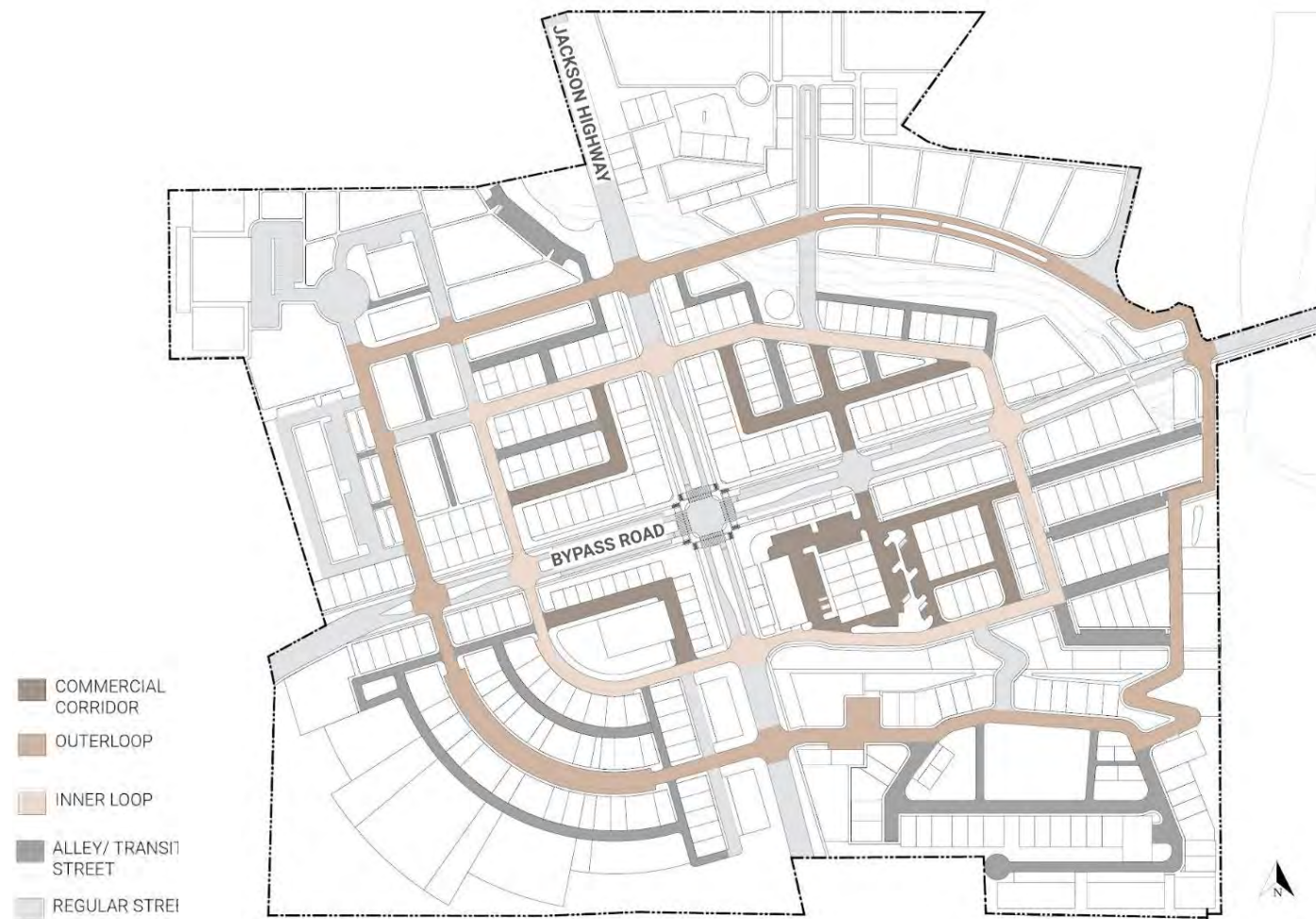


- WATER FLOWS FROM THE SOUTHEAST CORNER TO THE NORTH AND WEST SIDE OF THE DEVELOPMENT. CLEANING AND CAPTURING THIS WATER BEFORE IT REACHES THE STREET IS IMPORTANT TO THE DESIGN.
- THERE IS AN EXISTING RIDGE LINE THAT DIVIDES THE QUADRANT INTO TWO AREAS. REDIRECTING THE SOUTH WATER TO A CENTRAL GREEN SPACE WILL HELP REDUCE THE RUNOFF THAT FALLS ONTO THE NORTH HALF OF THE SITE.
- REPOSITIONING THE DETENTION POND AND WATER RETENTION AREA TO THE PERIMETER OF THE 5-YEAR SITE ALLOWS FOR MORE DEVELOPMENT.



# STREETS AND ROADS

## DECONSTRUCTING THE 30-YEAR REGULATING PLAN



CREATING BETTER CIRCULATION WITH SUSTAINABLE MATERIALS

### PLACEMAKING AND PERMEABILITY

THE OUTER LOOP MAINTAINS A WIDER RIGHT OF WAY TO SUSTAIN TRACTOR TRAVEL BETWEEN FARMS. THIS LOOP, BEING LESS ACTIVE, ALLOWS FOR SHARED ACCESS BY PEDESTRIANS.

THE INNER LOOP CONTAINS THE COMMERCIAL AND LIVE/WORK AREAS.

THE COLORS INDICATE A CHANGE IN PERMEABLE MATERIAL BETWEEN AREAS.



CREATING A MORE FRIENDLY PEDESTRIAN ENVIRONMENT

### WALKABILITY AND ACCESSIBILITY

THE DESIGN CREATES MORE WALKABILITY AND BIKEABILITY TO DESIGNATED GREEN SPACES AND DESTINATIONS.

THE ROAD SYSTEM REDUCES TRAFFIC SPEED TO INDICATE TO DRIVERS ON THE MAIN ROADS THEY ARE ENTERING A MORE PEDESTRIAN ENVIRONMENT.

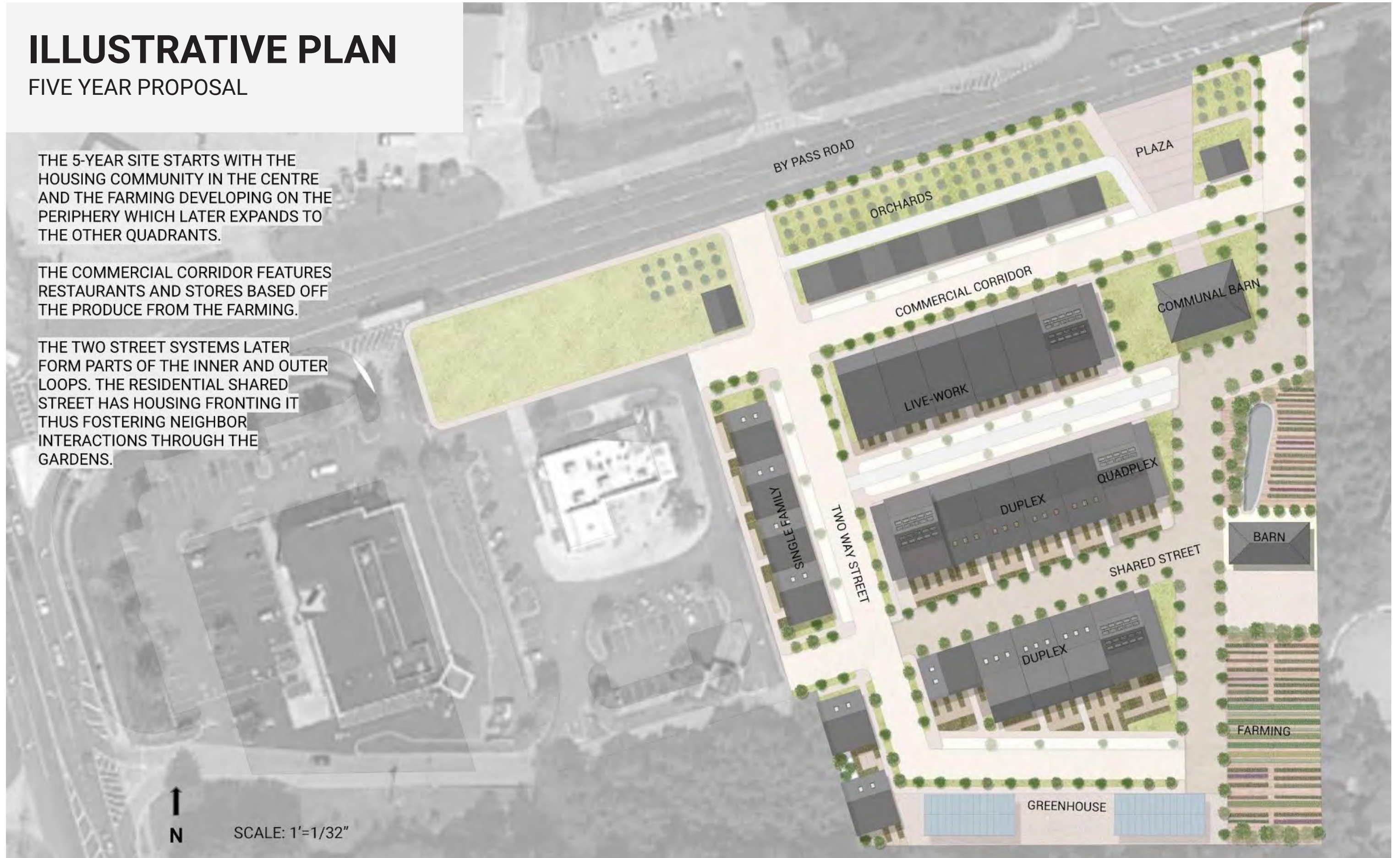
# ILLUSTRATIVE PLAN

## FIVE YEAR PROPOSAL

THE 5-YEAR SITE STARTS WITH THE HOUSING COMMUNITY IN THE CENTRE AND THE FARMING DEVELOPING ON THE PERIPHERY WHICH LATER EXPANDS TO THE OTHER QUADRANTS.

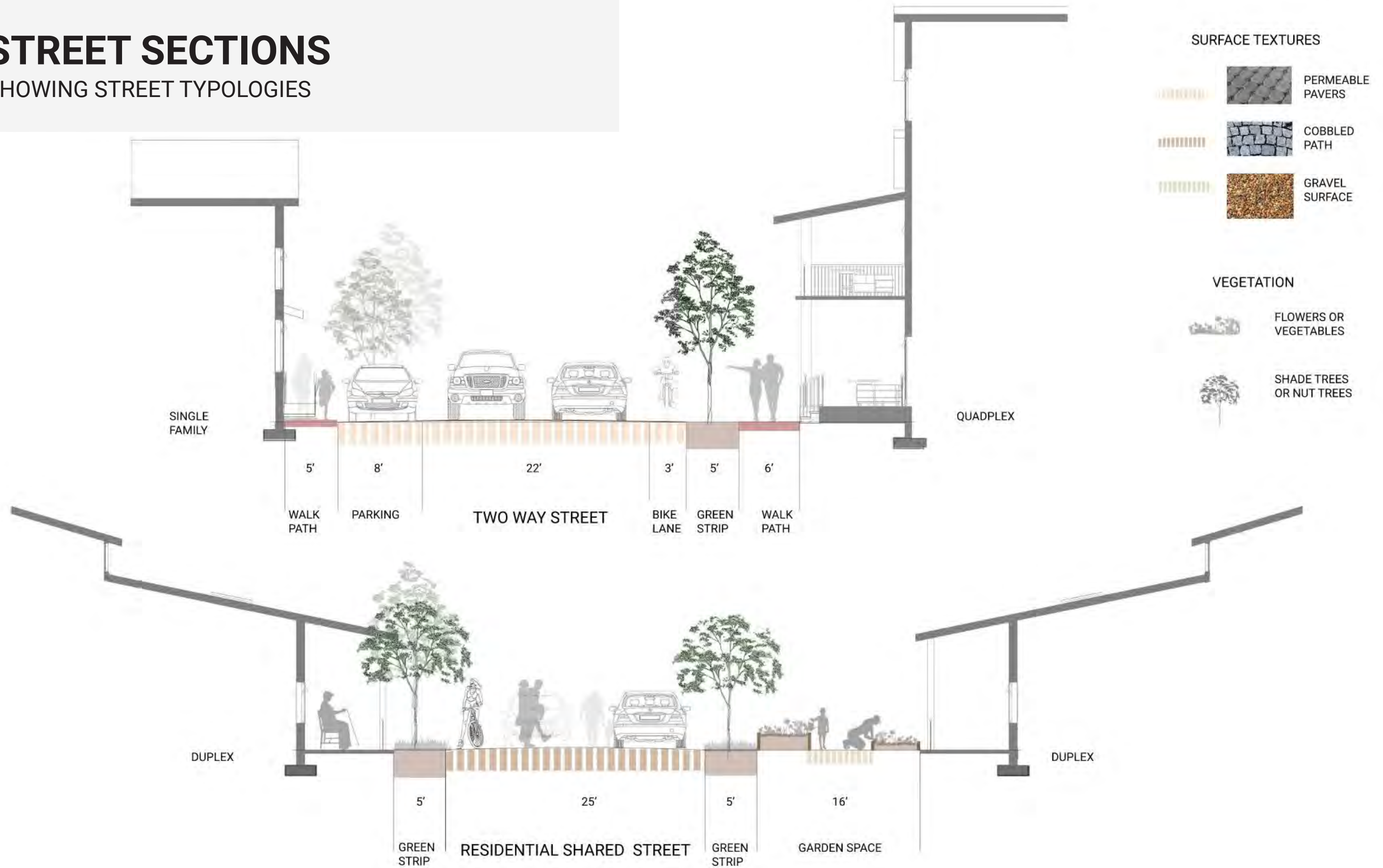
THE COMMERCIAL CORRIDOR FEATURES RESTAURANTS AND STORES BASED OFF THE PRODUCE FROM THE FARMING.

THE TWO STREET SYSTEMS LATER FORM PARTS OF THE INNER AND OUTER LOOPS. THE RESIDENTIAL SHARED STREET HAS HOUSING FRONTING IT THUS FOSTERING NEIGHBOR INTERACTIONS THROUGH THE GARDENS.



# STREET SECTIONS

## SHOWING STREET TYPOLOGIES

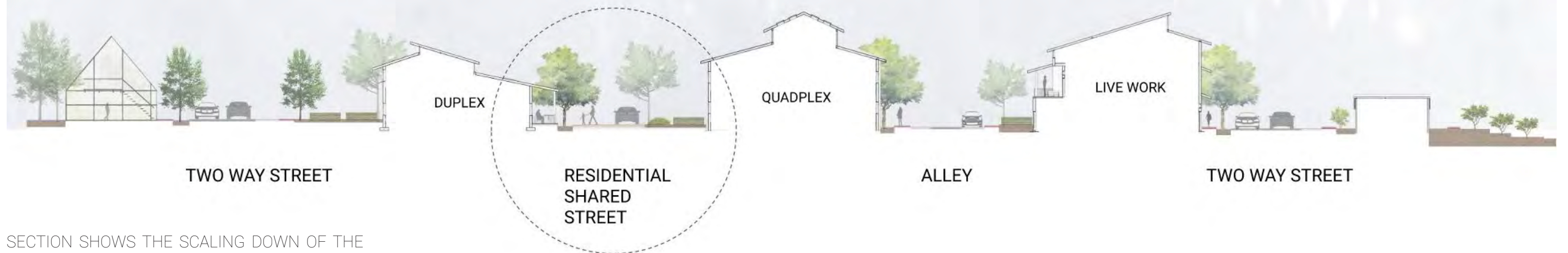


# SITE SECTION

SECTION SHOWING THE REDUCING SCALE OF HOUSING



THE INDIVIDUAL GARDEN PLOTS ENCOURAGE INTERACTIONS BETWEEN THE RESIDENTS AND PEDESTRIANS AND ACROSS THE HOUSING.



SECTION SHOWS THE SCALING DOWN OF THE HOUSING AND THE DIFFERENTIATING SLOPES FOR SOLAR SEQUESTRATION

# SINGLE FAMILY

## ONE UNIT

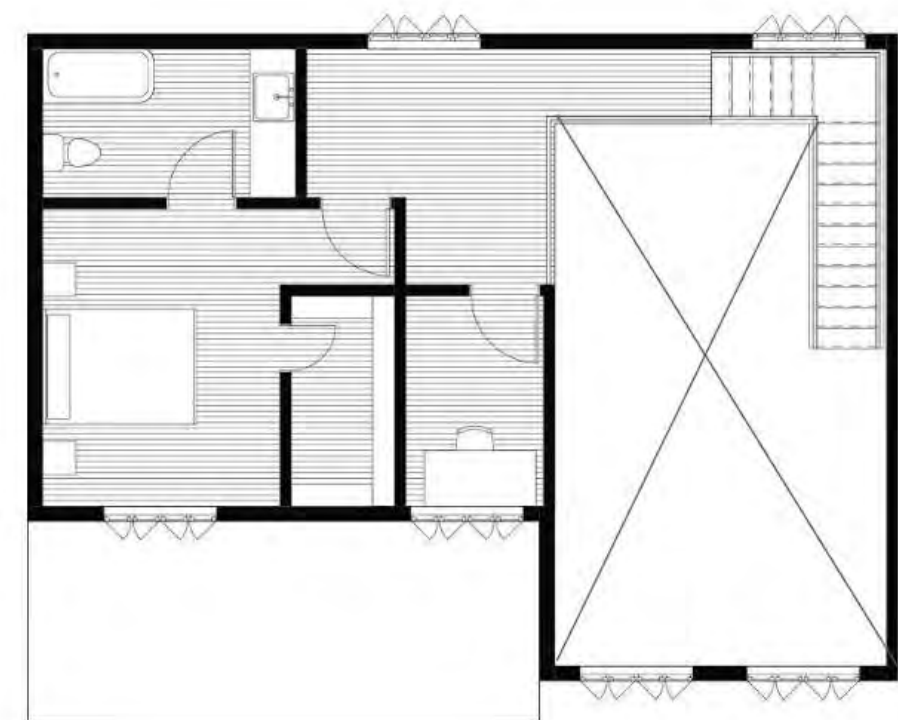
- CAN BE ADAPTED INTO TWO UNITS.
- BACKYARDS PROVISION TO GROW GARDENS AND RAISED BEDS.



SITE LOCATION



FIRST FLOOR



SECOND FLOOR



# SINGLE FAMILY

## SECTION AND STREET ELEVATION

- THE CLERESTORY WINDOW CAPTURES THE NORTH LIGHT ALONG WITH THE SKYLIGHT WHICH SERVICES THE LIVING SPACE.
- OPERABLE WINDOWS ON THE TWO FLOORS HELP CREATE STACK EFFECT.



0 6 12 18 FT

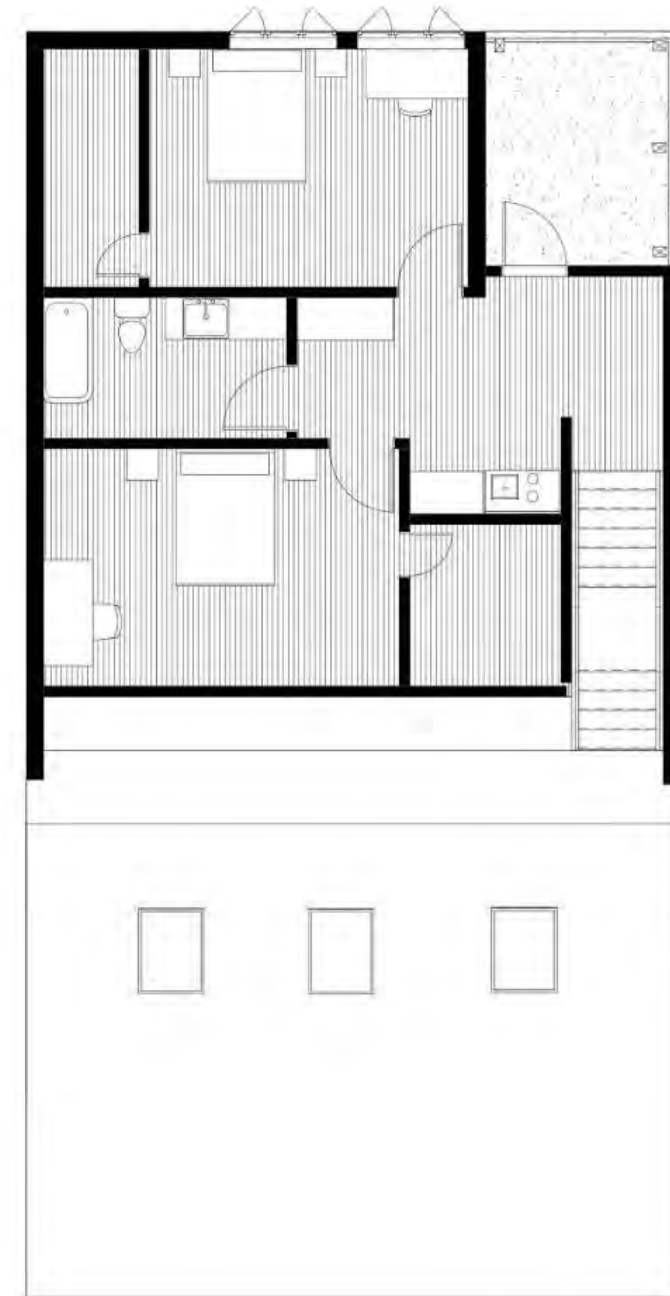


# DUPLEX HOUSING

## CO-HOUSING



SITE LOCATION



SECOND FLOOR



# DUPLEX HOUSING

## SECTIONAL DETAIL AND STREET ELEVATION

- CO- HOUSING WITH ADU UNIT ON FIRST FLOOR AND ANOTHER ON THE SECOND FLOOR.
- PROMOTES INTERGENERATIONAL INTERACTIONS THROUGH SPACE SHARING AND GARDENING.
- THE CLERESTORY WINDOWS ON EITHER SIDES PROVIDE LIGHT AND VENTILATION.
- THE SATIR ACTS AS A WIND TOWER DIRECTING AIR INTO THE SPACE.

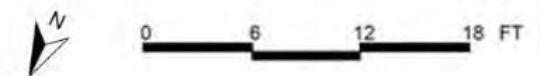
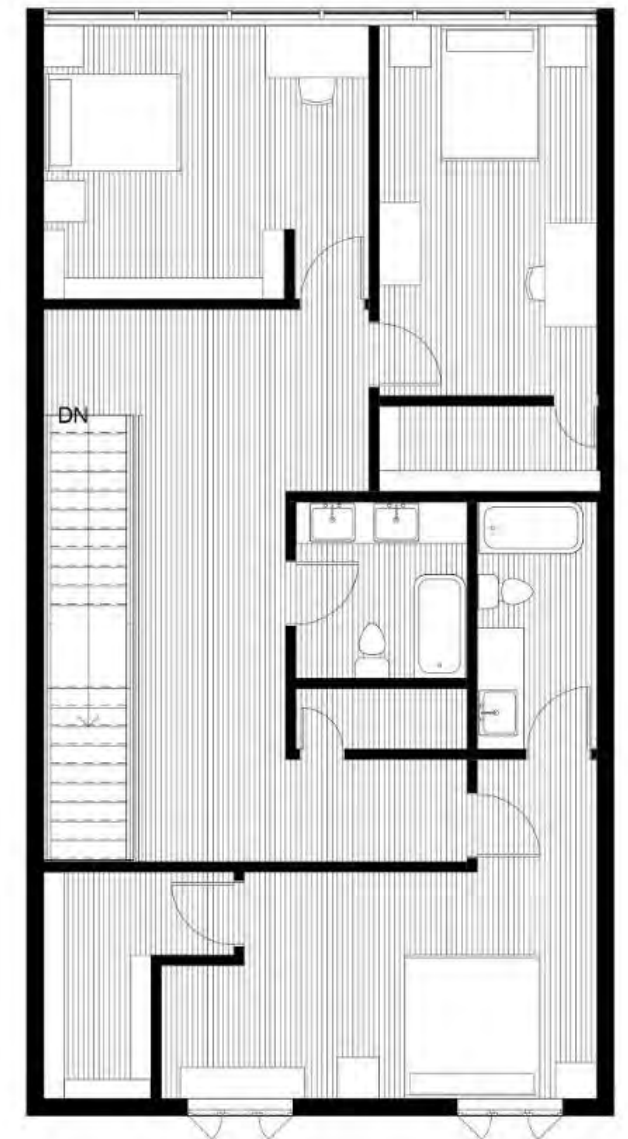
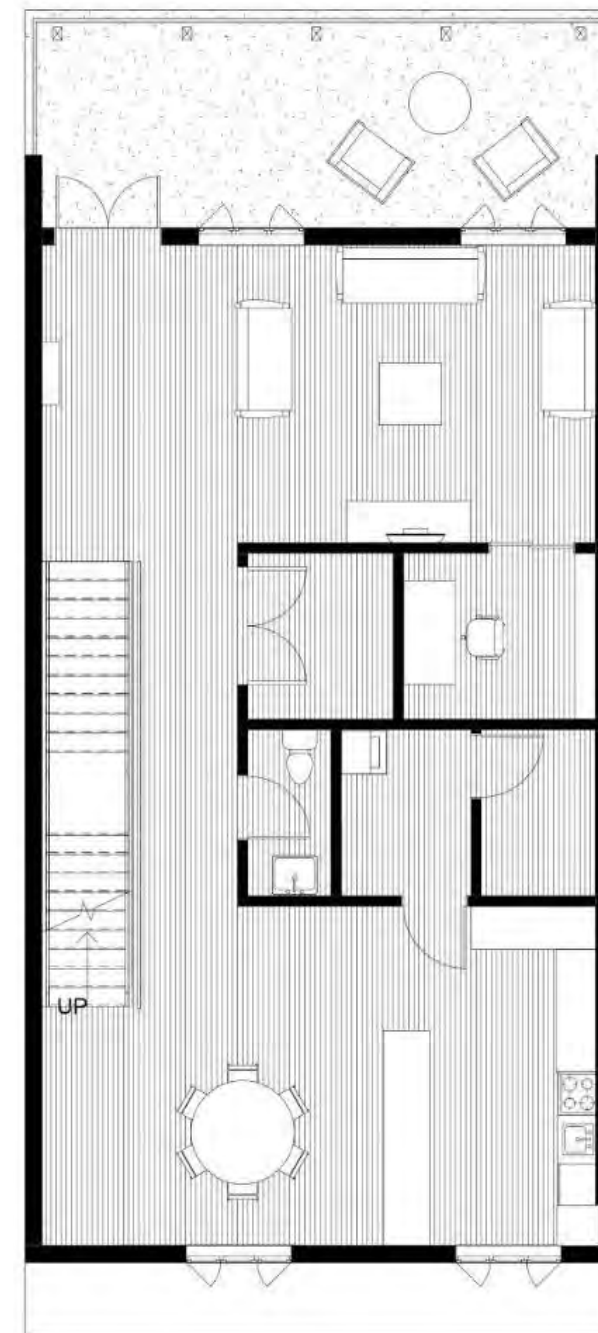


# LIVE-WORK UNIT

## SINGLE UNIT



SITE LOCATION



# LIVE-WORK UNIT

## SECTION SHOWING THE ROOF SLOPES AND THE STAIR CORE

- SINGLE FAMILY UNIT WHICH CAN BE ADAPTED INTO A CO-HOUSING WITH MAXIMUM 4 UNITS.
- FIRST FLOOR CAN BE CONVERTED INTO ADU.
- THE BALCONY PROVIDES BUFFER FROM SOUTH WESTERN RADIATION
- STAIR CORE ACTS AS A DRIVER FOR WIND AND PROVIDES LIGHT.



# LIVE-WORK UNIT

STREET ELEVATION



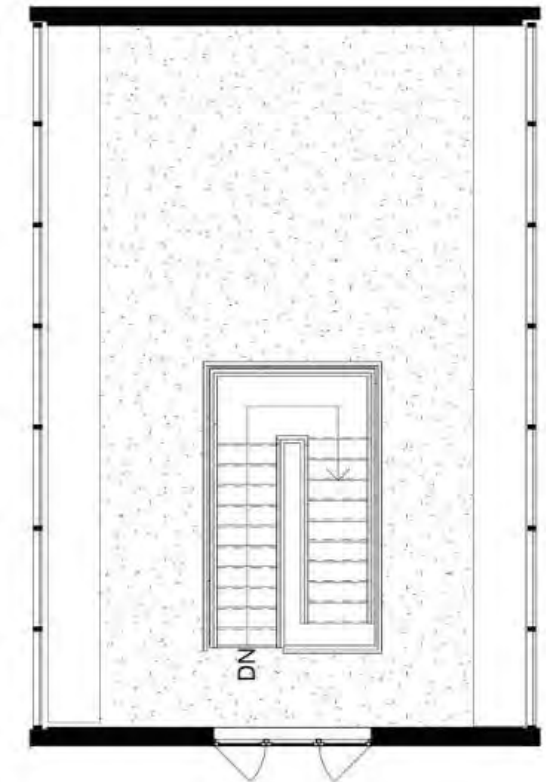
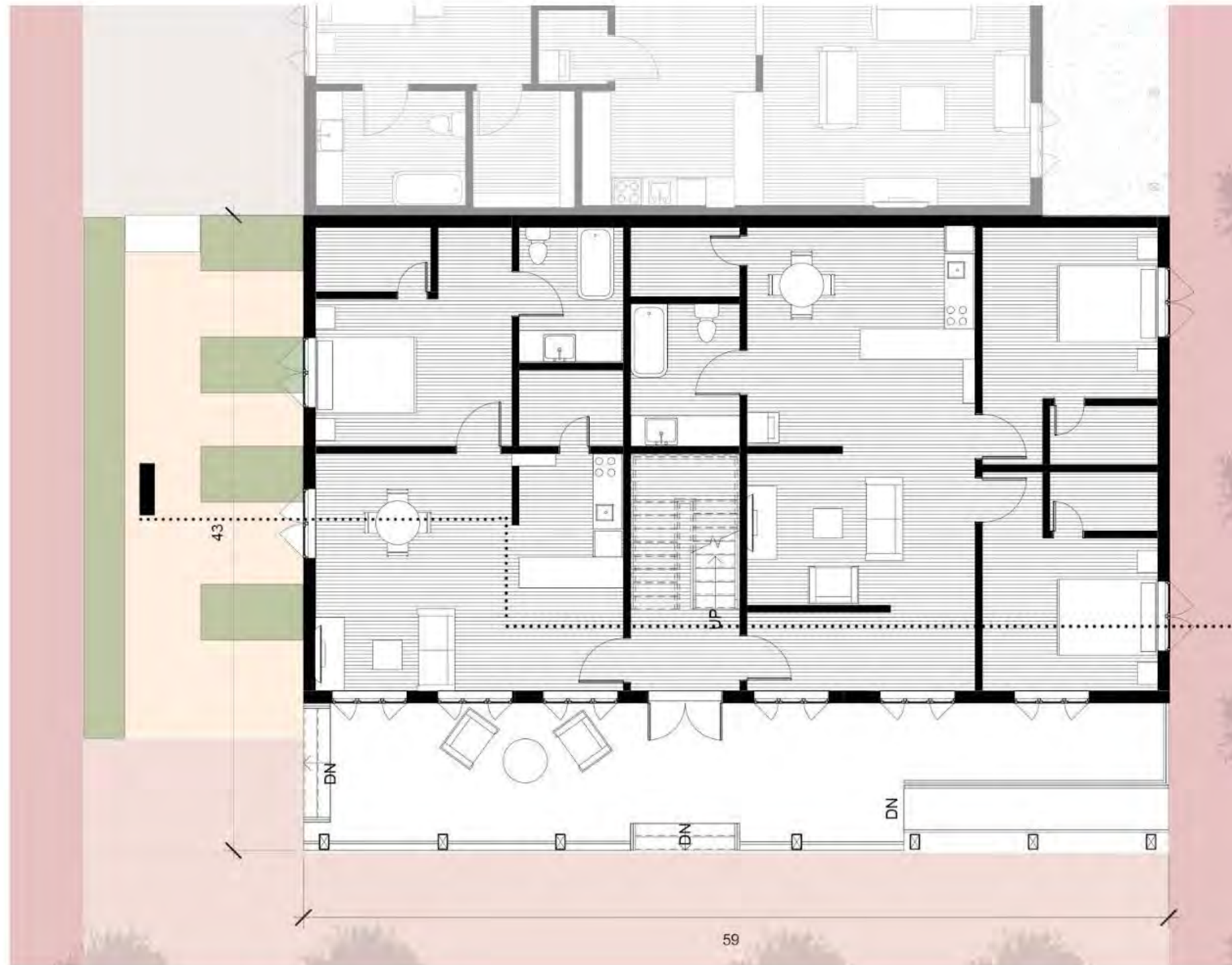
ELEVATION SHOWS THE FRONT OF THE BUILDING WITH THE CLERESTORY WINDOW

# QUADPLEX HOUSING

GARDENS AND GREEN HOUSE



SITE LOCATION



THIRD FLOOR: GREENHOUSE

# QUADPLEX HOUSING

## SECTION FEATURING THE COMMUNAL GREENHOUSE

- FOUR UNITS: TWO 1-BEDROOM AND TWO 2-BEDROOM.
- GREENHOUSE ACTS AS A COMMUNAL SPACE AND FACILITATES AIR MOVEMENT THROUGH THE FLOORS.
- THE OPERABLE SKYLIGHTS PROVIDE LIGHT AND VENTILATION.
- WESTERN PORTION IS BUFFERED BY THE GARDEN.



# QUADPLEX HOUSING

FRONT AND SIDE ELEVATIONS



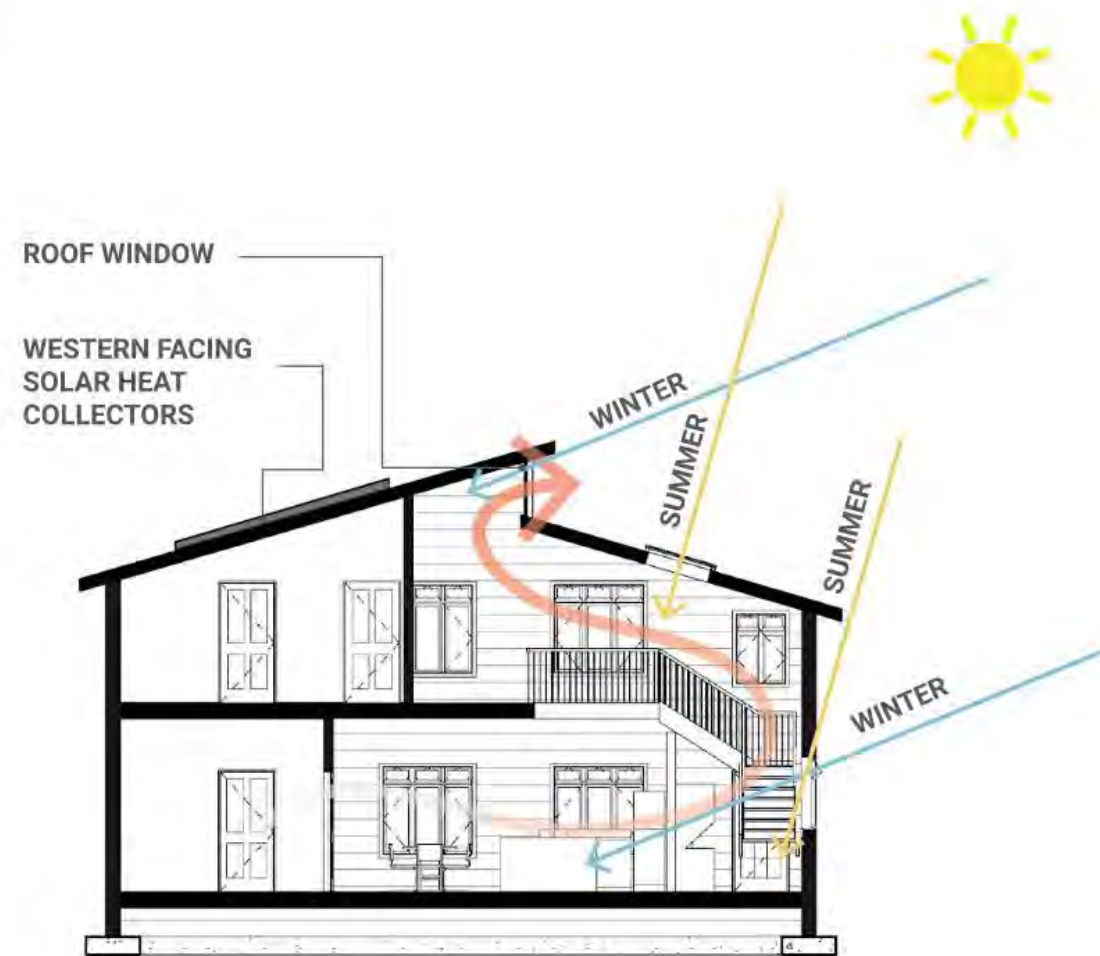
FARMHOUSE FROM THE FRONT AND A GREENHOUSE FROM THE SIDE



# PASSIVE COOLING AND HEAT GAIN

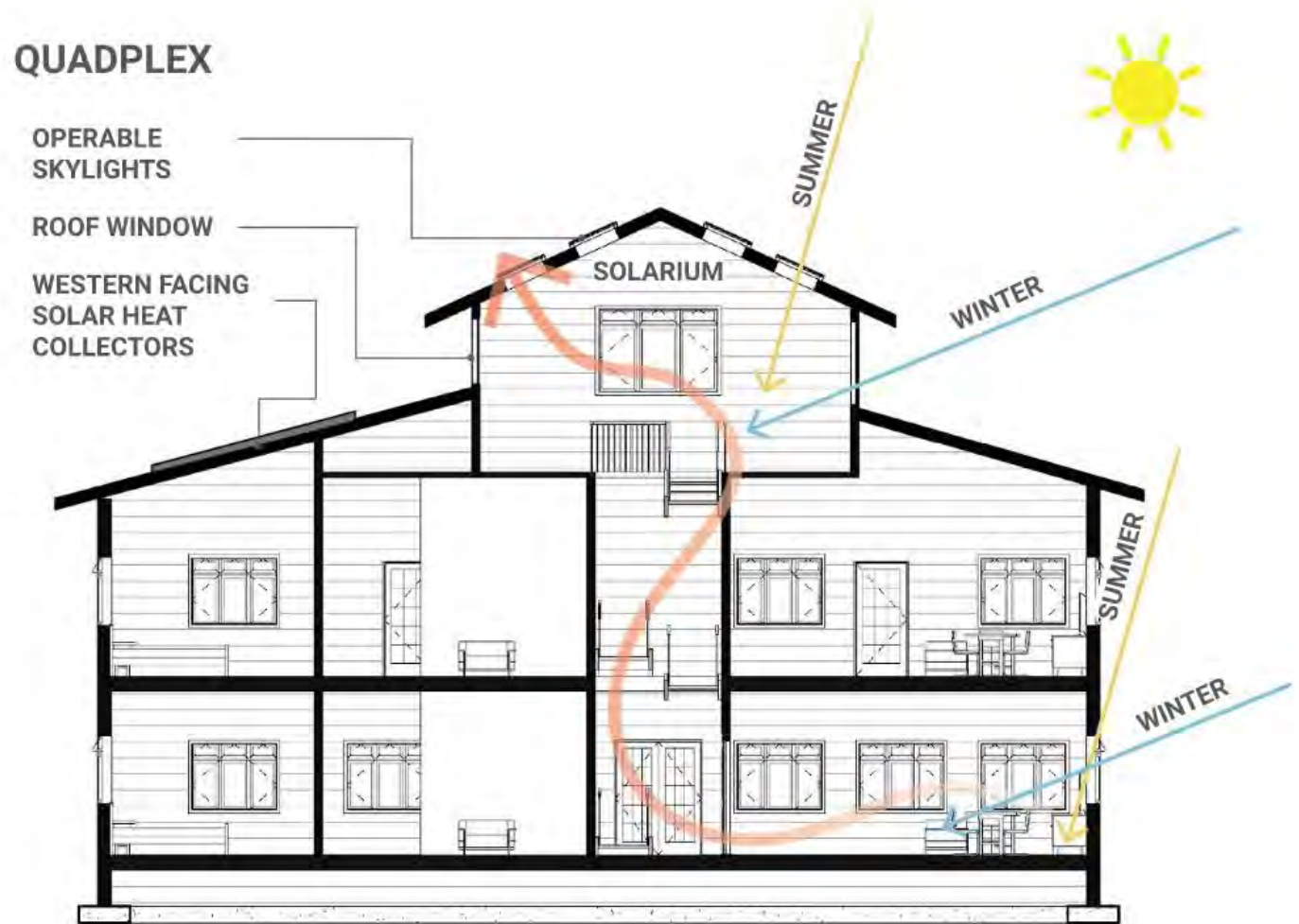
DESIGNING TO REDUCE ENERGY CONSUMPTION USING THE SUN

## SINGLE



- WESTERN FACING SOLAR HEAT COLLECTORS ARE EMPLOYED TO CAPTURE THE MAXIMUM AMOUNT OF SUNLIGHT TO REDUCE HEAT GAIN AND PRODUCE ELECTRICITY.
- ROOF WINDOWS VENT THE WARM SUMMER AIR.

## QUADPLEX

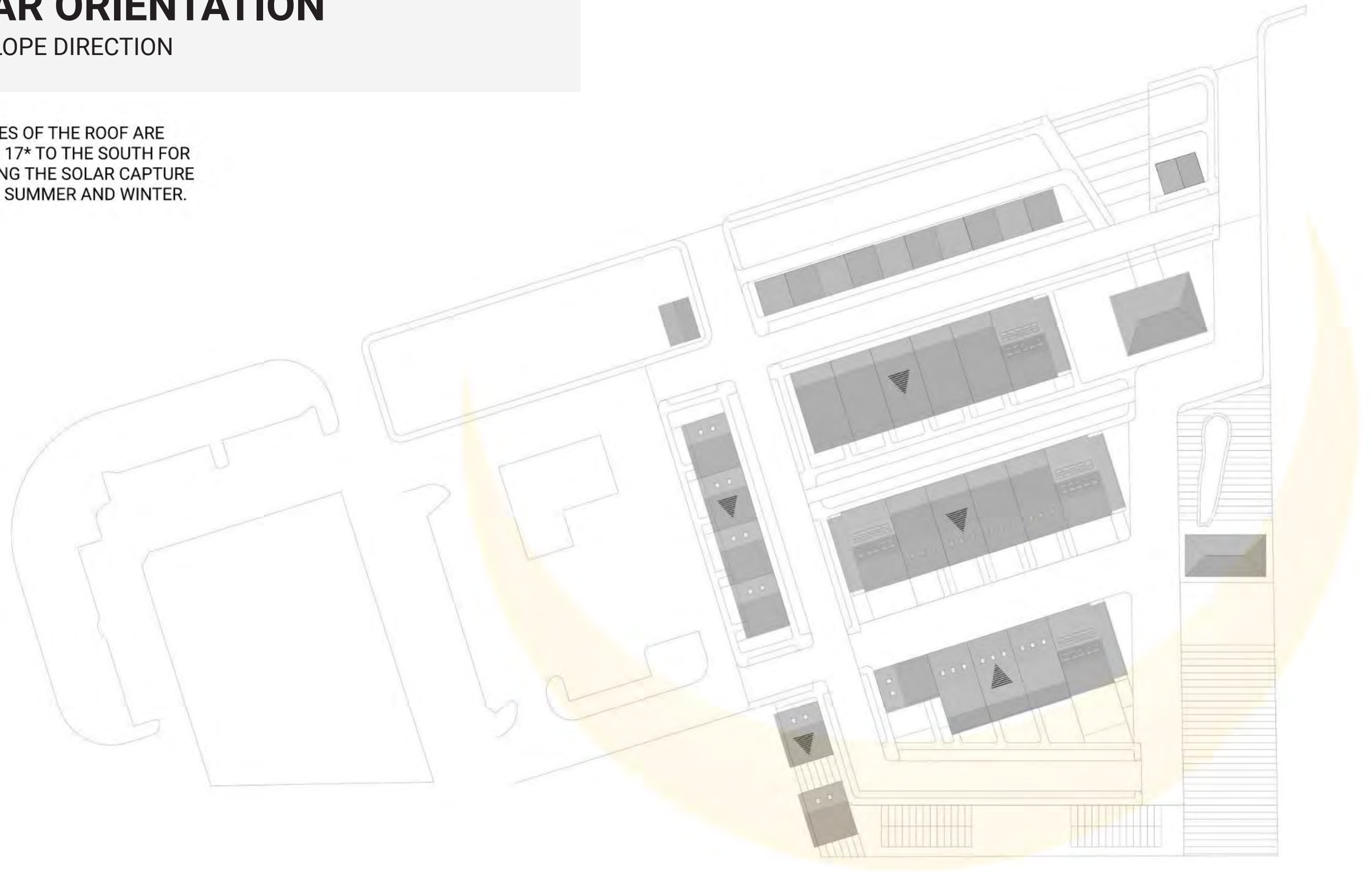


- ROOF OVERHANGS PREVENT DIRECT SUMMER HEAT GAIN, BUT ALLOW FOR BETTER WINTER HEAT GAIN WHEN IT IS NEEDED.
- STAIRCASES ARE ESSENTIAL TO THE PASSIVE COOLING SYSTEM TO ALLOW HOT AIR TO RISE OUT OF THE HOUSE.

# SOLAR ORIENTATION

## ROOF SLOPE DIRECTION

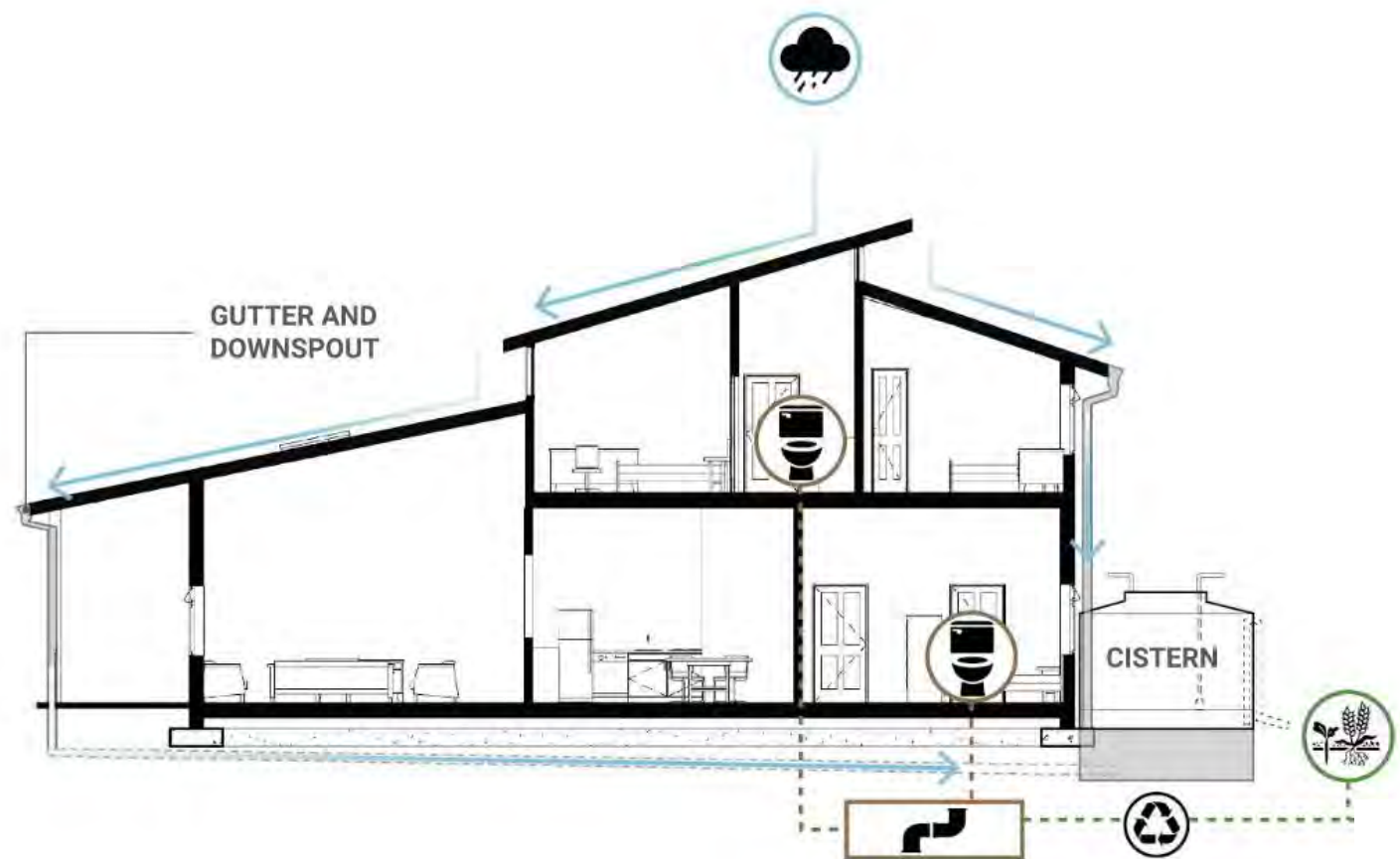
THE SLOPES OF THE ROOF ARE ORIENTED 17\* TO THE SOUTH FOR MAXIMIZING THE SOLAR CAPTURE THROUGH SUMMER AND WINTER.



# REUSING WATER AND WASTE

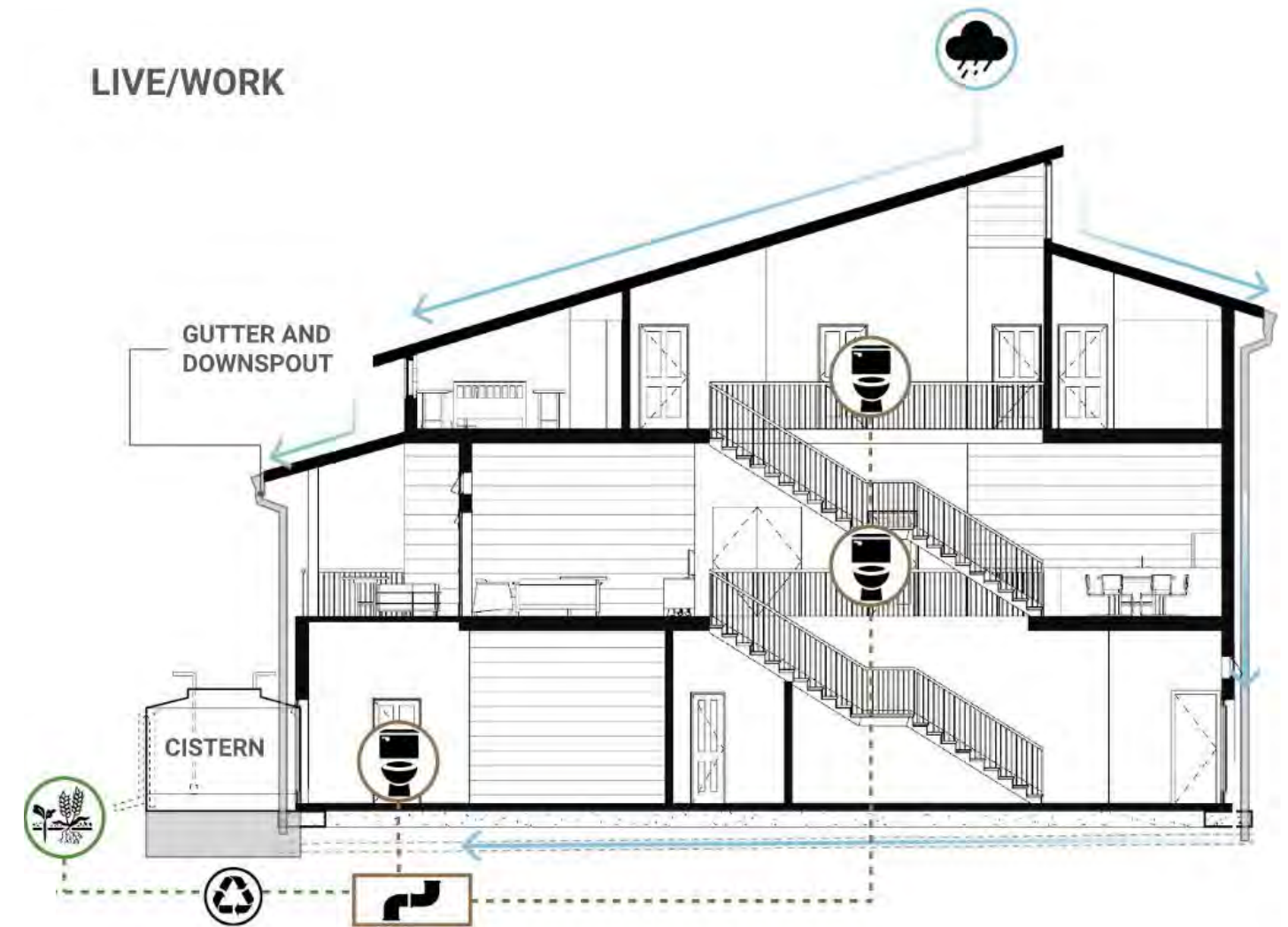
## A LOOK AT WATER CAPTURING AND COMPOST

### DUPLEX



- WATER IS COLLECTED FROM THE ROOF BACK TO A CISTERN LOCATED IN THE GARDEN TO BE REUSED FOR THE HOUSE AND THE GARDEN.

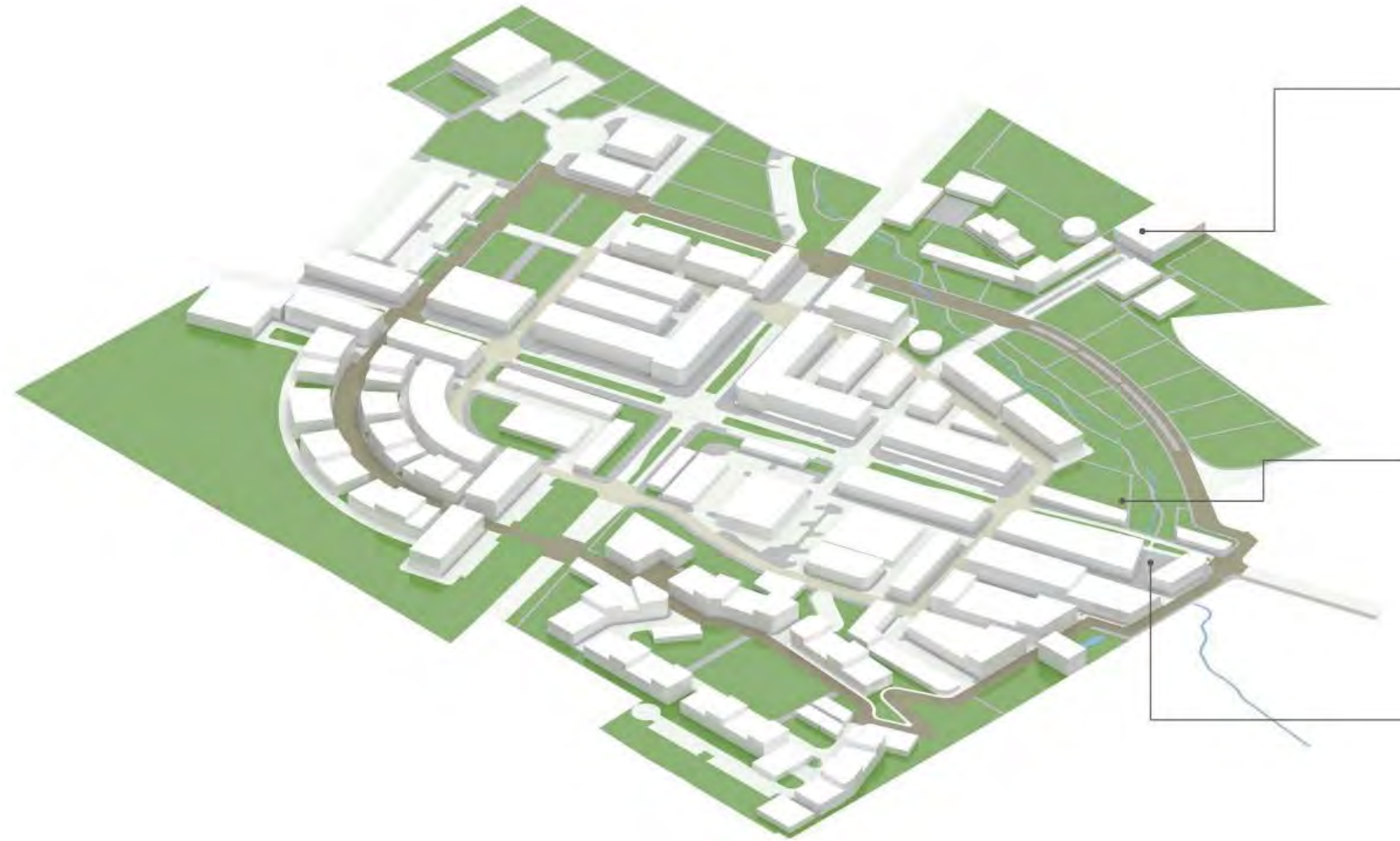
### LIVE/WORK



- WASTE IS COLLECTED FROM THE RESTROOMS AND RECYCLED AS FERTILIZER IN THE GARDEN. NEW COMMERCIAL DEVELOPMENTS UTILIZE THE HOOK UP TO THE WASTEWATER TREATMENT FACILITY ON BYPASS ROAD.

# THE VISION

TO CREATE A MODEL FOR A CLIMATE RESILIENT COMMUNITY



COMMERCIAL FARM OPEN TO PUBLIC TO BUY PRODUCE AND LEARN ABOUT AGRICULTURAL TECHNIQUES

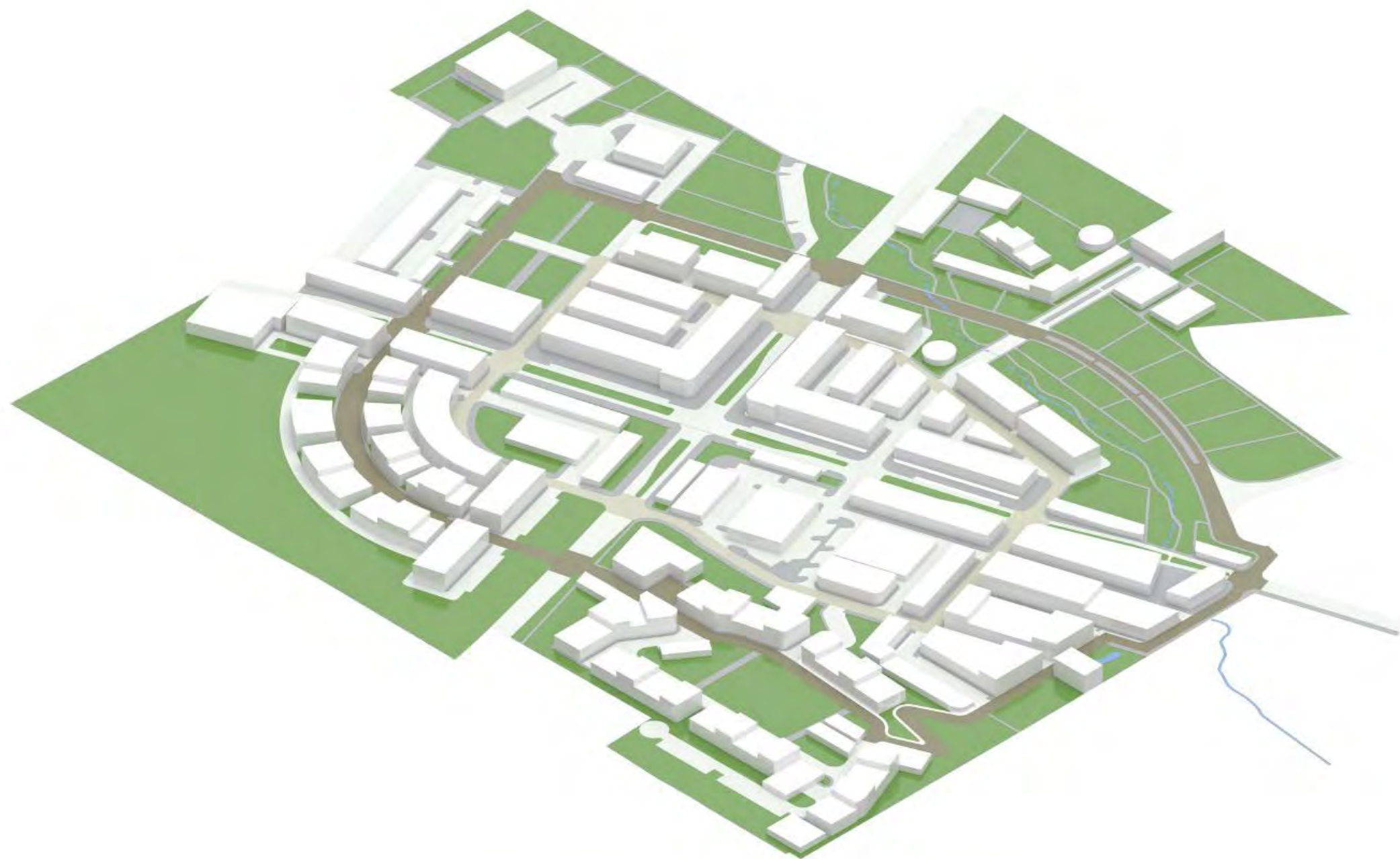


INTEGRATION OF GREENHOUSE GROWING AND LAND FARMING ADJACENT CREEK - FOOD FOREST



FUTURE BUS WAITING AREA AT 5-YEAR SITE

BASE IMAGE SOURCE:  
<https://farmerdconsulting.com/portfolio> (Suwanee)  
<https://www.archdaily.com/895315/adept-and-katres-plus-brands-wins-contest-to-design-one-of-germanys-largest-masterplans>  
<https://i.pinimg.com/736x/10/7c/41/107c413b6ce5b62435418d81ca8a4f00-timber-deck-urban-landscape.jpg>



**THANK YOU**

**What if** we designed housing and retrofitted intersections for the...

# SHRINKING MIDDLE CLASS



**Newton Crossing**

JOEL JASSU | GEORGE DOYLE

# INTRODUCTION & EXECUTIVE SUMMARY

The middle class, often understood as the backbone of American small towns and suburban life, has been shrinking since the mid-1980s as income disparities have grown. In general, while real wages for the middle class have remained relatively stagnant, ordinary household expenses and costs have risen. The most significant of these rising costs are that of housing, transportation, healthcare, and labor/education. While urban design cannot resolve the causes of income inequality, it can support more affordable and healthier lifestyle solutions that shrinking middle class households and communities need in order to better prosper in an everchanging society. There is a unique opportunity to mitigate these income inequality concerns by first identifying the issues seen within rising housing, transportation, healthcare, and education costs and subsequently proposing real design-based solutions for them.

So, what does this mean for Covington and the greater county of Newton? It means that at this moment, we can implement an inspiration to transform the Covington community from a typical American intersection into a more beautiful and desirable place where everyone wants to be at and enjoy. Table 1 below highlights the rising household costs seen within Covington, Georgia. The table identifies local issues identified within these cost brackets, which drove our resultant proposal and the design-based solutions implemented throughout to resolve these local issues.

**Table 1: Rising Household Costs within Covington, Georgia**

	HOUSING	TRANSPORTATION	HEALTHCARE	LABOR/EDUCATION
Issues Identified	An average of 30% of income is spent on housing. Limited housing options exist other than single-family types	An average of 29% of income is spent on transportation, largely due to the low-density urban form, high-speed arterials, and long commutes	Obesity is the leading cause of heart disease and diabetes, both of which are the most common chronic diseases	No home-trade workshops seen within Covington; limited night school options and home economics courses are provided to teach financial literacy
Solutions Proposed	Affordable, diverse, missing middle housing types that require less land and more opportunities for rental income	Introducing new driving apparatus options like golf carts; Walkable mixed-use neighborhoods; retrofitting arterials within neighborhoods to lower speeds	Preventing chronic causes of death by implementing walkable, exercise-oriented, park and trail-way interconnectivity	On-site live-work options for ground floor incubator / workshop spaces; local programs to teach financial literacy to community members

Newton Crossing addresses the socioeconomic and geographic disparities within Covington by activating spaces so that all people can enjoy its small-town chemistry. By developing affordable live-work atmospheres integrated with complete street designs, Newton Crossing establishes intergenerational places for empty-nesters and new families that fosters a more complete full-service city. Newton Crossing provides a location for residences, convenient goods, and services directly adjacent to single-family neighborhoods. It satisfies the common and frequent needs of the residents of nearby neighborhoods. Its design standards and parameters encourage a pedestrian-friendly traditional urban form, oriented to pedestrians, that limits conflicts experienced between vehicles and pedestrians. Through implementing this proposed plan, Newton County and the City of Covington can begin to tackle the housing demands of the shrinking middle class and aging population, leading the way for other American small-town communities to enhance the lives of their people for many years to come.

**What if the Shrinking Middle Class and Aging Population were the primary drivers for the design of housing and retrofitting intersections?**



# CONTENTS

A Shrinking Middle Class **04**

Regional Opportunities **08**

How Do We Start? **12**

Comprehensive Plan **18**

Design Elements **23**

Concluding Thoughts **34**

Appendix **36**





# A SHRINKING MIDDLE CLASS

# IDENTIFYING A SHRINKING MIDDLE CLASS

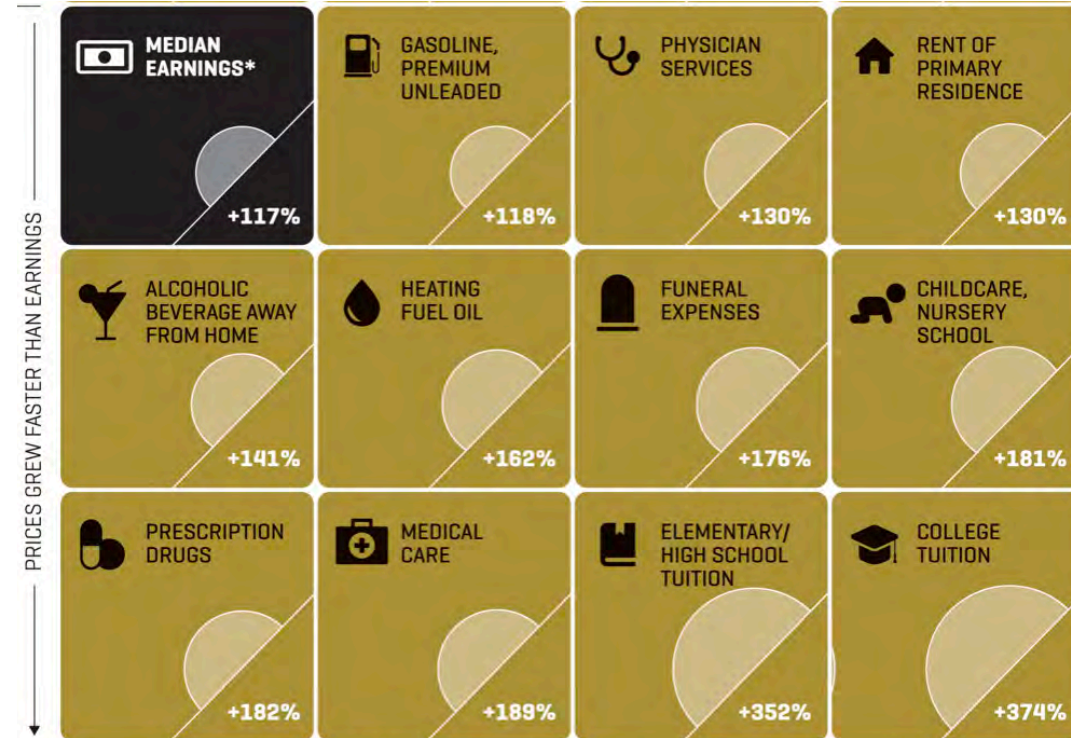
Since the mid 1980's, middle class wages have remained relatively stagnant. In contrast, ordinary household expenses and transportation costs have risen. The most significant of these rising costs are that of housing, transportation, healthcare, and education. Images provided on the right show these growths in prices and earnings, as well as the national average minimum wages in regions where people can afford two-bedroom apartments. These diagrams, provided in a *Fortune* article that introduced the idea of a Shrinking Middle Class in late 2018, were used in reference to our end-design of an intergenerational place for everyone.

According to the Economic Policy Institute, the productivity of the economy grew 77% between 1973 and 2017. The average compensation of this productivity only rose 12.4%, adjusted for inflation. Statistics from both the Federal Reserve Bank and Edward Wolff state that of the average middle-class American family, 47% of them can't afford to pay for a \$400 emergency; 40% of them can't raise \$2,000 in a month; it takes approximately 21 days for a family to liquidate all their financial reserves if no steady stream of income is made. These national statistics are real and an immediate concern for not just Americans, but the global population as well. As the COVID-19 crisis continues to affect daily lifestyles, these numbers are expected to have an even deeper impact on the purses of middle-class families. Resolving a shrinking middle class and its issues is not a future concern, it is an immediate concern.

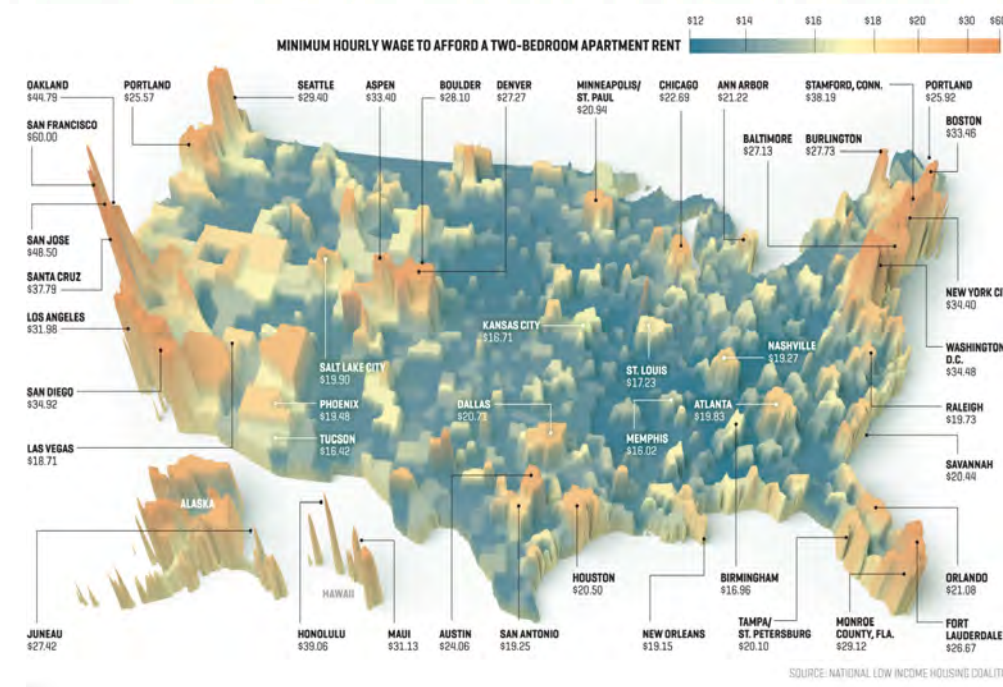
In neighborhoods directly adjacent to our site, 65% of annual income made is spent on housing and transportation costs. These values derived from the Housing + Transportation (H+T) Index, which combines the 30% housing costs with that of the 29% transportation and 6% vehicle miles travelled (VMT) costs. Chronic healthcare issues like obesity, heart disease, and diabetes are also common trends found not only in Covington but in other typical American towns. Regarding education, there are no home-trade workshop options available in the immediate area. Additionally, limited night-class options are available for locals and daytime workers who aim to pursue higher education at times that work for their schedules. New education and labor options should be implemented in this area to foster a sense of financial literacy that currently struggles to exist.

Alternative housing and transportation options were considered and incorporated in the overall design of Newton Crossing. In doing so, the existing mismatch between the available housing stock and what the market needs and wants can be better met. The housing types provided, 10 variations in total, accommodate for the needs and demands of local household demographics that are missing from existing residencies. Missing housing types throughout the United States are mostly due to the regulatory constraints put in place since the early 1940s, which shifted American culture to auto-related patterns of development and financing. Covington is an auto-dependent community. By looking at new driving options like the golf cart, we found that almost \$13,000 can be saved by middle-class families if they opt in to paying annual costs for a new golf cart versus a new car. This money saved can not only alleviate existing financial pressures burdened on a shrinking middle class but can also help stimulate local economies with this new redistribution of wealth. In implementing these housing and transportation changes to the existing built environment, we have provided a scenario where more walkable and desirable places have been built.

## Growth in Prices Compared with Earnings, 1990-2018



SOURCE: BUREAU OF LABOR STATISTICS, PRICE CHANGES AS OF NOVEMBER OF EACH YEAR  
\* MEDIAN USUAL WEEKLY EARNINGS, AS OF Q3, 2018, FOR FULL-TIME WAGE AND SALARY WORKERS



Images provided from <https://fortune.com/longform/shrinking-middle-class/>

# WHAT ARE THE ISSUES?

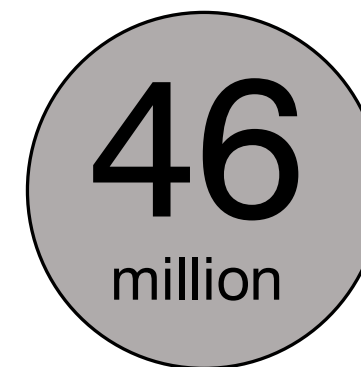
## Of all typical American Middle-Class families...

**47%** Can't afford a \$400 emergency

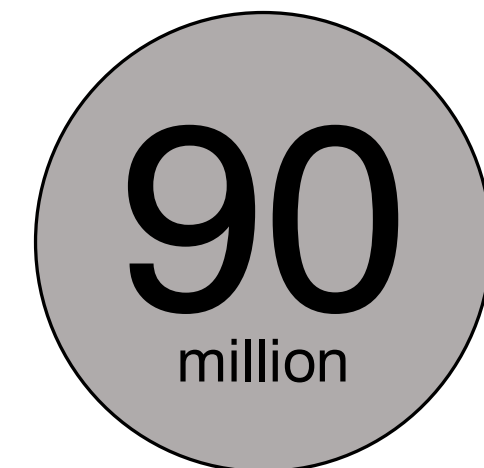
**40%** Can't raise \$2,000 in 30 days

**21 DAYS** The average household can live on financial reserves until exhausted

## Population of Americans who are 65+ years old



2020



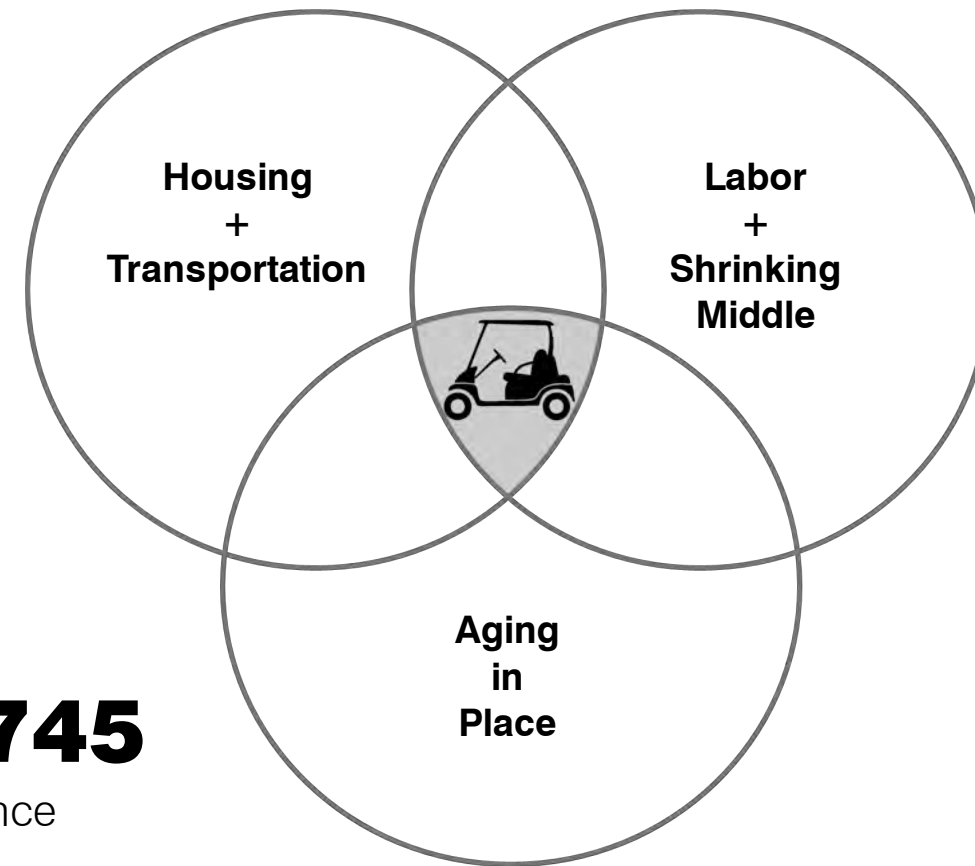
2050

	HOUSING	TRANSPORTATION	HEALTHCARE	LABOR/EDUCATION
Issues Identified	30% of income is spent on housing	29% of income is spent on transportation 6% of income is spent on miles driven	Common chronic diseases like heart disease and diabetes	No home-trade workshops seen within Covington

# WHAT ARE THE SOLUTIONS?

## H+T Index Statistics at Site Location

**\$57,000** vs. **\$19,950**  
 Average Income vs. Disposable Income Remaining



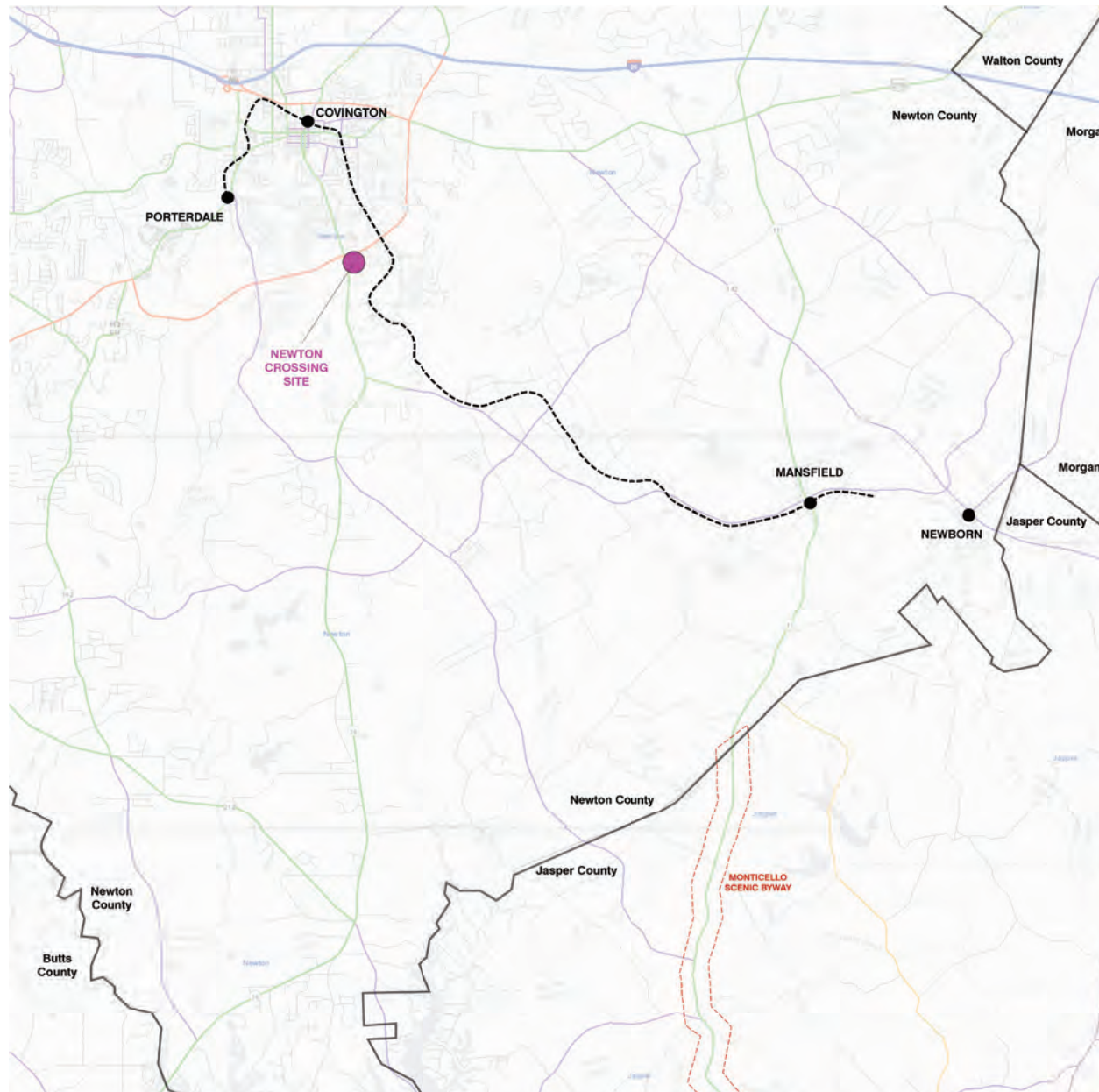
## Annual Transportation Expenses

**\$17,030** - **\$4,285** = **\$12,745**  
 New Car vs. New Golf Cart vs. Difference

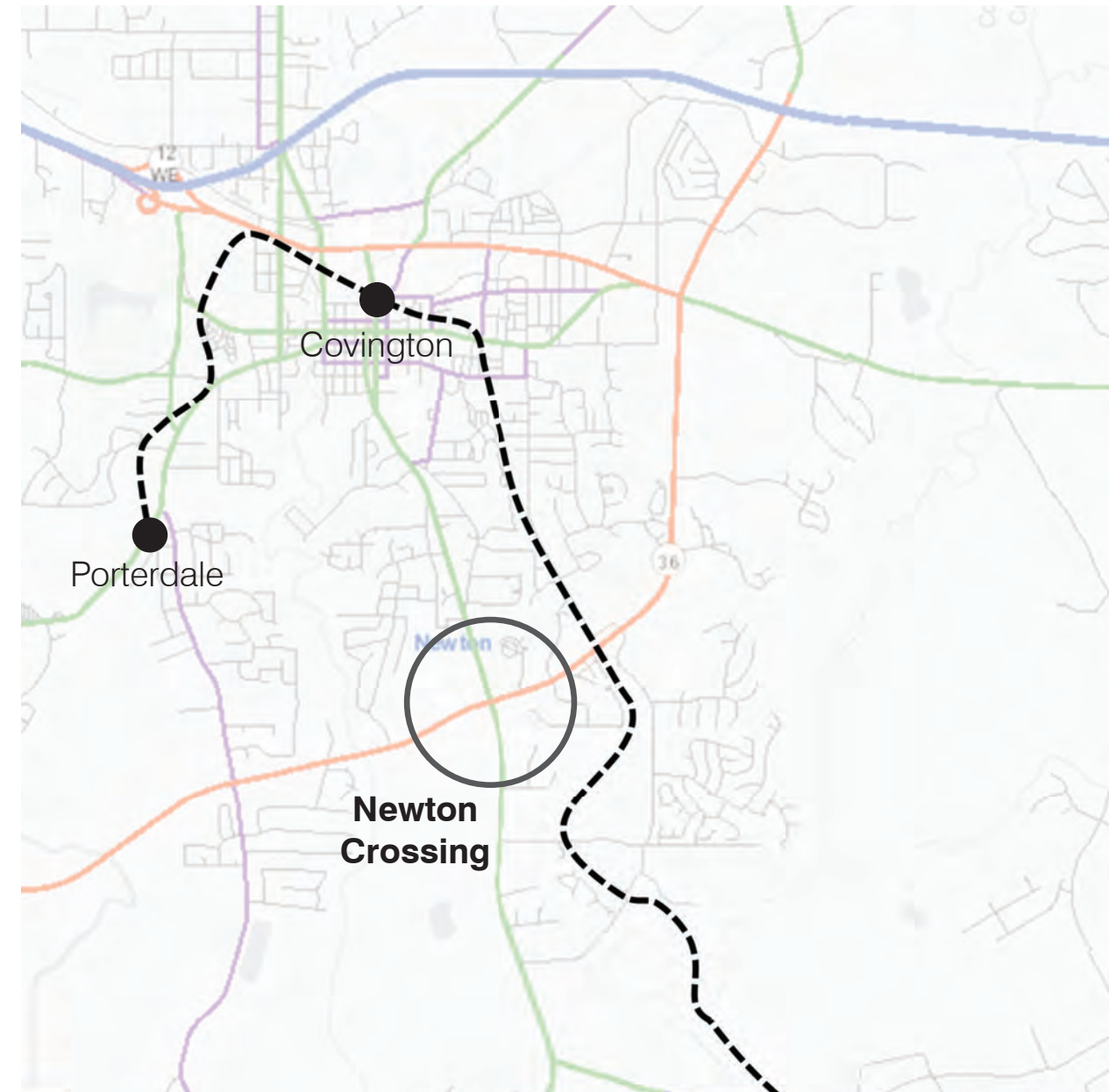
	HOUSING	TRANSPORTATION	HEALTHCARE	LABOR/EDUCATION
Issues Identified	30% of income is spent on housing	29% of income is spent on transportation 6% of income is spent on miles driven	Common chronic diseases like heart disease and diabetes	No home-trade workshops seen within Covington
Solutions Proposed	Ten affordable, diverse, missing middle housing types	Introducing new driving options like golf carts	Implementing walkable, exercise-oriented, park and trail-way interconnectivity	On-site live-work options for ground floor incubator / workshop spaces

# REGIONAL OPPORTUNITIES

# THE SITE & ITS REGIONAL OPPORTUNITY

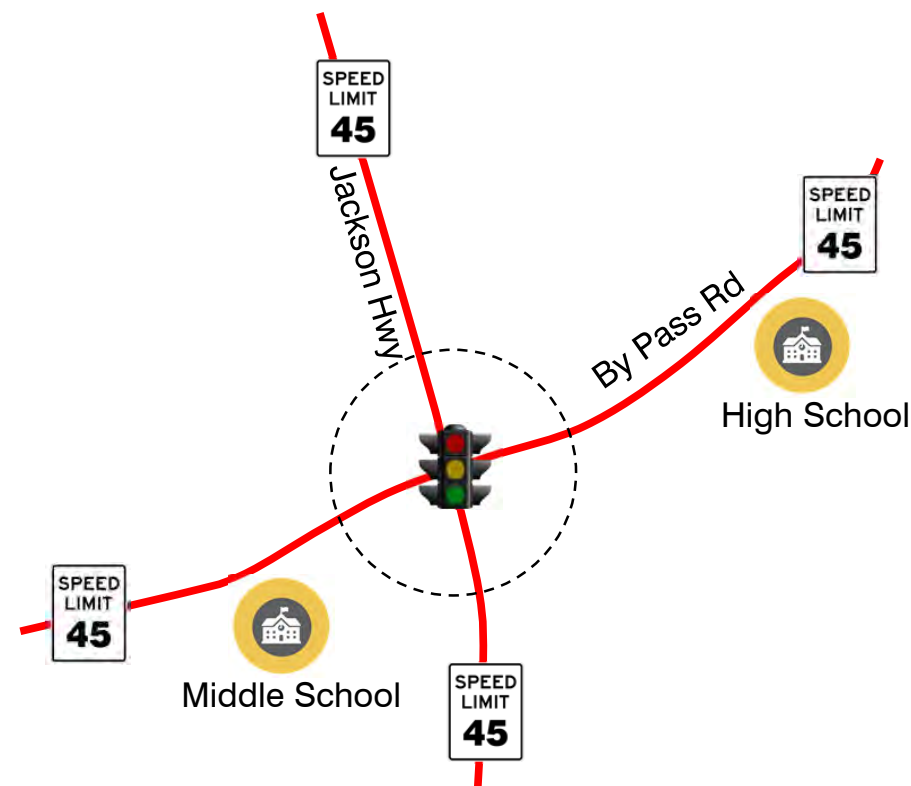


1. Link displaced neighborhoods together
2. Foster a more complete full-service community
3. Implement small-town urbanism in creative ways

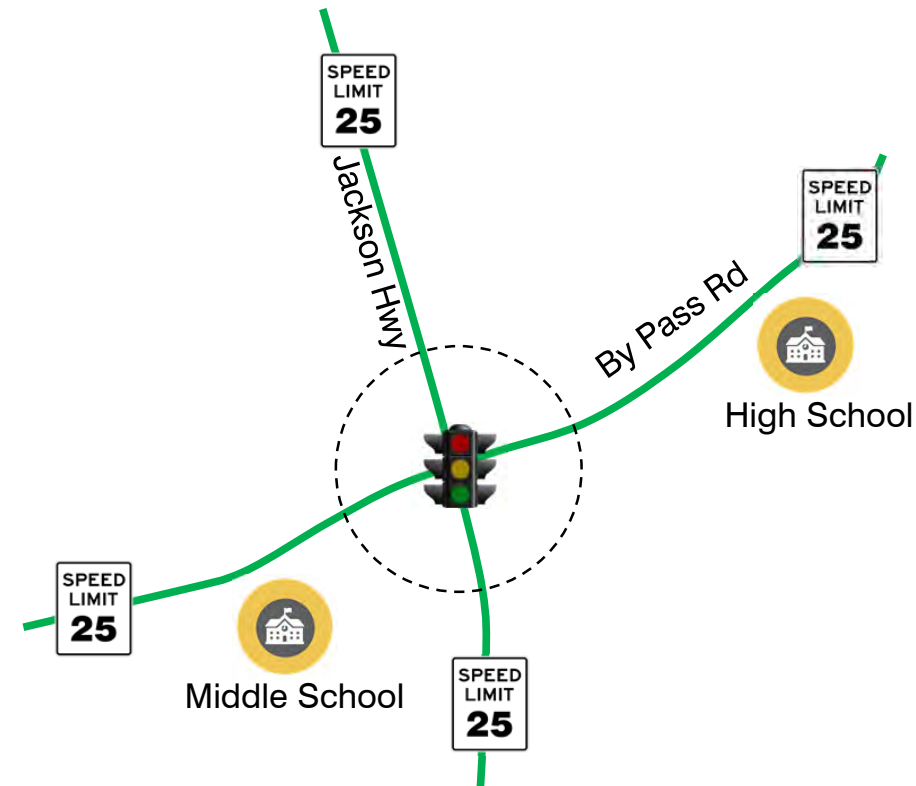


1. Connect with the Recreational Cricket Frog Trail
2. Strategize for Internal Capture Rates
3. Increase Street Congestion, Increase Mode-Splits

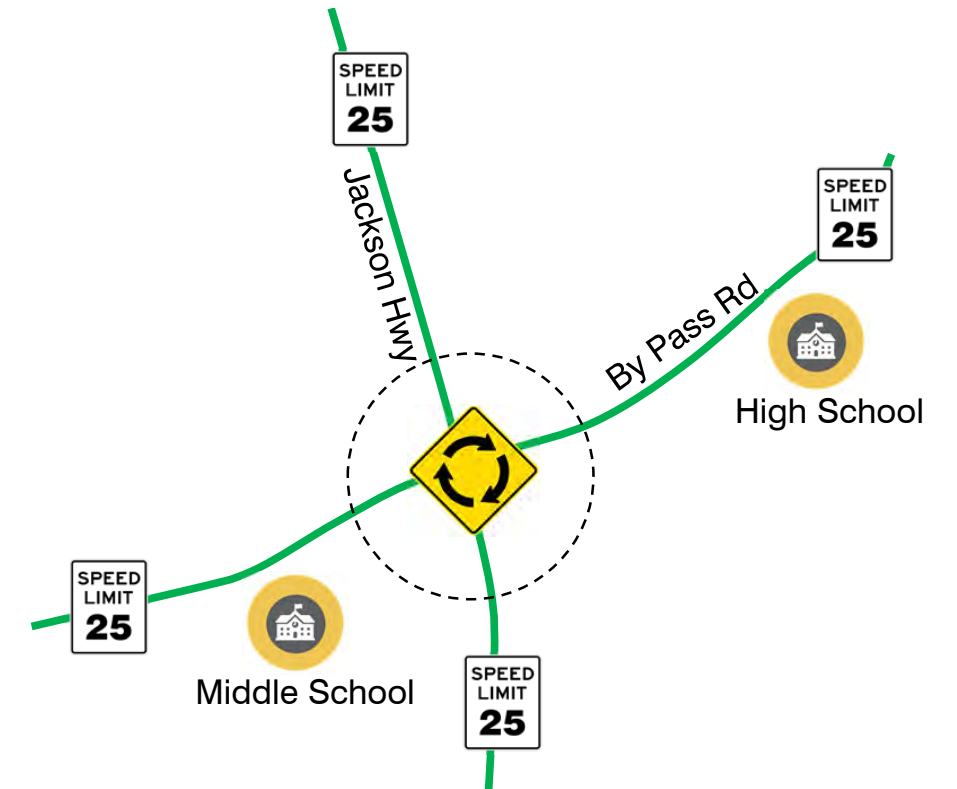
# THE INTERSECTION & ITS REGIONAL OPPORTUNITY



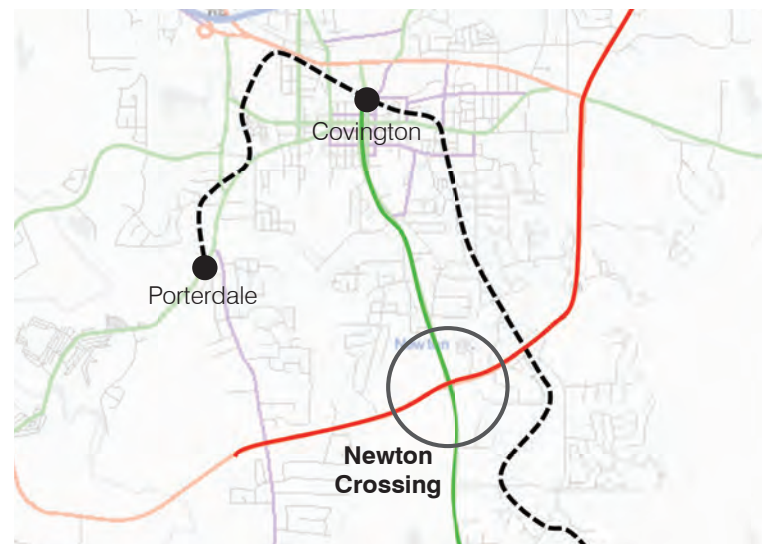
Existing Conditions



5- Year Proposal



Long Term Vision



1. Reduce existing speeds from 45 MPH to 25 MPH
2. Activate spaces between schools for more pedestrian and bicycle uses
3. Link people between the Indian Creek Middle School and Eastside High School
4. Implement mode-split variants through Cricket Frog Trail connections
5. Reclaim ROW for pedestrian, bicyclist, and ADA accessibilities
6. Increase existing roadway volume capacities and traffic operations
7. Enhance roadway environmental factors that are aimed towards pedestrian priority

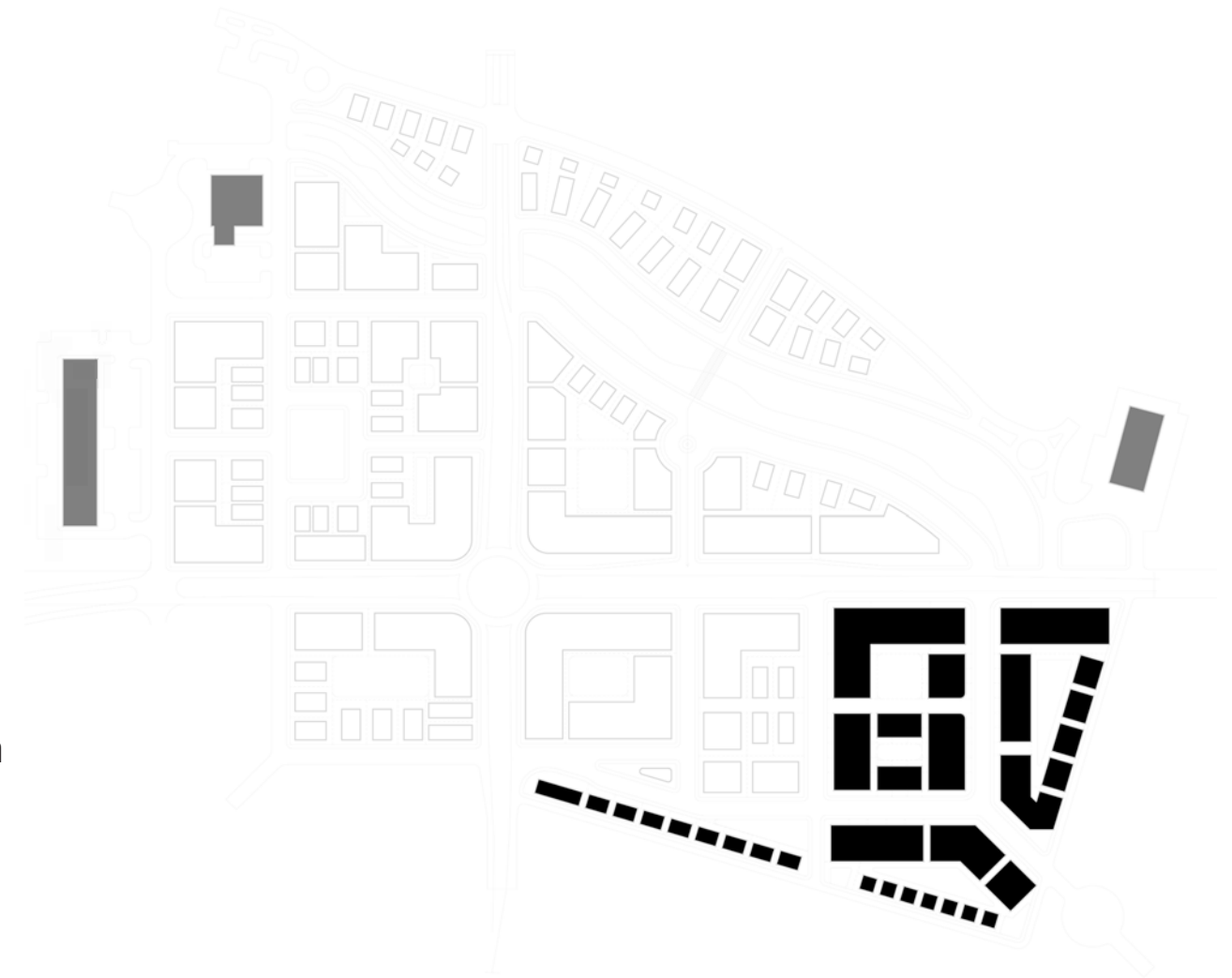
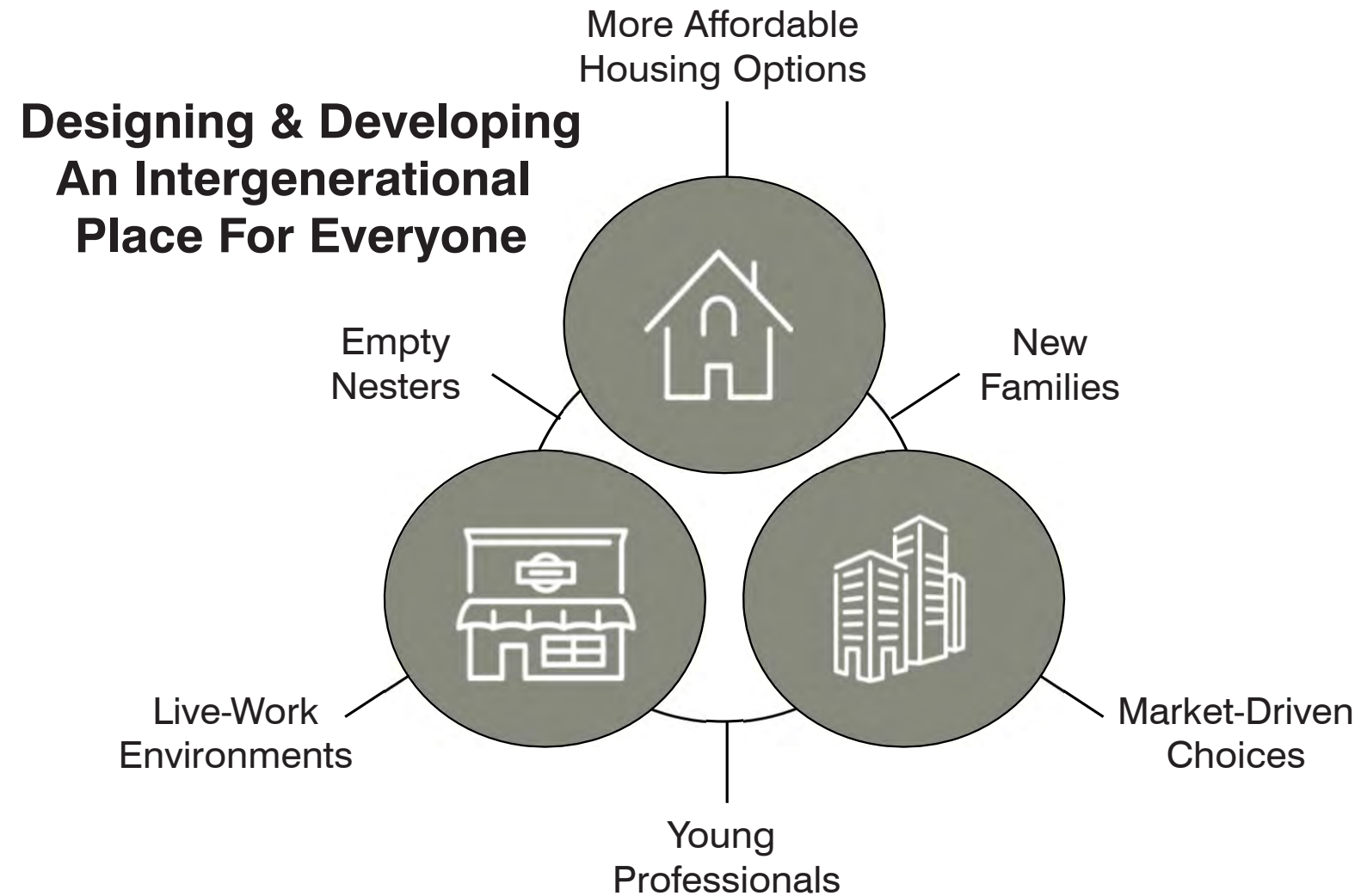
# LONG-TERM VISION





# HOW DO WE START?

# CAPITALIZING ON UNDERREPRESENTED MARKETS



Phase 1 of long term vision:

- 10 Housing Types
- 169 Total Units

1. Connect to the immediate residential neighborhood
2. Capitalize on existing infrastructure
3. Provide a variety of housing options
4. Promote intergenerational learning and living

# BRINGING GENERATIONS TOGETHER

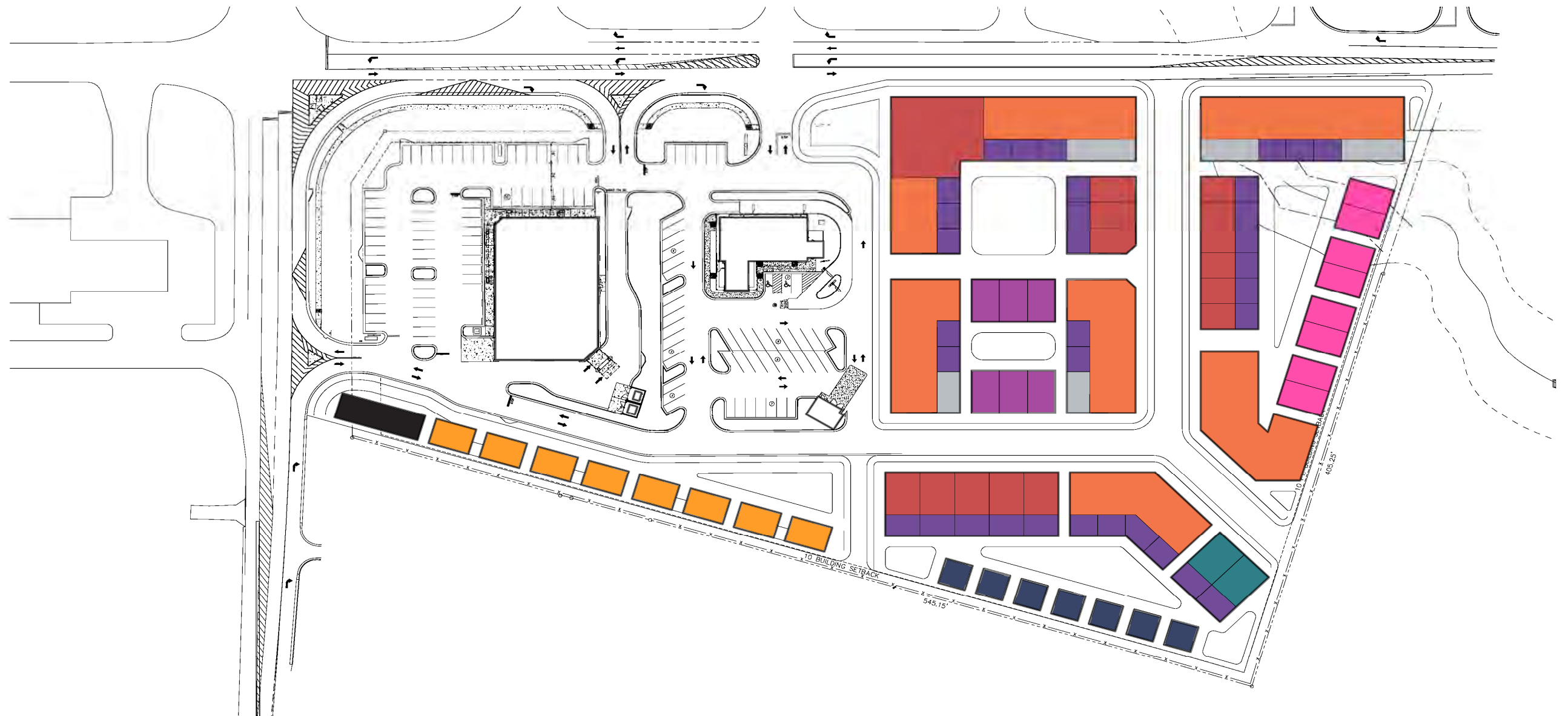


## LEGEND



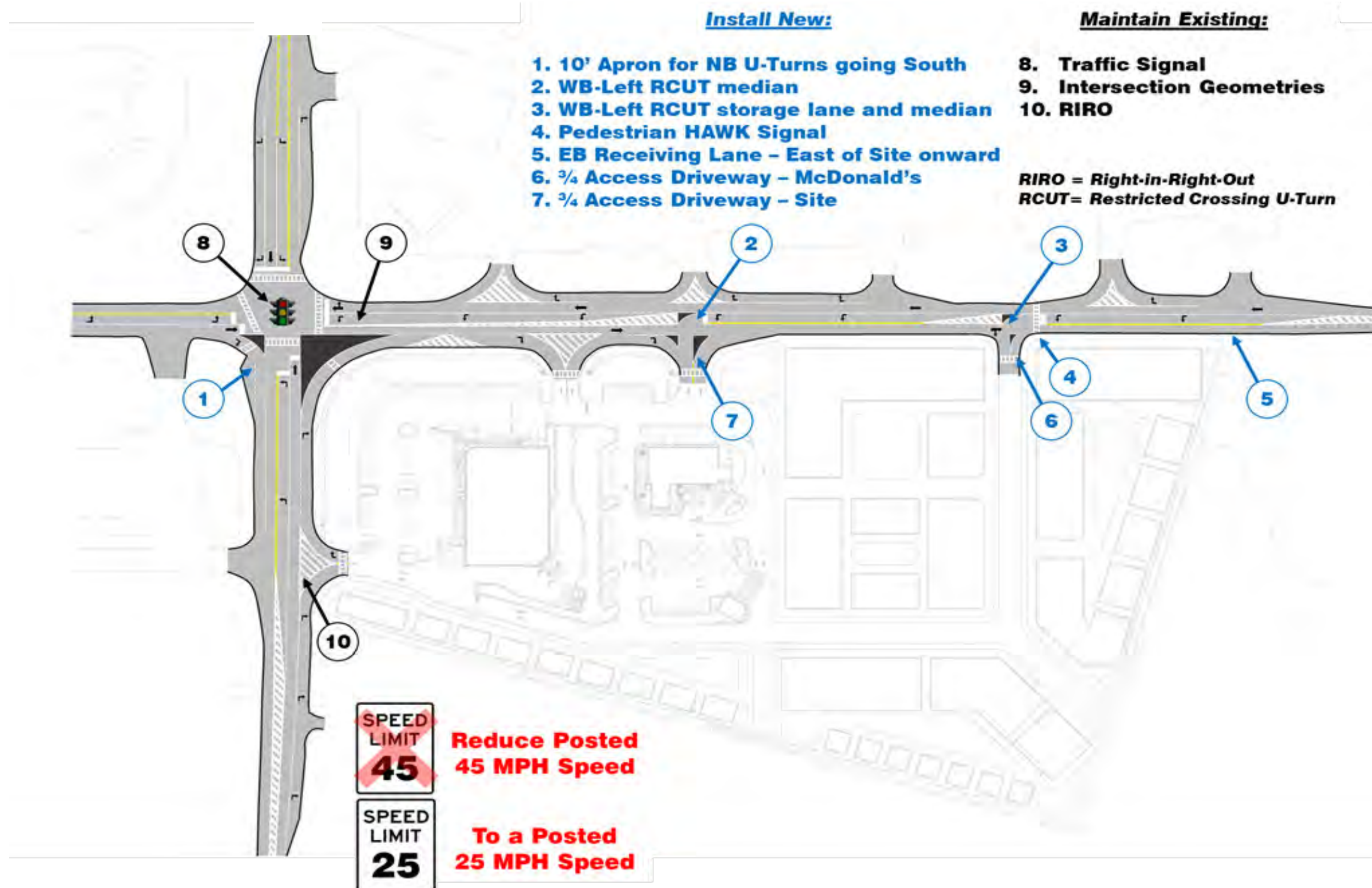
- 1. Existing CVS
- 2. Existing McDonalds
- 3. Pedestrian Only Walkway
- 4. Residential Courtyard
- 5. Pedestrian Loop

# HOUSING VARIETIES + LIFESTYLES

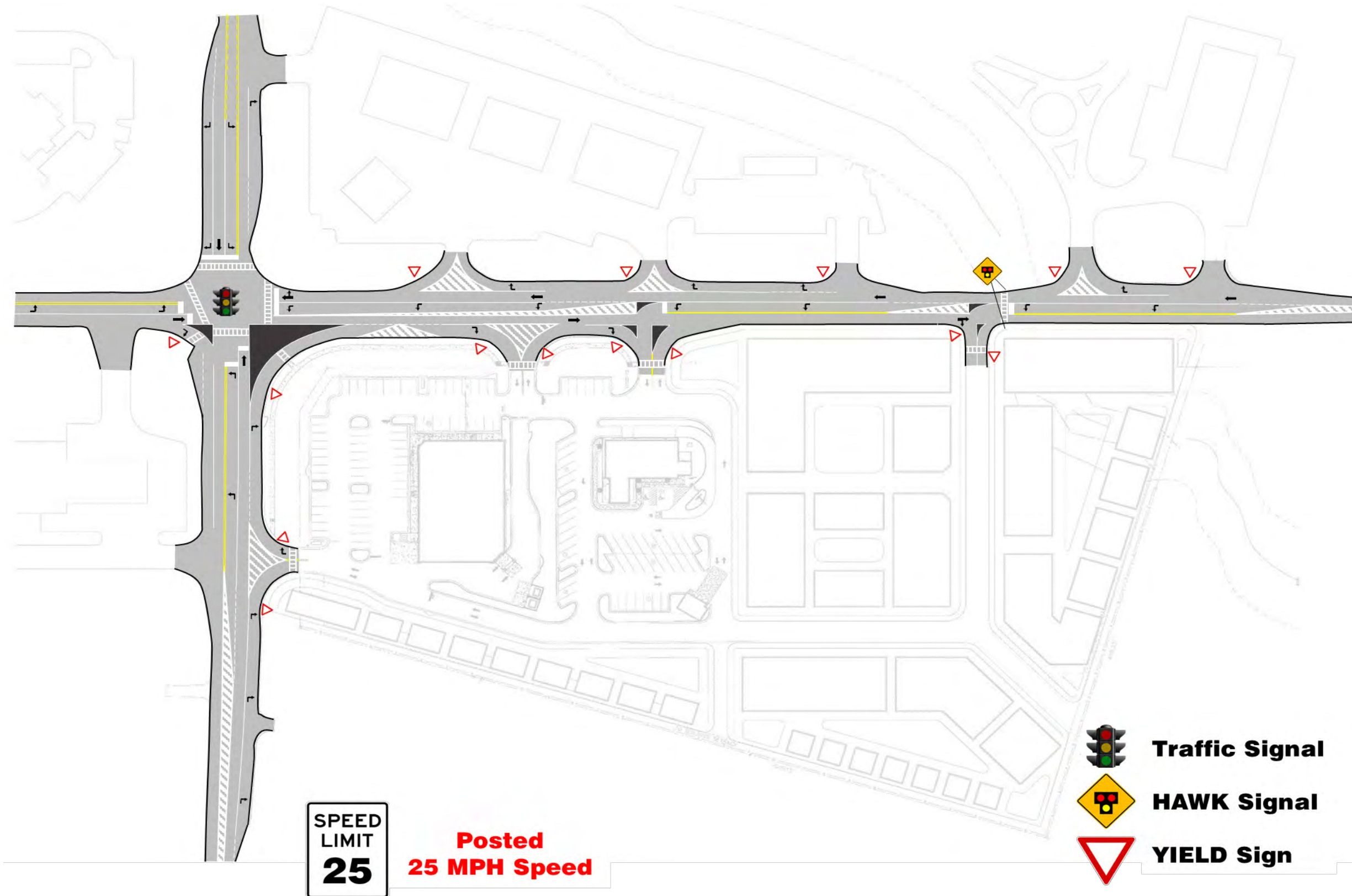


- |                                                                                                                                                 |                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <span style="display: inline-block; width: 20px; height: 10px; background-color: black; margin-right: 5px;"></span> Mail Room / Post Office Box | <span style="display: inline-block; width: 20px; height: 10px; background-color: purple; margin-right: 5px;"></span> Townhouses                             |
| <span style="display: inline-block; width: 20px; height: 10px; background-color: grey; margin-right: 5px;"></span> Golf Cart Parking            | <span style="display: inline-block; width: 20px; height: 10px; background-color: teal; margin-right: 5px;"></span> Multi-Family                             |
| <span style="display: inline-block; width: 20px; height: 10px; background-color: orange; margin-right: 5px;"></span> Split Levels               | <span style="display: inline-block; width: 20px; height: 10px; background-color: pink; margin-right: 5px;"></span> Duplexes                                 |
| <span style="display: inline-block; width: 20px; height: 10px; background-color: darkblue; margin-right: 5px;"></span> Cottages                 | <span style="display: inline-block; width: 20px; height: 10px; background-color: red; margin-right: 5px;"></span> Apartments                                |
| <span style="display: inline-block; width: 20px; height: 10px; background-color: purple; margin-right: 5px;"></span> ADUs                       | <span style="display: inline-block; width: 20px; height: 10px; background-color: darkred; margin-right: 5px;"></span> Incubator / Workshop with Residential |

# 5-YEAR PLAN ROAD RETROFIT

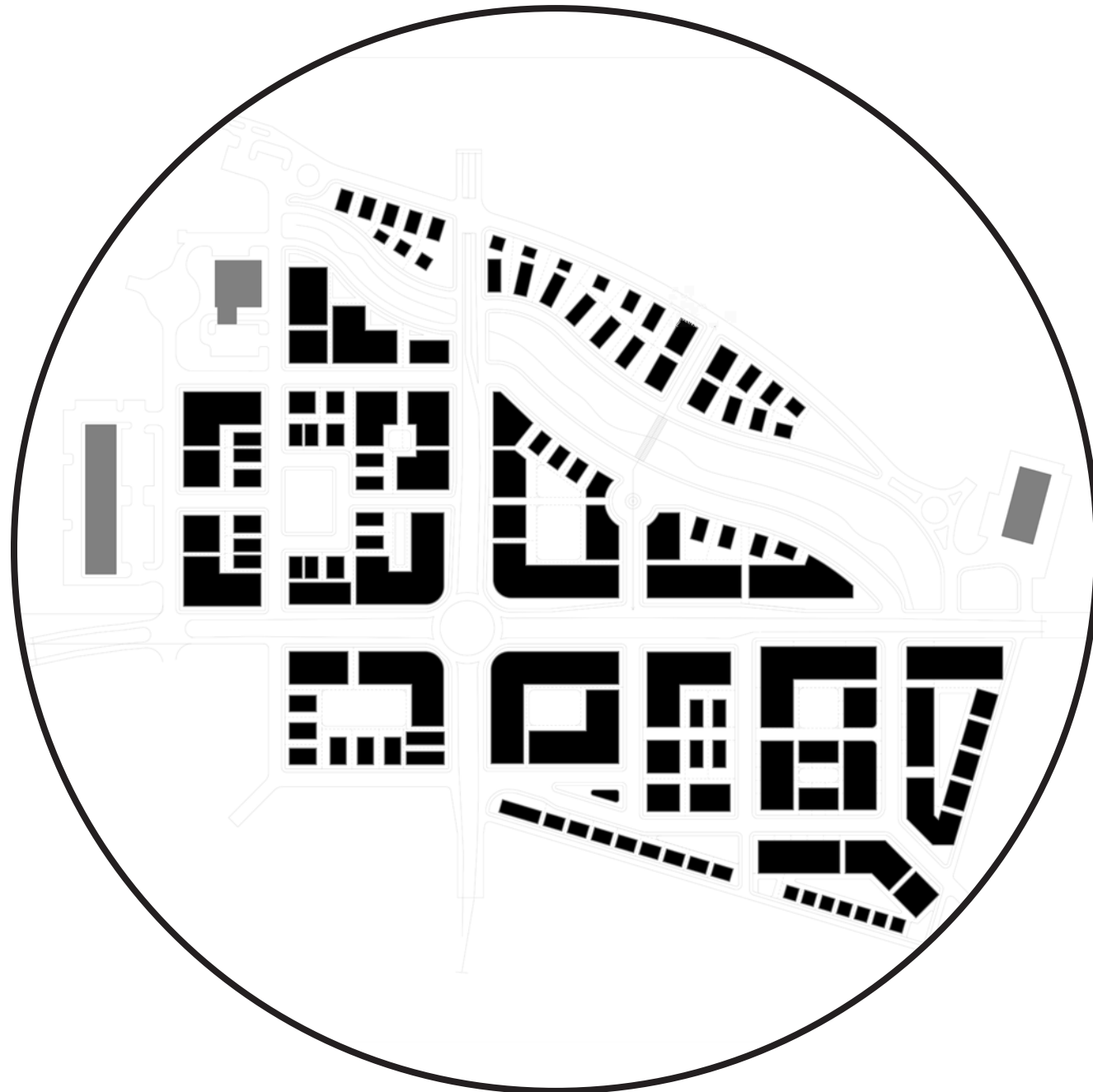


# 5-YEAR PLAN ROAD SIGNAGE



# COMPREHENSIVE PLAN

# LEARNING FROM SMALL-TOWN URBANISM



Proposed Newton Crossing Interchange



Existing Downtown Covington GA



# INCREMENTAL DEVELOPMENT

## STRATEGY

1. Neighborhood Connection
2. Building a commercial core
3. Capitalizing on creek and square
4. Dealing with edge conditions



# COMPREHENSIVE PLAN



## LEGEND



- 1. Retrofitted Intersection
- 2. Restored Creek
- 3. Residential Square
- 4. Intergenerational Community

# REGULATING PLAN

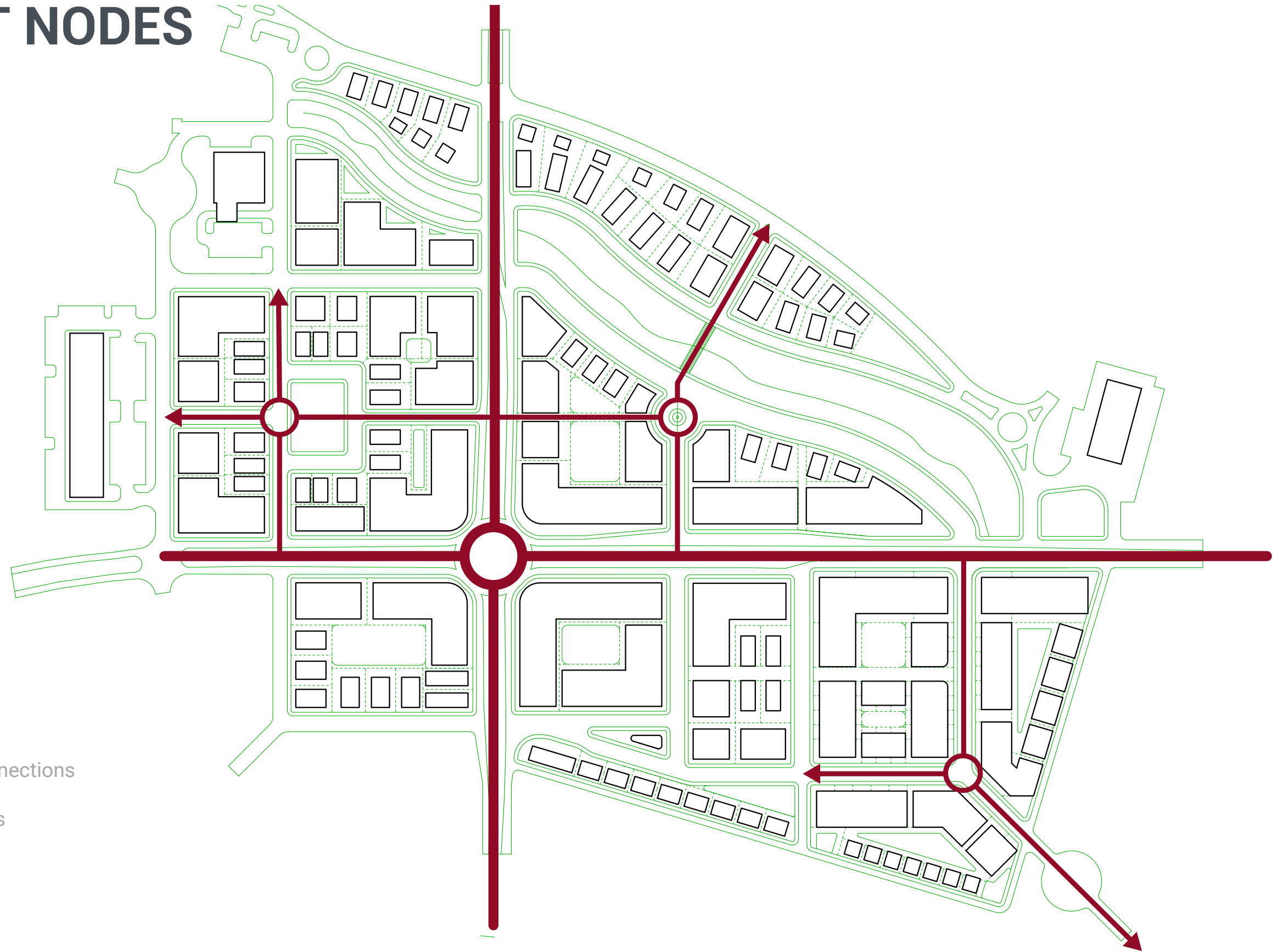
## LEGEND

- Single Family
- High Density Single Family
- Multi-Family
- Mixed Use Office
- Mixed Use
- Environmental Conservation
- Recreation and Green Space
- Civic
- Utilities
- Transportation



# DESIGN ELEMENTS

# DIFFERENT NODES



## LEGEND



 Major Roads Connections




 Residential Nodes

# HEALTHY MODALITY



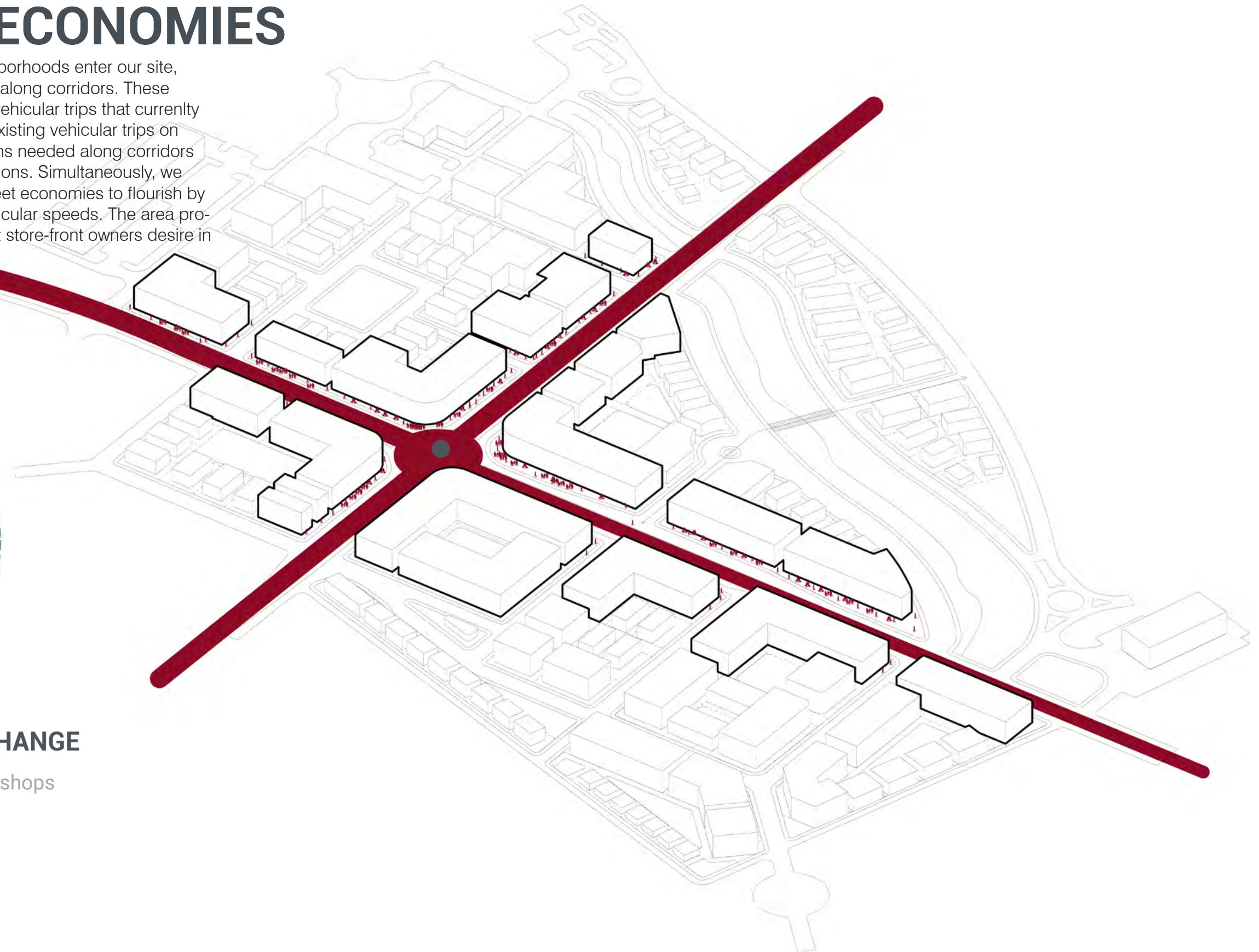
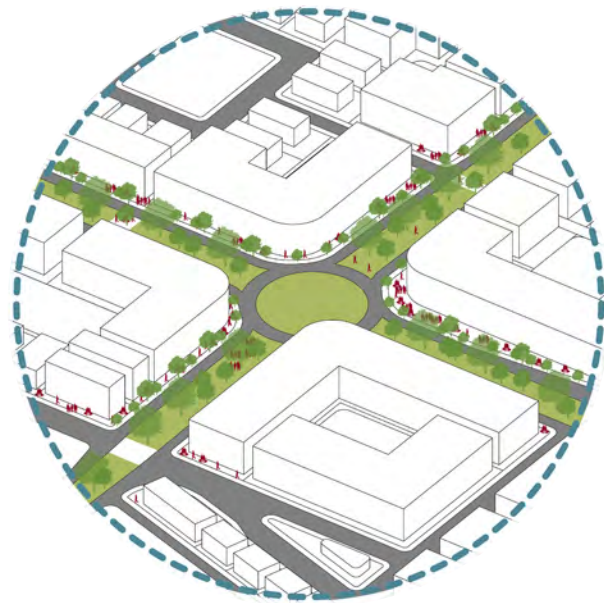
## LEGEND



-  Major State Roads
-  Complete Streets
-  Safe Pedestrian Ways

# MAIN STREET ECONOMIES

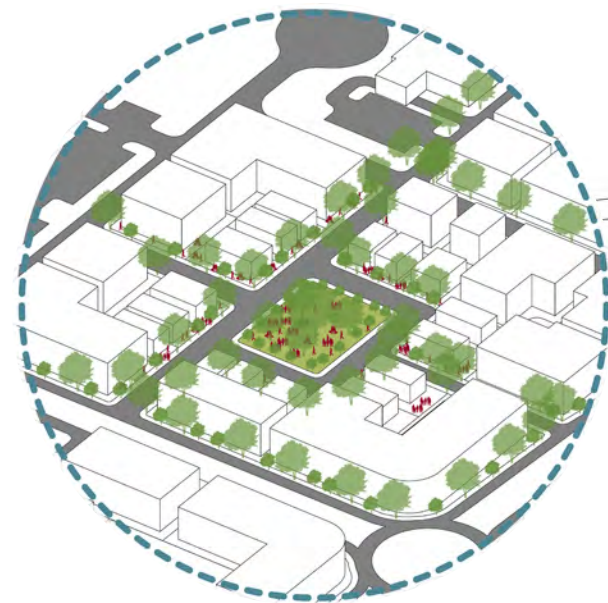
New internal capture trips from adjacent neighborhoods enter our site, spurring new forms of economic development along corridors. These internal capture trips will attract 3-mile or less vehicular trips that currently use roadway corridors. By reallocating these existing vehicular trips on to new platforms, we can begin the interventions needed along corridors that optimize their capacities and traffic operations. Simultaneously, we have allowed the opportunity for new Main Street economies to flourish by activating pedestrian boulevards that slow vehicular speeds. The area produces a sense of vibrancy and congestion that store-front owners desire in any ideal development.



## ● THE CROSSING + INTERCHANGE

1. Street-level Incubator and Workshops
2. Live-Work Opportunities
3. Pedestrian Highways
4. Greenways

# PUBLIC & ENVIRONMENTAL

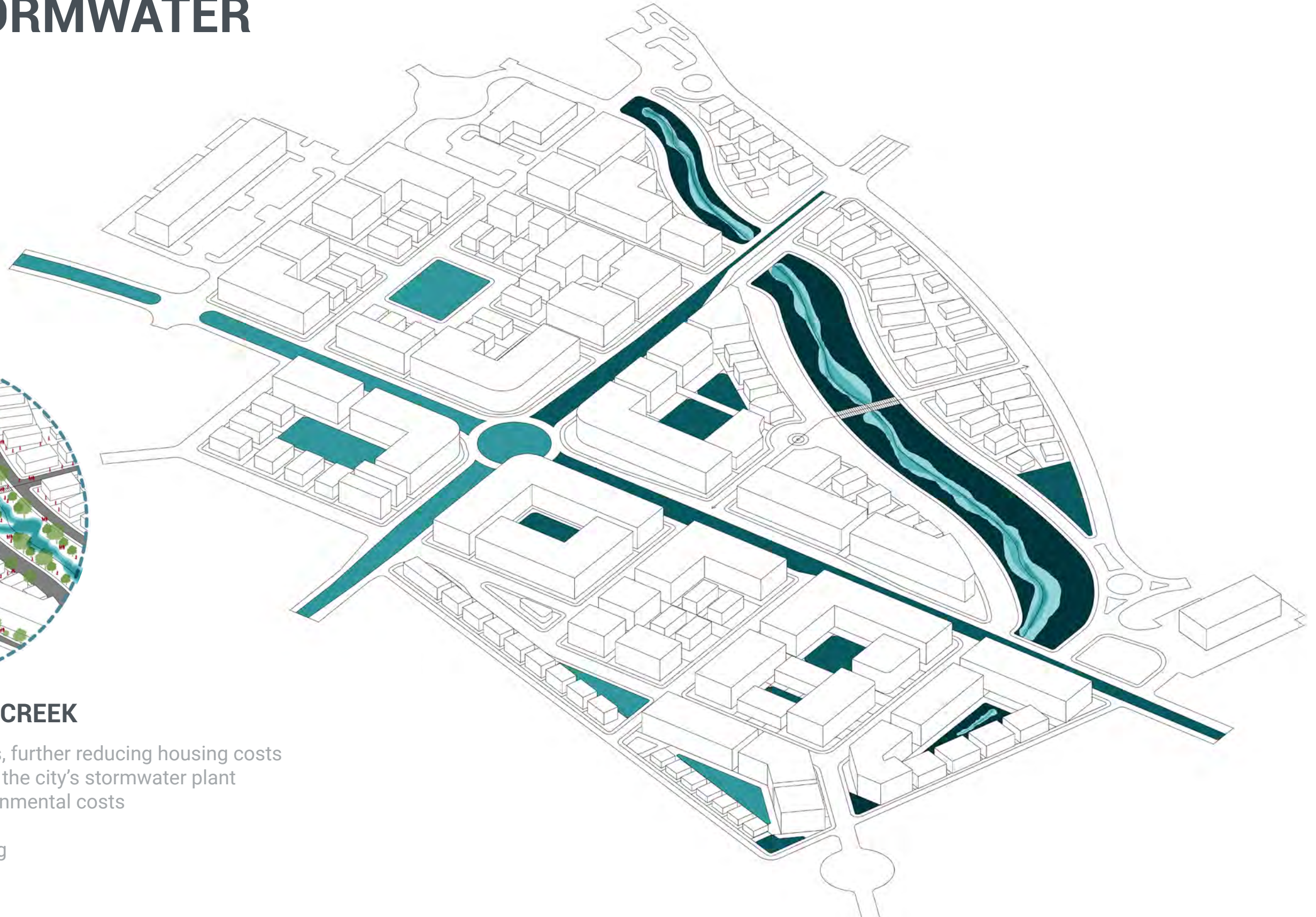


## RESIDENTIAL SQUARES

1. Reduced Internal Congestion
2. Interactive Public Spaces
3. Shaded Green Spaces
4. Pocket Parks



# LOCAL STORMWATER



## ● LEVERAGING THE CREEK

1. Reducing impact fees, further reducing housing costs
2. Reducing burden and the city's stormwater plant
3. Reducing local environmental costs
4. Increasing resilience
5. Promote healthy living

# COMPLETE STREETS

## LEGEND

1. Neighborhood Services/Incubators
2. Town Homes
3. Safe Pedestrian Streets
4. Street Front Home Office



## NEIGHBORHOOD ACCESS

1. Connect residential and commercial cores
2. Promote safe streets
3. Foster more opportunities for intergeneration interactions



# BUILDING COMMUNITIES



**MULTI MODAL STREET**  
Caters for all transportation means

**HOME OFFICE/WORK**  
Supports creation of extra income

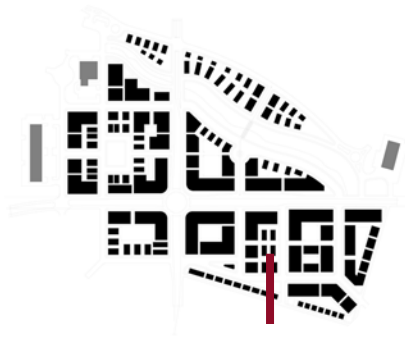
**ATTACHED ADU**  
Varies living choices and solves front-back issue

**DISTRICT STORMWATER**  
Reduces single unit utility expenses

**DUPLEX**  
Can create extra income if owned by individual

**PEDESTRIAN LOOP**  
Used for movement and exercise

# GENERATING ADDITIONAL INCOME



**DISTRICT WASTE**  
Source of energy and reduces waste costs

**GOLF CART**  
Cheap and safe for elder and middle class residents

**DISTRICT STORMWATER**  
Reduces single unit utility expenses

**STACKED DUPLEX**  
Supports intergenerational living

**PEDESTRIAN LOOP**  
Supports community connections

# PEDESTRIAN ORIENTED



## LEGEND

- 1. Town Homes
- 2. Multi-Family
- 3. Public Space

# STARTER COTTAGES



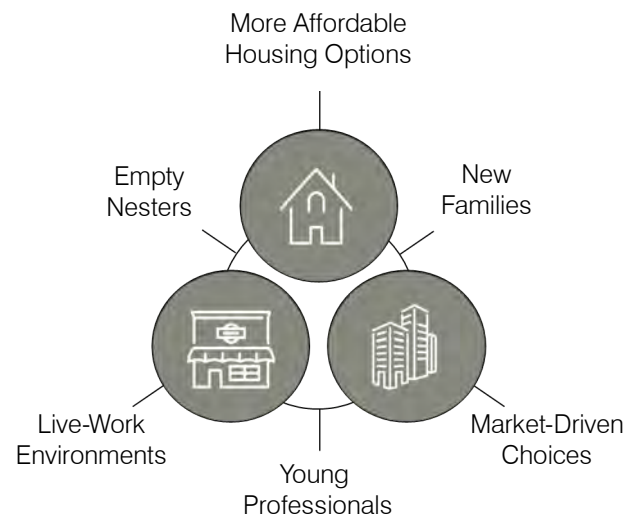
## LEGEND

- 1. Cottages
- 2. Private Garden
- 3. Town Homes
- 4. Multi-Family



# CONCLUDING THOUGHTS

# OUR RECOMMENDATIONS



## 01 Re-Zoning:

To Neighborhood Mixed Use (NM) from the current Commercial Office district. Implement a low density development oriented towards pedestrians. NM districts are for residences, convenient goods, and services directly adjacent to single-family neighborhoods.

## 02 Mitigate the Following Existing Conditions:

1. Posted Speed 45 MPH; signal-controlled
2. High speeds within school zones
3. Walkability concerns for adjacent neighborhoods
4. Unwelcoming environments for pedestrians, where priority is currently given to automotive vehicles
5. Poorly optimized traffic operations and capacities; reimagine the concept of Level-of-Service (LOS)

## 03 Foster An Intergenerational Place to Live and Learn:

Design and develop communities that fosters intergenerational collaboration, learning and living.

## 04 Reclaim R.O.W for pedestrians, cyclists and ADA accessibilities:

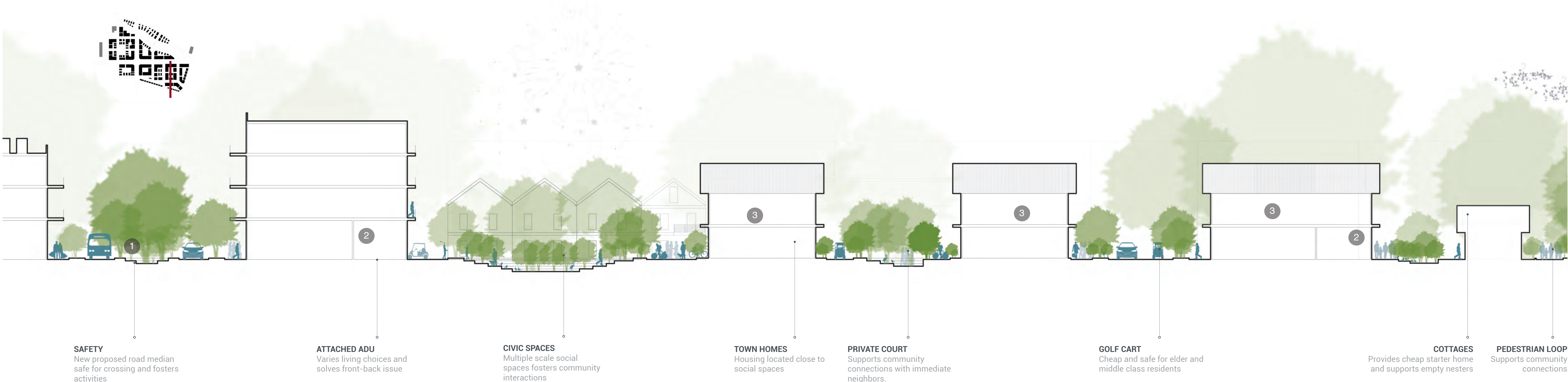
Implement incremental roadway retrofits that foster a full-service community and lower speeds within school zones.





# APPENDIX

# HUMAN SCALE AND LIVABILITY



The 5-year plan proposes multiple scales of housing types, a total of 169 units under 10 varying typologies, reflecting the flexible designs and lifestyle choices needed to emulate the dynamic demographics of Covington. These types include:

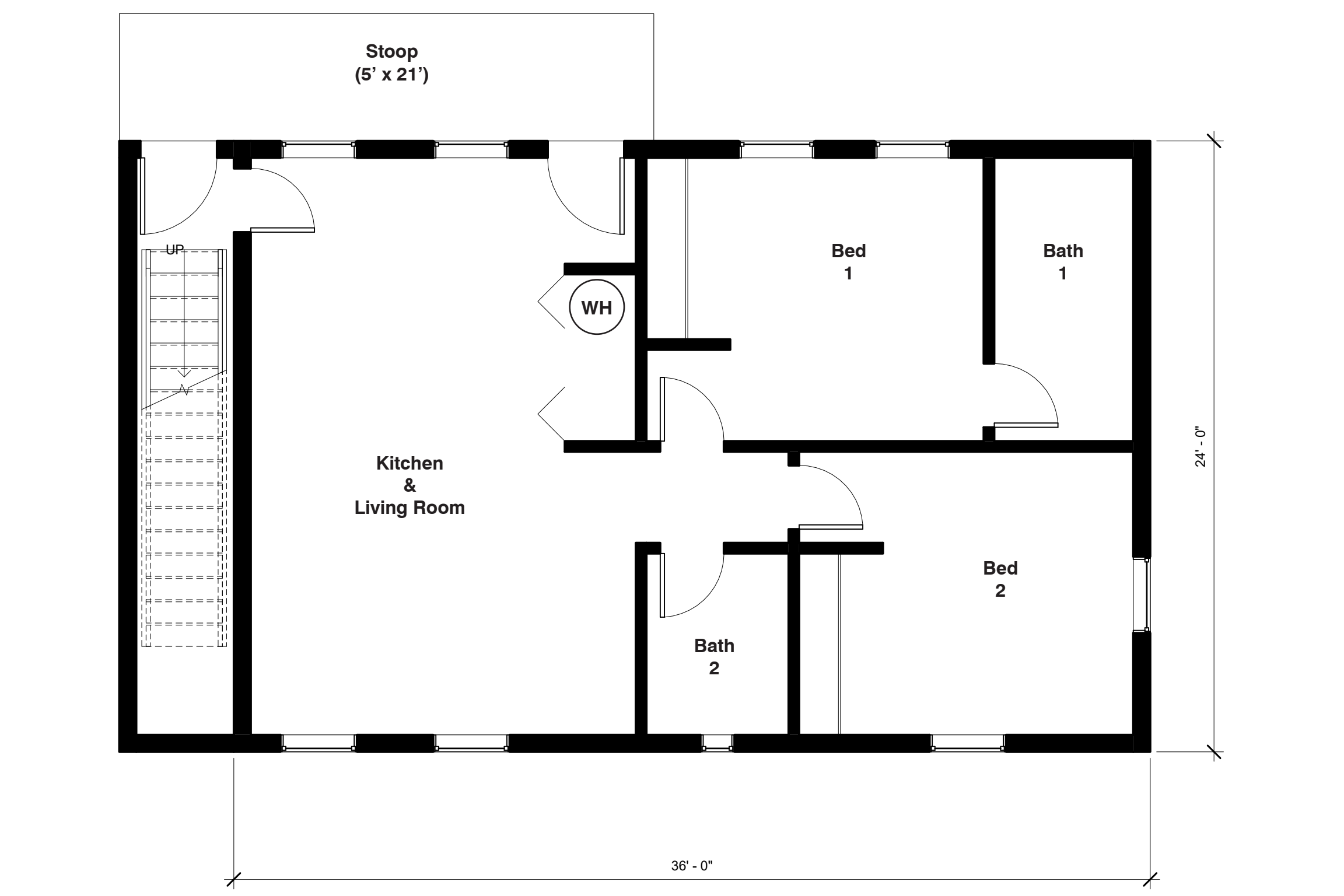
1. Stacked Duplexes
2. Townhome A with ADU
3. Cottage Homes
4. Two-Story Duplexes
5. Multi-Family with ADU
6. Townhome B with ADU
7. Townhome C with ADU
8. Townhome D - Standalone
9. Two-Bedroom Apartments
10. Three-Bedroom Apartments

Townhomes A through C offer a unique live-work option for residents, creating an opportunity for them to have an incubator workshop space on the ground floor while living above that shop. Alternatively, owners of the townhome have the option to rent out their ground floor space to local entrepreneurs or businessmen as a means of raising additional income.

Housing types that accommodate for this missing middle demand are house-scale based and compatible in form, allowing builders to attract not just entry-level buyers, but those looking for smaller and higher-quality units. The missing middle housing types needed for and demanded by the shrinking middle class, as defined by Daniel Parolek, offer "a great way to deliver affordable housing choices by design since they're of a scale that most communities would support." Communities that have these housing types adopt a form-based zoning code to enable broader mixes of housing types.

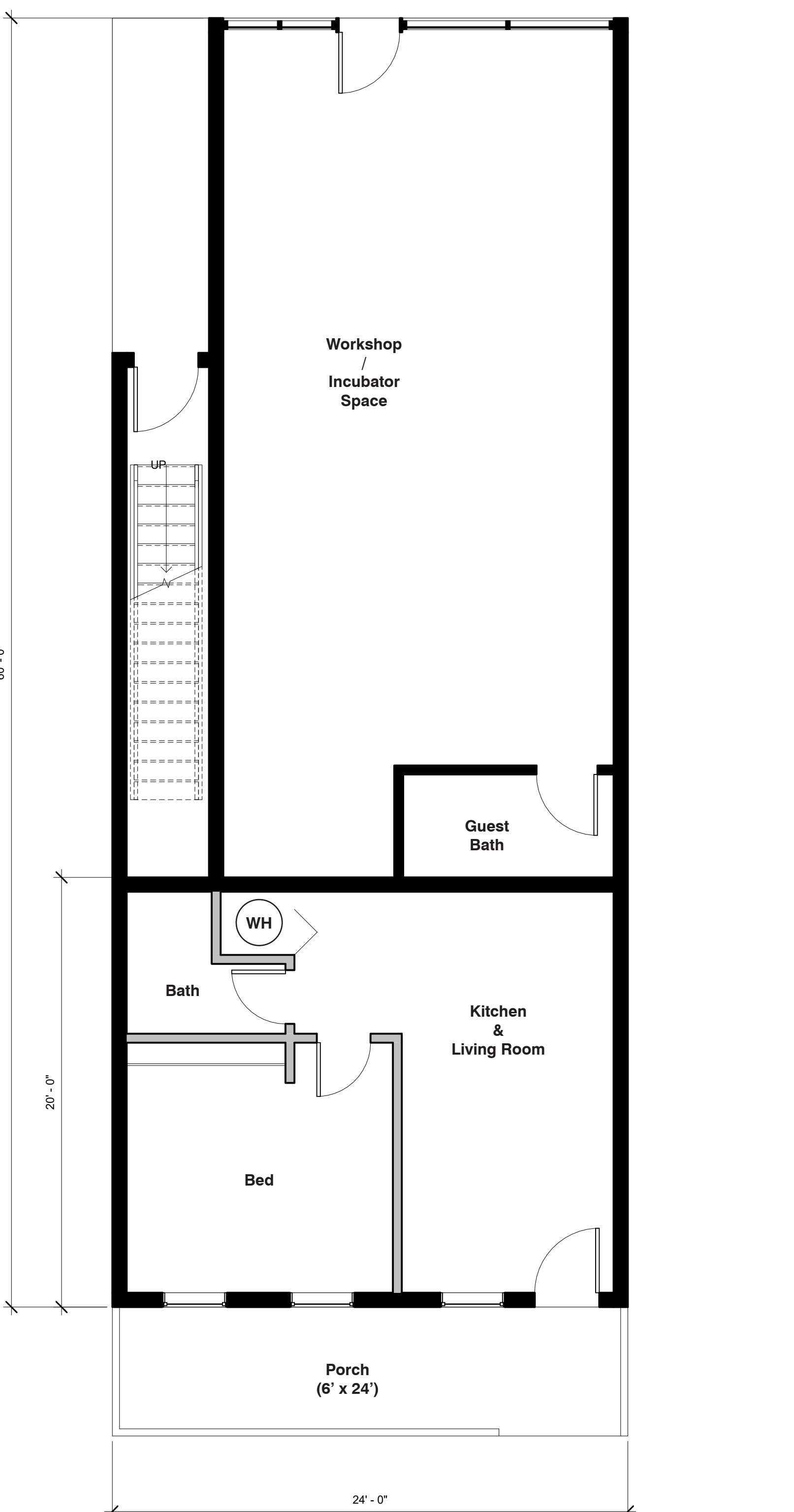
**FLOORPLAN 1: Stacked Duplexes**

Scale: 1/4" = 1'



**FLOORPLAN 2: Townhome Type A - with ADU**

Scale: 1/4" = 1'



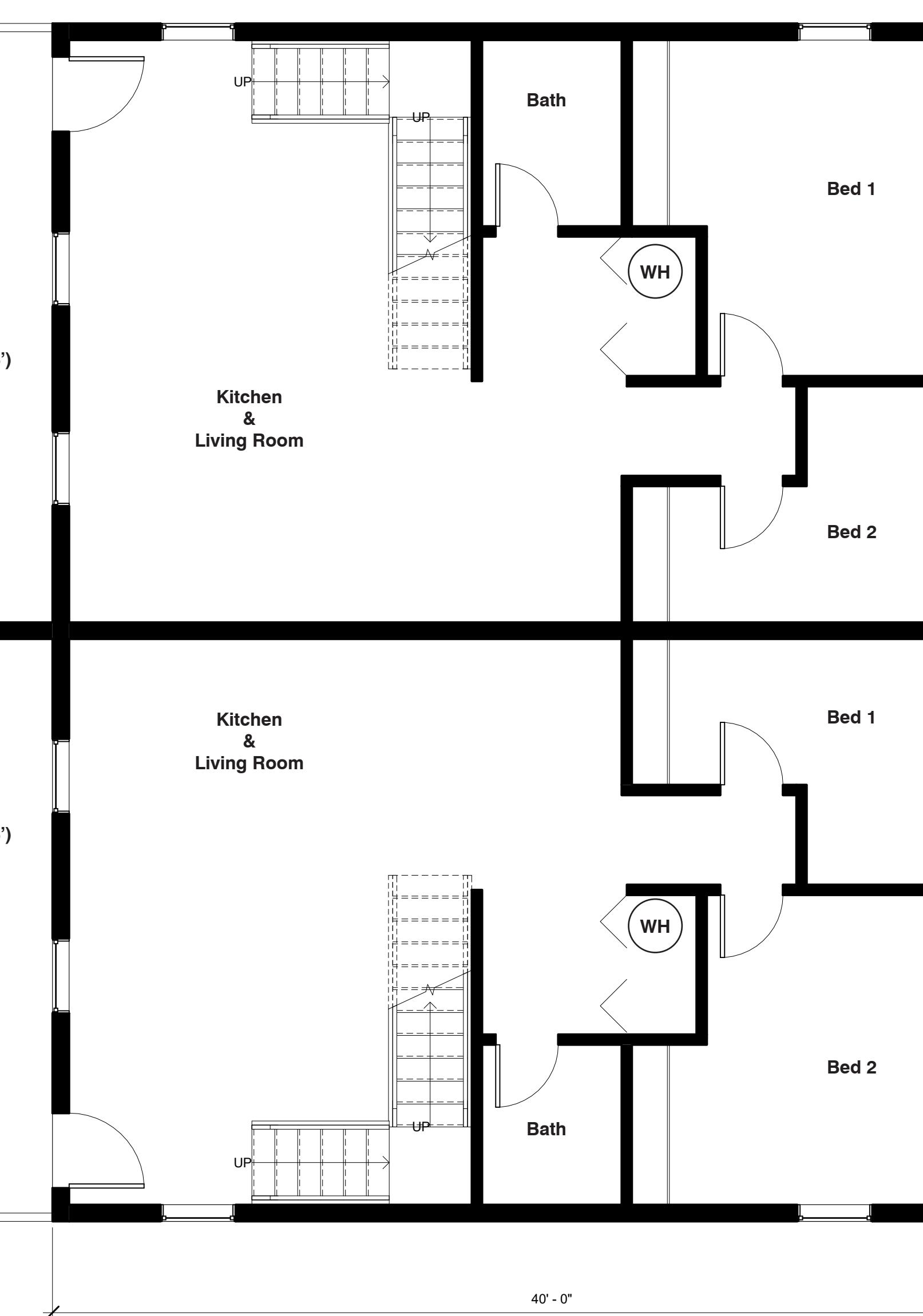
**FLOORPLAN 3: Cottage Home**

Scale: 1/4" = 1'



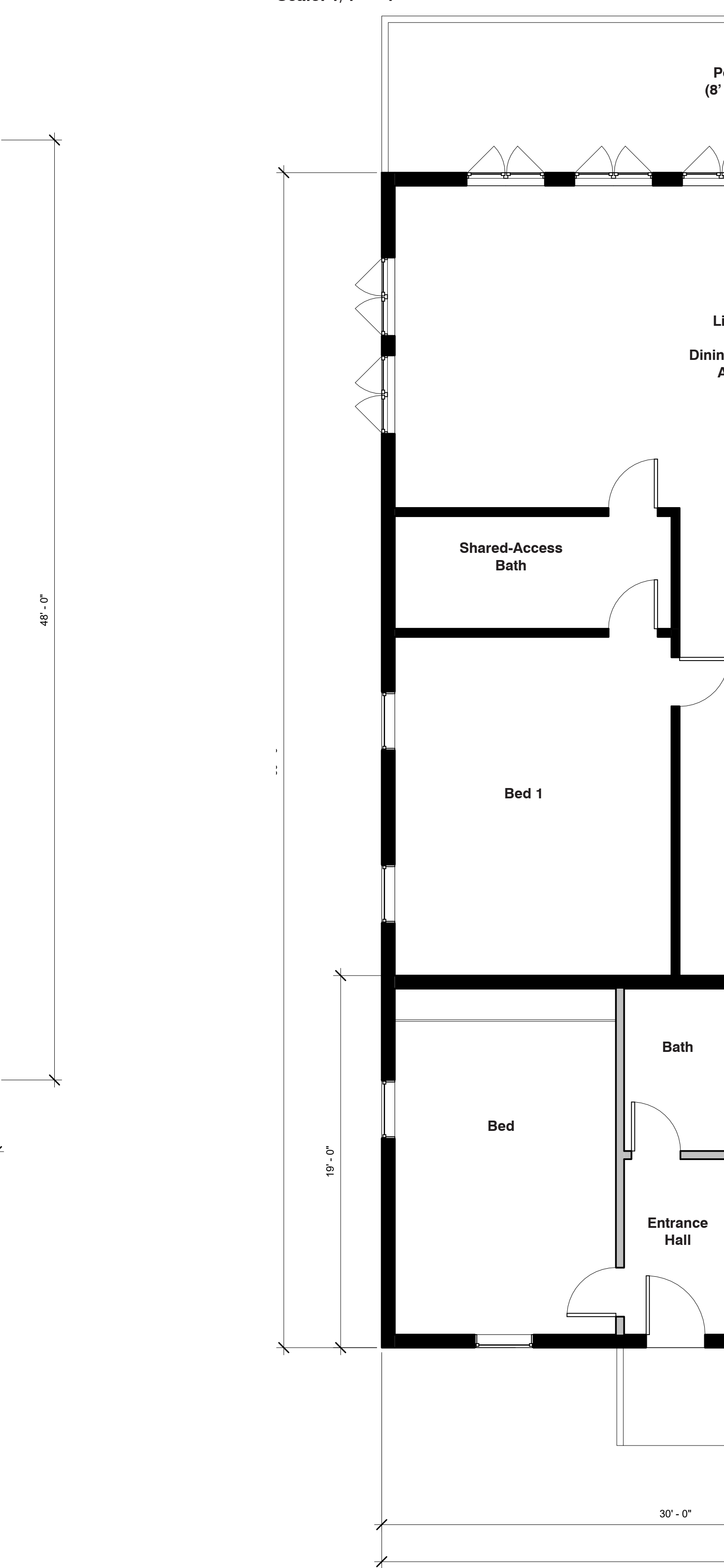
**FLOORPLAN 4: Two-Story Duplex Home**

Scale: 1/4" = 1'



**FLOORPLAN 5: Multi-Family Housing - with ADUs**

Scale: 1/4" = 1'



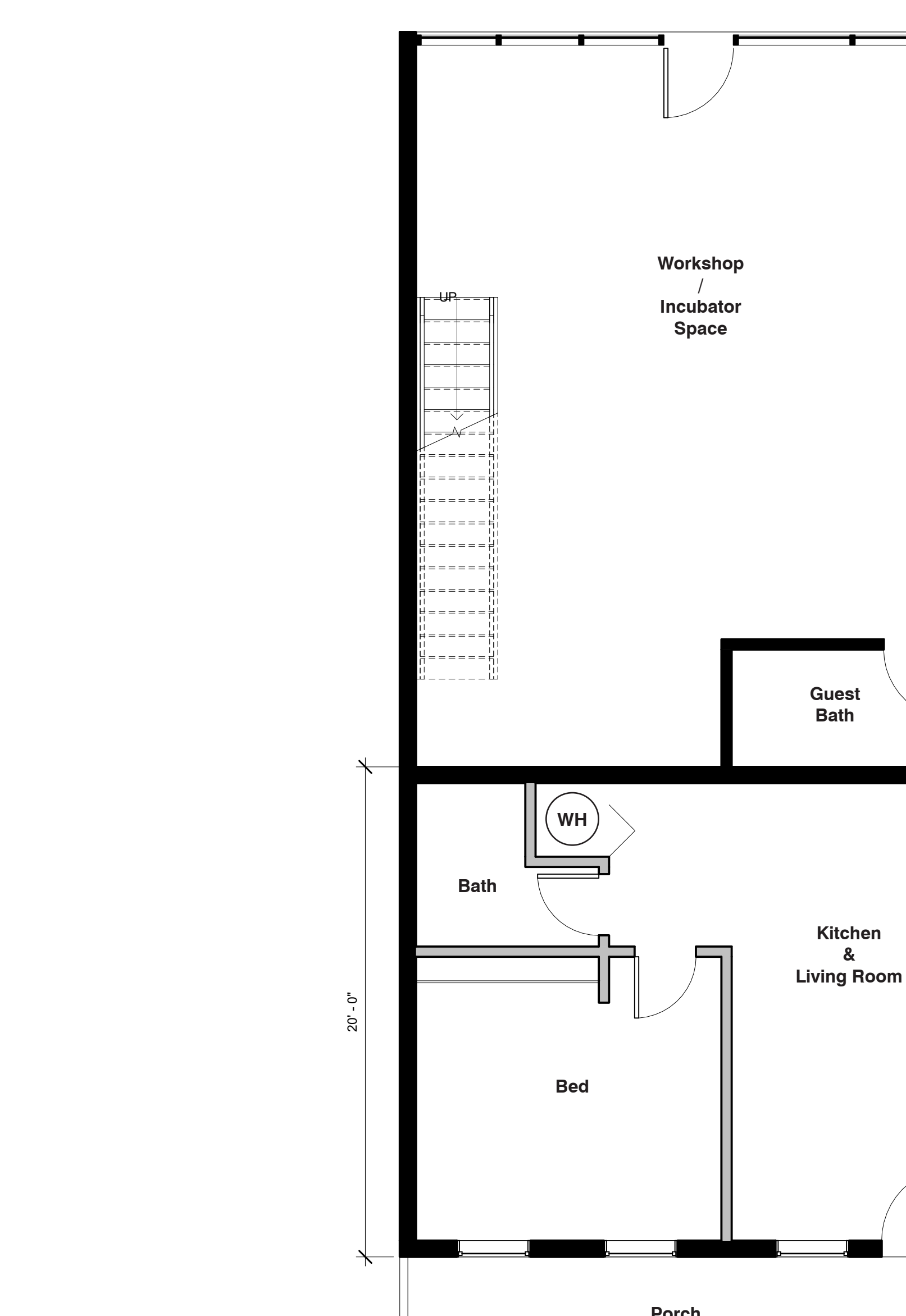
**FLOORPLAN 6: Townhome Type B - with ADU**

Scale: 1/4" = 1'



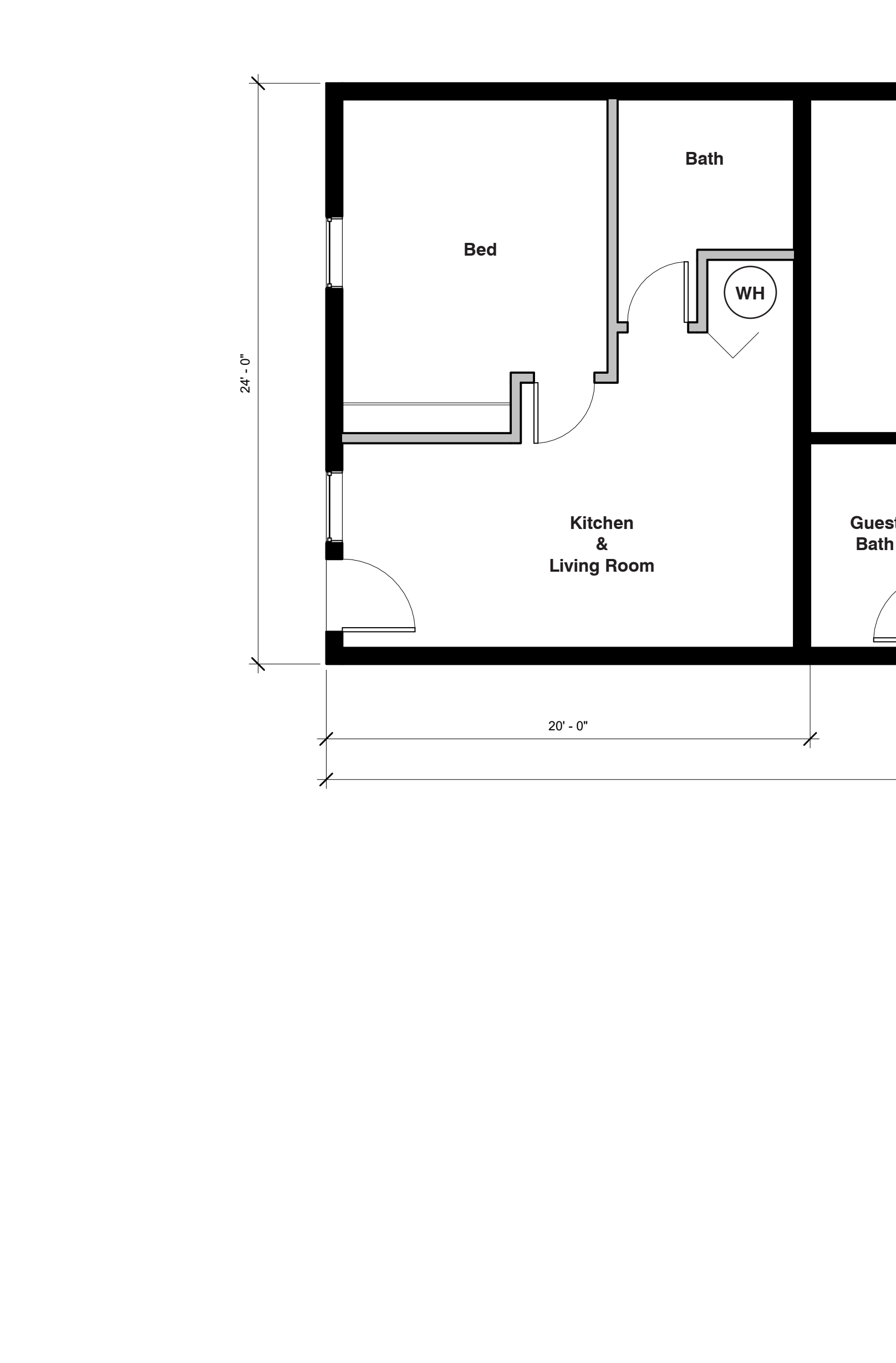
**FLOORPLAN 7: Townhome Type C - with ADU**

Scale: 1/4" = 1'



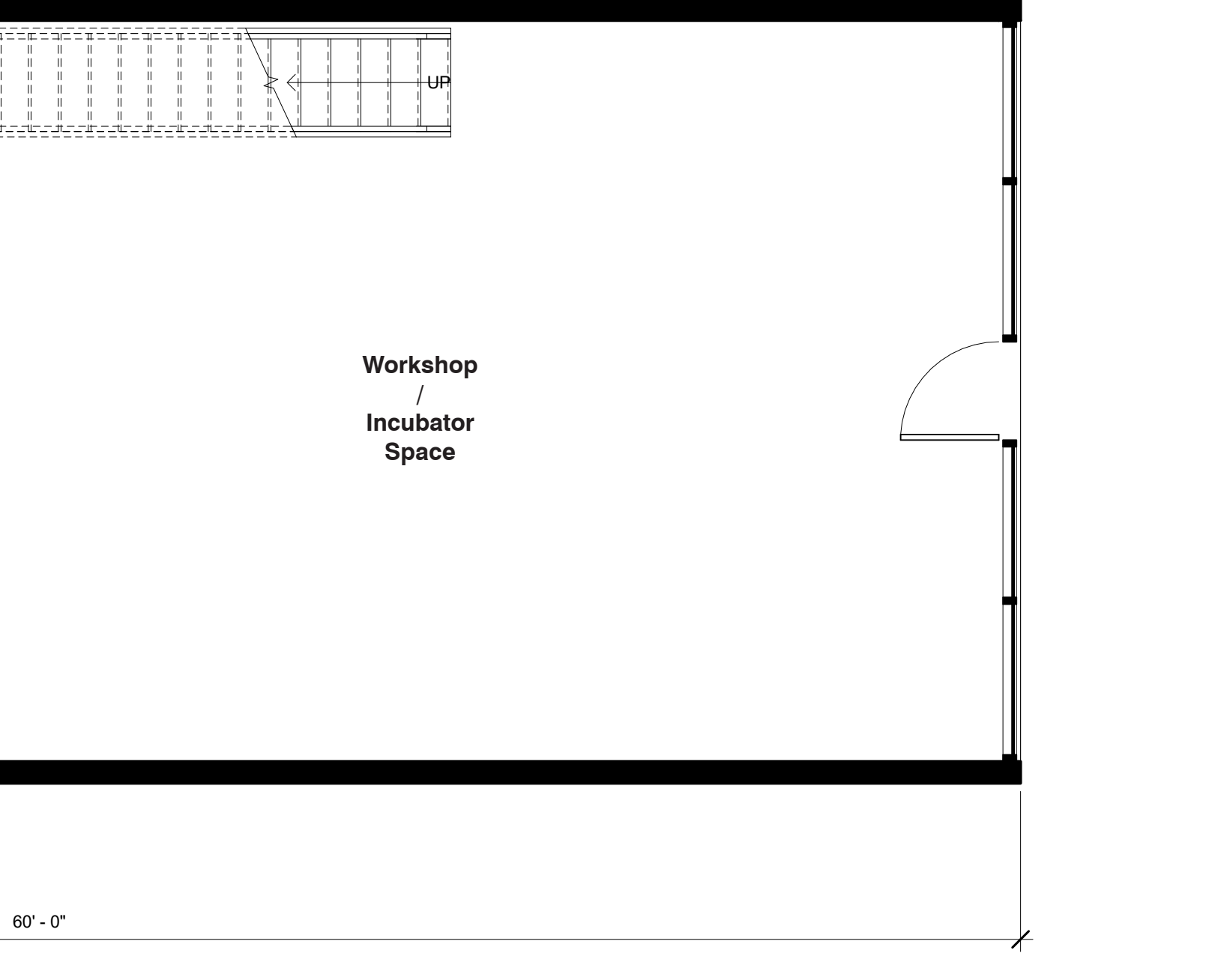
**FLOORPLAN 8: Townhome Type D - Standalone**

Scale: 1/4" = 1'



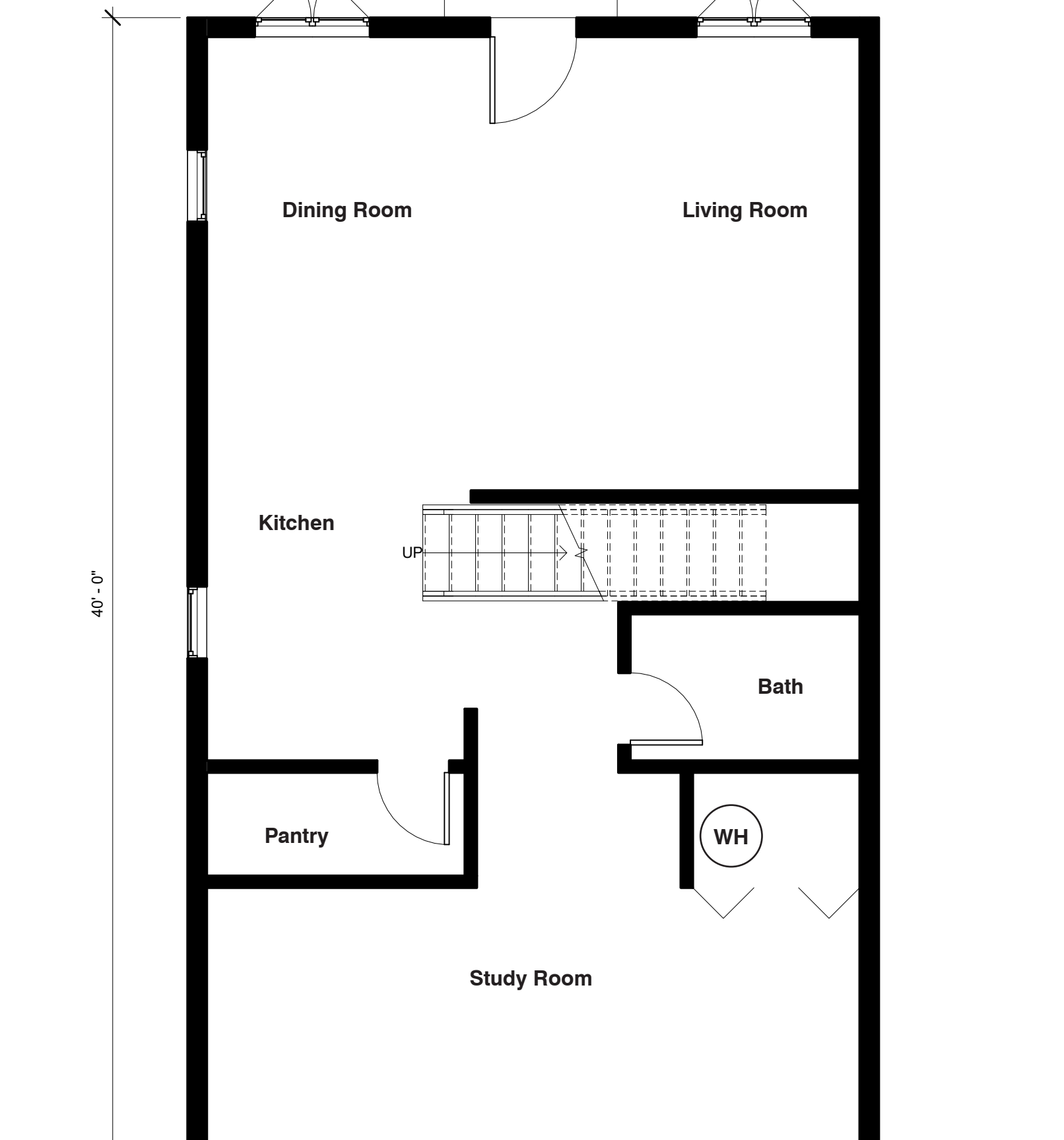
**FLOORPLAN 9: Two-Bedroom Apartment**

Scale: 1/4" = 1'



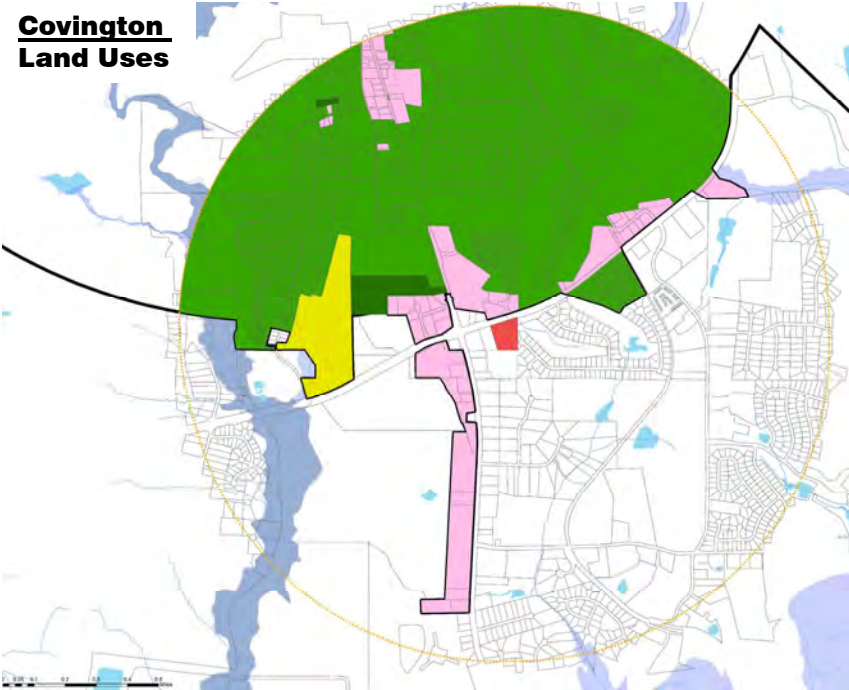
**FLOORPLAN 10: Three-Bedroom Apartment**

Scale: 1/4" = 1'



# Existing Zoning At and Around Site

## Covington Land Uses

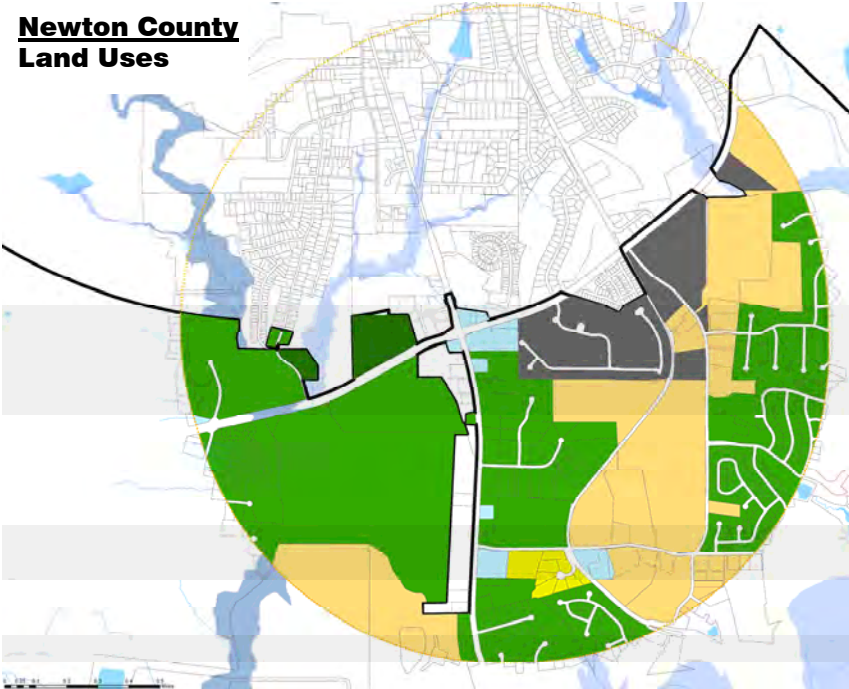


### Covington Site

#### Covington Zoning < 1 mi

- Mixed-Use
  - Multi-Family
  - Industrial
  - SFR
  - Parcels < 1 mi
  - StudioSite
  - Newton\_AllCityLimits
  - Streams & Creeks
  - Water (Misc)
- Flood Zones**
- 500-Year Flood
  - A
  - AE
  - Water (Lakes)

## Newton County Land Uses

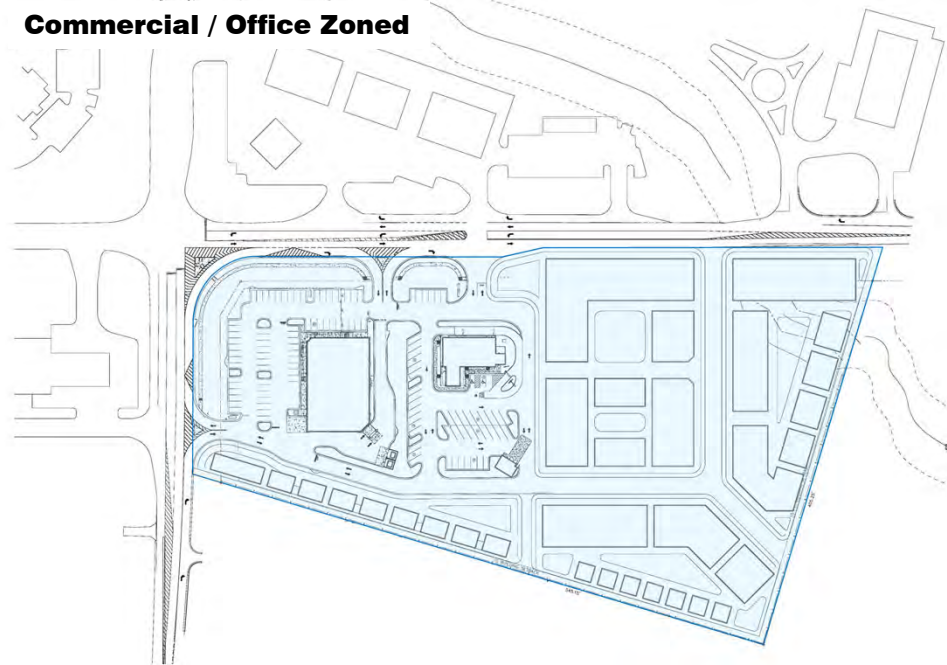


### Covington Site

#### Newton Zoning < 1 mi

- Parcels < 1 mi
  - Conservation/Ag
  - Commercial/Office
  - Industrial
  - SFR
  - Planned Development
  - Multi-Family
  - StudioSite
  - Newton\_AllCityLimits
  - Streams & Creeks
  - Water (Misc)
- Flood Zones**
- 500-Year Flood
  - A
  - AE
  - Water (Lakes)

## Commercial / Office Zoned



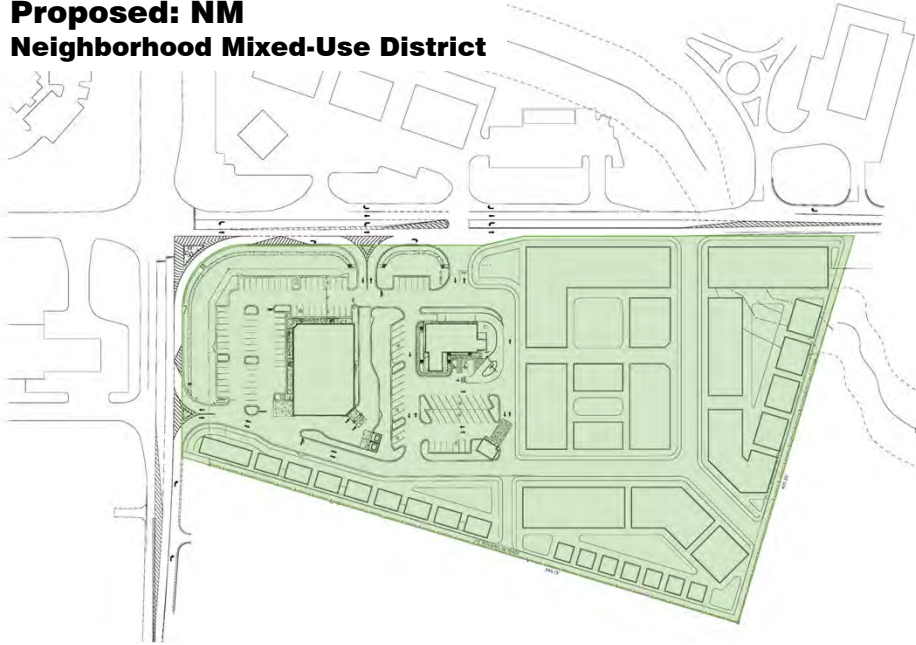
“Covington’s zoning code contains provisions for innovative housing solutions. Certain single-family zoning categories allow for *accessory dwelling units*, and other residential types allow for *2-family and multi-family housing structures*. A significant challenge lies in the distribution of its zoning categories, with very little land available for housing types other than single-family.

Work is being done to clarify the character of Covington’s “mixed-use” zoning categories. Currently, buildings in these zones are mostly only used for commercial purposes, with limited co-location of housing and retail. Zoning and building codes do not align, making it difficult for any true mix of uses to be achieved. Other developments have skirted this confusion by enacting overlay districts.”

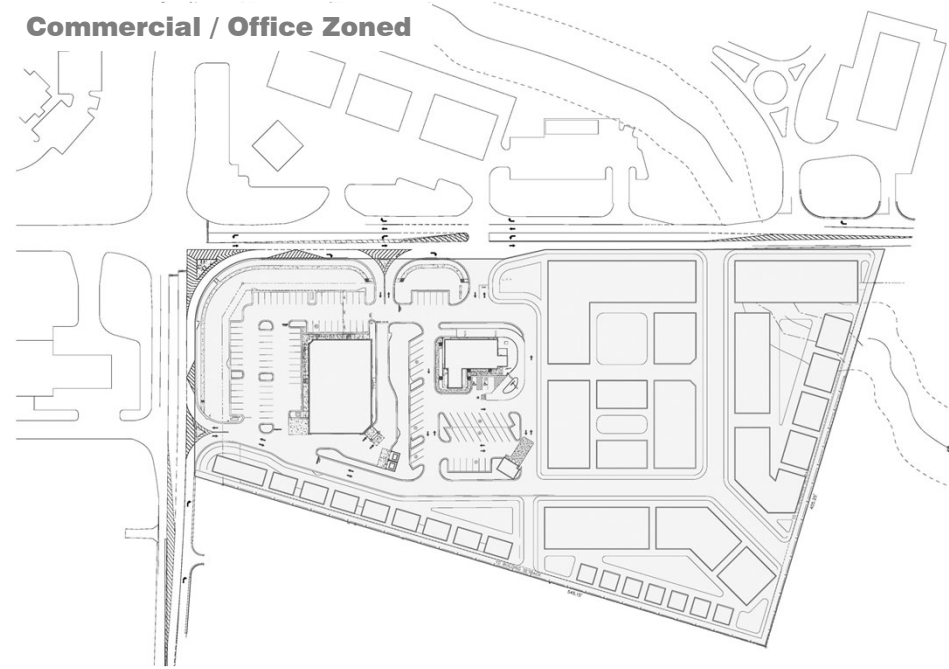
**-Georgia Conservancy**

# Proposed Zoning (Ordinance 16.16.010) At and Around Site

## Proposed: NM Neighborhood Mixed-Use District



## Commercial / Office Zoned



### NM, Neighborhood Mixed-Use District:

Intended primarily for **mixed-use development and related uses at a lower density**. This district **provides a location for residences and convenient goods and services directly adjacent to single-family neighborhoods** that will satisfy the common and frequent needs of the residents of nearby residential neighborhoods with design standards and design parameters to encourage a pedestrian-friendly traditional urban form, **oriented to pedestrians**, which will limit the conflicts between vehicles and pedestrians.

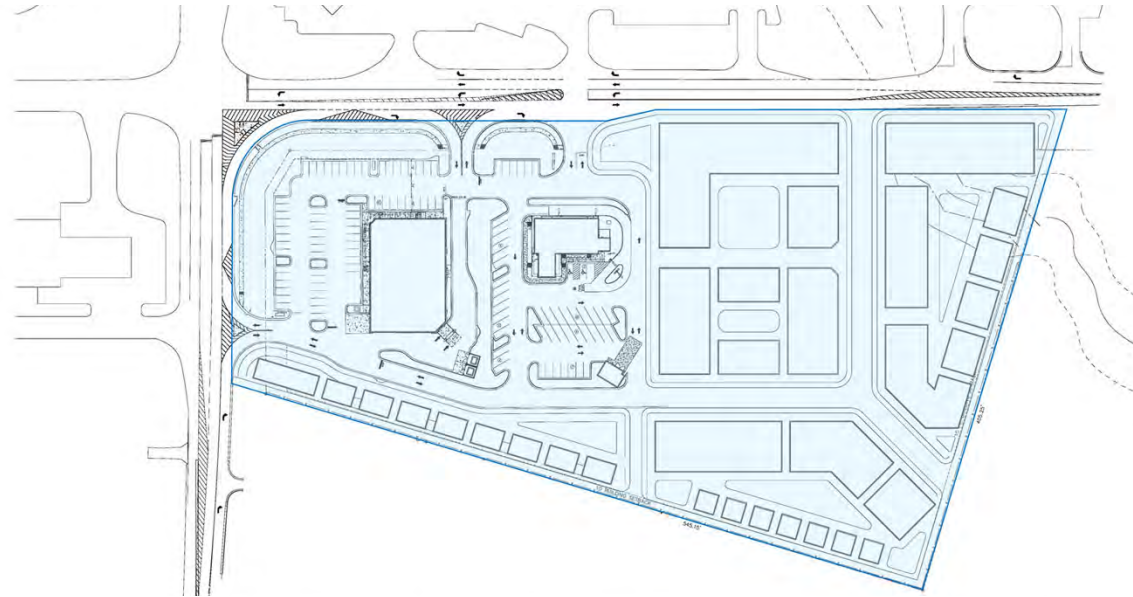
“Newton is taking strides to alter what zoning types are possible to better reflect the needs and preferences of its residents.”

**-Georgia Conservancy**

# PROPOSED RE-ZONING & PHASING

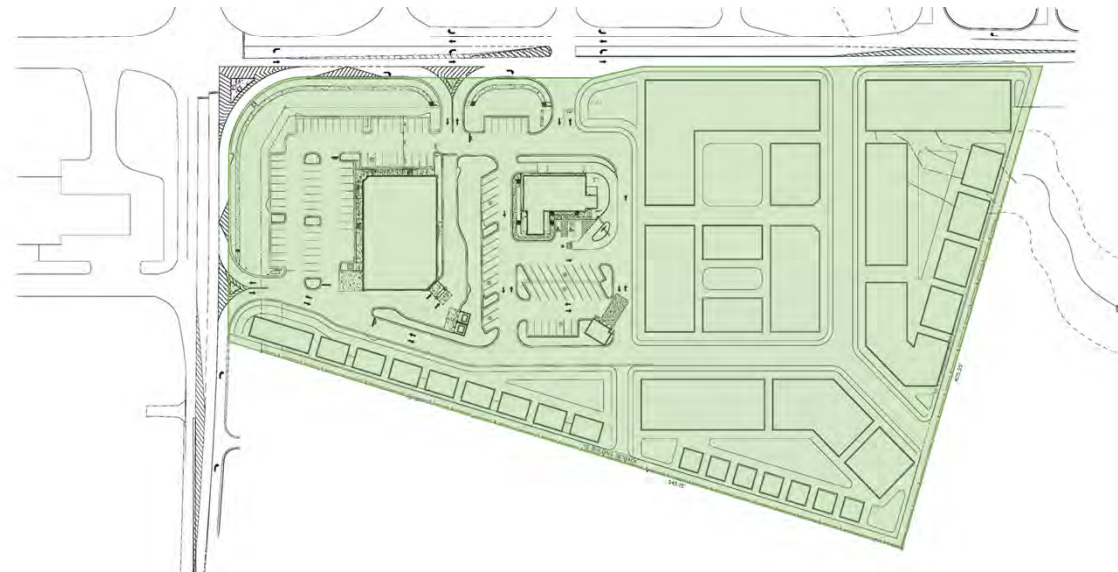
**EXISTING:** Commercial / Office District

- Low density
- Oriented to vehicles
- For business enterprise activities to be conducted for profit



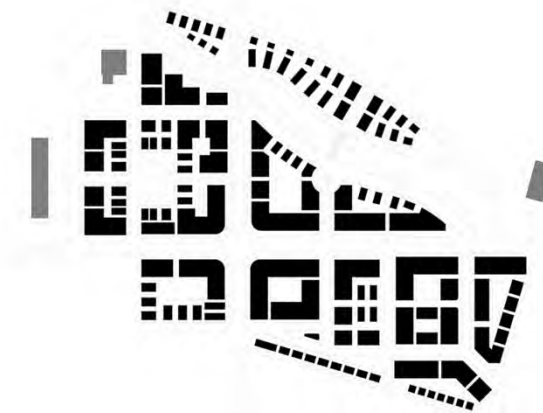
**PROPOSED: NM** Neighborhood Mixed-Use District

- Low density
- Oriented to pedestrians
- For residences, convenient goods, and services directly adjacent to single-family neighborhoods



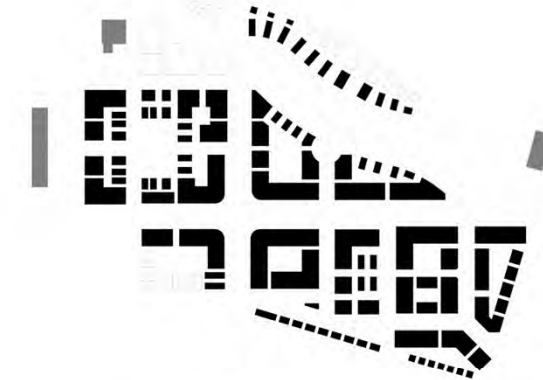
PHASE 3:

EDGE  
CONDITIONS



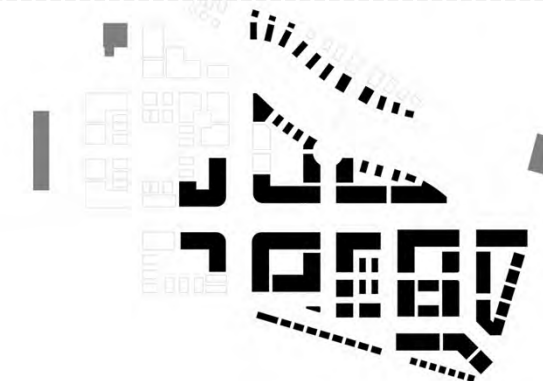
PHASE 2:

CREEK PARK  
+  
SQUARES



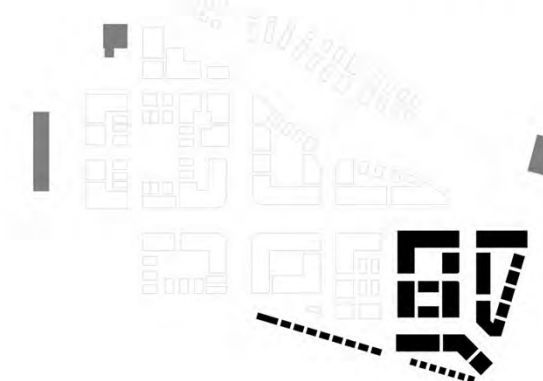
PHASE 1:

MAIN STREET  
ECONOMIES



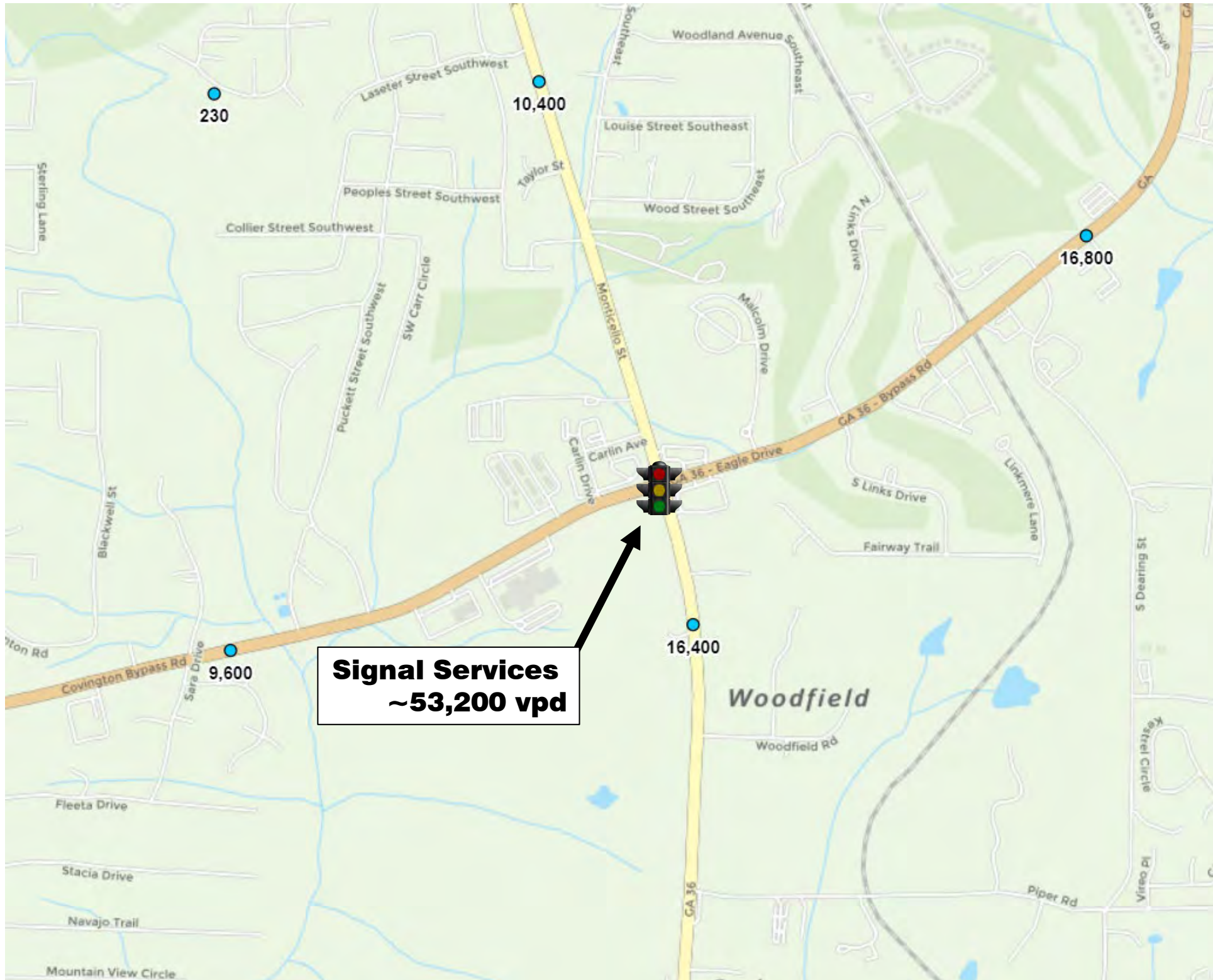
5-YEAR BUILD-OUT:

IMMEDIATE  
CONNECTIONS



# GDOT Traffic Count Station Data

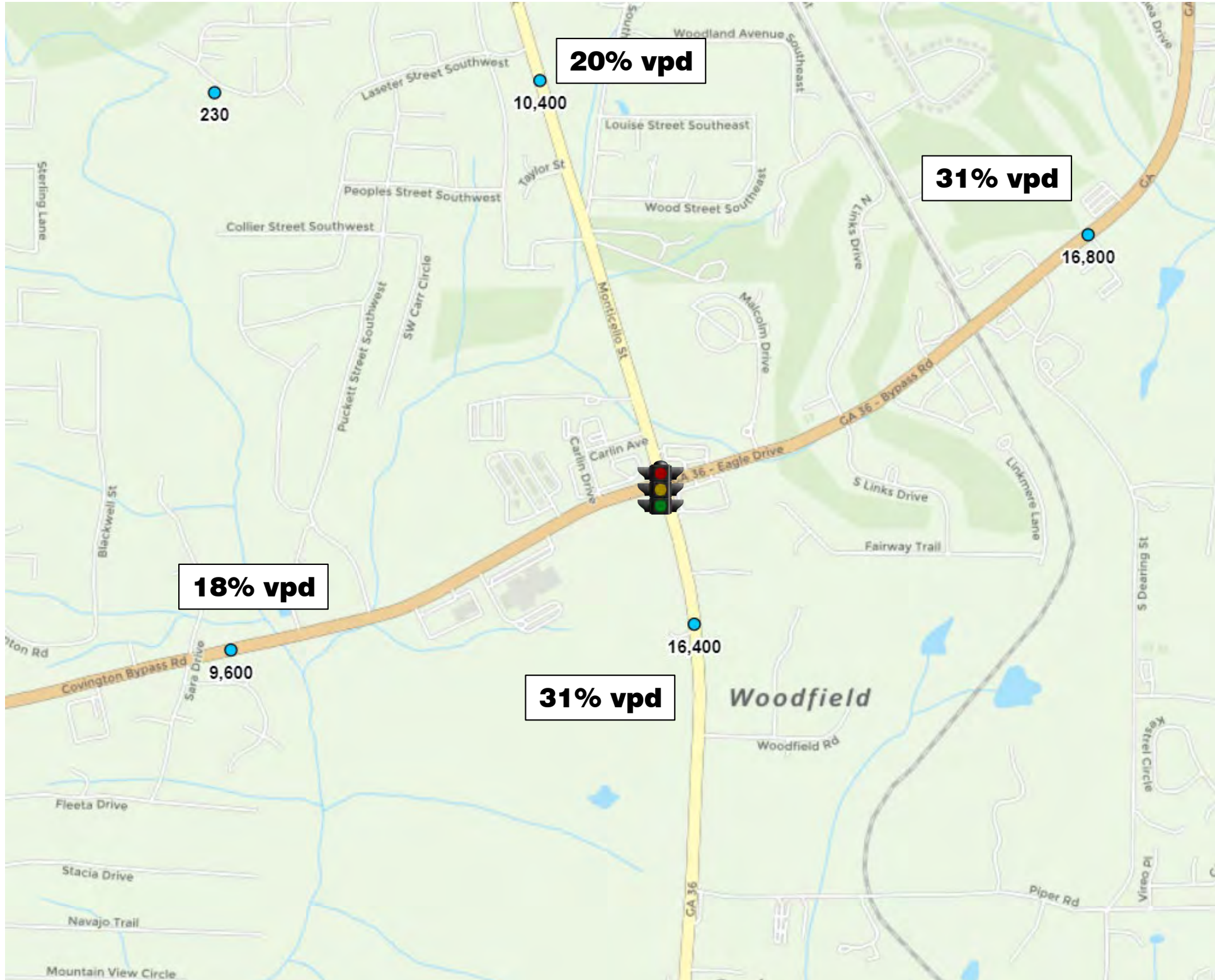
## Vehicles per day (vpd) at Intersection and Site



Data and Image from GDOT's TADA Count Station Map

# GDOT Traffic Count Station Data

## Movement Distributions at Intersection and Site

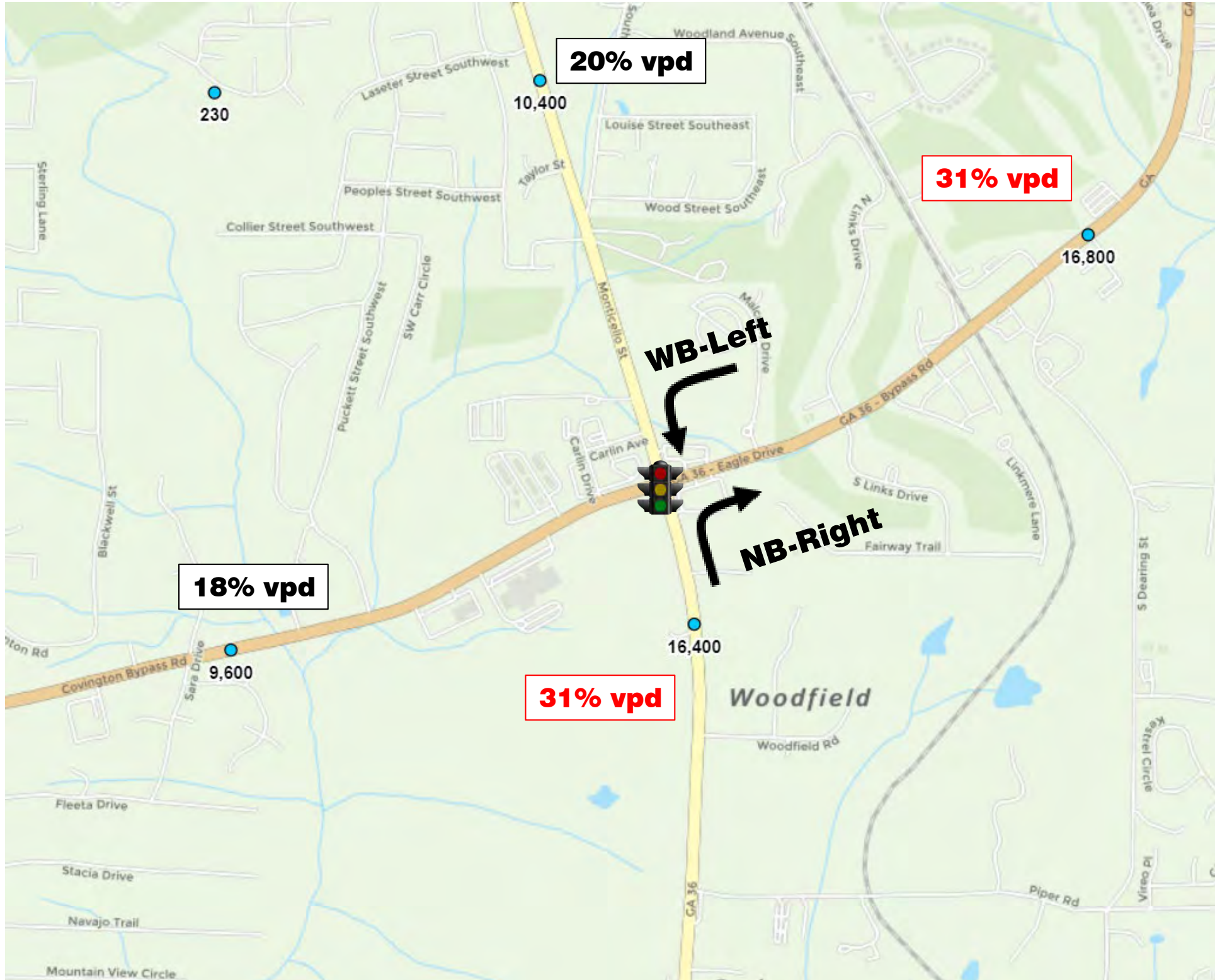


Data and Image from GDOT's TADA Count Station Map



# GDOT Traffic Count Station Data

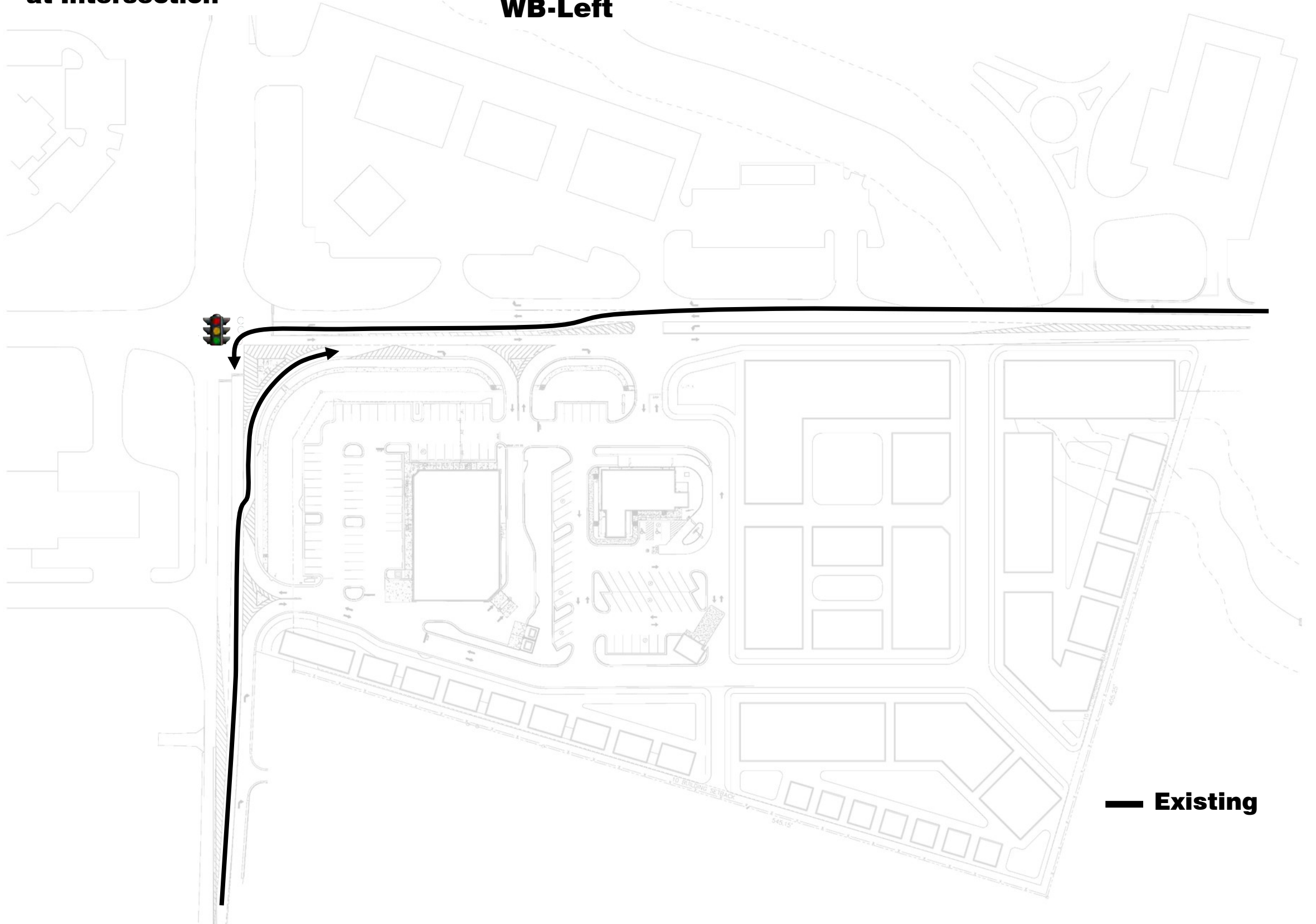
## Heaviest Movements at Intersection and Site



Data and Image from GDOT's TADA Count Station Map

**High Volume Turns  
at Intersection**

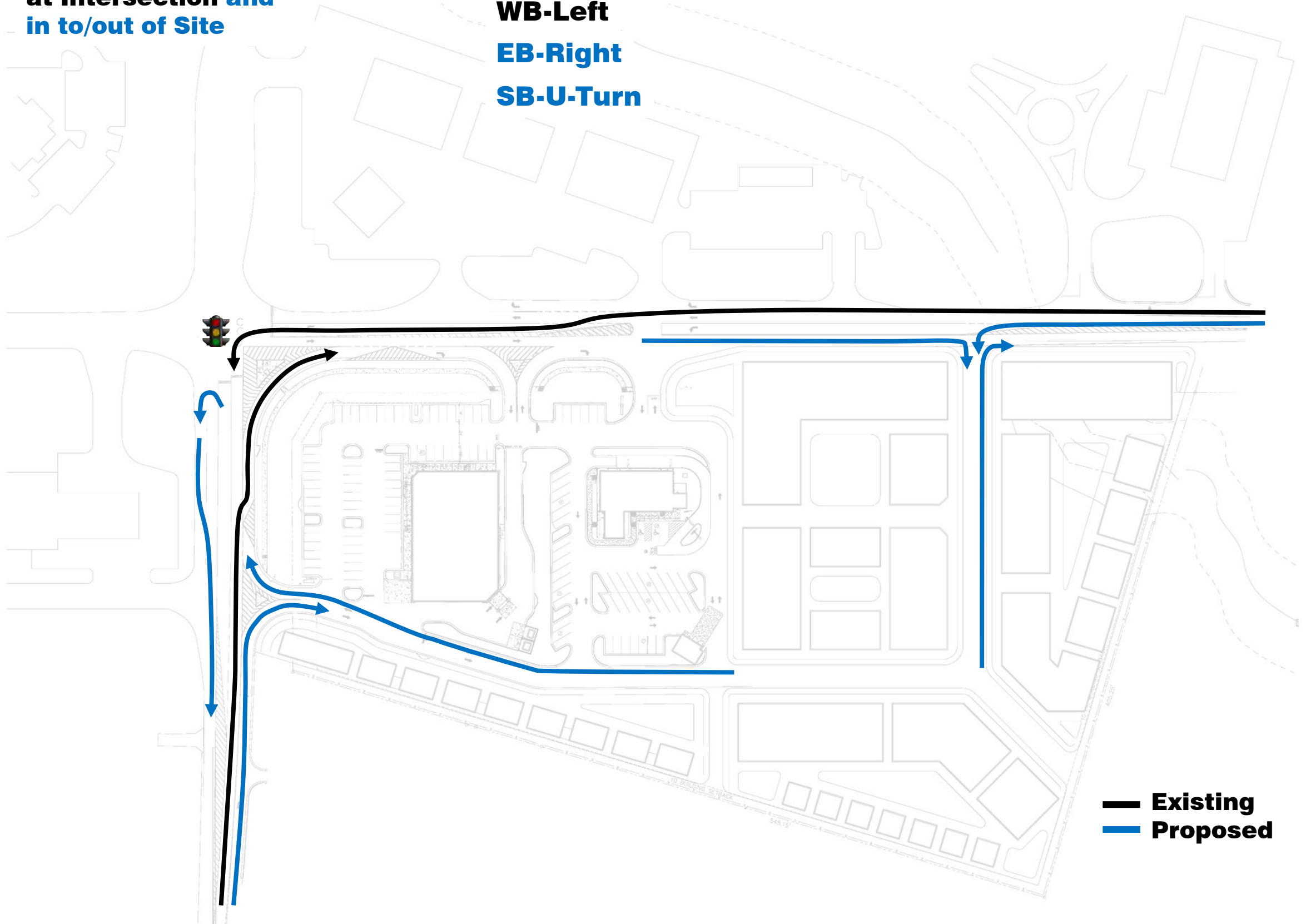
**NB-Right  
WB-Left**



**— Existing**

**High Volume Turns  
at Intersection and  
in to/out of Site**

**NB-Right  
WB-Left  
EB-Right  
SB-U-Turn**



**Existing**  
**Proposed**

**Minor Volume Turns  
That can't be made into the Site  
from the Signalized Intersection**

**SB-Thru  
WB-Left  
EB-Right**

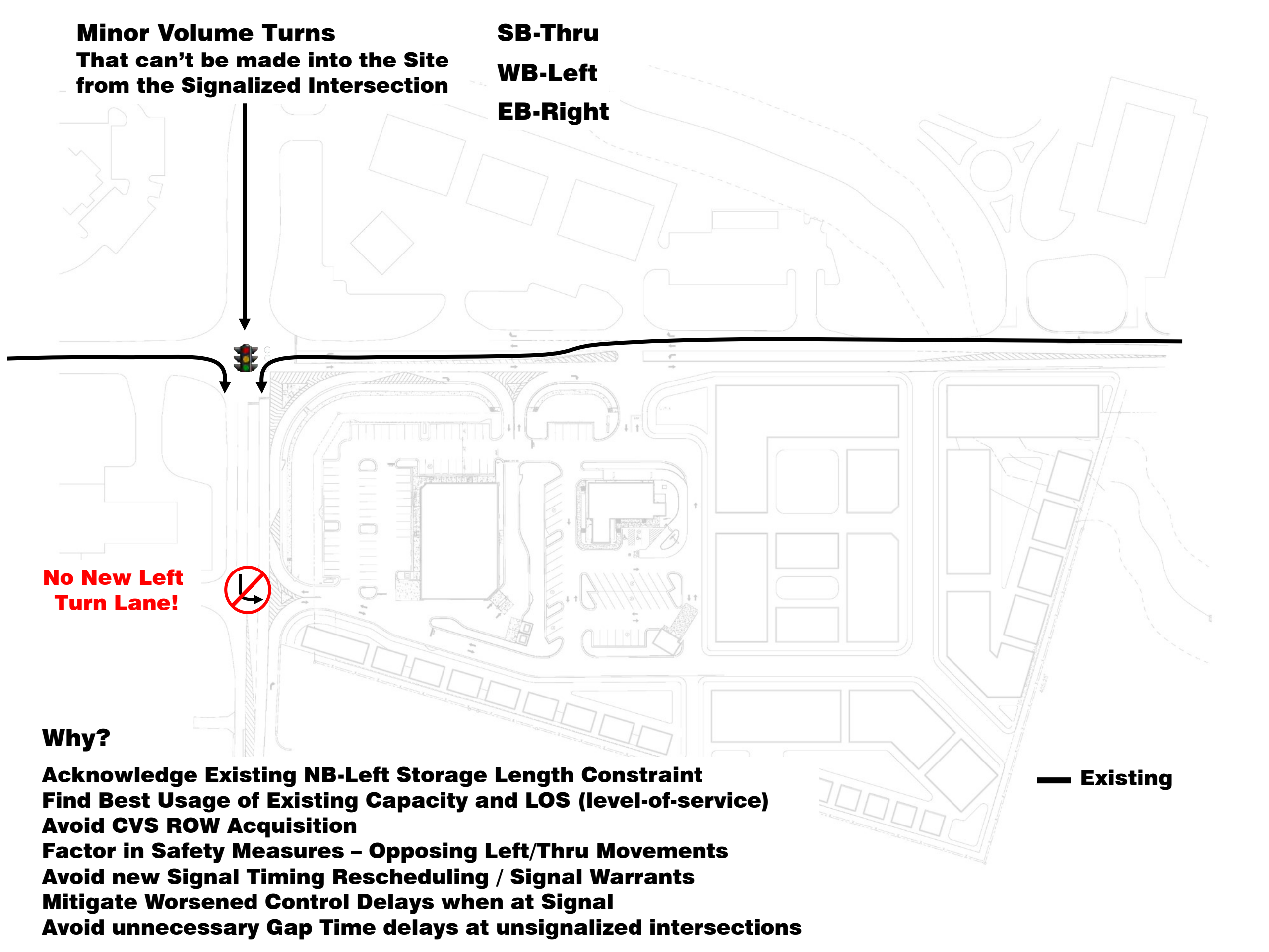
**No New Left  
Turn Lane!**



**Why?**

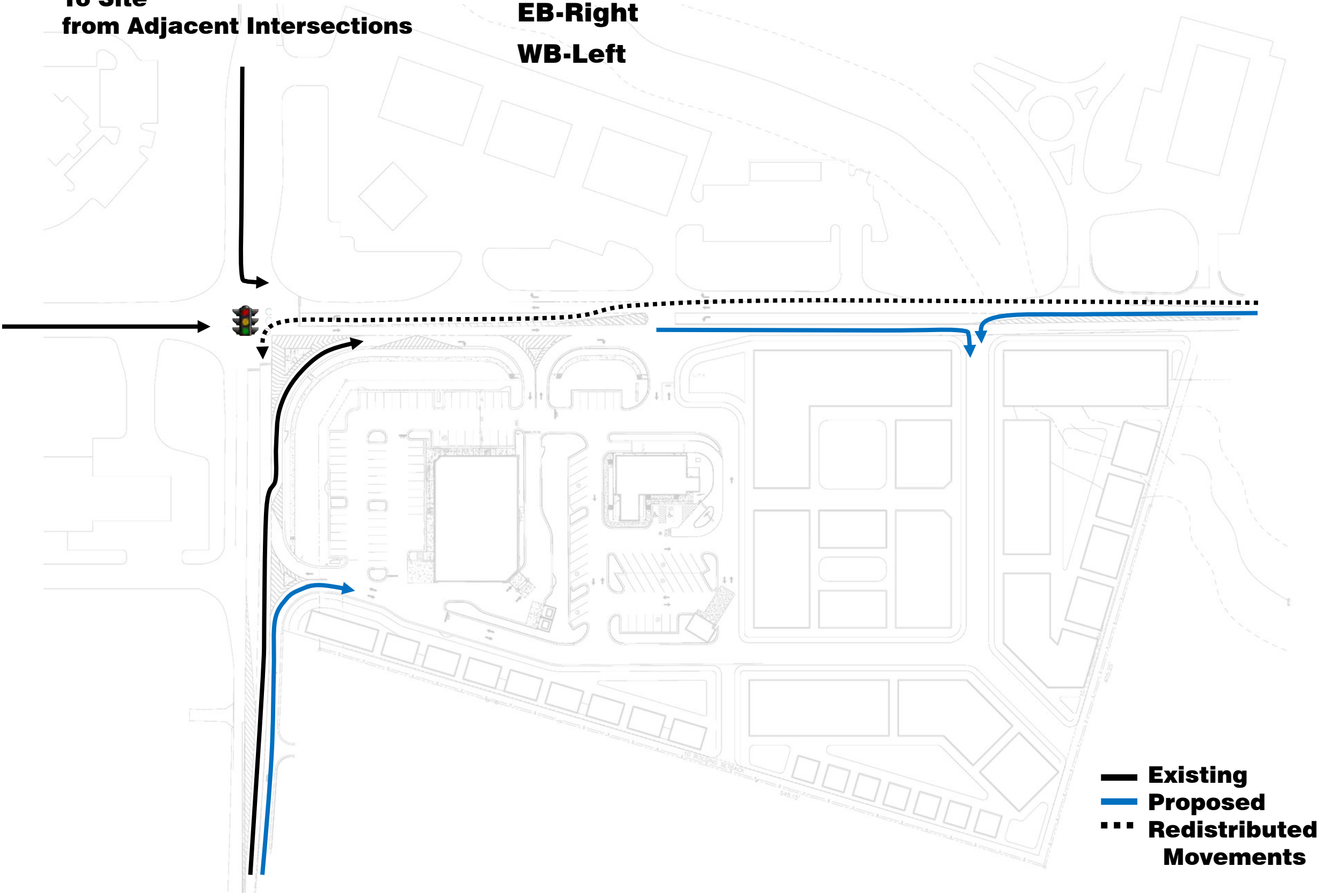
- Acknowledge Existing NB-Left Storage Length Constraint**
- Find Best Usage of Existing Capacity and LOS (level-of-service)**
- Avoid CVS ROW Acquisition**
- Factor in Safety Measures – Opposing Left/Thru Movements**
- Avoid new Signal Timing Rescheduling / Signal Warrants**
- Mitigate Worsened Control Delays when at Signal**
- Avoid unnecessary Gap Time delays at unsignalized intersections**

**— Existing**



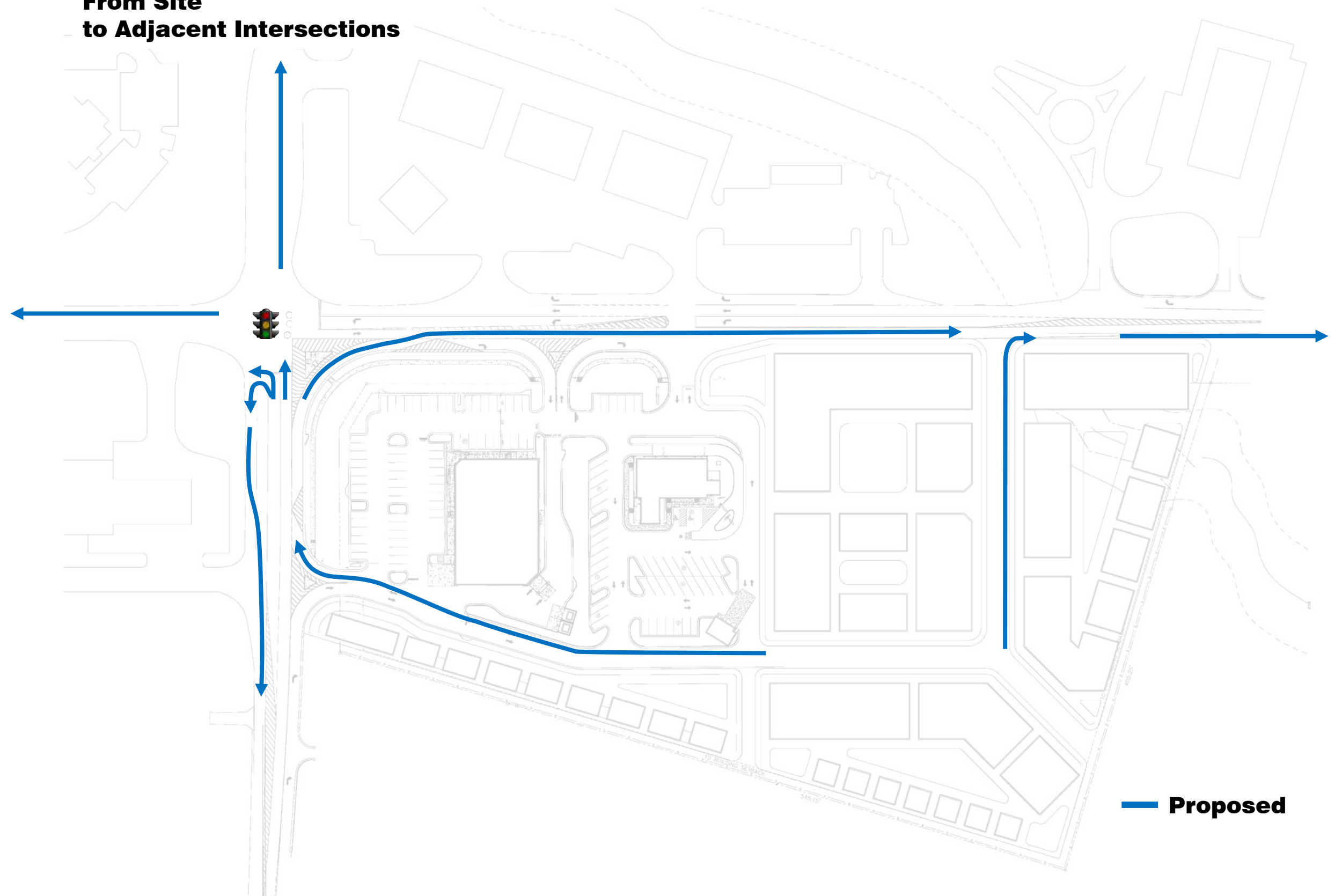
**Entering Volumes  
To Site  
from Adjacent Intersections**

**NB-Right  
EB-Right  
WB-Left**



- Existing**
- Proposed**
- Redistributed Movements**

**Exiting Volumes  
From Site  
to Adjacent Intersections**



**Proposed**

# Traffic Controls At and Around Site - 5-Year Plan

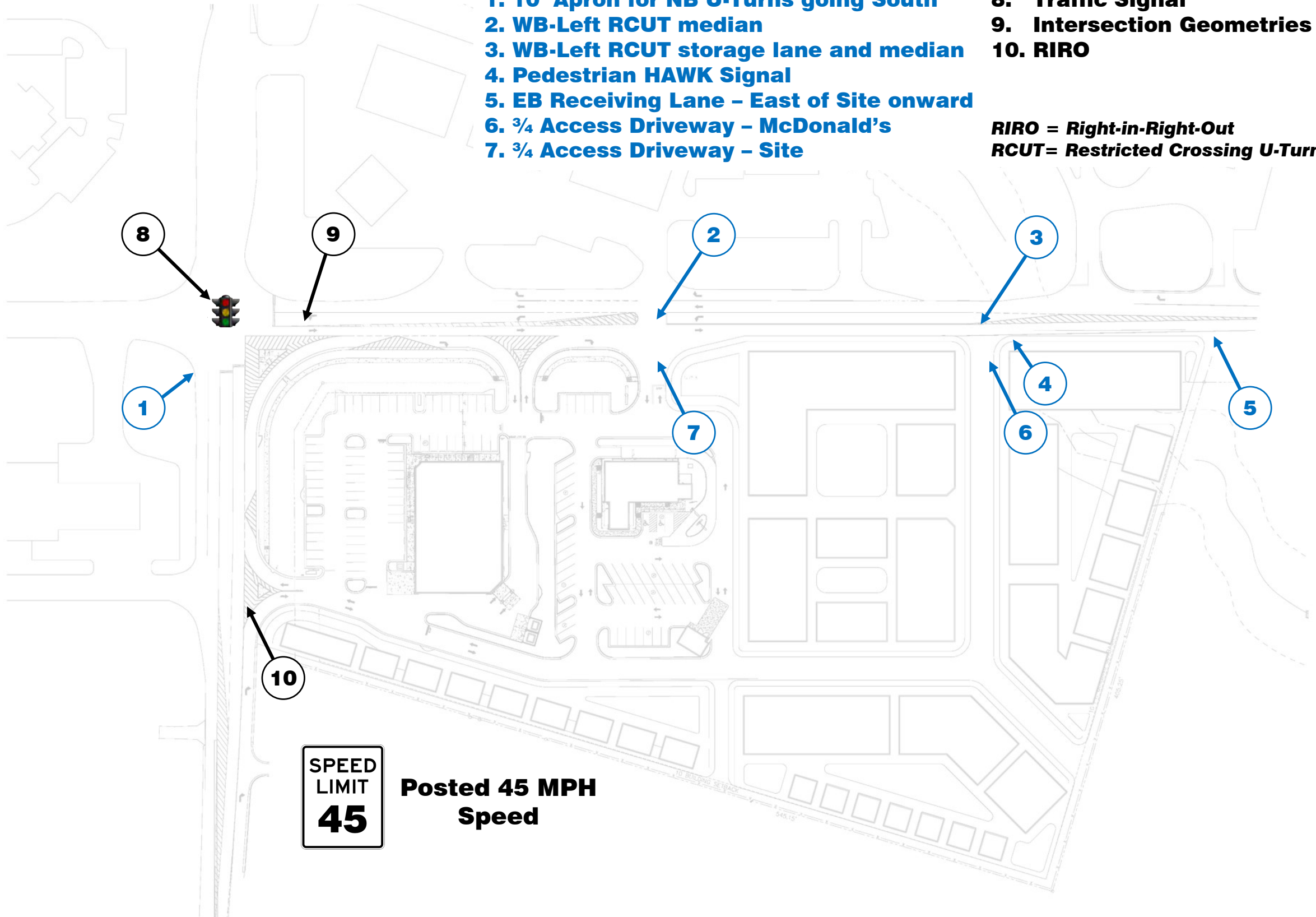
## Install New:

## Maintain Existing:

1. 10' Apron for NB U-Turns going South
2. WB-Left RCUT median
3. WB-Left RCUT storage lane and median
4. Pedestrian HAWK Signal
5. EB Receiving Lane - East of Site onward
6. 3/4 Access Driveway - McDonald's
7. 3/4 Access Driveway - Site

8. Traffic Signal
9. Intersection Geometries
10. RIRO

**RIRO = Right-in-Right-Out**  
**RCUT = Restricted Crossing U-Turn**



# Proposed Traffic Controls At and Around Site – 5-Year Plan

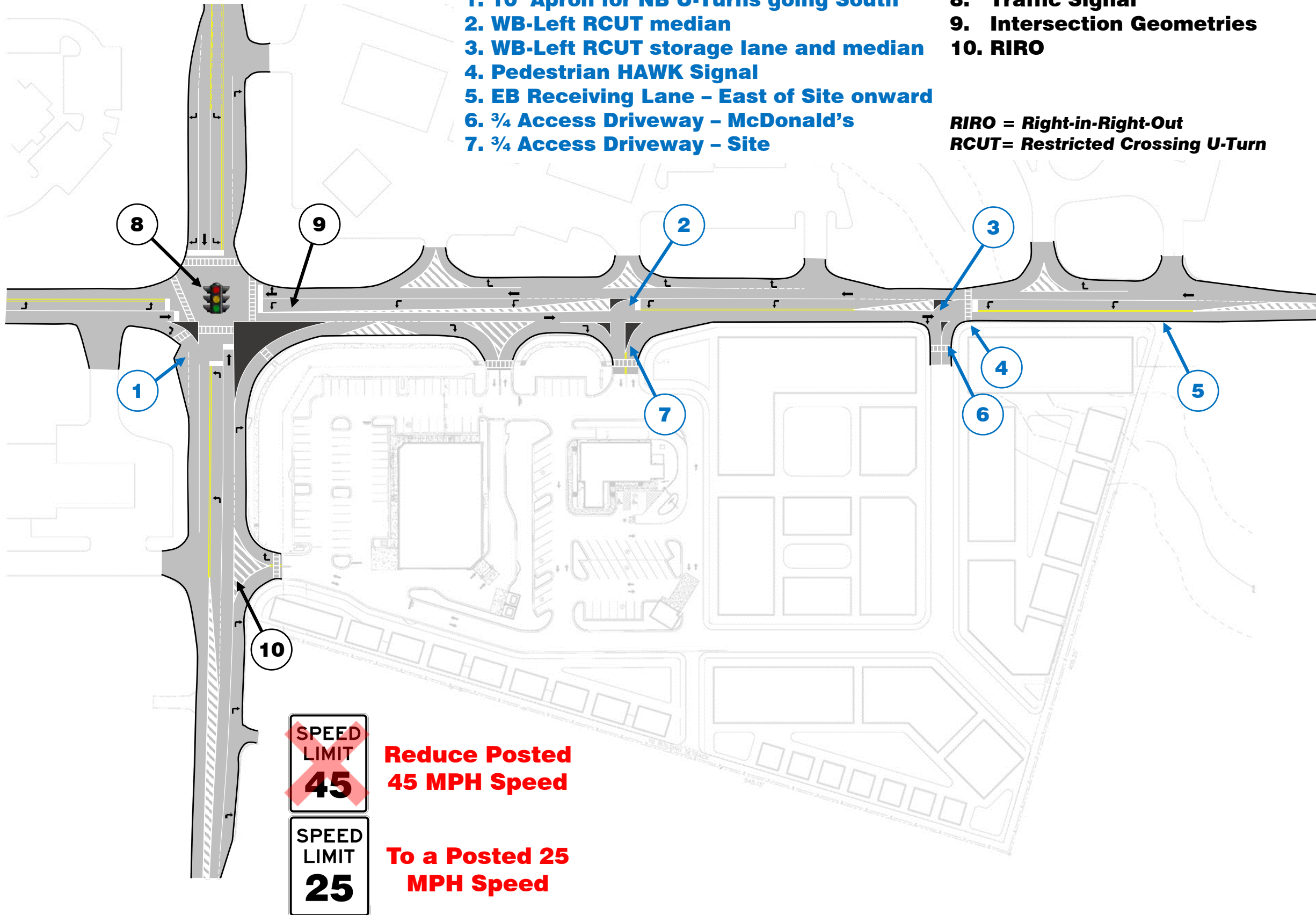
## Install New:

## Maintain Existing:

1. 10' Apron for NB U-Turns going South
2. WB-Left RCUT median
3. WB-Left RCUT storage lane and median
4. Pedestrian HAWK Signal
5. EB Receiving Lane - East of Site onward
6. ¾ Access Driveway - McDonald's
7. ¾ Access Driveway - Site

8. Traffic Signal
9. Intersection Geometries
10. RIRO

**RIRO = Right-in-Right-Out**  
**RCUT = Restricted Crossing U-Turn**



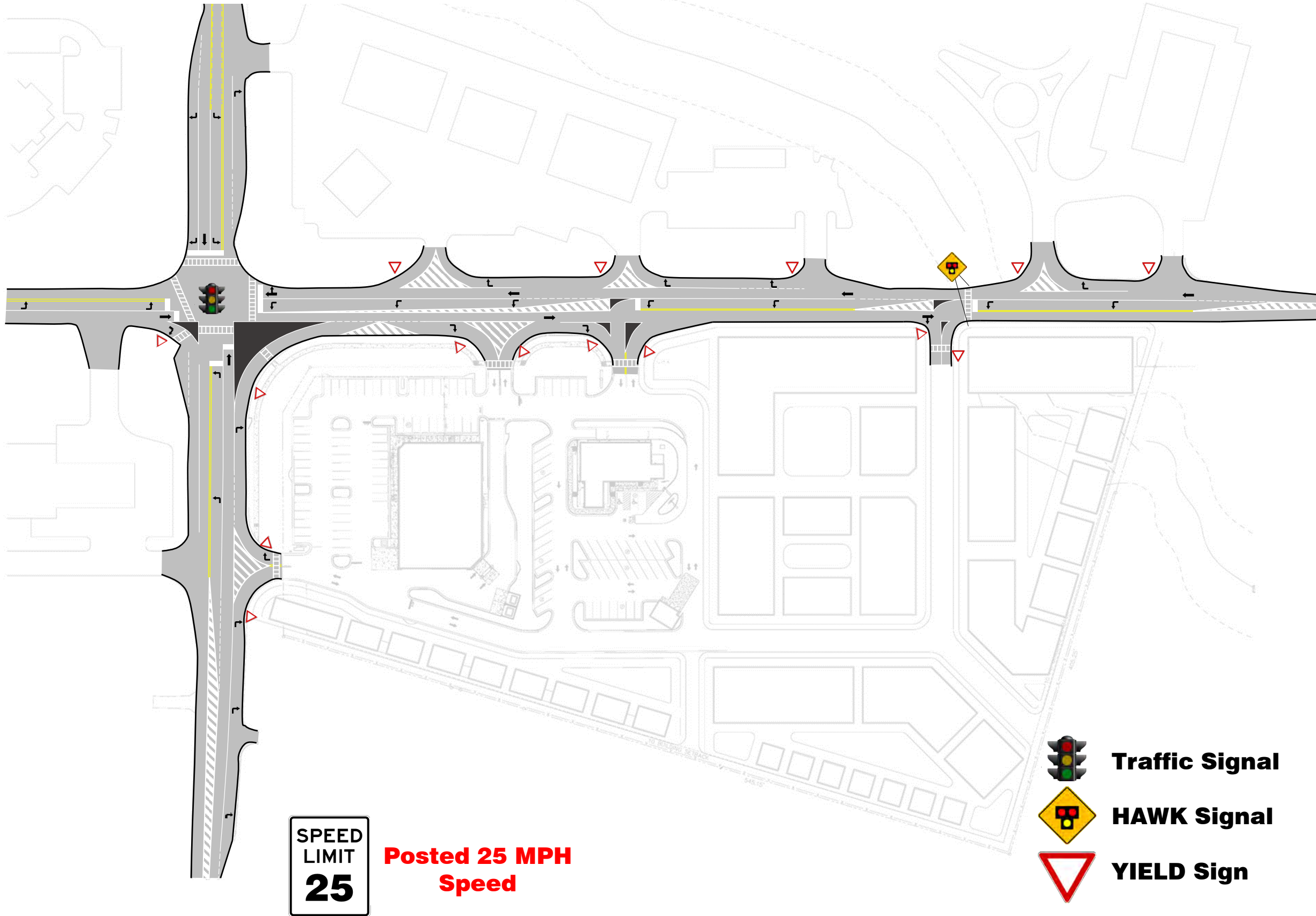
**Reduce Posted  
45 MPH Speed**



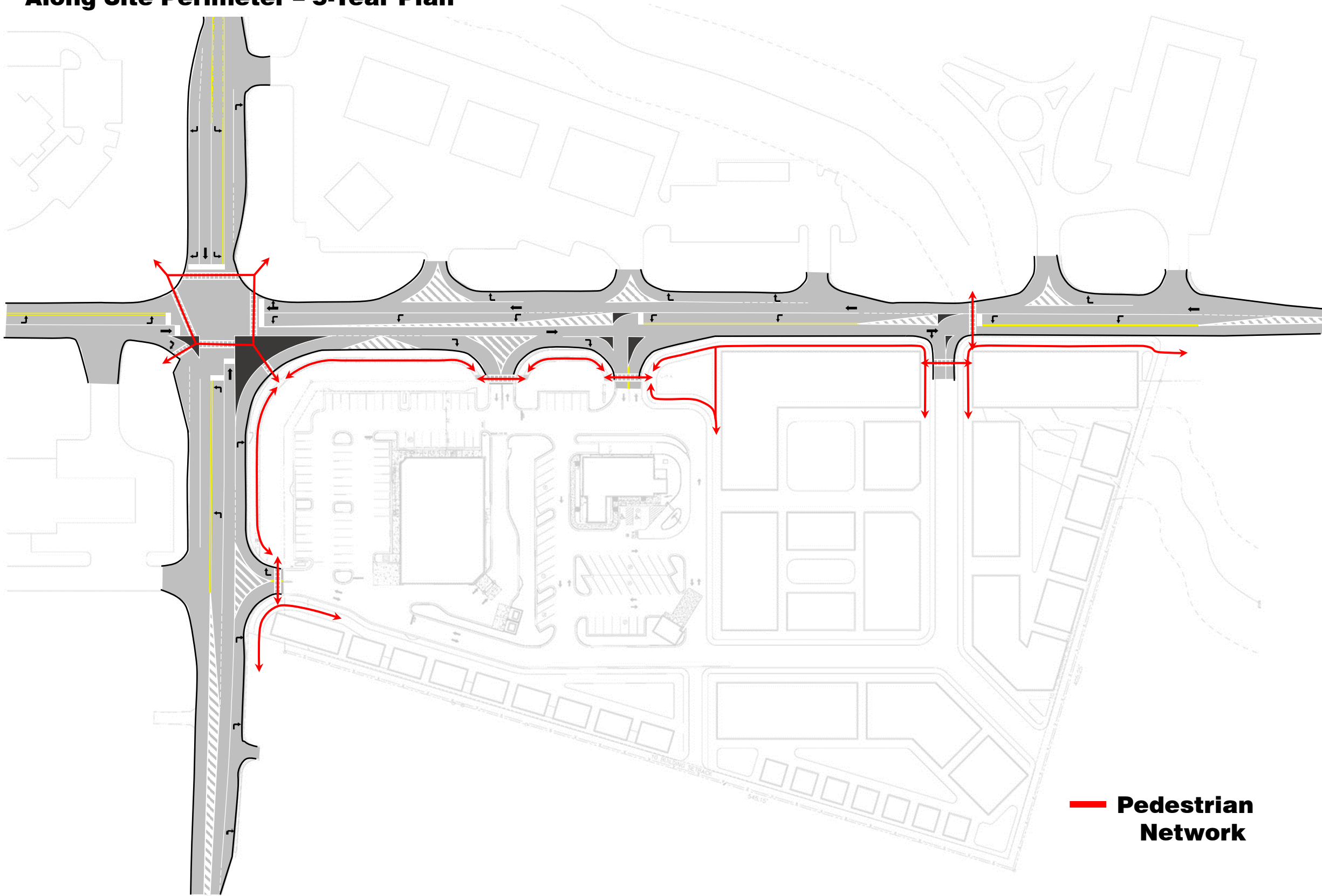
**To a Posted 25  
MPH Speed**



# Proposed Signage Along Site Perimeter - 5-Year Plan

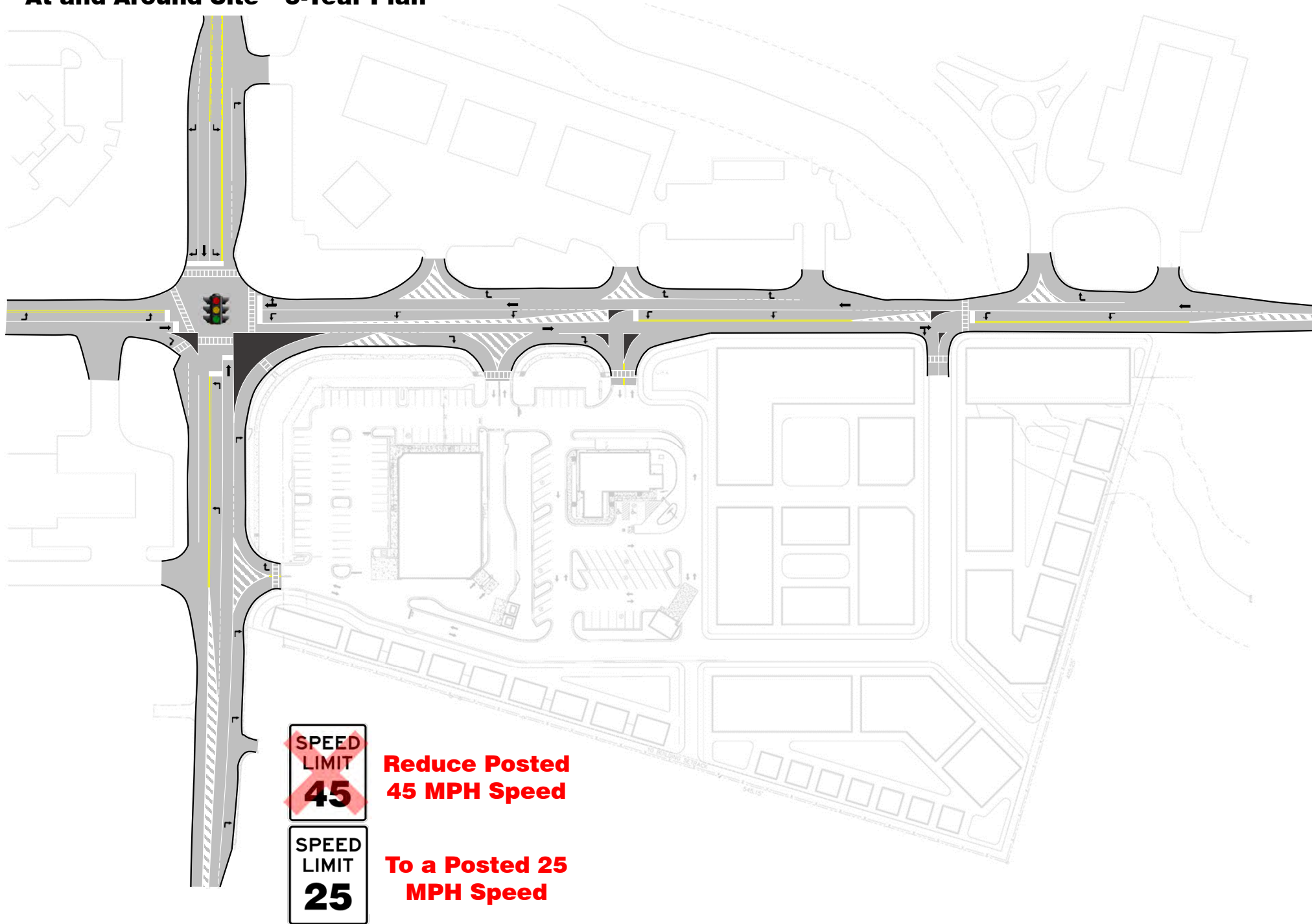


# Proposed Pedestrian Connectivity Along Site Perimeter - 5-Year Plan



**— Pedestrian Network**

# GDOT Standards At and Around Site - 5-Year Plan



**Reduce Posted  
45 MPH Speed**



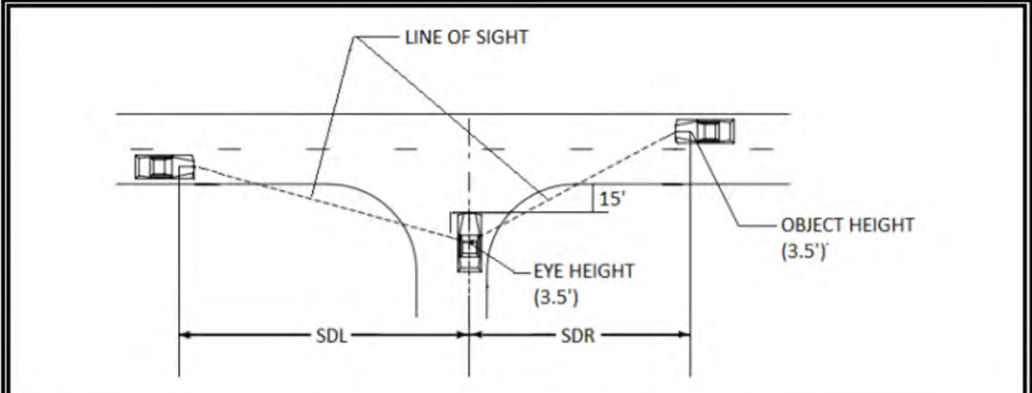
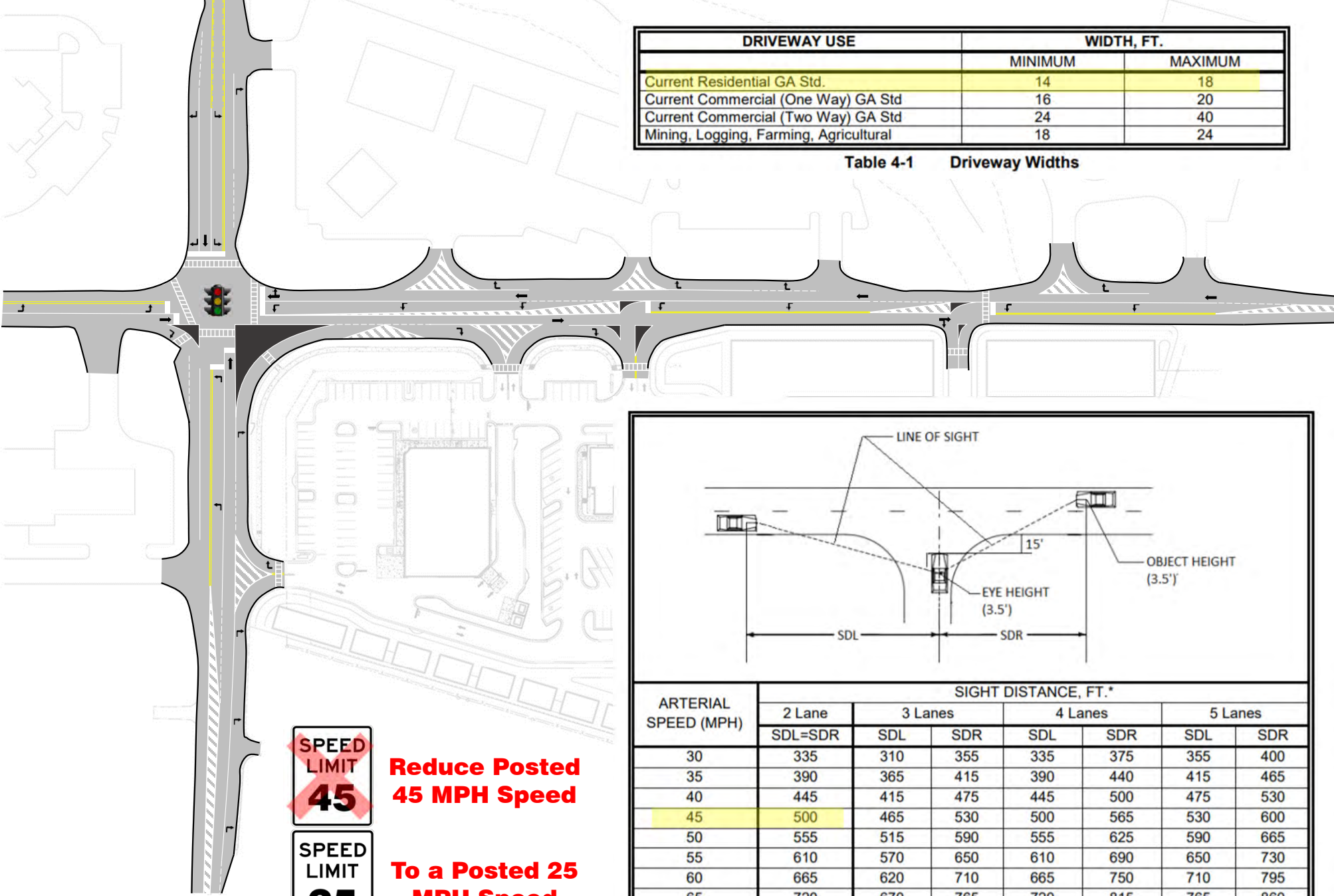
**To a Posted 25  
MPH Speed**

# GDOT Standards – DRIVEWAYS

## At and Around Site – 5-Year Plan

DRIVEWAY USE	WIDTH, FT.	
	MINIMUM	MAXIMUM
Current Residential GA Std.	14	18
Current Commercial (One Way) GA Std	16	20
Current Commercial (Two Way) GA Std	24	40
Mining, Logging, Farming, Agricultural	18	24

Table 4-1 Driveway Widths



ARTERIAL SPEED (MPH)	SIGHT DISTANCE, FT.*							
	2 Lane		3 Lanes		4 Lanes		5 Lanes	
	SDL=SDR	SDL	SDR	SDL	SDR	SDL	SDR	
30	335	310	355	335	375	355	400	
35	390	365	415	390	440	415	465	
40	445	415	475	445	500	475	530	
45	500	465	530	500	565	530	600	
50	555	515	590	555	625	590	665	
55	610	570	650	610	690	650	730	
60	665	620	710	665	750	710	795	
65	720	670	765	720	815	765	860	

Table 3-4 Intersection Sight Distance Requirements

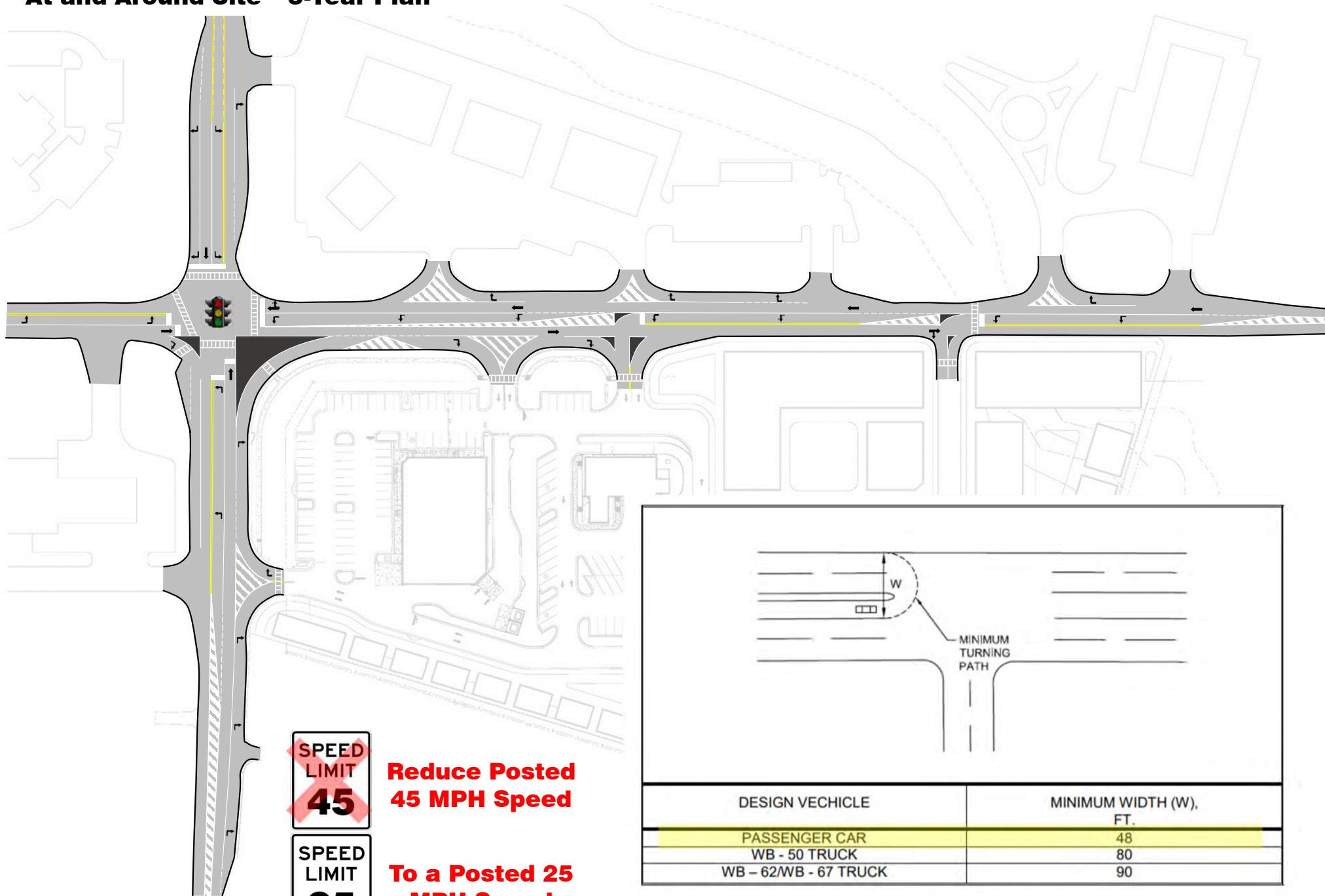


**Reduce Posted 45 MPH Speed**



**To a Posted 25 MPH Speed**

**GDOT Standards - U-Turns**  
**At and Around Site - 5-Year Plan**



**Reduce Posted  
45 MPH Speed**

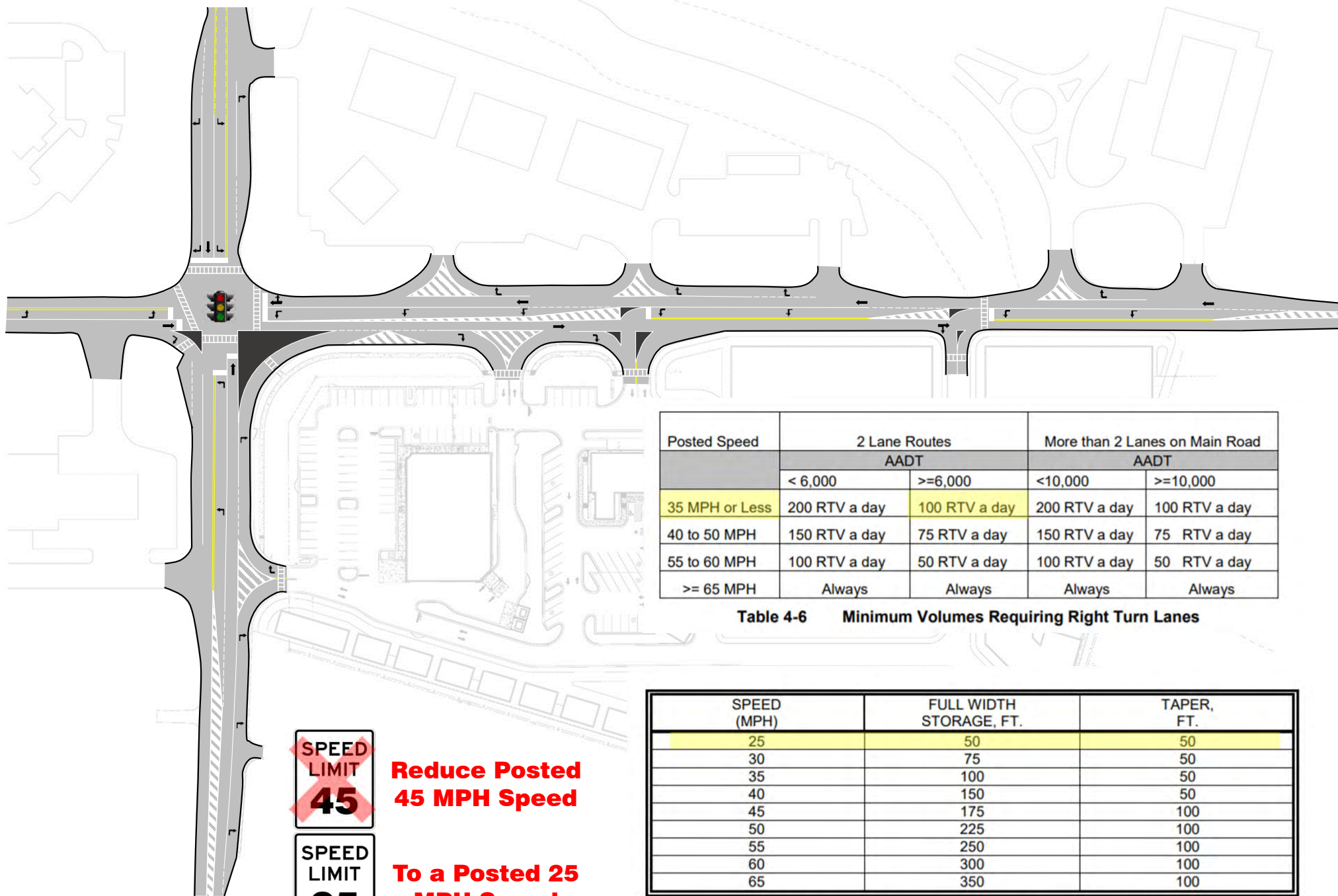


**To a Posted 25  
MPH Speed**

DESIGN VEHICLE	MINIMUM WIDTH (W), FT.
PASSENGER CAR	48
WB - 50 TRUCK	80
WB - 62/WB - 67 TRUCK	90

Table 4-4 Minimum Road Width for U-Turns

# GDOT Standards – Right Turn Lanes At and Around Site – 5-Year Plan



Posted Speed	2 Lane Routes		More than 2 Lanes on Main Road	
	AADT		AADT	
	< 6,000	>=6,000	<10,000	>=10,000
35 MPH or Less	200 RTV a day	100 RTV a day	200 RTV a day	100 RTV a day
40 to 50 MPH	150 RTV a day	75 RTV a day	150 RTV a day	75 RTV a day
55 to 60 MPH	100 RTV a day	50 RTV a day	100 RTV a day	50 RTV a day
>= 65 MPH	Always	Always	Always	Always

Table 4-6 Minimum Volumes Requiring Right Turn Lanes



**Reduce Posted  
45 MPH Speed**

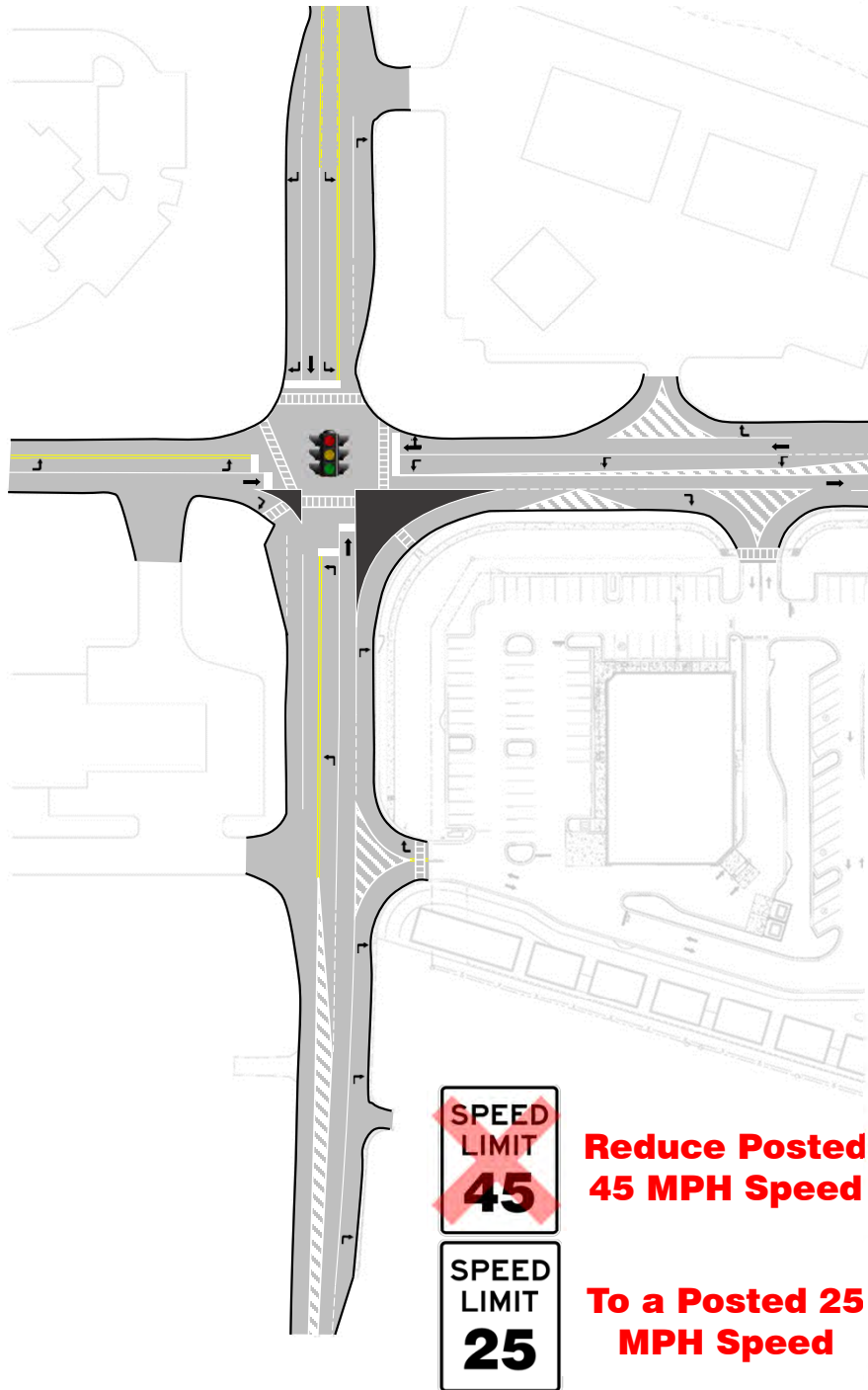


**To a Posted 25  
MPH Speed**

SPEED (MPH)	FULL WIDTH STORAGE, FT.	TAPER, FT.
25	50	50
30	75	50
35	100	50
40	150	50
45	175	100
50	225	100
55	250	100
60	300	100
65	350	100

Table 4-8 Minimum Right Turn Deceleration Lengths

# GDOT Standards - Left Turn Lanes At and Around Site - 5-Year Plan



Condition 1

LEFT TURN REQUIREMENTS-FULL CONSTRUCTION				
Posted Speed	2 Lane Routes		More than 2 Lanes on Main Road	
	ADT		ADT	
	<6,000	>=6,000	<10,000	>=10,000
35 MPH or Less	300 LTV a day	200 LTV a day	400 LTV a day	300 LTV a day
40 to 50 MPH	250 LTV a day	175 LTV a day	325 LTV a day	250 LTV a day
>= 55 MPH	200 LTV a day	150 LTV a day	250 LTV a day	200 LTV a day

Table 4-7a Minimum Volumes Requiring Left Turn Lanes

POSTED SPEED LIMIT, MPH	APPROACH AND DEPARTURE TAPER, FT.		BAY TAPER, FT.	FULL WIDTH STORAGE, FT
	6' Shift	12' Shift		
25	65	130	50	85
30	90	180	50	135
35	125	250	50	160
40	160	320	50	210
45	270	540	100	235
50	300	600	100	285
55	330	660	100	310
60	360	720	100	360
65	390	780	100	410

Table 4-9 Minimum Design Elements of Left Turn Lanes

# SUPER PRACTICAL / SUPER VISIONARY

We hope our speculations can help spark useful conversations about how to re-localize small town, suburban intersections dominated by auto-oriented franchises so as to better serve the residents of Covington and Newton County as well as other communities in the future.

We would like to thank the many individuals and organizations who helped us along the way: Shamica Tucker at the Housing Authority of the City of Covington, Shena Applewhaite with the Newton County Development Services, and Katherine Moore and Nick Johnson at the Georgia Conservancy.

Kay Sibetta with AARP Georgia and three volunteers provided priceless input on the students' ideas for intergenerational living – shown here on our last in-person class meeting before the pandemic forced us to meet online.

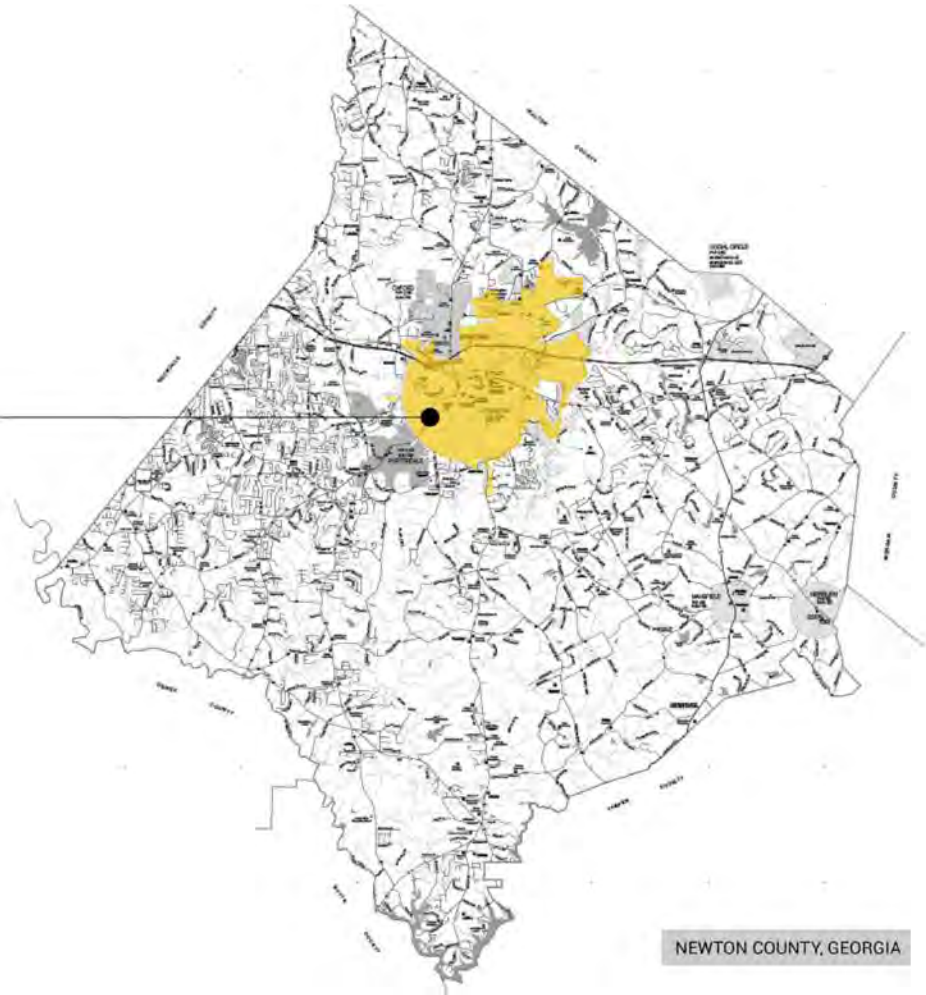
Additional critics that we're extremely grateful to include Marco Ancheita, Richard Dagenhart, Victor Dover, Peter Dreier, Paul Knight, Joel Mann, Vernelle Noel, Lew Oliver, Brian O'Looney, Haythem Shatta, and June Williamson. And a special shout out to John Anderson and Randy Vinson who encouraged us to be super practical and super visionary throughout the project.





# APPENDIX

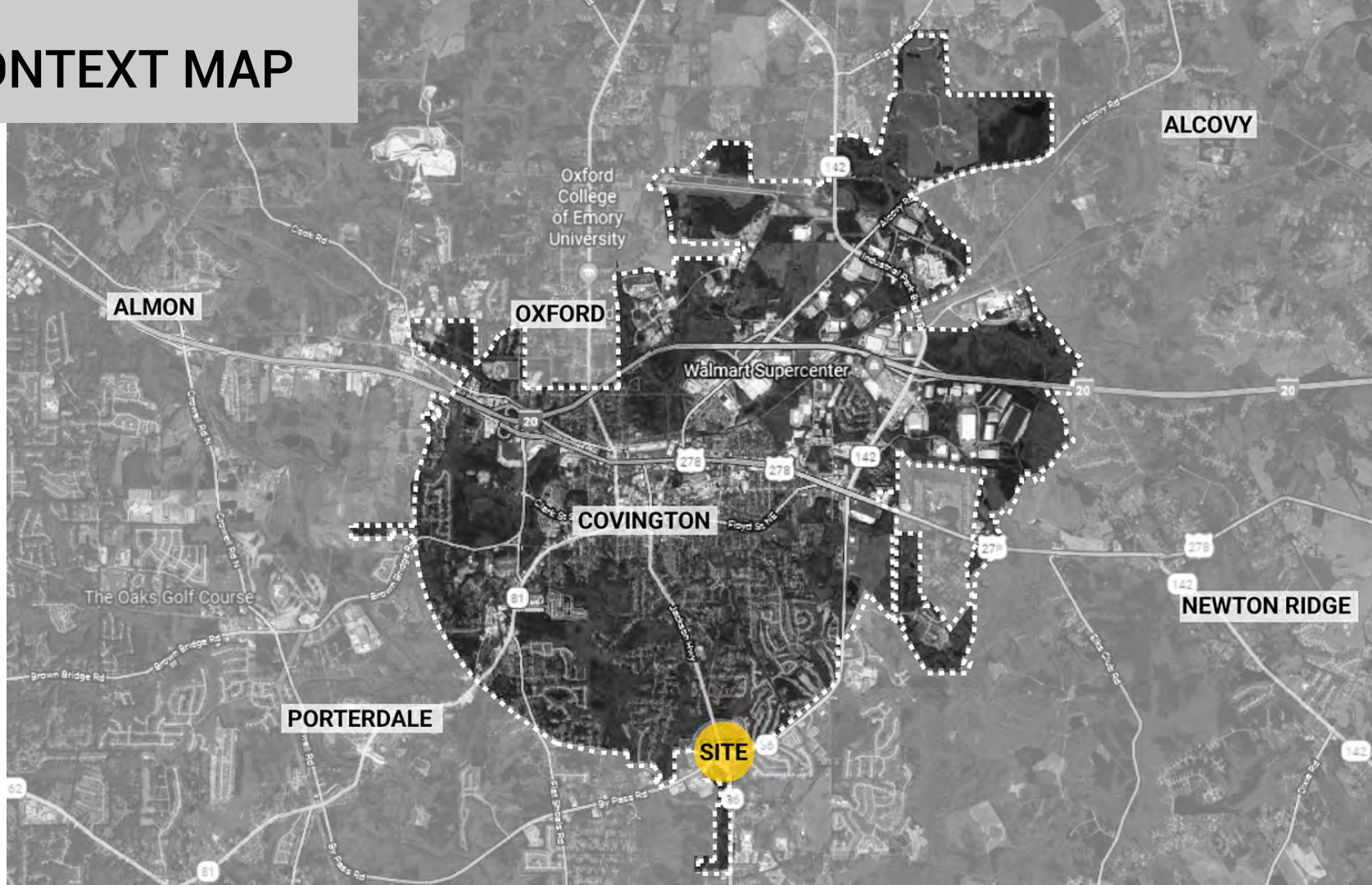
CITY OF  
**COVINGTON**  
HISTORICAL + MARKET RESEARCH



URBAN DESIGN STUDIO | SPRING 2020  
EMILY KHALID  
SHREYA KUMAR

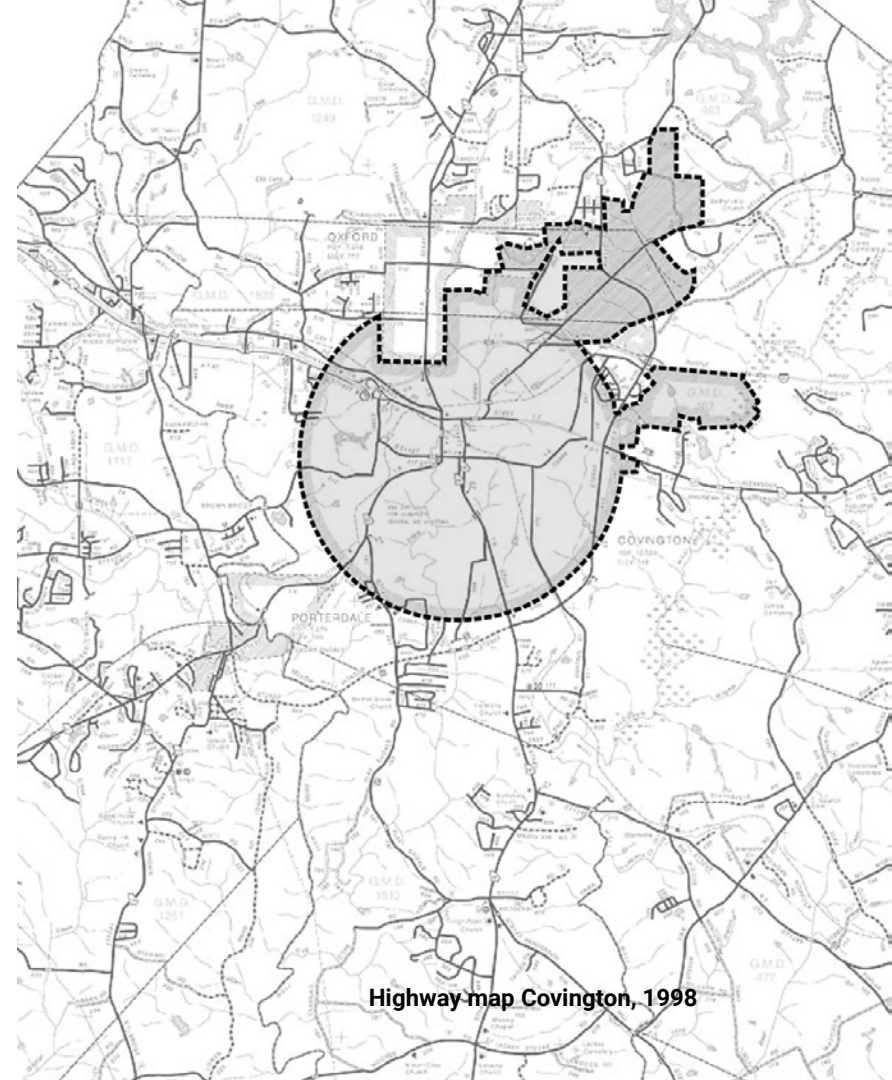
NEWTON COUNTY, GEORGIA

# CONTEXT MAP



# HISTORY

- + The city of Covington is located on land that belonged to the Creek Indian Nation until January of 1821, when the **Treaty of Indian Springs** ceded the land from the Creeks to the United States.
- + After a few transfer of properties, the Justices of the Inferior Court selected the property for the seat of the **Newton County government**.
- + The place was named Newtonsborough which was changed to Covington when the city was incorporated on December 8, 1822. The town was named for Leonard Covington, a hero of the War of 1812.



Highway map Covington, 1998

# HISTORY : Early Development

- + The 1880s brought a lot of for the physical **development of the commercial district**. The downtown business district is characterized by its high number of Victorian styled commercial buildings, which were popular at the turn of the century.
- + The town continued to prosper and grow with the founding of **Porterdale Mills in 1890, and Covington Mills in 1901**, which proved to be significant factors in **the economic development of Covington** and Newton County. The mills operated successfully until the 1960s, when they eventually closed.
- + With these new industries, Covington's residential development expanded into what is now called North Covington. Many of the workers' homes are still present in the area.

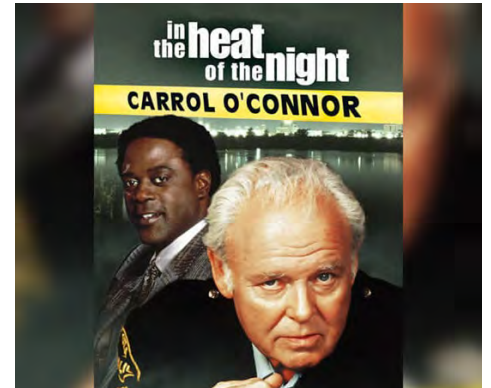
<https://cityofcovington.org/ckeditor/files/files/City%20of%20Covington%20Historic%20District%20Design%20Guidelines%20FINAL.pdf>



# HISTORY : Later Development

- + In 1952, the community experienced a major change when U.S. **Highway 278** was constructed just south of the Georgia Railroad dividing the city. Next, was the construction of **Interstate 20**, which provided industry access to a **major transportation corridor** and a connection to Atlanta.
- + Covington has been featured in television shows and movies and nicknamed "**Hollywood of the South.**" Strong economic growth and prosperity has continued in Covington during recent years, owing to increase in a significant corporate presence.
- + In the **first half of the 20th century**, the town paved the sidewalks and the streets, thus spurring an **increase in residential development of homes in North Covington.** Victorian architecture, especially the Queen Anne style, was popular in this period and many of the residences still remain, today.

<https://cityofcovington.org/ckeditor/files/files/City%20of%20Covington%20Historic%20District%20Design%20Guidelines%20FINAL.pdf>



# DOWNTOWN TODAY



# DEMOGRAPHIC STATISTICS

COVINGTON, GA

POPULATION

13,728

0.446% growth

MEDIAN AGE

34.7

MEDIAN PROPERTY VALUE

128,300

11.4% growth

POVERTY RATE

29.9%

ATLANTA, GA

POPULATION

498,073

2.42% growth

MEDIAN AGE

33.2

MEDIAN PROPERTY VALUE

302,200

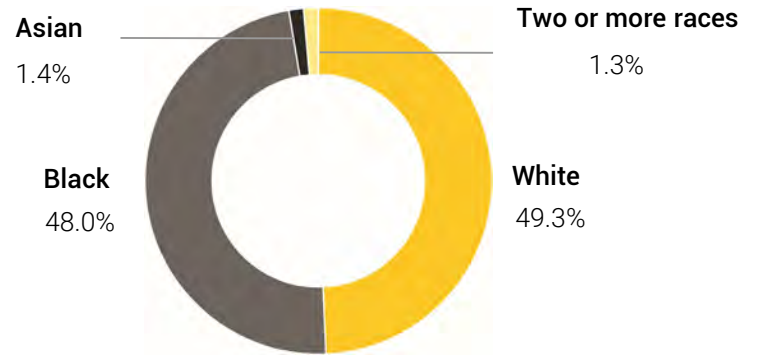
0.935% growth

POVERTY RATE

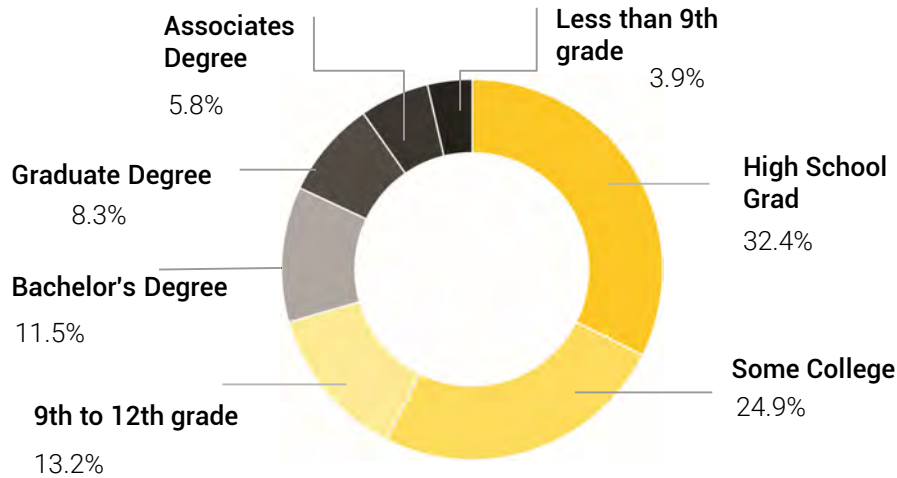
22.4%



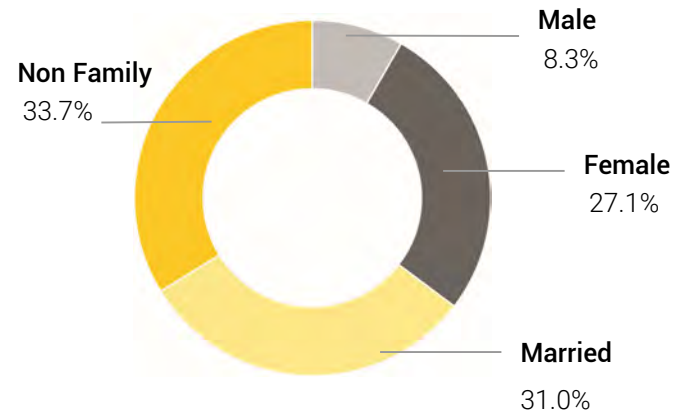
**Sex Ratio**



**Race and Ethnicity**



**Over 25 Education**

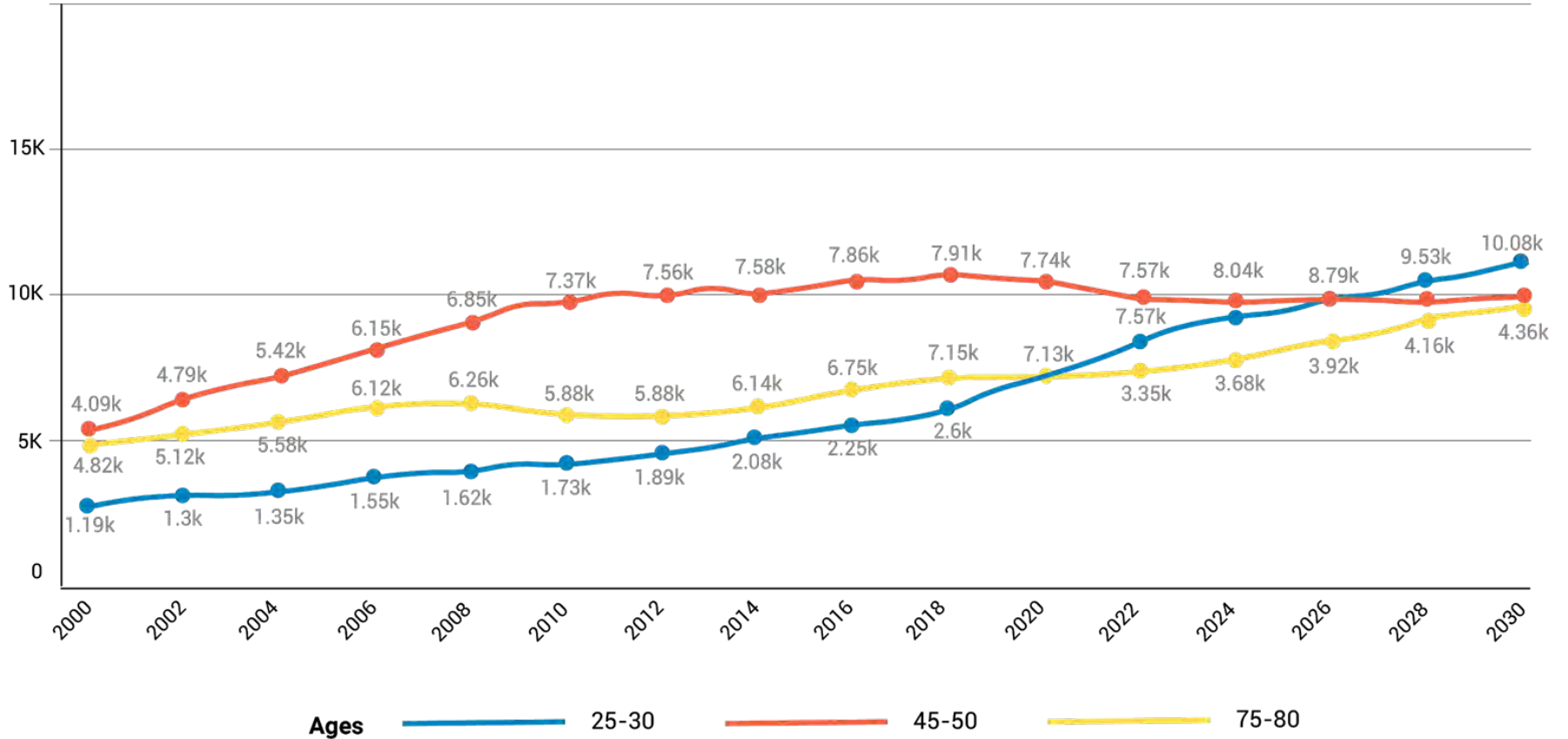


**Household Types**



# POPULATION PROJECTIONS

- Population growth in all age ranges
- Particular growth in ages 25-30



# JOBS + ECONOMY

Median Household Income

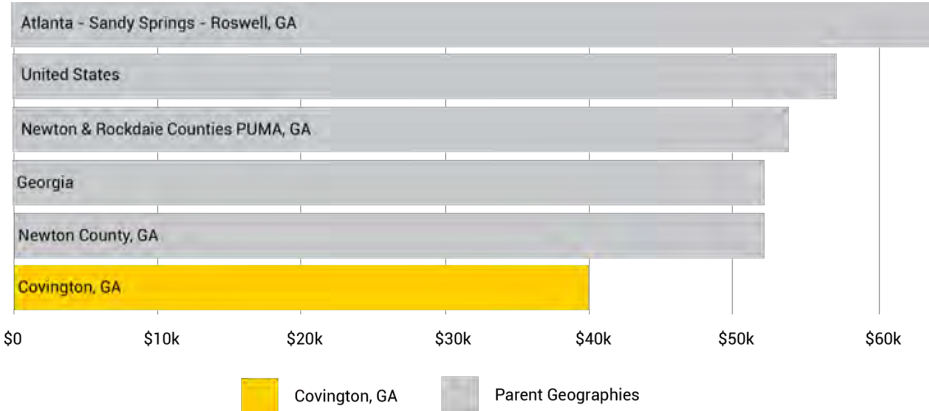
**\$39,959**

2017 VALUE

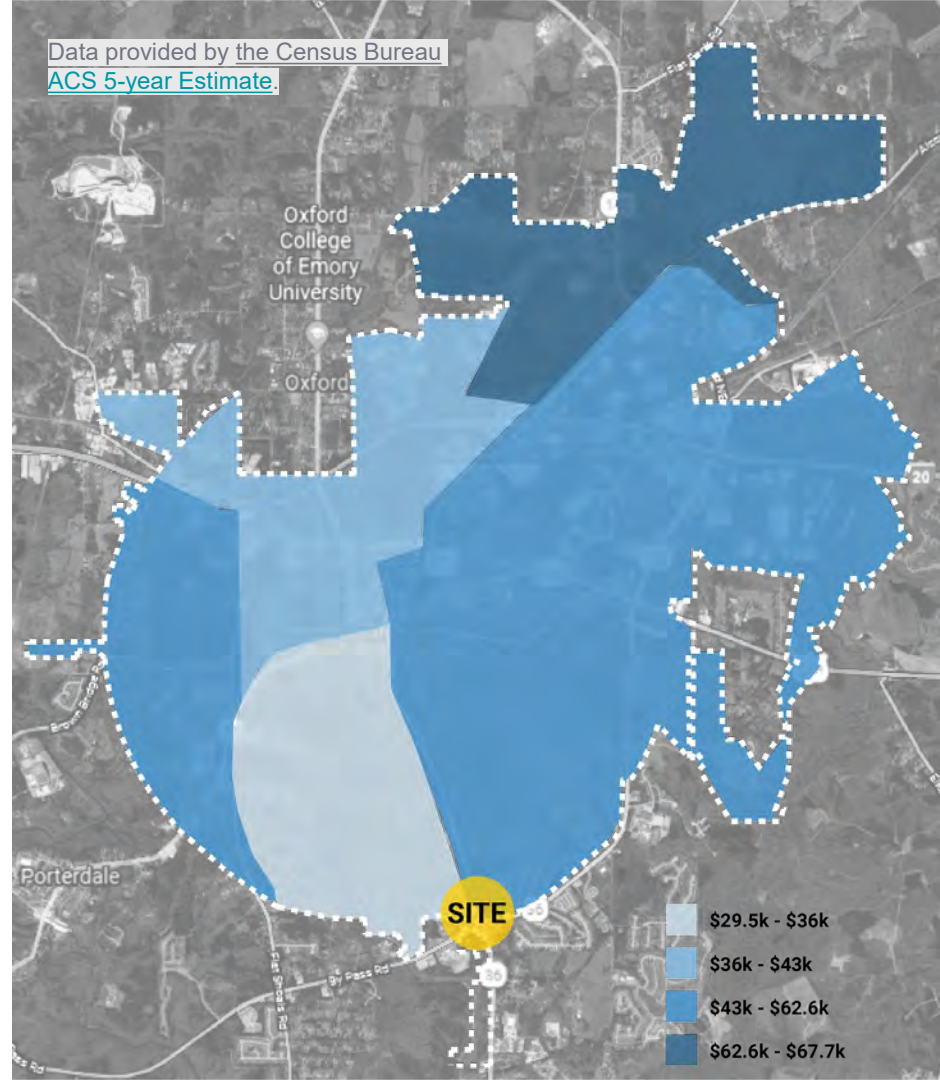
**21.9%**

1 YEAR GROWTH

Wages



Data provided by the Census Bureau  
[ACS 5-year Estimate.](#)



# JOBS + ECONOMY

**5.74k**

2017 EMPLOYEES

**7.25%**

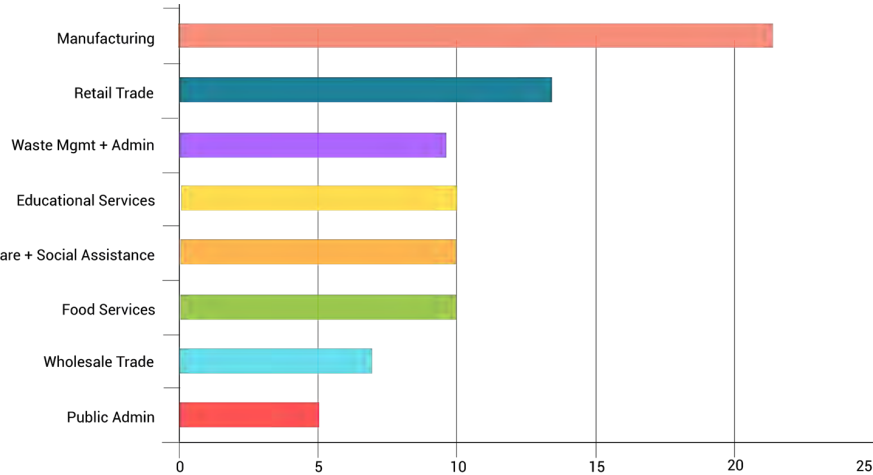
1 YEAR GROWTH

**4.1%**

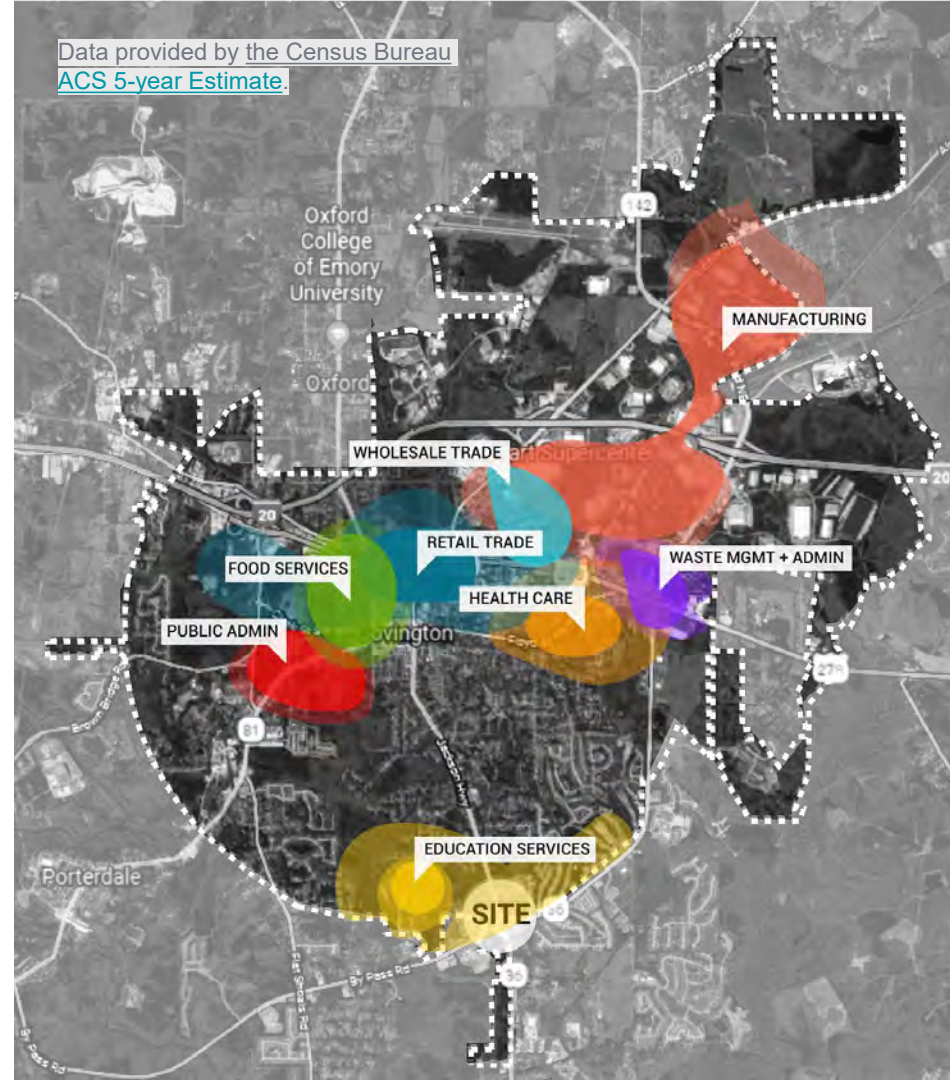
UNEMPLOYMENT

Compared to 3% in  
Newtown County

## Job Count by Percentage



Data provided by the Census Bureau  
[ACS 5-year Estimate.](#)



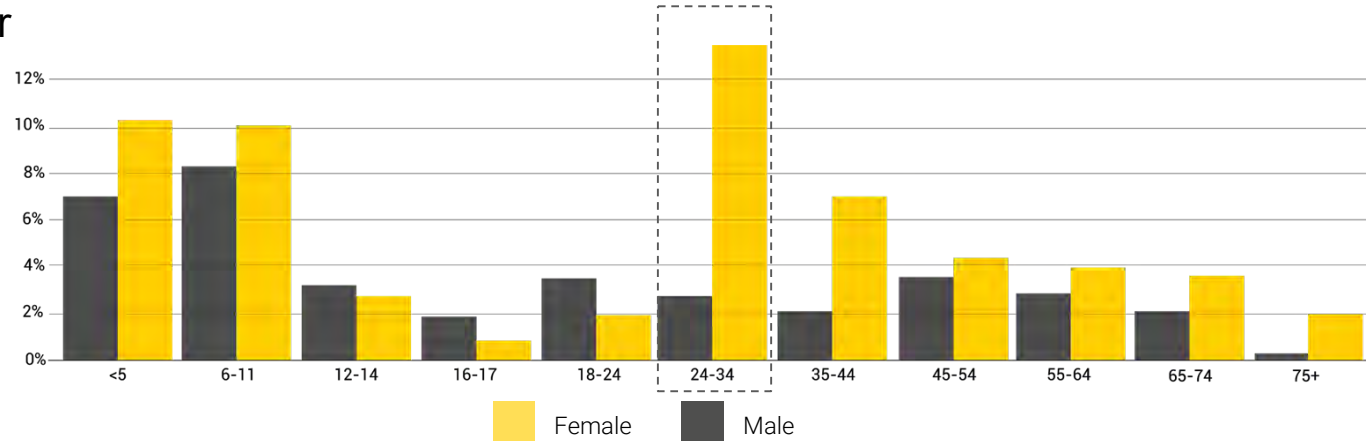
# JOBS + ECONOMY

Data provided by [the Census Bureau](#) [ACS 5-year Estimate](#).

## Poverty by Age + Gender

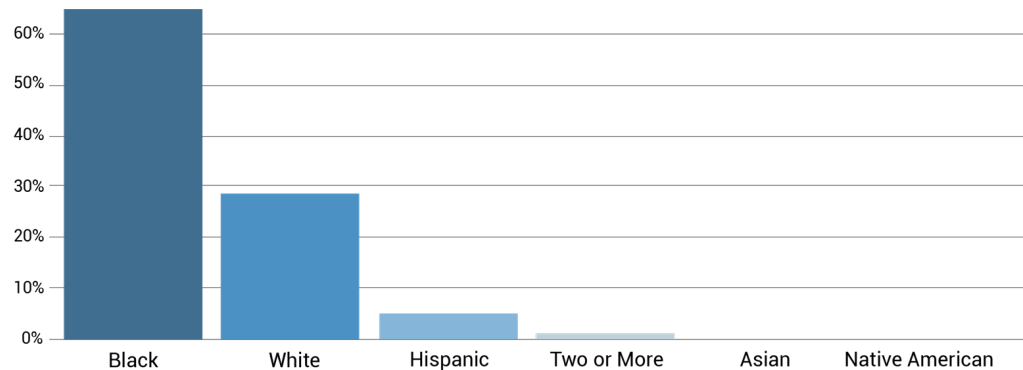
# Females 25-34

LARGEST DEMOGRAPHIC  
LIVING IN POVERTY



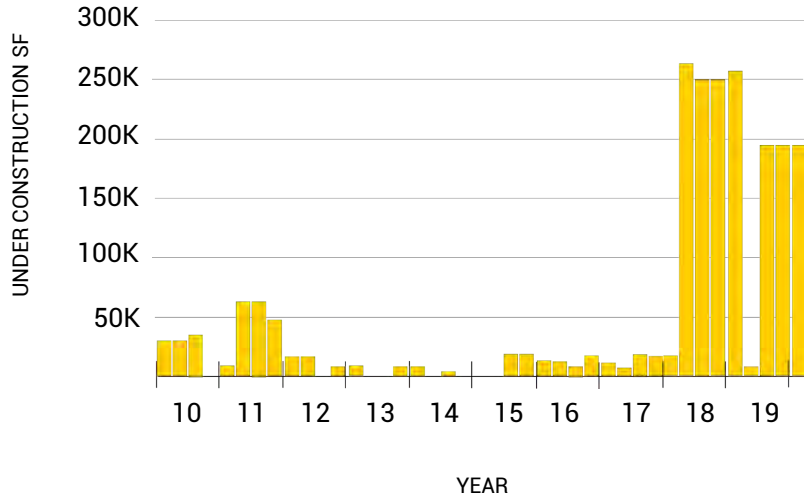
## Poverty by Race or Ethnicity

1. **Black** ~2,652
2. **White** ~1,172
3. **Hispanic** ~211

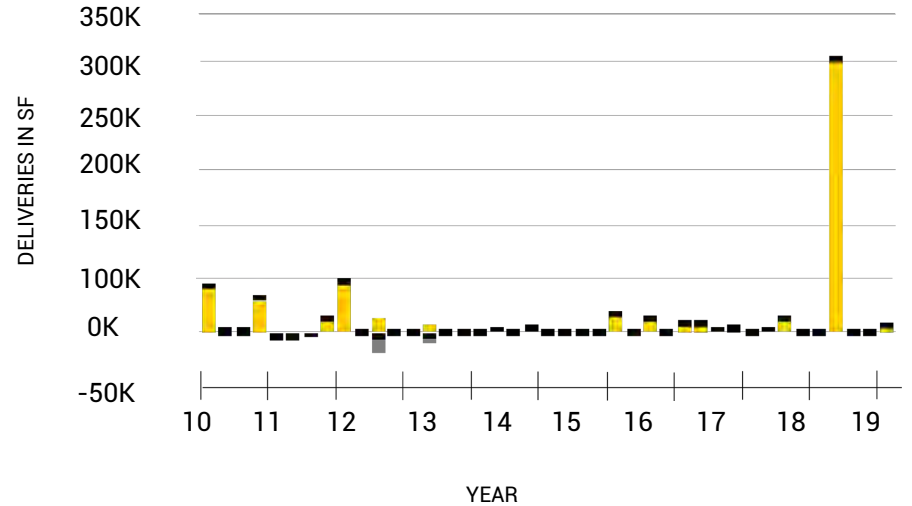


# REAL ESTATE TRENDS

## Under Construction IN COVINGTON

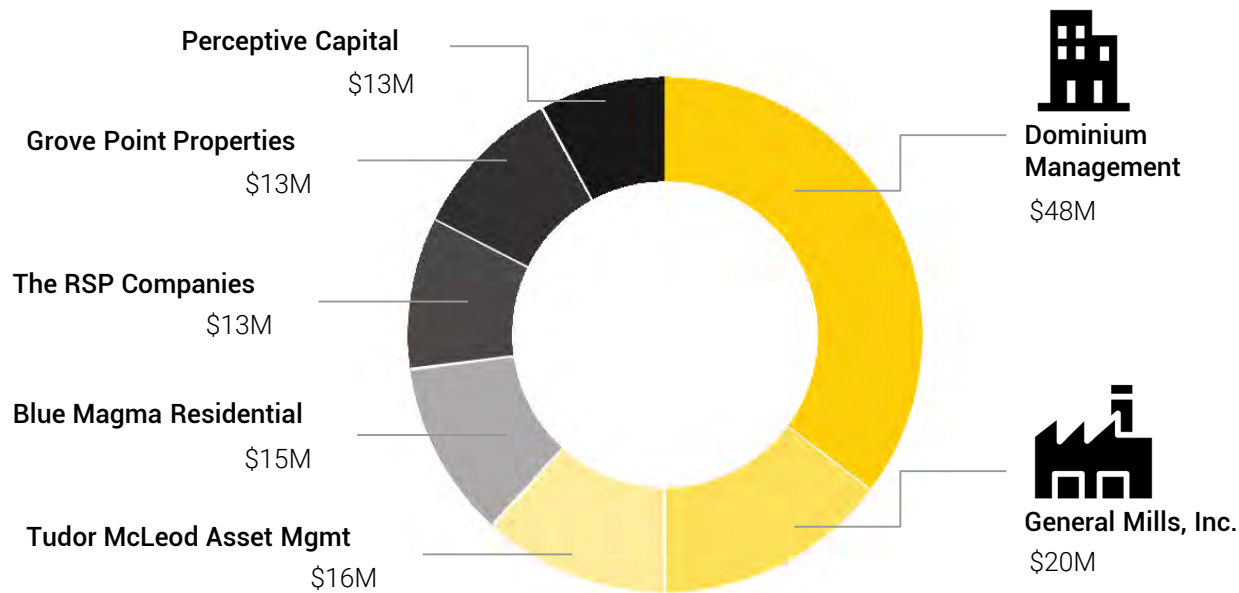


## Deliveries + Demolitions IN COVINGTON



Deliveries Demolitions Net Deliveries

# REAL ESTATE TRENDS



## TOP BUYERS

2019

# HOUSEHOLD STATISTICS



**3.11**

AVERAGE FAMILY SIZE



**2.57**

AVERAGE HOUSEHOLD  
SIZE

**64.8 %**

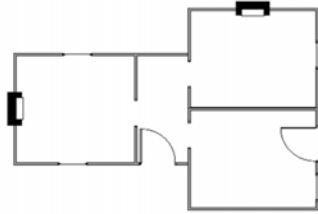
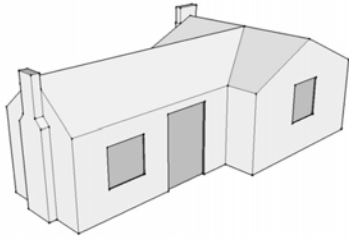
2017 HOMEOWNERSHIP  
UNITED STATES



**40.8 %**

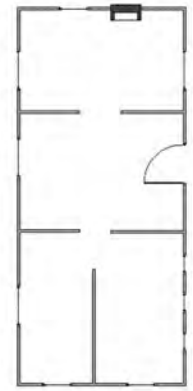
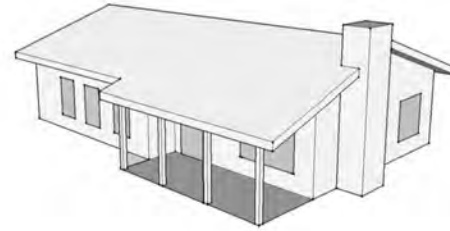
2017 HOMEOWNERSHIP  
COVINGTON

# HOUSING TYPES - 1800s



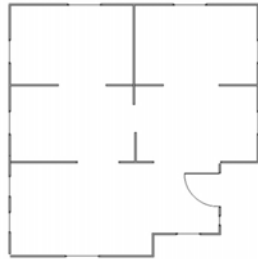
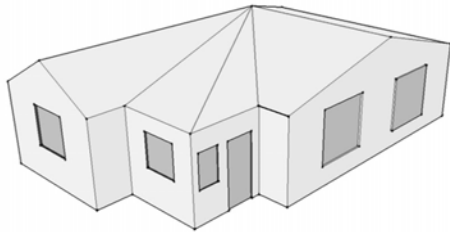
**GABLE ELL COTTAGE**  
(1875-1915)

T-or-L-shaped plan; roof is usually gabled. Gable-front at one end of a recessed wing parallel to the façade.



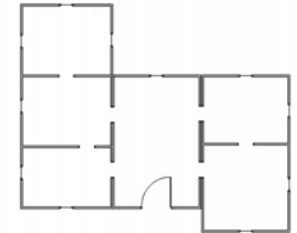
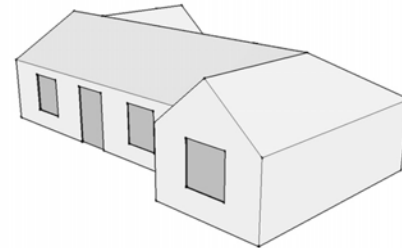
**RANCH HOUSE**  
1950s

Bedrooms are clustered at one end, the principal entry and living spaces near the center, and the garage or carport at the other end.



**QUEEN ANNE COTTAGE**  
(1880-1890)

Square mass with projecting gables on front and side. Roof is either pyramidal or hipped with interior chimneys.

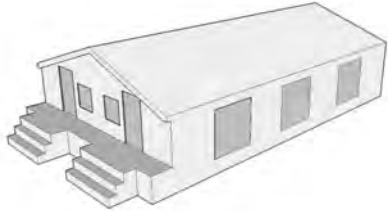


**NEW SOUTH COTTAGE**  
(1890-1920)

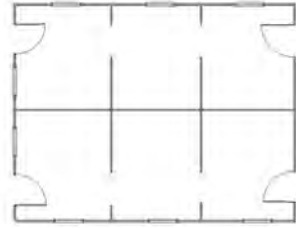
Has a central square mass, usually with a hipped roof and gabled projections. Strong emphasis on symmetry.



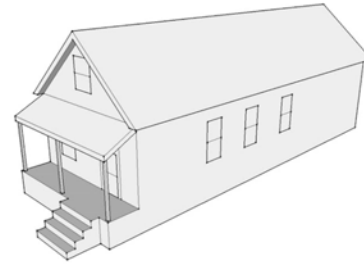
# HOUSING TYPES - 1900s



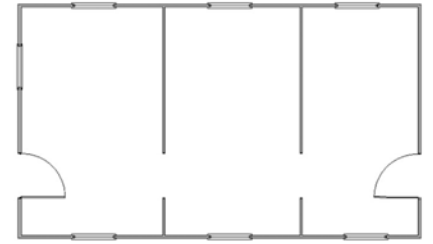
**DOUBLE SHOTGUN**  
(1700s-1800s)



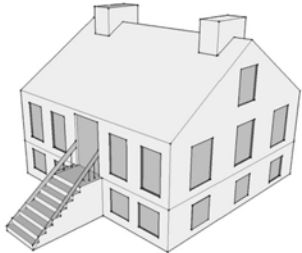
Two-family dwelling created by placing two shotgun houses side by side, with no openings in the party wall..



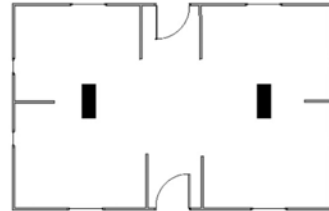
**SHOTGUN HOUSE (1870-1920)**



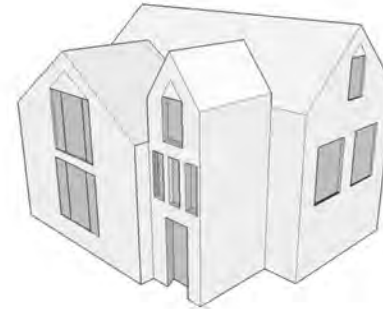
One room wide and two or more rooms deep, usually three. Roofs are typically gabled or hipped.



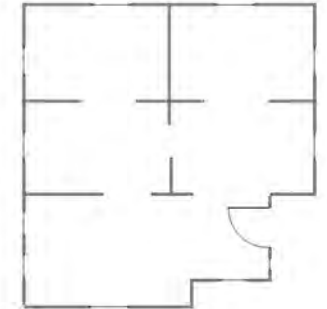
**SAND HILLS COTTAGE**  
(1870-1920)



One-story house on a raised basement. Roof is usually gabled. Prominent flight of stairs to the front entry.



**QUEEN ANNE HOUSE**  
(1880-1890)



Square mass with projecting gables on front and side. Two-story version of the Queen Anne Cottage is the Queen Anne House.

# HOUSING TYPES - 2000s

Average rent in **Covington**

1BHK: \$836

2BHK: \$952

Average rent in **Atlanta**

1BHK: \$1391

2BHK: \$1,747



6 bed 2 bath  
Built in 1999  
\$258,000



4 bed 3 bath  
Built in 2001  
\$234,900

# HOUSING TYPES - 2000s



8 bed 5 bath  
Built in 2007  
\$330,000

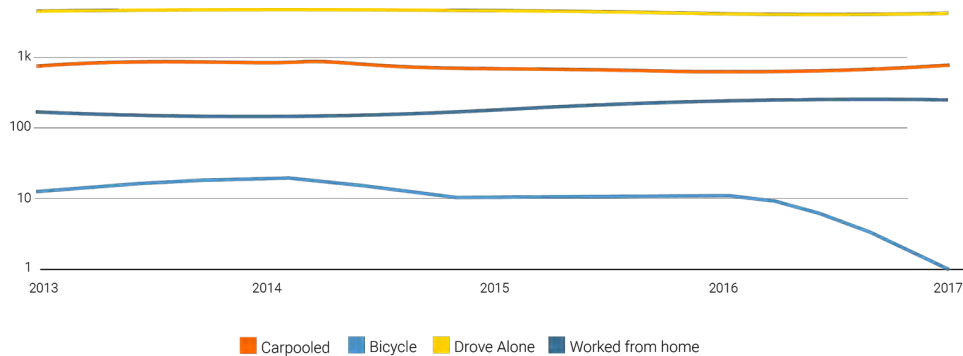


4 bed 3 bath  
Built in 2019  
\$248,490

# TRANSPORTATION

## MOST COMMON METHOD OF TRAVEL

1. **Drove Alone** 77.9 %
2. **Carpooled** 13.4%
3. **Worked at Home** 4.59%



**2 CARS** per household



# TRANSPORTATION

WALK SCORE

**36/100**

TRANSIT SCORE

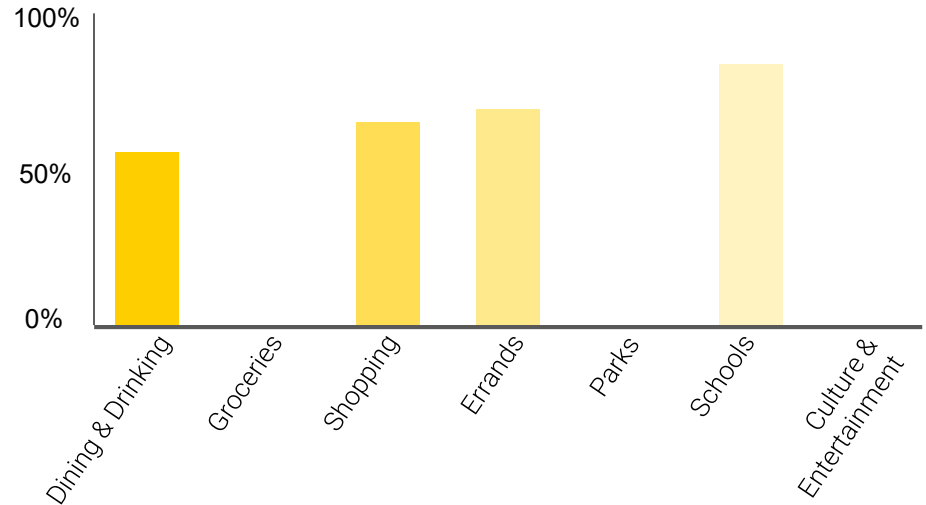
**N/A**

BIKE SCORE

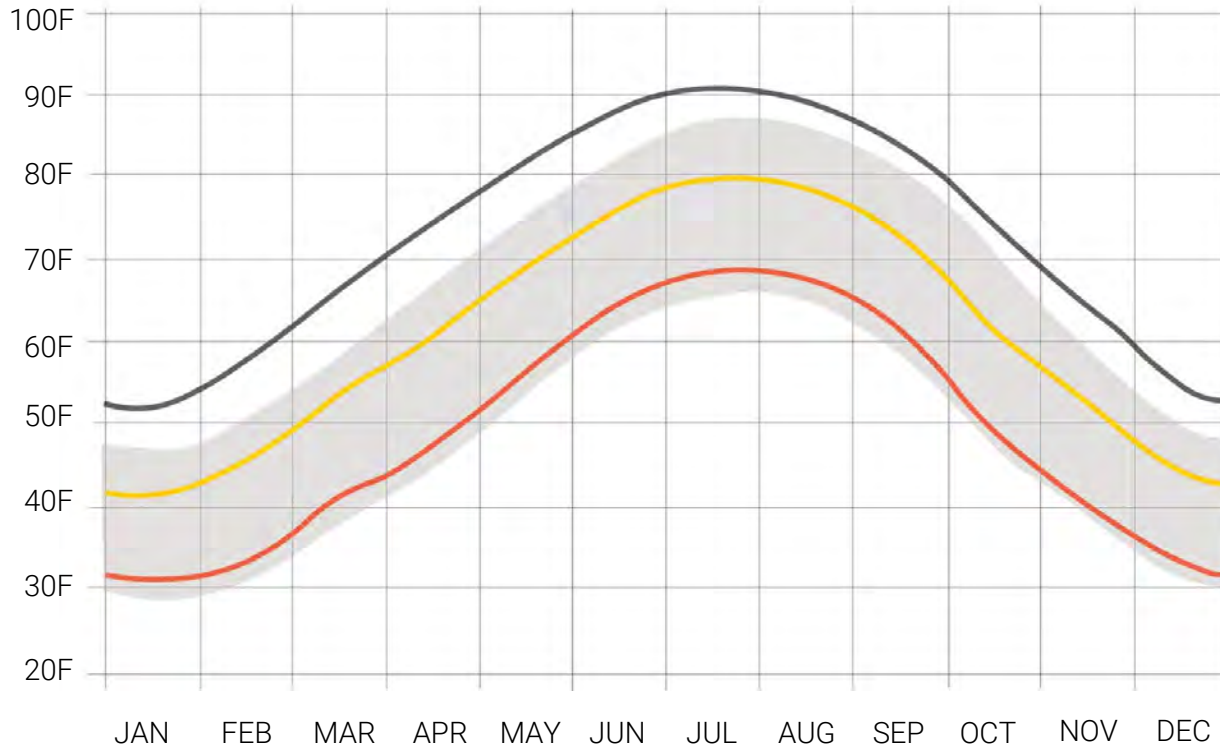
**28/100**



Amenities within Walking Distance



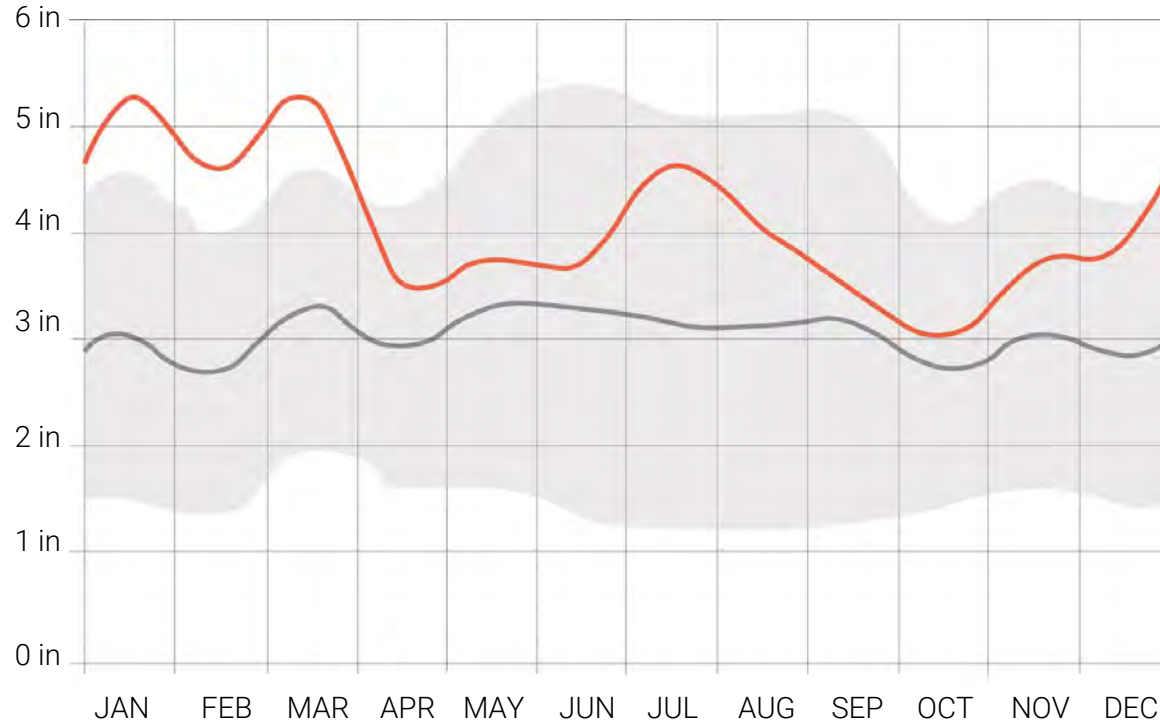
# CLIMATE DATA : Average Temperature



The temperature is almost average in comparison to the national data.

- Daily high
- Average
- Daily low
- US Average

# CLIMATE DATA : Precipitation



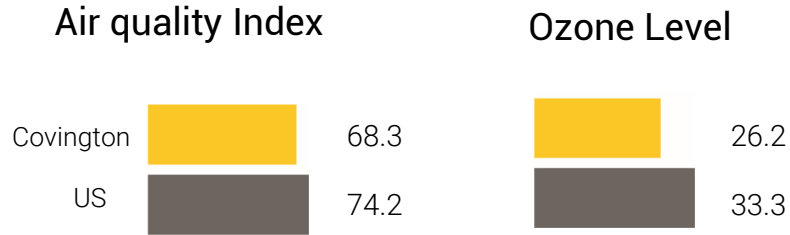
Rainfall here is higher than the national average.

■ City Average  
■ US Average

# CLIMATE DATA : Air Quality

The city of Covington has called for a company to **shut down its local medical sterilization plant** until it can reduce its emissions of a cancer-causing gas.

A preliminary data from air pollution testing found ethylene oxide levels that were particularly high in two neighborhoods close to the BD sterilizing plant in Covington. Georgia Attorney General Chris Carr filed a motion Monday for a temporary restraining order against Becton Dickinson, or BD, which sterilizes medical equipment at a plant in Covington.



Ethylene Oxide Levels  
**0.5 - 15.3** per m<sup>3</sup> of air  
0.2 per m<sup>3</sup> of air (normal levels)





# CLIMATE DATA : Sustainability

Sustainable Newton is grassroots, community-based charitable organization created in 2018 to connect people & resources to better understand & effectively respond to sustainability challenges & opportunities in our community -- which is Newton County, Georgia.

Supports approaches that recognize the critical need to balance people, planet, and profit in every important decision.



Triple bottom line

# COVINGTON CENTRAL PARK: Proposal



- Totals **126 acres**
- **~7 minute drive** from site
- Proposed Amenities include:
  - Disc golf course
  - Residential Area
  - Hiking/Walk Trails
  - Mountain bike trail
  - Soccer field
  - Playgrounds
  - Botanical Garden
  - Skatepark
  - Restrooms



<https://www.covnews.com/news/cities/city-covington-releases-proposed-plans-central-park/>



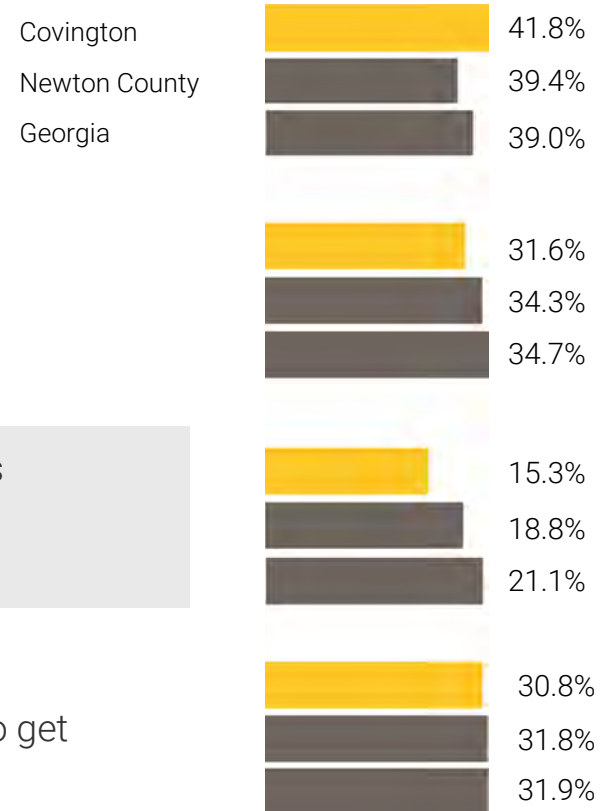
# HEALTH DATA : Physical Health

**42%** of population is **obese**

**32%** of population have ever **tried to lose weight**.

**15%** of population do any **vigorous-intensity sports**, fitness or recreational activities for at least 10 minutes continuously.

**31%** **walk or bicycle for at least 10 minutes** continuously to get to and from places.



# HEALTH DATA : Mental Health

**28%** of population 18 years old and older have usually **little interest or pleasure in doing things.**

**28%** of population often feel down, **depressed**, or hopeless.

**31%** of population are bothered by **poor appetite or overeating.**

**5%** of population have **suicidal thoughts.**



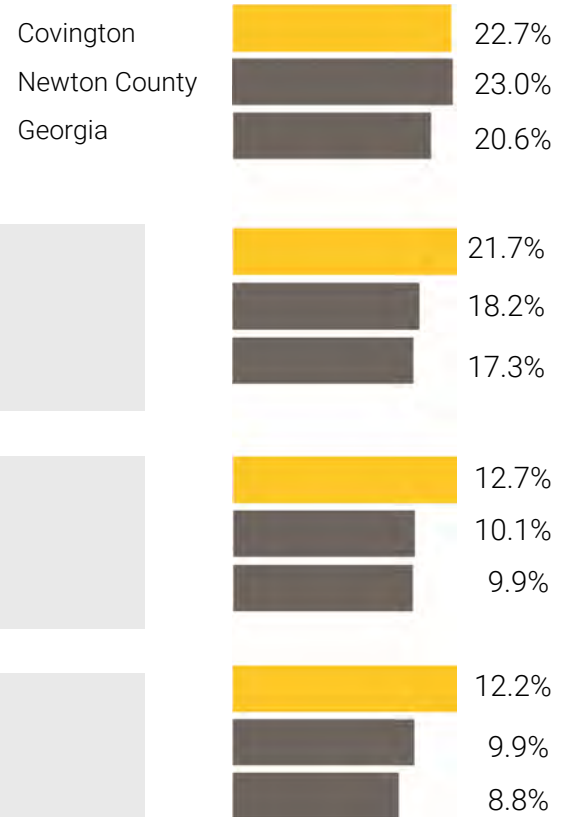
# HEALTH DATA : Old Age

**23%** of population **60 years and older** have difficulties in **thinking or remembering** that can make a big difference in everyday activities.

**22%** of population have ever been told by a doctor or other health professional that their **blood cholesterol level was high**.

**13%** of population have ever been told by a doctor or health professional that they **have diabetes**.

**12%** of population have difficulty **walking without** using any **special equipment**.



# SENIOR LIVING

14%

SENIORS IN  
EXISTING  
POPULATION

- Site is approx 1 mile from 2 senior living facilities
- Site is also adjacent to childcare centers and schools



# MISSING MIDDLE HOUSING PRECEDENTS



## COTTAGES ON GREENE

*EAST GREENWICH, RI*

- **15 Units of mixed-income condominiums** organized into a compact cottage court development
- Building types include **free-standing single units**, **duplexes**, and a **3-unit townhouse structure**
- **Bio-swales** and **rain gardens** have been used not only as stormwater management, but as landscape elements

# MISSING MIDDLE HOUSING PRECEDENTS



## PETTAWAY POCKET NEIGHBORHOOD

*LITTLE ROCK, AR*

- **Cluster of houses** around **shared outdoor commons** and infrastructure
- Urban market housing at **construction costs of \$100,000/unit**
- Capitalizes on **smaller home footprints** with shared amenities like a community lawn, playground, and stormwater management infrastructure



# SENIOR/INTERGENERATIONAL PRECEDENTS



## LA STATION

*Nun's Island, Verdun, Quebec*

- Originally a **modernist gas station** by Mies Van der Rohe, built in 1969
- Adaptively reused into a **Intergenerational community center** since 2012
- There are two distinct glass volumes; one housing seniors' activities, while the other is designated for the younger set.

<https://www.citylab.com/design/2019/03/mies-van-der-rohe-montreal-gas-station-community-redesign/584809/>

# SENIOR/INTERGENERATIONAL PRECEDENTS



## PDX COMMONS

*Portland, Oregon*

- **Urban cohousing condominium** development
- There are **27 units (1, 2 and 3 bedrooms)** ranging from 650-1250 square feet.
- Condos surrounding **enclosed garden courtyard** and **common house**
- The units and building are designed for **age-in-place** and **age-in-community**

## AUTONOMOUS VEHICLES



- + High traffic count at our intersection
- + # of accidents
- + Potential sustainable initiative

## HEALTH



- + Lack of pedestrian infrastructure leads to a more sedentary lifestyle
- + Mental and physical health problems higher than national average
- + Increasing aging population

**Why are these  
themes  
relevant to  
Covington?**

## LONELINESS EPIDEMIC



- + Lack of accessibility to recreation
- + Mental health problems higher than national average
- + Missing communal spaces

## AGING



- + Increasing aging population
- + Lack of accessible recreation
- + A population with difficulty walking without using any special equipment

# REFERENCES searched 1/2020

- <https://www.cityofcovington.org/>
- <https://embed.datausa.io/profile/geo/covington-ga/#about>
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- <http://worldpopulationreview.com/us-cities/covington-ga-population/>
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- <https://www.trulia.com/GA/Covington/>