



GADSDEN GREEN

ARCH 8520
SPRING 2024



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Shelbie Hyland

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ENVIRONMENTAL SYSTEMS

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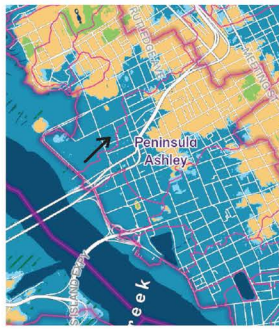


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Elevation Zones

- High Ground** - Land that falls outside the FEMA 100 year floodplain and above NOAA max category 3 storm surge. Flooding Un-
- Adapt Zone** - Land that falls outside the FEMA 100 year floodplain but still within NOAA max category 3 storm surge. Flooding Infrequent.
- Compound Flood Risk** - Areas within the floodplain above the tidal flood risk
- Tidal Flood Risk Zone** - Lowest Land in the city. All land is within 100 year floodplain. Flooding Frequent.



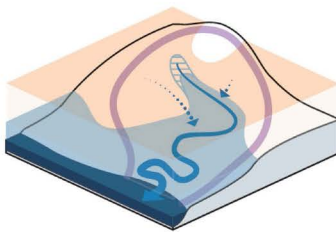
WATERSHED + 100 YEAR FLOODPLAIN

100 Year Floodplain

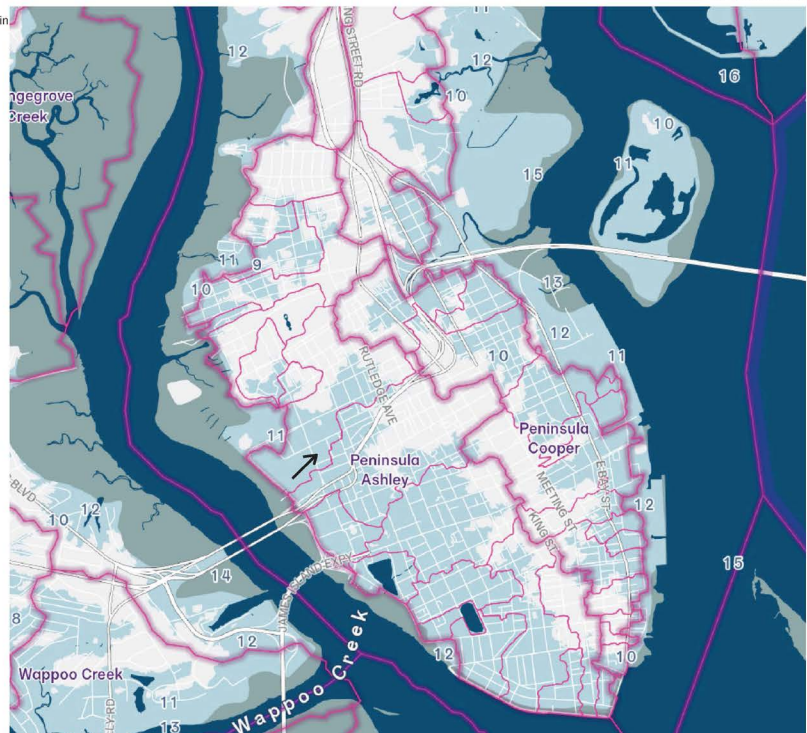
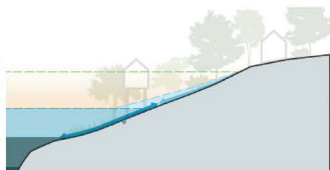
100 Year Floodplain means that you are 1% likely every year to observe the flooding of the floodplain that is as intense as what FEMA considers a "100 year flood". Areas within this floodplain may flood any given storm, but the floodplains existence mainly is used to gauge and enforce flood insurance. In other words, the floodplain acts as a way of determining flood risk, for example, a 50-year floodplain would be considered riskier than a 100-year, as your chances of seeing a flood is higher per year.

Small Watersheds

Watersheds are land areas that channel water to outflow points. The Charleston peninsula entirely consists of only small tidal watersheds. Small watersheds have lower potential runoff accumulation and lower potential drainage



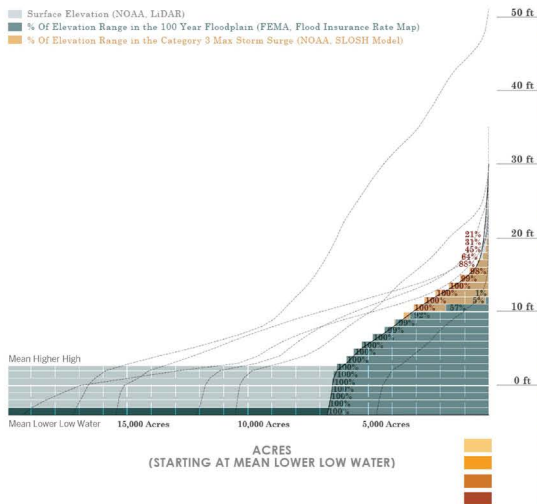
High Ground
Adapt Zone
Compound Flood Risk Zone
Tidal Flood Risk Zone
Mean High High Water



MAXIMUM CATEGORY 3 STORM SURGE

Storm Surges

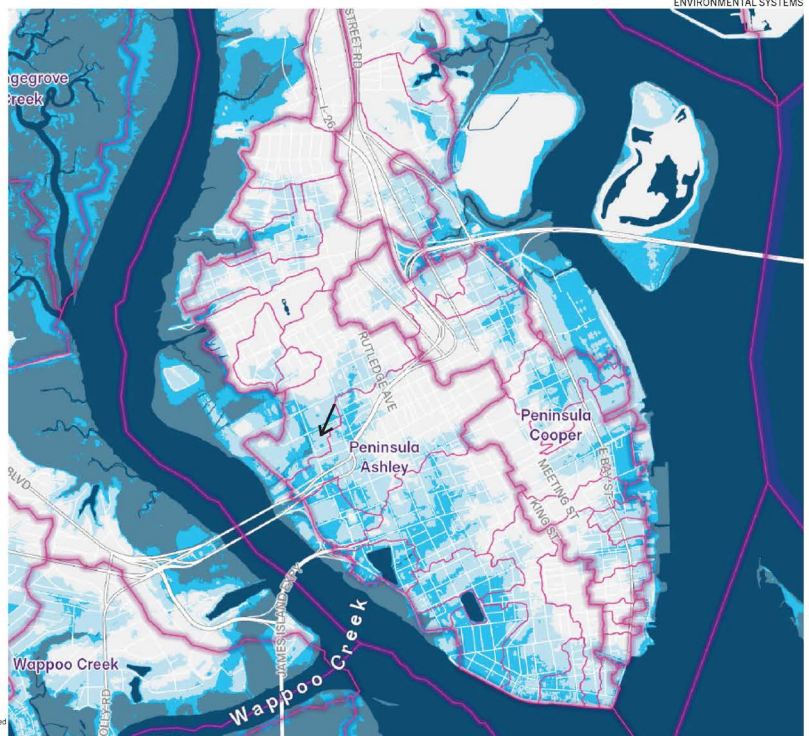
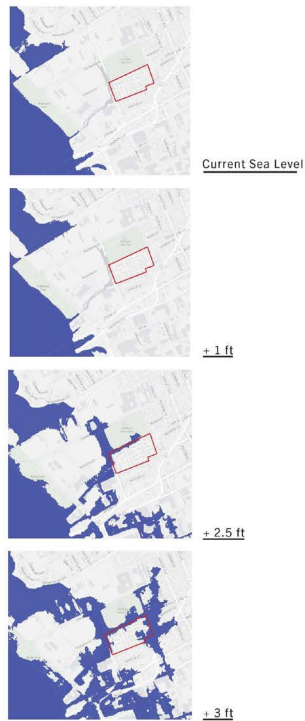
The majority of Charleston's land surface is at risk of a storm surge from a category 3. Charleston has ben hit with 4 category 3+ hurricanes, with the most recent of them being Hugo in 1989. Charleston is prone for higher risks for hurricanes from its location on the coast, and in recent years, the probability of more intense hurricanes are increasing.



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TIDES AND SEA LEVEL RISE



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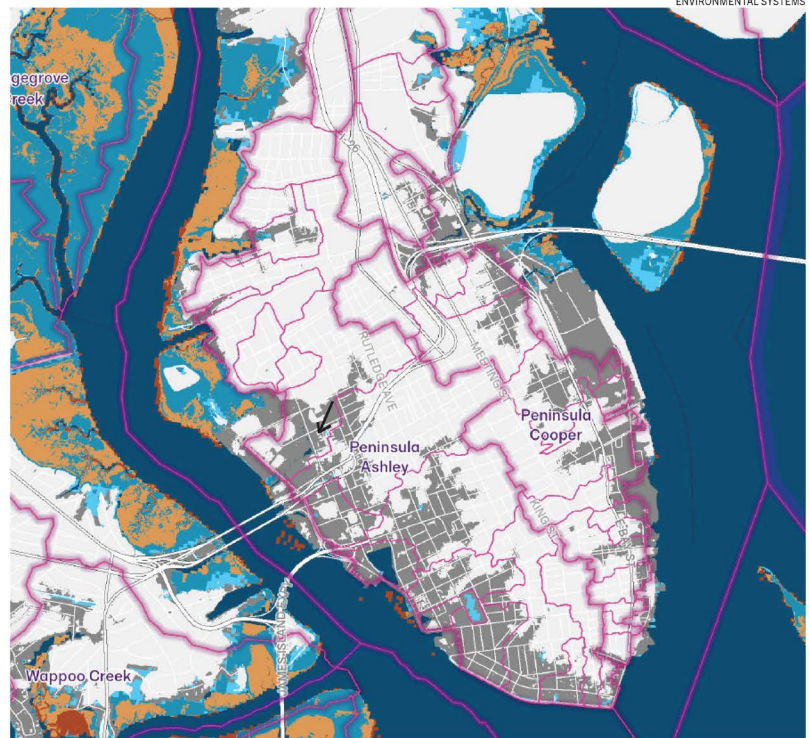
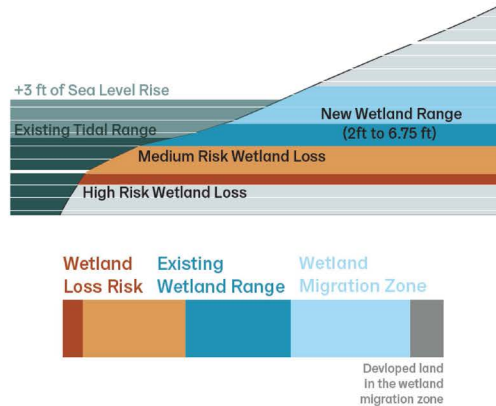


MARSH MIGRATION - 3 FOOT SEA LEVEL RISE

ENVIRONMENTAL SYSTEMS

Marsh Migration

Marsh migration is the process in which a salt marsh progressively shifts into its neighboring inland habitat. Marsh Migration is also the result of a rising sea level, which is why it is important to understand marsh development and change. There are a lot of efforts in place to prevent marsh migration and preserve our marshes, but with the rising sea levels, the more the migration. Nevertheless, marsh migration is an important aspect when observing the changes of Charleston's peninsula.



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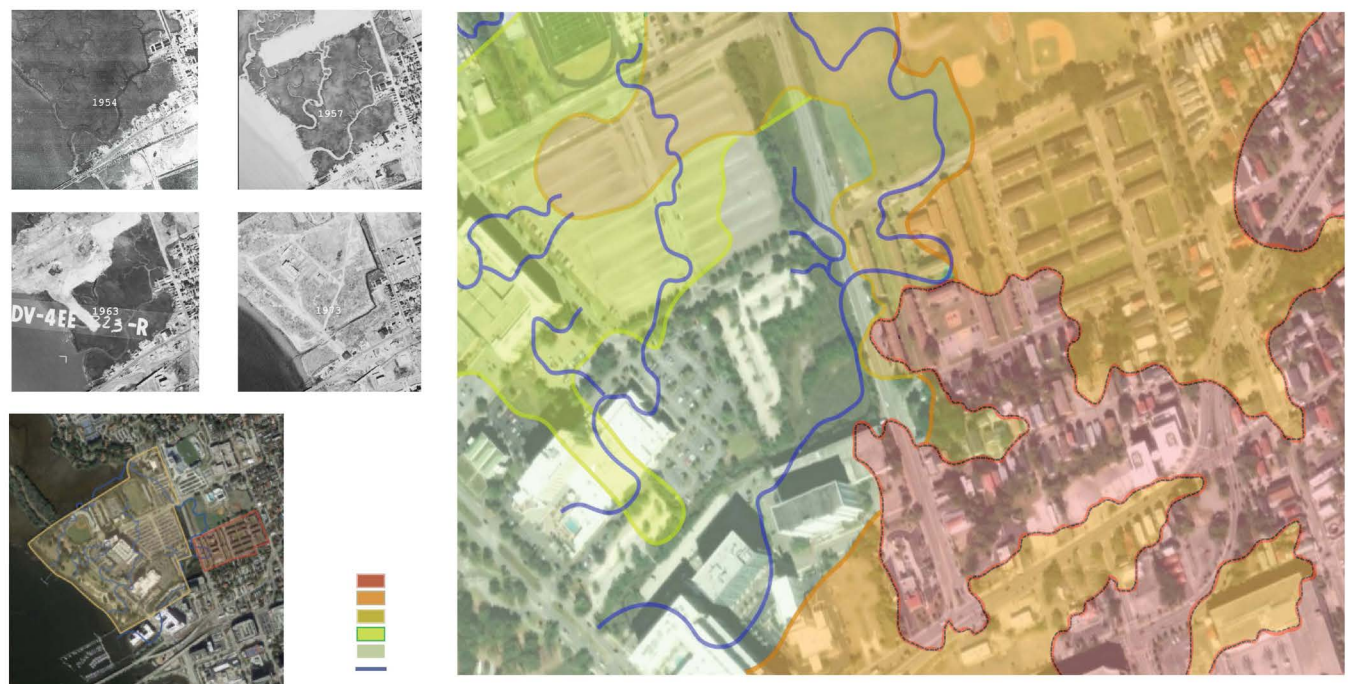
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HISTORICAL LAND DEVELOPMENT

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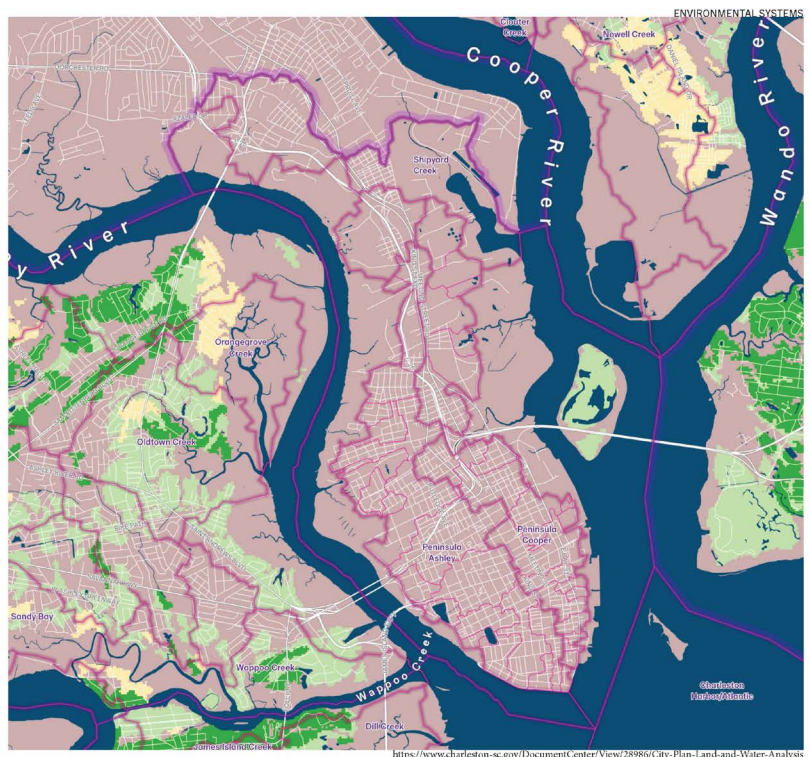
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SOIL TYPE

All of the peninsula soils are unmapped due to extensive disturbance, fill, and historic development. These soils are considered group D with little to no ability to absorb water.

HYDROLIC GROUPS

- A: absorbs the most water
- B: absorbs some water
- C: absorbs little water
- D: poorly drained and/or absorbs virtually no water



<https://www.charleston-sc.gov/DocumentCenter/View/28986/City-Plan-Land-and-Water-Analysis>



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TREE CANOPY DENSITY

The densest canopy on the Peninsula occur in Hampton Park, on spoil islands, and on landfills.

Additionally, Gasten Green has a total canopy cover of 8.04% and is 42.24% paved, 73.75% impervious (paved and built on).

The Westside as a whole has a total tree cover of 20.97% and is 43.45% paved, 61.80% of that being impervious (paved and built on).

LEGEND

- Dense to sparse
- High gain to high loss



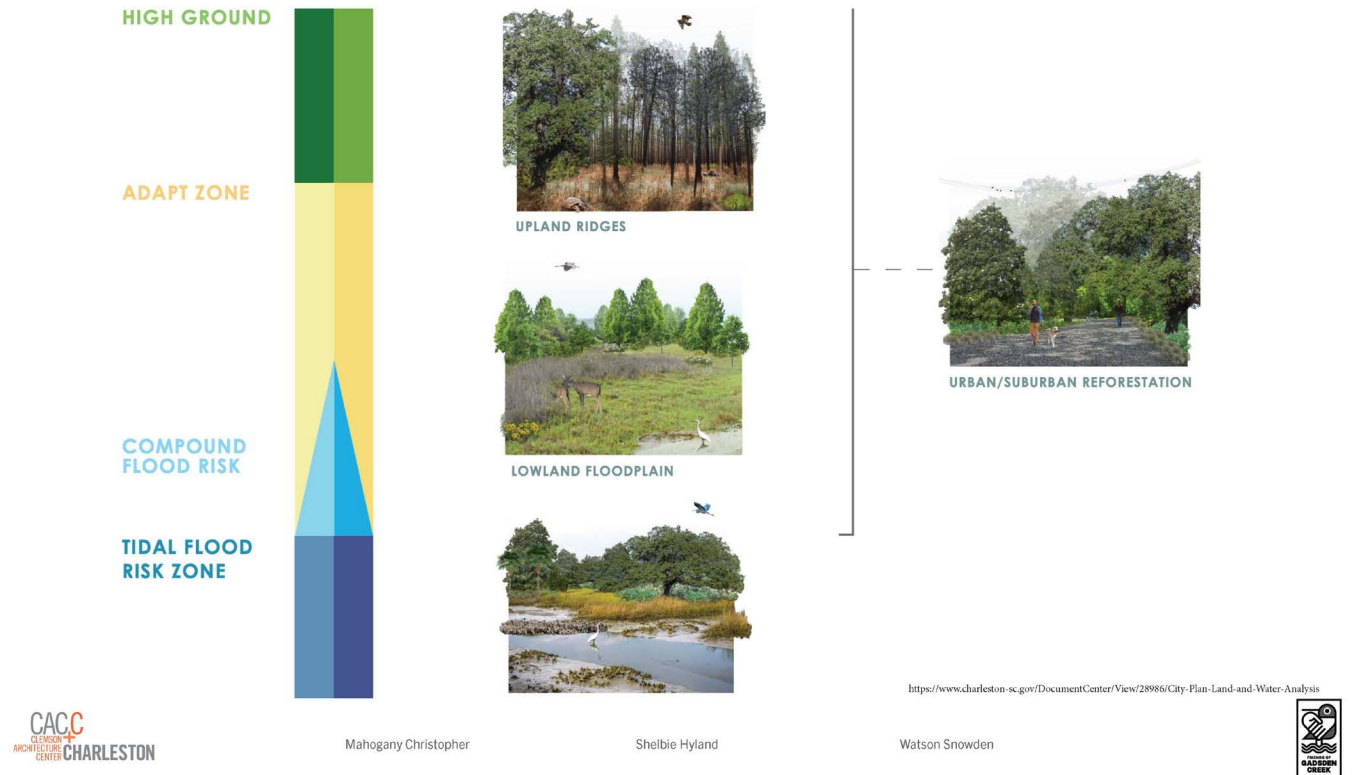
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LANDSCAPE TYPOLOGIES



KEY PLANT SPECIES

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SALT TOLERANT														
	American Holly <i>Ilex opaca</i>	Southern Red Cedar <i>Juniperus virginiana</i>	Southern Live Oak <i>Quercus virginiana</i>	Southern Magnolia <i>Magnolia grandiflora</i>	Yaupon Holly <i>Ilex vomitoria</i>	Devilwood <i>Osmanthus americanus</i>	Southern Waxmyrtle <i>Morella cerifera</i>	Muhly Grass <i>Muhlenbergia capillaris</i>	Inkberry Holly <i>Ilex glabra</i>	Dwarf Yaupon Holly <i>Ilex vomitoria nana</i>	American Beauty Berry <i>Callicarpa americana</i>	Coastal Sweet Pepperbush <i>Clethra Alnifolia</i>	Seaside Goldenrod <i>Solidago sempervirens</i>	Saltmeadow Cordgrass <i>Spartina patens</i>
FLOOD TOLERANT														
	Buttonbush* <i>Cephalanthus occidentalis</i>	Sea Ox-Eye Daisy* <i>Borrichia frutescens</i>	Perennial Glasswort* <i>Salicornia virginica</i>	Saltwort* <i>Batis maritima</i>	Southern Waxmyrtle* <i>Morella cerifera</i>	Muhly Grass* <i>Muhlenbergia capillaris</i>	Inkberry Holly* <i>Ilex glabra</i>	Dwarf Yaupon Holly* <i>Ilex vomitoria nana</i>	Red Buckeye* <i>Aesculus pavia</i>	Coastal Sweet Pepperbush* <i>Clethra Alnifolia</i>	Black Needlerush <i>Juncus roemerianus</i>	Saltmeadow Cordgrass* <i>Spartina patens</i>		
WILD LIFE SUPPORT														
	Black Eyed Susan <i>Rudbeckia hirta</i>	Butterfly Milkweed <i>Asclepias tuberosa</i>	Common Boneset <i>Eupatorium perfoliatum</i>	Common Bottonbush <i>Cephalanthus occidentalis</i>	Marsh Blazing Star <i>Liatris spicata</i>	Prickly Elder <i>Aralia spinosa</i>	Calico Aster <i>Symphotrichum lateriflorum</i>	Red Buckeye* <i>Aesculus pavia</i>	Coastal Sweet Pepperbush* <i>Clethra Alnifolia</i>					
LARGE SHADE TREES														
	Southern Live Oak <i>Quercus virginiana</i>	Red Maple <i>Acer rubrum</i>	Southern Magnolia <i>Magnolia grandiflora</i>	Nuttall Oak <i>Quercus nuttallii</i>	Hackberry <i>Celtis occidentalis</i>	American Sweetgum <i>Liquidambar styraciflua</i>	American Fringe Tree <i>Chionanthus virginicus</i>							



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KEY MARSH + GREATER ECOSYSTEM SPECIES

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HEALTHY MARSH SPECIES														
	Periwinkle Snail	Blue Crab	Fiddler Crab	Crown Conch	Mullet	Diamondback Terrapin	Oysters	Pinfish	Ribbed Mussel	Clapper Rail	Common Gallinule	Pied-billed grebe	Grey Egret	Great Blue Heron
DOCUMENTED GADSDEN CREEK SPECIES														
	Periwinkle Snail	Blue Crab	Fiddler Crab	Oysters	Ribbed Mussel	Anhinga	Eastern Glass Lizard							
GREATER ECOSYSTEM SPECIES														
	Brown Bat	Bees	Butterflies	Caterpillars	Carolina Chickadee	Carolina Wren	Cricket	Grasshopper	Beetles					



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Table 9—Net annual energy savings produced by Charleston street trees.

Species	Electricity (MWh)	Electricity (\$)	Natural gas (MBtu)	Natural gas (\$)	Total (\$)	% of total trees	% of total \$	Avg. \$/tree
Live oak	376	35,105	565	6,766	41,871	23.8	34.6	11.53
Crapemyrtle	45	4,177	125	1,493	5,670	20.1	4.7	1.85
Sabal palmetto	117	10,885	291	3,481	14,367	19.6	11.9	4.81
Water oak	167	15,595	348	4,170	19,766	5	16.3	25.28
Laurel oak	131	12,249	267	3,201	15,449	3.9	12.8	25.83
Flowering dogwood	9	851	24	286	1,137	2.3	0.9	3.22
Loblolly pine	32	3,015	63	749	3,764	1.8	3.1	13.74
Jelly palm	6	595	13	162	756	1.5	0.6	3.39
Red maple	6	523	10	124	647	1.0	0.5	4.18
Other street trees	150	14,025	296	3,540	17,565	20.9	14.5	5.52
Citywide total	1,039	97,020	2,002	23,971	120,991	100.0	100.0	7.94

https://www.fs.usda.gov/pnw/topics/urban_forestry/products/cufr_661_CHSMFRA_6-06.pdf



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Table 6—Number of conflicts between trees and power lines, overhead communication lines, sidewalks, lights, and signs for the most common species in Charleston.

Species	Power lines	Comm. lines	Power and comm. lines	Sidewalk heave	Lights	Signs
Live oak	349	186	1,084	2,822	21	395
Crapemyrtle	150	146	1,117	2,722	13	215
Sabal palmetto	151	127	737	2,661	2	9
Water oak	56	27	331	630	1	48
Laurel oak	48	29	295	523	0	58
Flowering dogwood	21	23	165	289	0	18
Jelly palm	40	0	38	36	0	6
Other trees	232	129	944	2,667	37	178
Citywide total	1,047	667	4,711	12,350	74	927

https://www.fs.usda.gov/pnw/topics/urban_forestry/products/cufr_661_CHSMFRA_6-06.pdf



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SUN PATH DIAGRAM

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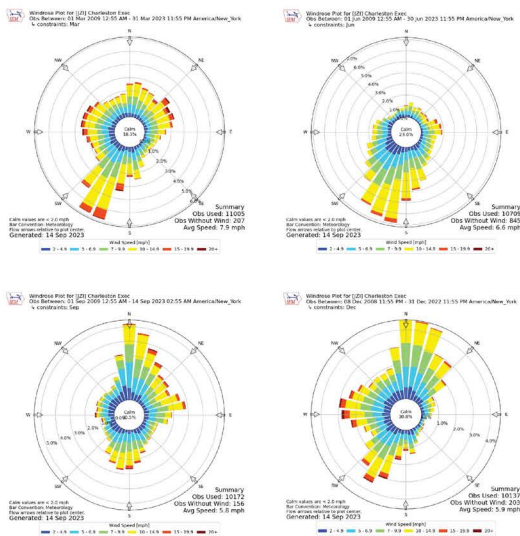
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WIND

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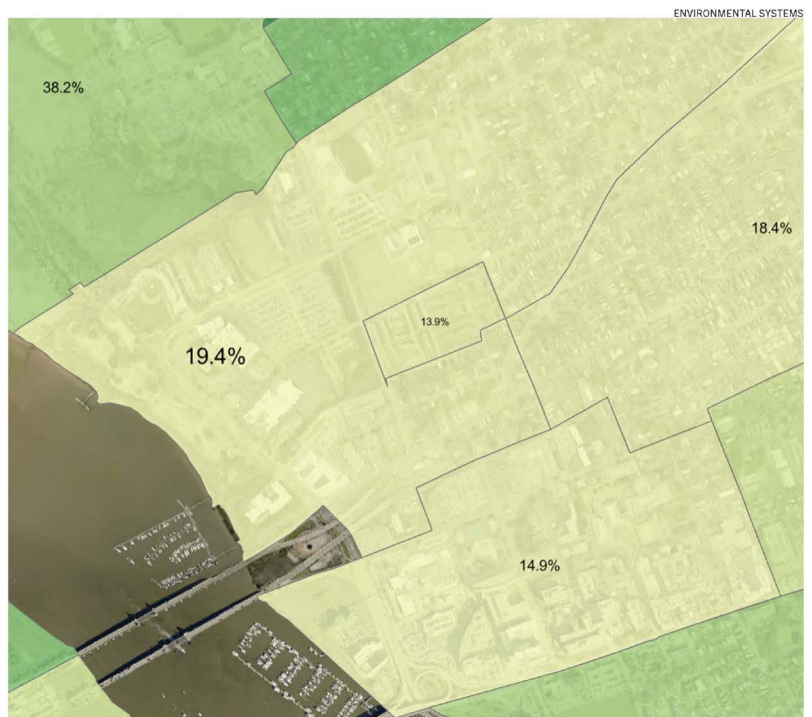
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TREE CANOPY COVERAGE

TREE CANOPY COVERAGE IS UNDER 20% AND PLAYS A ROLE IN THE ETREME HEATS OF THE URBAN HEAT ISLAND EFFECTS



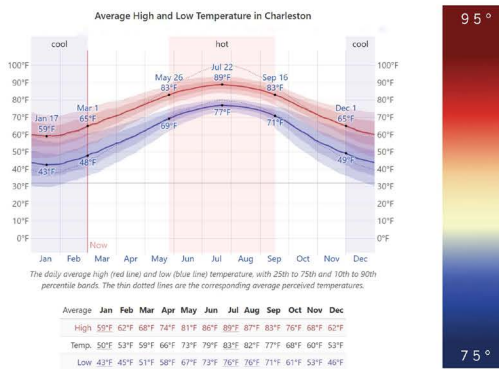
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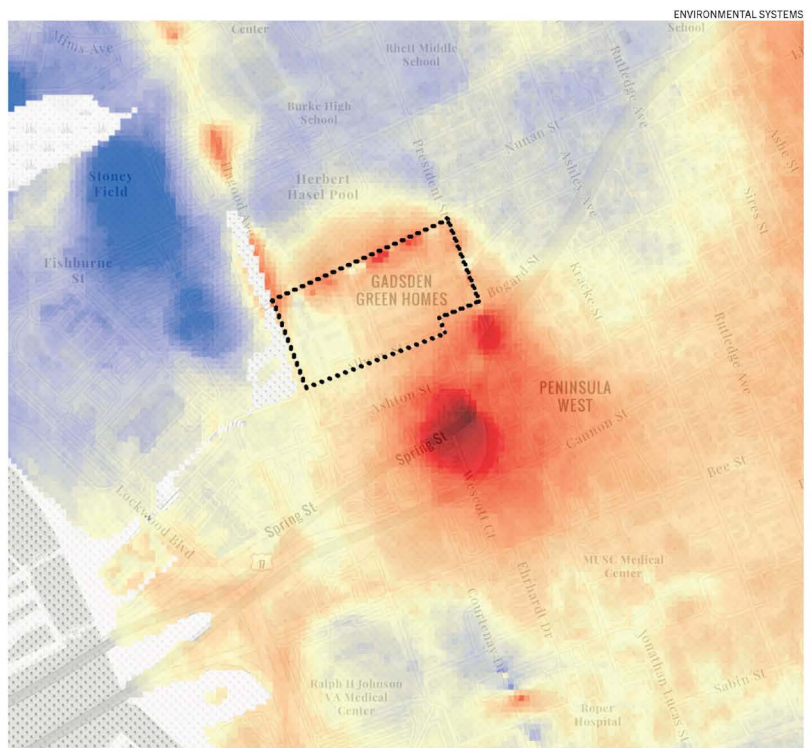
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CLIMATE - MORNING



DUE TO CLIMATE CHNAGE TEMPERATURES ARE EXPECTED TO HEIGHTEN UP TO AN ADDITION 25 DEGREES IN THE NEXT 50 YEARS



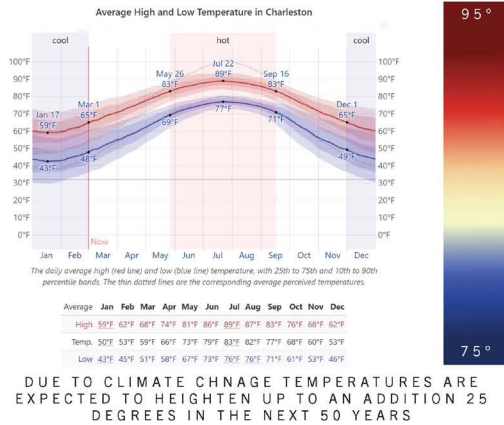
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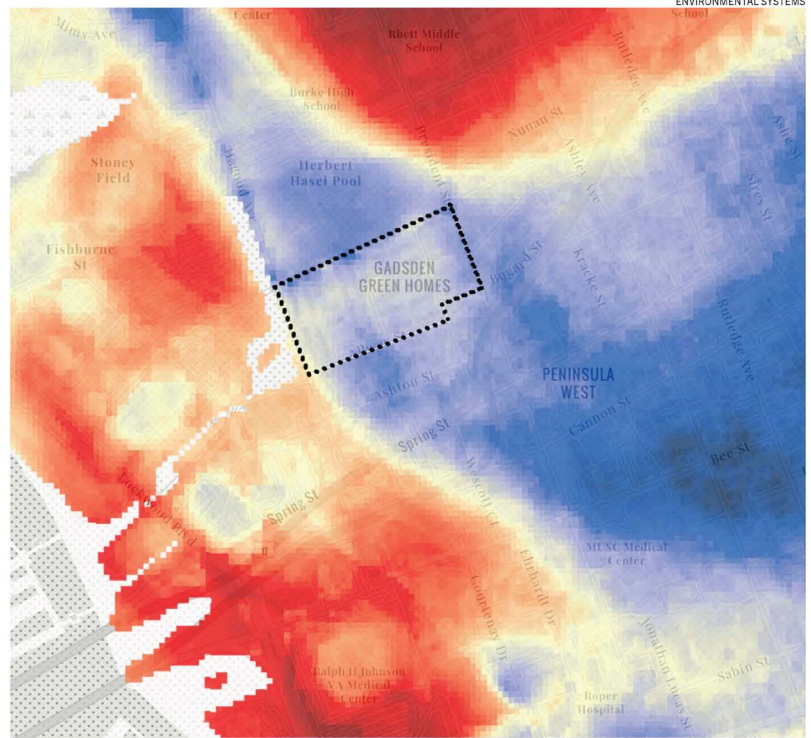
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CLIMATE - AFTERNOON



ENVIRONMENTAL SYSTEMS



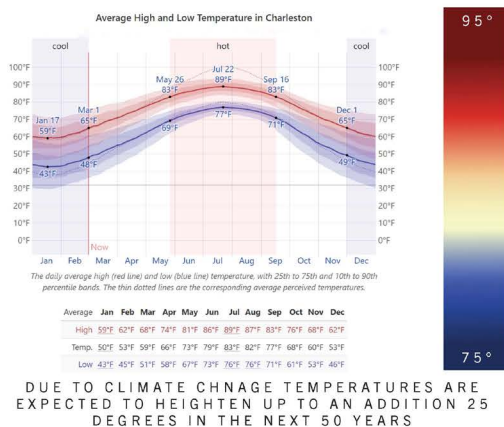
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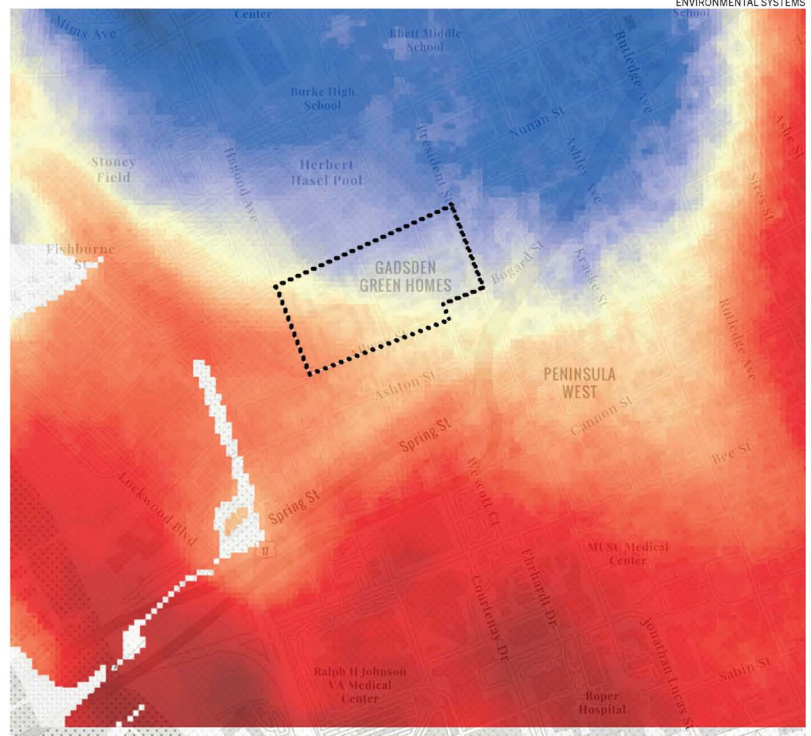
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CLIMATE - EVENING



ENVIRONMENTAL SYSTEMS



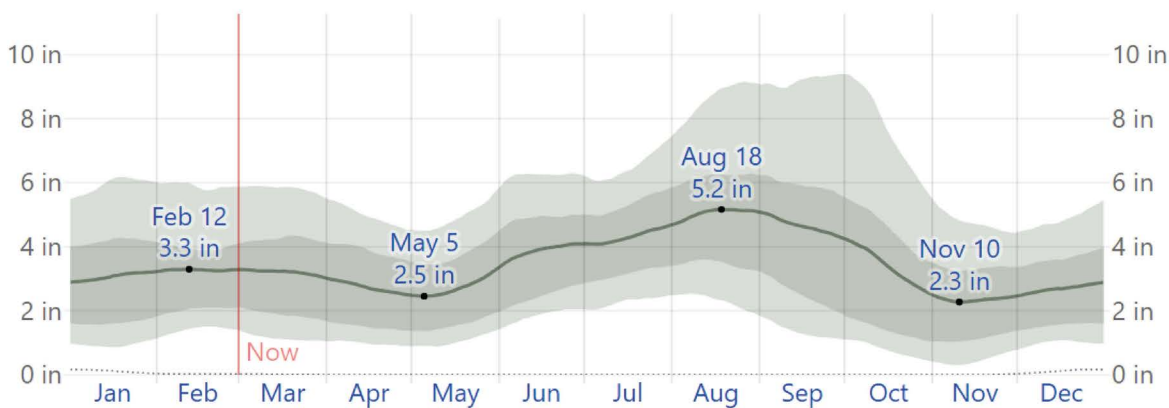
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Average Monthly Rainfall in Charleston



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	3.1"	3.3"	3.2"	2.7"	2.6"	3.9"	4.3"	5.2"	4.6"	3.4"	2.3"	2.7"



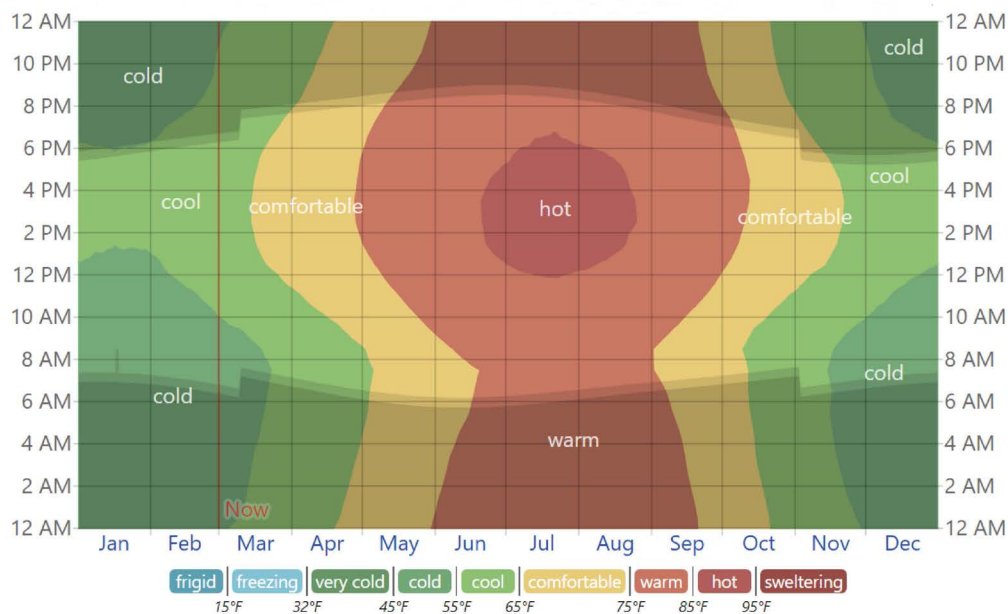
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Average Hourly Temperature in Charleston



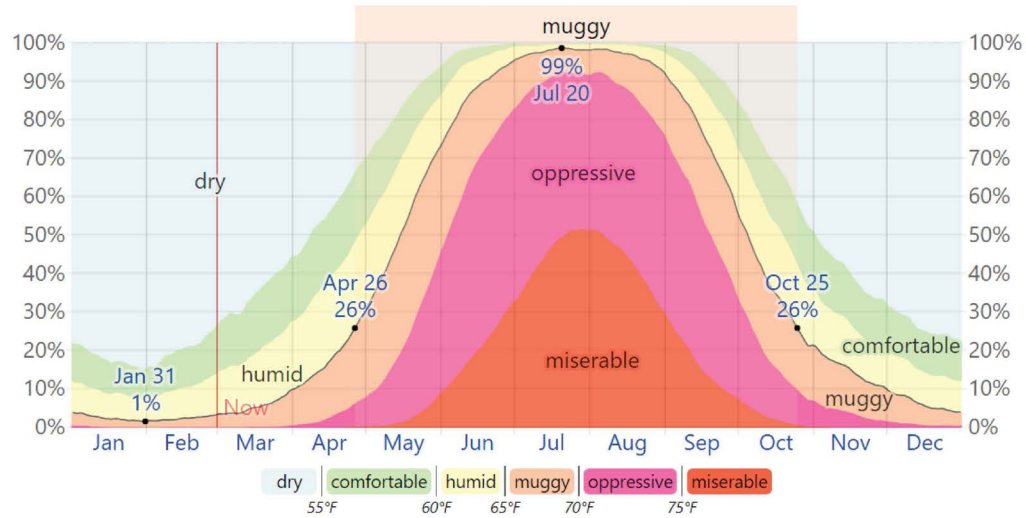
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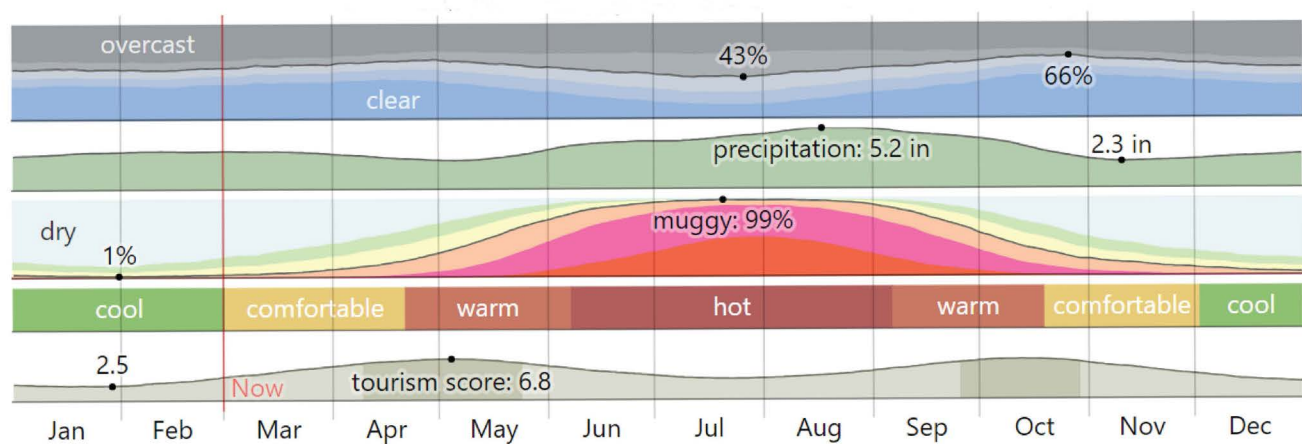
Humidity Comfort Levels in Charleston



The percentage of time spent at various humidity comfort levels, categorized by dew point.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Muqqy days	0.7d	0.6d	1.7d	5.4d	16.1d	26.1d	30.3d	29.9d	22.8d	11.0d	4.5d	1.9d

Climate in Charleston



GADSDEN GREEN



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GADSDEN GREEN COMMUNITY TIMELINE

1870 - 1930s

- Gadsden Green becomes the largest group of black property owners in any single area of Charleston

1938 - 1970s

- Urban Renewal - era policies promoting slum clearance
- City seizes land from homeowners, using property damages from 1938 tornado to claim eminent domain
- Radically segregated Gadsden Green Homes public housing complex is completed in 1952 - over 50 homes lost to city
- 1965 - Colored Farmers' Fair shut down by Mayor Morris for being "unsightly"
- City designates Gadsden Creek as a landfill, which remained until 1971

1980 - 2020

- City proposes many development schemes for areas surrounding Gadsden Green Homes
- City fails to maintain landfill cap + public housing conditions continue to decline
- Gentrification, displacement, and further disenfranchisement are impeding
- City approves WestEdge development permit



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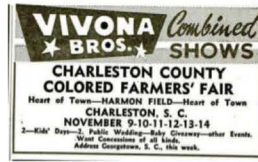
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Post card of "Negro Baptisms"

The creek was once used by the black community as a place for religious ceremonies and bathing



"Charleston County Colored Farmer's Fair"

An old clipping from billboard magazine advertising the Charleston County Colored Farmers' Market in the "Heart of Town," Harmon Field - part of the rich cultural activity in the Gadsden Green Community



Basser's Grocery Store

Basser's Grocery Store was once located at 186 Spring Street and was one of many buildings impacted by construction of the Crosstown Expressway, an urban renewal-era highway project that connects US-17 with I-26



1938 Tornado Detriment

Two tornadoes tore through the Charleston Peninsula in 1938, destroying and damaging a great deal of life and property. The tornadoes impacted two district areas including the downtown business district and the Gadsden Green neighborhood, consisting of predominately African American



"New School On The Creek"

In 1911, Reverend John L. Dart opened the Charleston Colored Industrial School, which is now Burke High School, at 244 President St. - The first public school for African Americans in the City of Charleston



Teddy Foster Grocery

17 Allway St., Theodore "Teddy" Foster was one of the 39 Gadsden Green residents to sign the 1940 letter by John Harris Protesting the City's plan to seize and demolish their homes. Teddy's grandchildren operate the building to this day.

'BACK DA GREEN' CULTURAL TIES

Gadsden Creek was once Charleston's largest and most prosperous Black community.

The community was made up of artisans, industries, butchers, lumbers, and markets, all tucked up against Gadsden Creek. There was a cultural-ecological connection that blossomed between the Black community of Gadsden Green, or "Back da Green" and the surrounding environment.

The people of Gadsden Green fished, swam, bathed, baptized, and were supported and sustained by the creek both physically, financially, and spiritually.

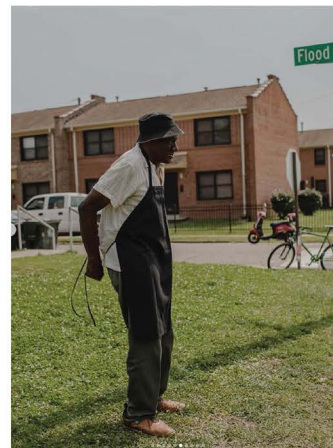
The tie between the people of Gadsden Green and the Gadsden creek was alive and prominent.



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CHALLENGES

Poor living conditions

- poor maintenance of neighborhood and buildings
- outdated units
- poor insulation causing mold issues and higher utility bills
- lack of functional greenspace
- minimal tree cover
- missing sense of ownership

A STRONG COMMUNITY.

A DIFFICULT ENVIRONMENT.



STRENGTHS

Identity + Culture

- strong sense of community
- neighbors helping neighbors
- deep rooted history
- eyes on the street



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GADSDEN CREEK

Gadsden Creek once spanned over 95 acres, alongside Charleston's largest and most prosperous black community, Gadsden Green.

In 1931 the City of Charleston submitted planning documents that commissioned a vision to landfill all 95 acres of the creek with the intent to build for white residents.

Over the next 40 years Gadsden Creek was filled over with landfill, creating lucrative property for the city.

As Gadsden Creek was systemically dismantled, so was Gadsden Green, the black community that thrived alongside it.

Today, only 4 acres of the creek remain.



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CURRENT RELEVANCIES: WEST EDGE

JULY 12, 2021

- WestEdge Foundation obtains a Critical Area Permit + Water Quality and Coastal Zone Consistency Certifications from SCDHEC, allowing for the filling and excavation of 3.923 of the remaining 4 acres of critical area tidelands of Gadsden Creek
- Permit allows for destruction of the tidal creek in order to build hotels, condos, and office buildings

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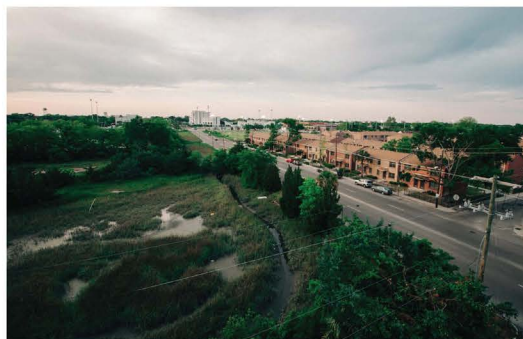
- Contested case hearing ruled to uphold the issued permit but rejects the rationale DHEC employed to approve the permit

JANUARY 3, 2023

- Friends of Gadsden Creek appeal the ALC decision on DHEC's permit for WestEdge

WESTEDGE CMP POLICY VIOLATIONS

- To protect and sustain the unique character of life on the coast that is reflected in its cultural, historical, archeological, and aesthetic values;
- To promote increased recreational opportunities in coastal areas and increased public access to tidal waters in a manner which protects the quality of coastal resources and public health and safety;
- To encourage the inland siting of facilities which are not water "dependent"
- And to protect and, where possible, to restore or enhance the resources of the State's coastal zone for this and succeeding generations.



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CURRENT RELEVANCIES: LOWCOUNTRY RAPID TRANSIT

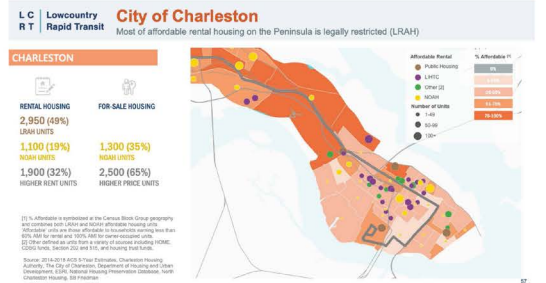
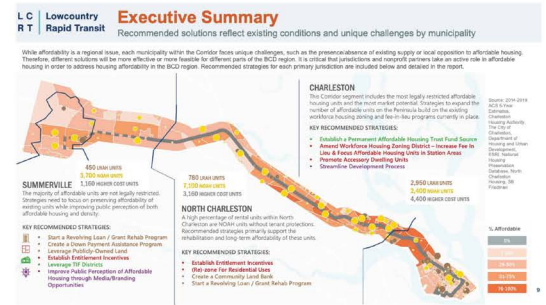
Lowcountry Rapid Transit (LCRT) is a modern 21.3-mile bus rapid transit project that will connect the region, its communities, key destinations, and employment centers.

The goal of the project is to transform the region by improving transportation for people traveling on buses, on foot, and on bikes. The foundation of LCRT will serve Charleston, North Charleston, and Ladson.

This system will offer a safe, reliable, and low-cost transportation alternative for tens of thousands of residents, including those at Gadsden Green.

Importance

- reliable, frequent, and accessible rapid transit for Gadsden Green citizens
- connection to surrounding communities and resources like employment hubs, education, healthcare, grocery stores, and community and civic centers
- an increase in access to affordable, reliable public transportation means less dependency on the automobile. Less cars means room to designing for a less automobile centric community, and designing for a more pedestrian, multi-modal environment
- this directly correlates to increased accessibility, greater quality of life, lower cost of living, and a smaller environmental impact



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SITE ANALYSIS



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SITE BOUNDARY



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SITE ACREAGE



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EXISTING GREENSPACE : 177,000 SQ FT



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STREETS AND TRANSIT



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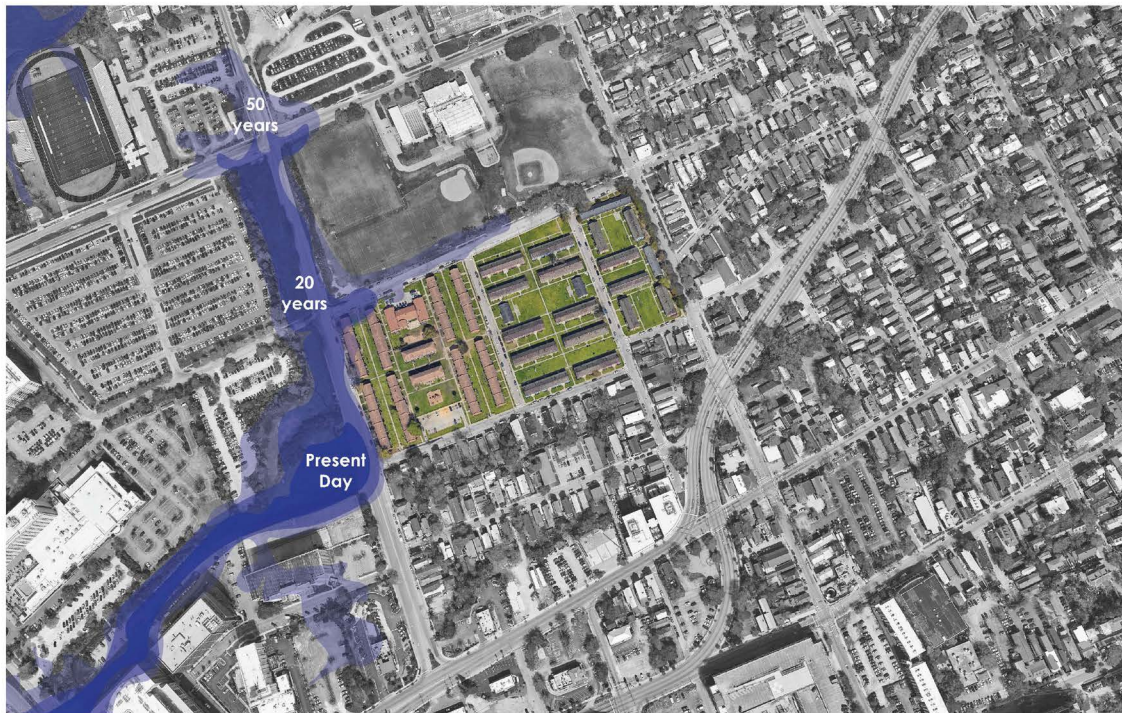
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FLOOD PATTERNS



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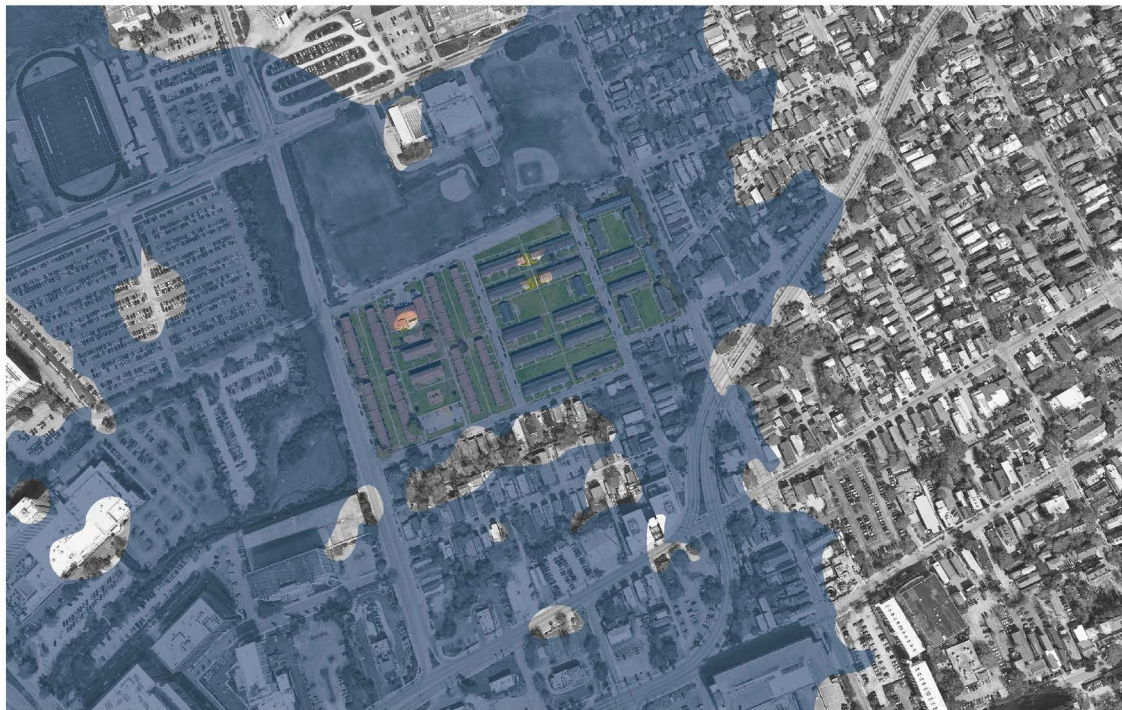
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5 FT STORM SURGE



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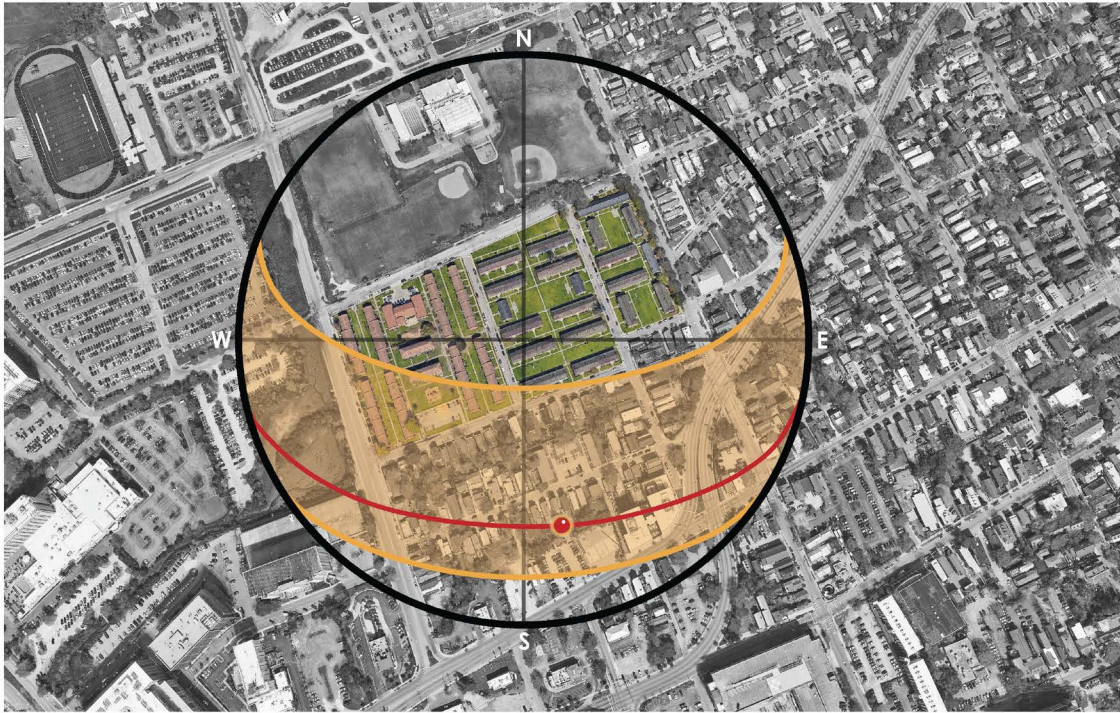
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SUN STUDY



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Shelbie Hyland

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WIND STUDY



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SENSE OF PLACE

- DESIGNING FOR THE EXISTING CULTURE + THE HISTORY OF PLACE AT THE FOREFRONT
- CREATING IDENTITY THROUGH THE USE OF MATERIALS
- INTEGRATION WITH THE SURROUNDING CONTEXT



ENVIRONMENTAL SENSITIVITY

- STRATEGIC DESIGN AND PROGRAMMING TO HARNESS OR MITIGATE NATURAL CHALLENGES INCLUDING WIND, SUN, AND WATER
- SUSTAINABLE DESIGN THROUGH PASSIVE BUILDING STRATEGIES AND STRATEGIC PLANT USE
- DESIGNING FOR ENVIRONMENTAL JUSTICE



COMFORT

- INTEGRATION OF PRIVATE / INDIVIDUAL SPACE
- DESIGNATION OF SHARED SPACE + COMMUNITY AMENITIES
- CONNECTIVITY: INTERNALLY + EXTERNALLY
- ACCESSIBILITY
- VIEW-SHEDS

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ENSLEY MIXED-USE NEIGHBORHOOD

David Baker Architects
Birmingham, Alabama
10.38 Acres

Ensley Mixed-Use Neighborhood re-imagines the site of a closed, fire damaged high school in Birmingham's historic Ensley district as a vital community hub that offers much needed affordable homes and amenities.

This project responds to the needs and the fabric of the surrounding area through a mix of low scale homes, green spaces, a leaning center, and a grocery store through the adaptive reuse of an existing school gymnasium.

The plan re-stitches the isolated site into its surrounding neighborhoods through vehicular and pedestrian connections.

Highest density is placed at the center of the site with 3-story apartment buildings, and digresses toward the neighborhood edges.

The design also incorporate "living alleys" as well as traffic-calmed walkable streets.

The project is an amenity-rich development that incorporates K-5 education, after school programming, and services like financial literacy, wellness, and mobile health care.

Design Strategies Demonstrated

Sense of place

- scale
- re-purpose of existing fabric

Environmental

- adaptive reuse of old gymnasium
- environmental justice through the integration of green space, parks, and tree coverage

Comfort

- extensive community amenities
- connectivity within the site as well as to its surroundings

AERIAL SKETCH



URBAN USE DIAGRAM



LINEAR PARK - CORNER OF AVENUE J AND 24TH STREET



SITE PLAN



SENSE OF PLACE



ENVIRONMENT



COMFORT



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675 EAST SANTA CLARA HOUSING

David Baker Architects
East Santa Clara, CA

PHASE 2
Studio T Square

675 East Santa Clara Housing is a Mixed-Use Neighborhood Development Project. The planned program includes several affordable housing developments, ground floor retail, and open space. This urban village project will transform more than a city block along the eastern stretch of Downtown San Jose's main avenue. The project will provide much-needed housing, be the future home of the Santa Clara Housing Authority office, and activate the street for residents and neighbors alike (Santa Clara County Housing Authority).

Design Strategies Demonstrated

Sense of place

- scale
- re-purpose of existing fabric
- grid

Environmental

- adaptive reuse
- environmental justice through the integration of green space, parks, terracing, and tree coverage

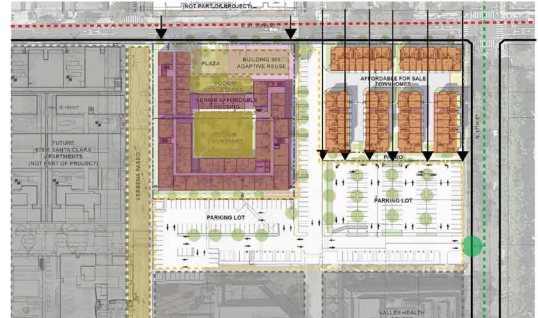
Comfort

- extensive community amenities
- connectivity within the site as well as to its surroundings
- distribution of solid, voids, and greenspace

MASSING RELATIONSHIPS & SCALE



SITE PLAN & PROGRAMMING DIAGRAM



MASSING DIAGRAM



STREETSCAPE SECTION



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MASON ON MARIPOSA

David Baker Architects
San Francisco, California
1601 Mariposa Street,



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Shelbie Hyland

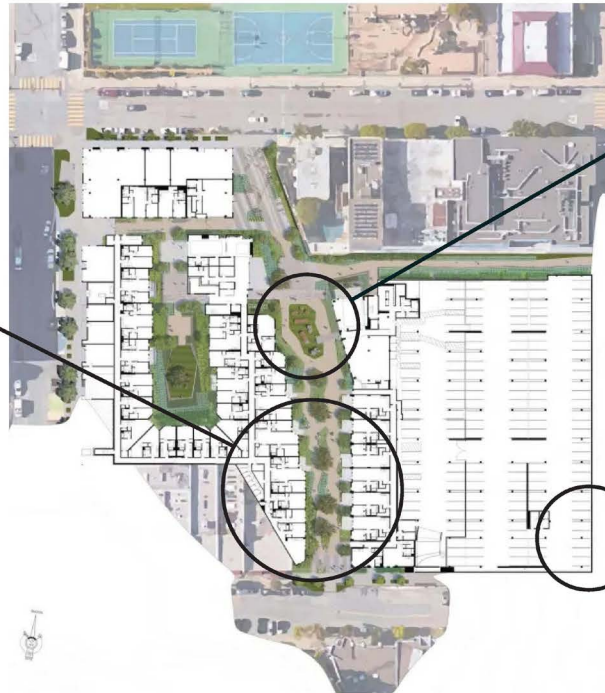
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•Outdoor corridor that provides green space, better movement, and connectivity

Since the area that Mason on Mariposa lies on is so large, there is a large urban greenspace walk-through that connects between two streets in the center of the block.



•Integrated space for play/sitting

Gadsen Green is home to kids of all ages, so it is important to provide them with the appropriate parks and playsets. These also draw in people and improve the overall engagement in the community.



•Parking garage integrated into grade change and hidden by design

The ability to hide a large parking garage into the fabric of the building is important to provide adequate parking access to residents. This would of course have to be adjusted to Charleston's water conditions, but Mason on Mariposa does a great job at hiding such a large space.



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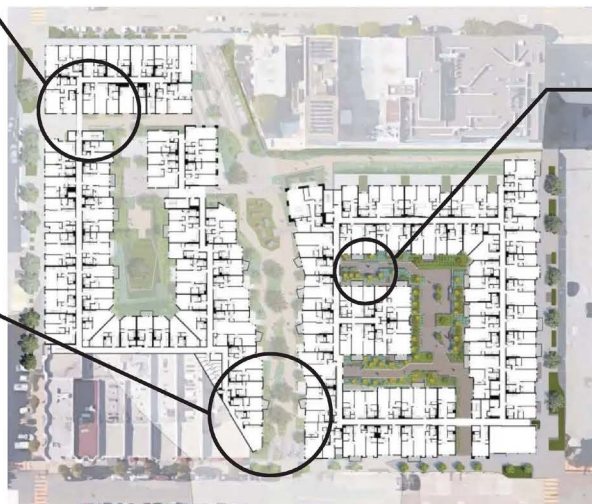
•Connection between different floors of separate buildings while simultaneously creating more outdoor space

Gadsen Green has multiple massing opportunities to provide similar outdoor connects between multiple buildings or to provide interactions with the roads that divide the area.



•Integration to fabric of preexisting neighborhood

Gadsen Green lies on the edge of an overall larger Charleston neighborhood, and will soon be next to WestEdge. It is important to identify relations with the surrounding context.



•Large outdoor vestibule courtyard to provide more units with outdoor space access

At Gadsen Green the most defining feature and an important social and cultural aspect is the balcony and porch spaces. It is important to provide similar movements like the one pictured to provide the maximum possible units with a connected outdoor space. These courtyards allow for more natural light in the units towards the center of the building and allows wind to move through the space.



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MASSING DEVELOPMENT



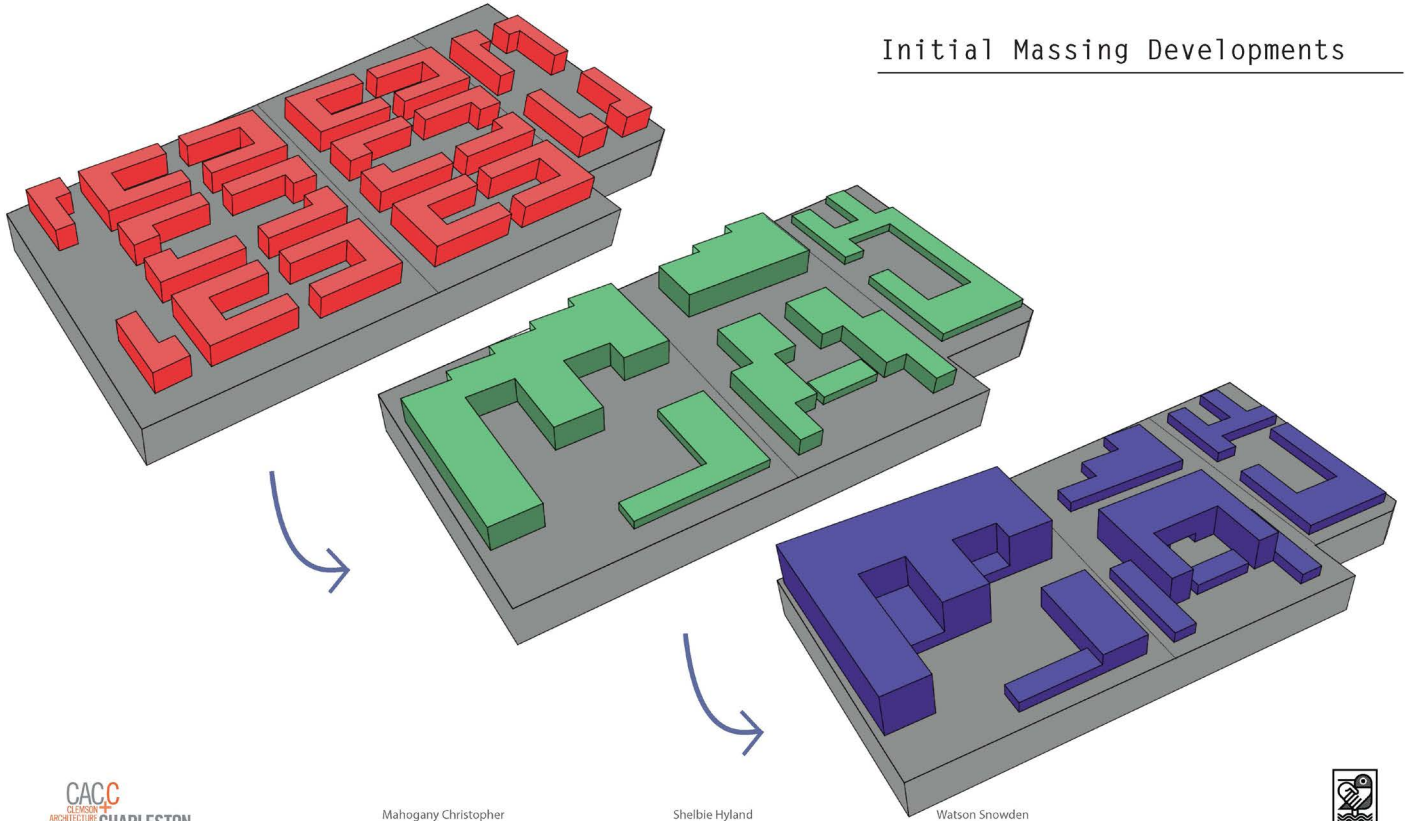
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Initial Massing Developments

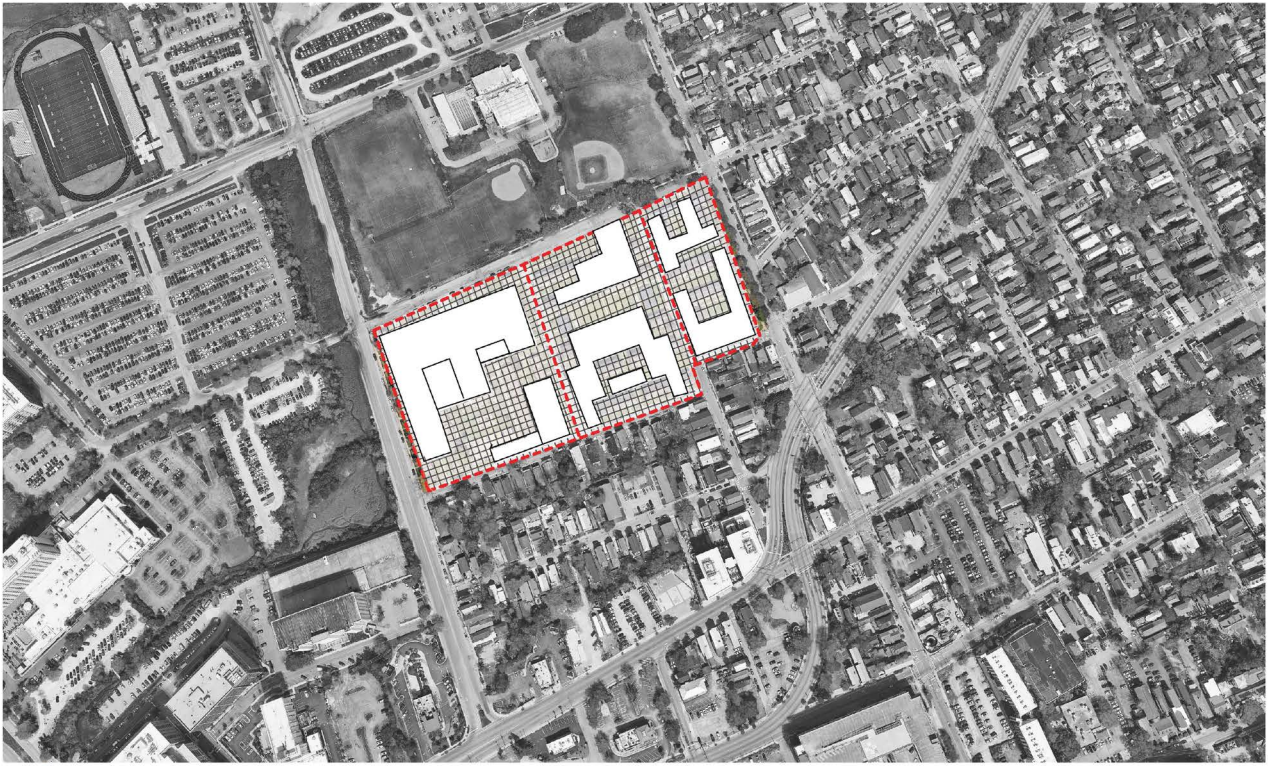


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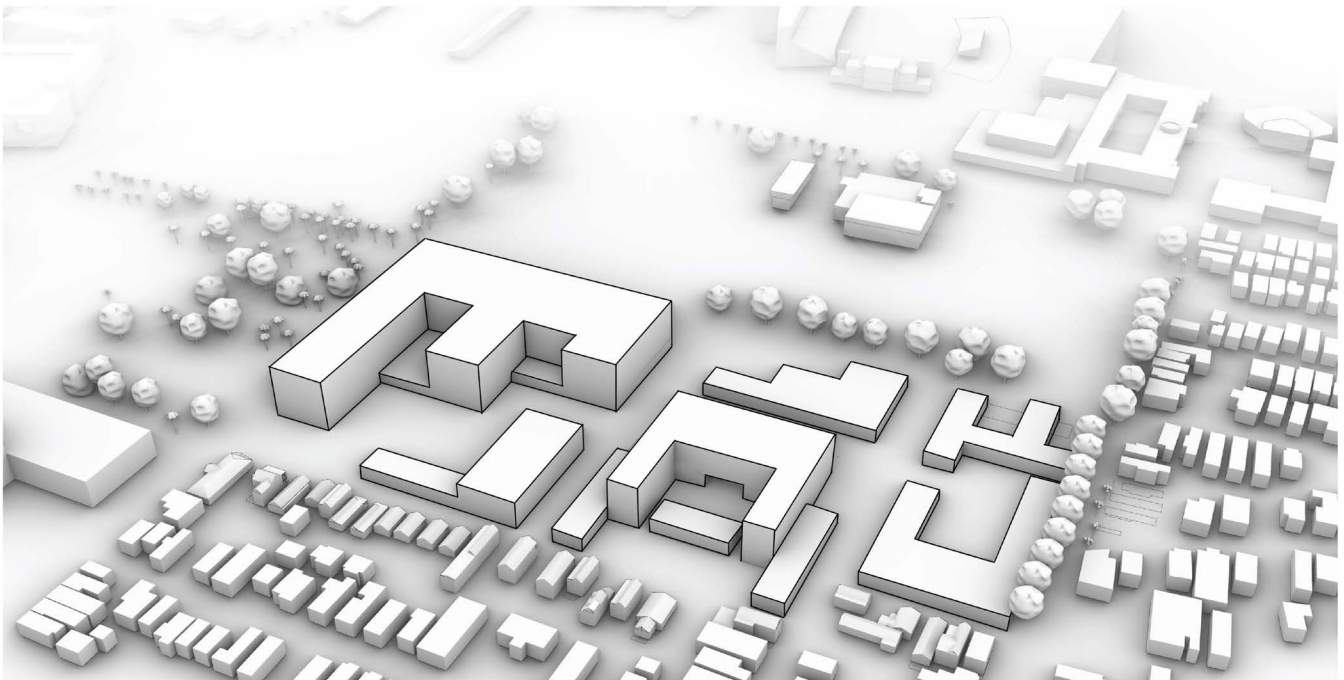


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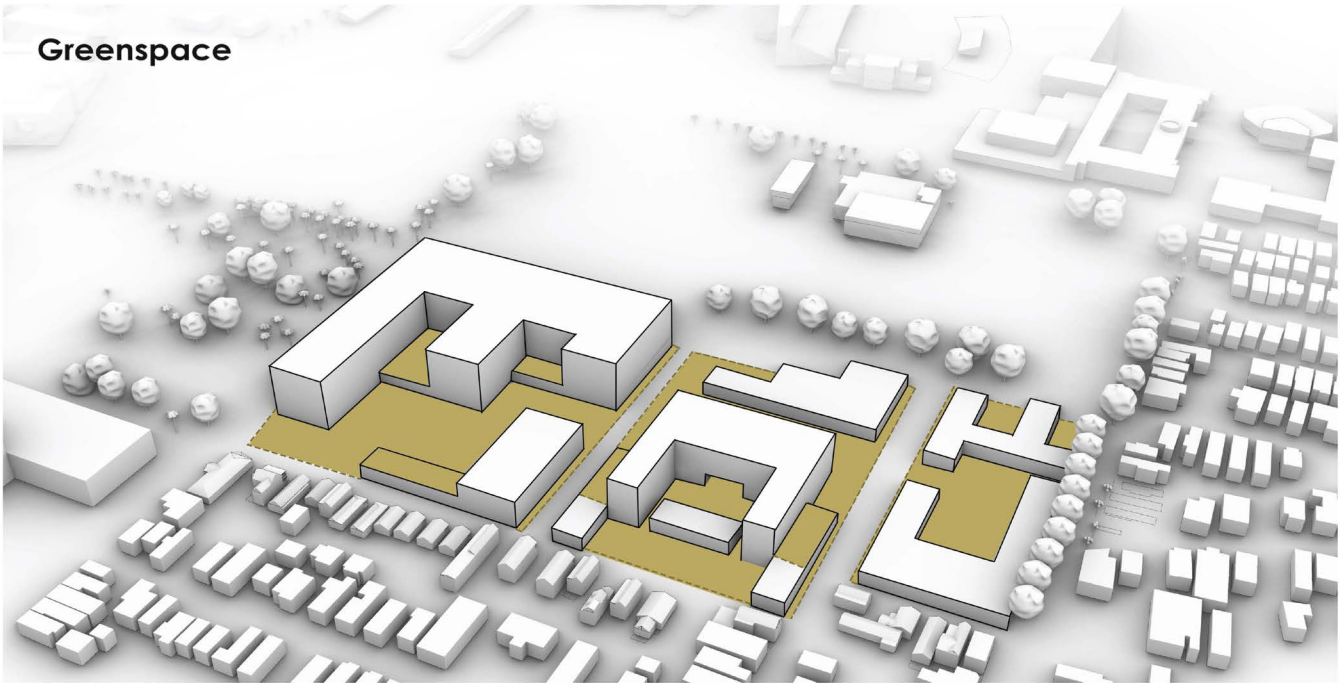
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Greenspace



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GRID REFERENCE



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GRID



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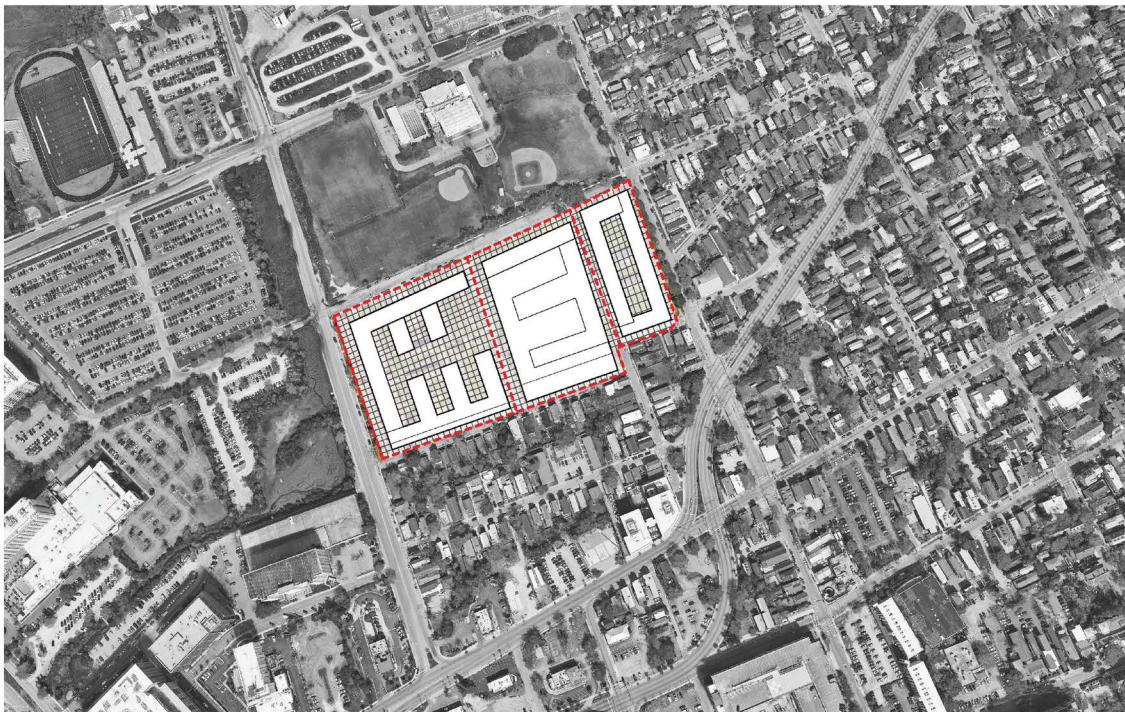
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MASSING



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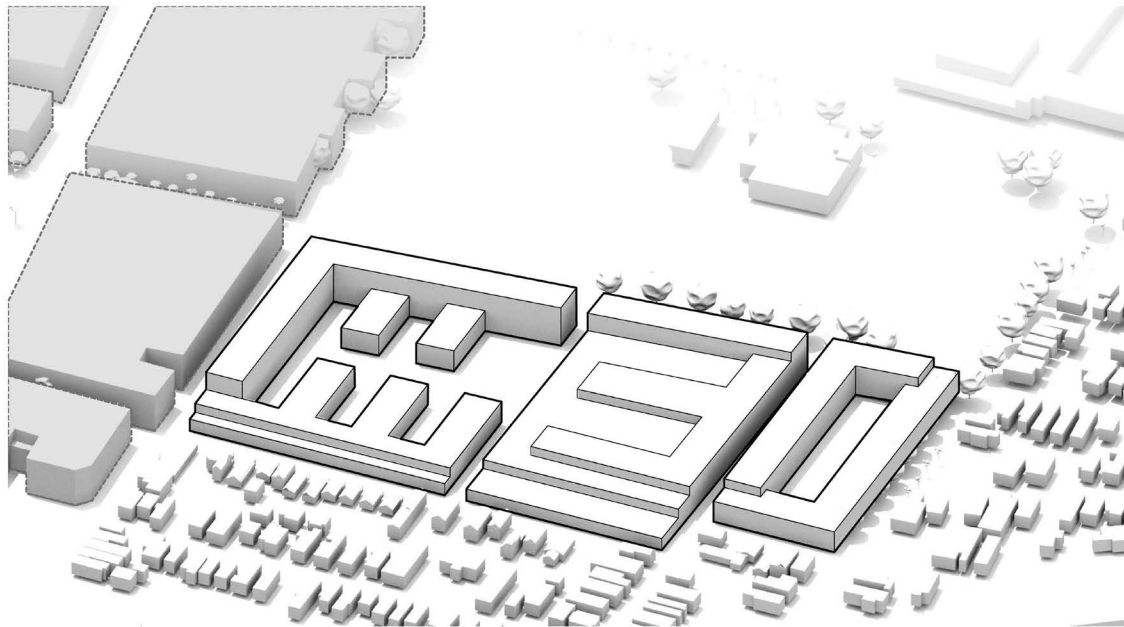
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MASSING : SE AXON



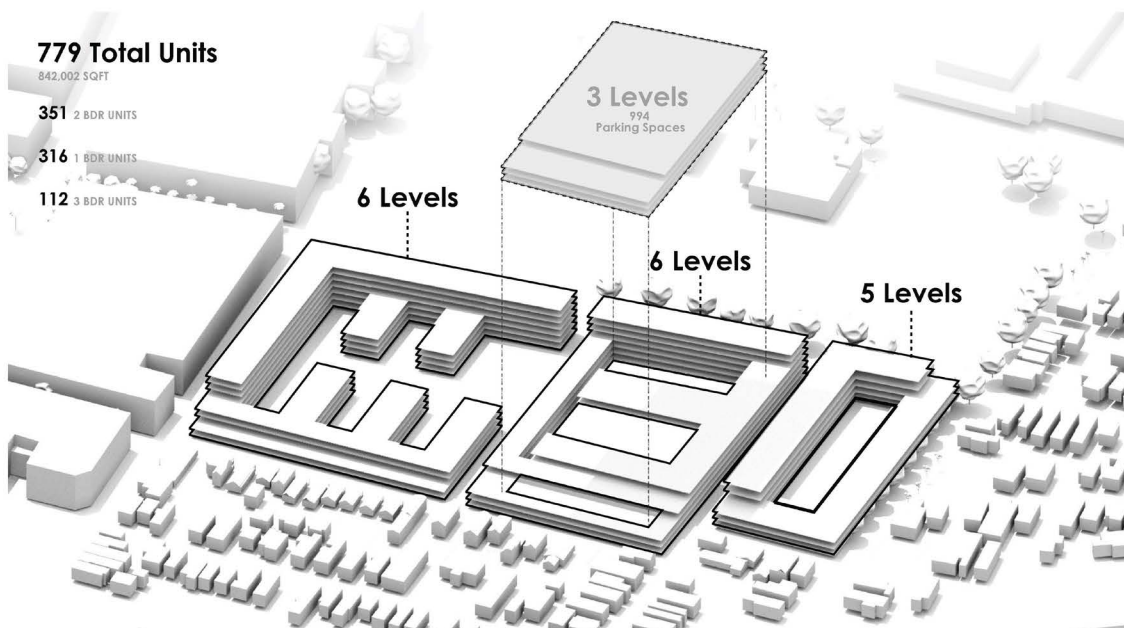
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LEVELS & SQUARE FOOTAGE : SE AXON



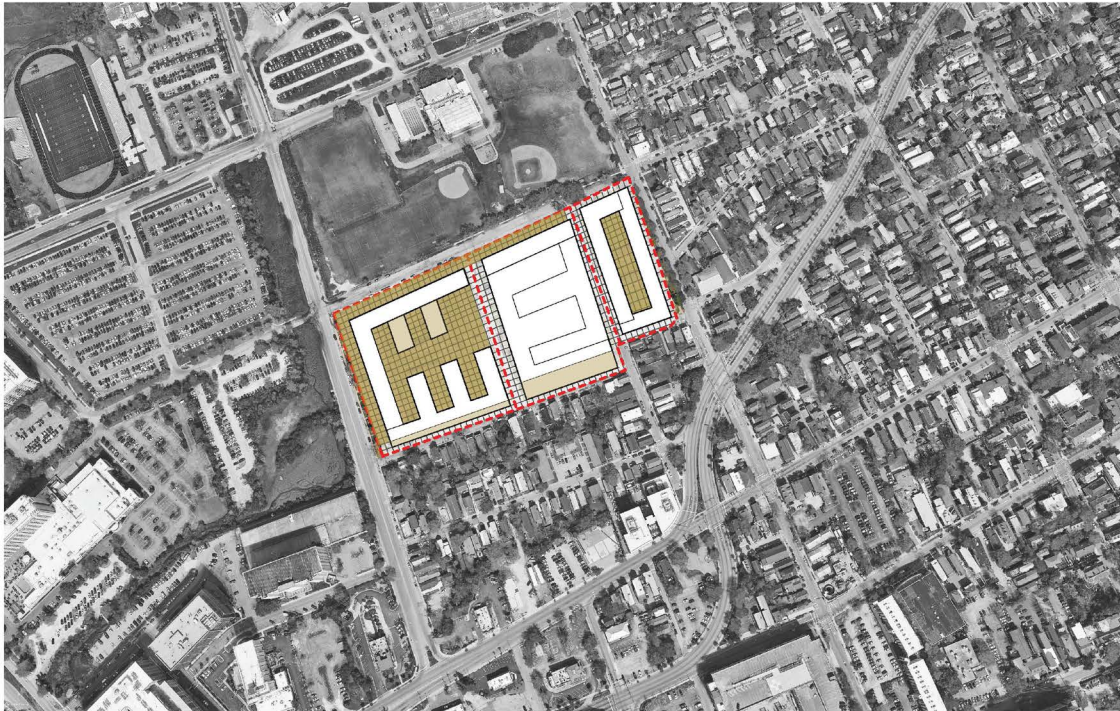
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GREENSPACE



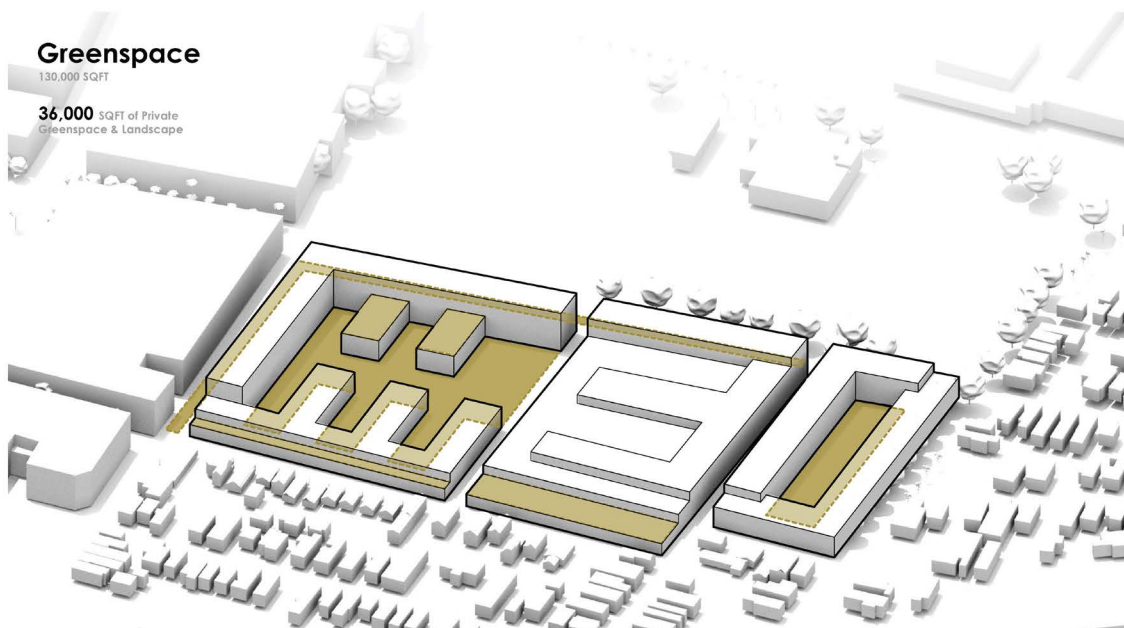
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GREENSPACE : SE AXON



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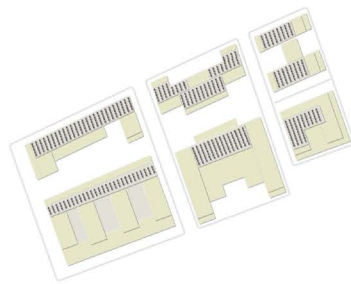
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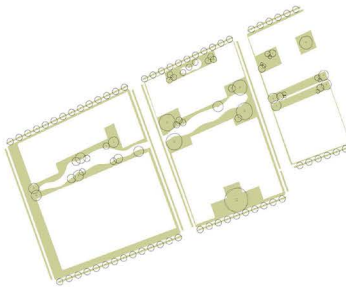
DESIGN STRATEGIES

■ SENSE OF PLACE ■ ENVIRONMENTAL SENSITIVITY ■ COMFORT



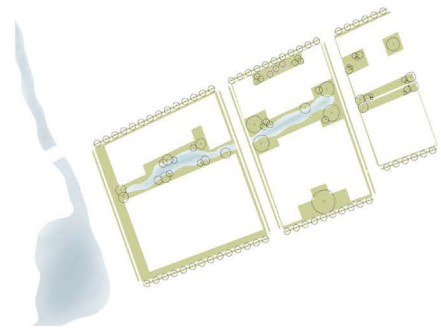
STRATEGIC LAYOUT

- VARYING SCALES
- MAXIMAL USE OF VARYING PLANES
- GREEN ROOFS
- SOLAR ENERGY
- RESPONSIBLE MATERIAL USE
- WATER FILTRATION AND FLOOD MITIGATION
- MINIMIZE FLOODING IMPACTS
- INTIMATE + PRIVATE SPACE
- GATHERING SPACES



MAINTAIN GREEN SPACE

- MAINTAIN HISTORY OF GADSDEN GREEN
- DEVELOP SENSE OF PLACE
- REVIVE A LOST CANOPY
- CONNECT THE COMMUNITY BACK TO NATURE
- MINIMIZE HEAT
- SUPPORT COMMUNITY CONNECTIVITY
- CREATION OF PUBLIC AND PRIVATE SPACES



DESIGN WITH WATER

- REESTABLISH CULTURAL TIES TO GADSDEN CREEK
- DEVELOPMENT OF IDENTITY
- ALLOW NATURAL SYSTEMS TO PERFORM
- INTRODUCE NATIVE MICRO-ECOSYSTEMS
- WATER FILTRATION AND FLOOD MITIGATION
- MINIMIZE FLOODING IMPACTS



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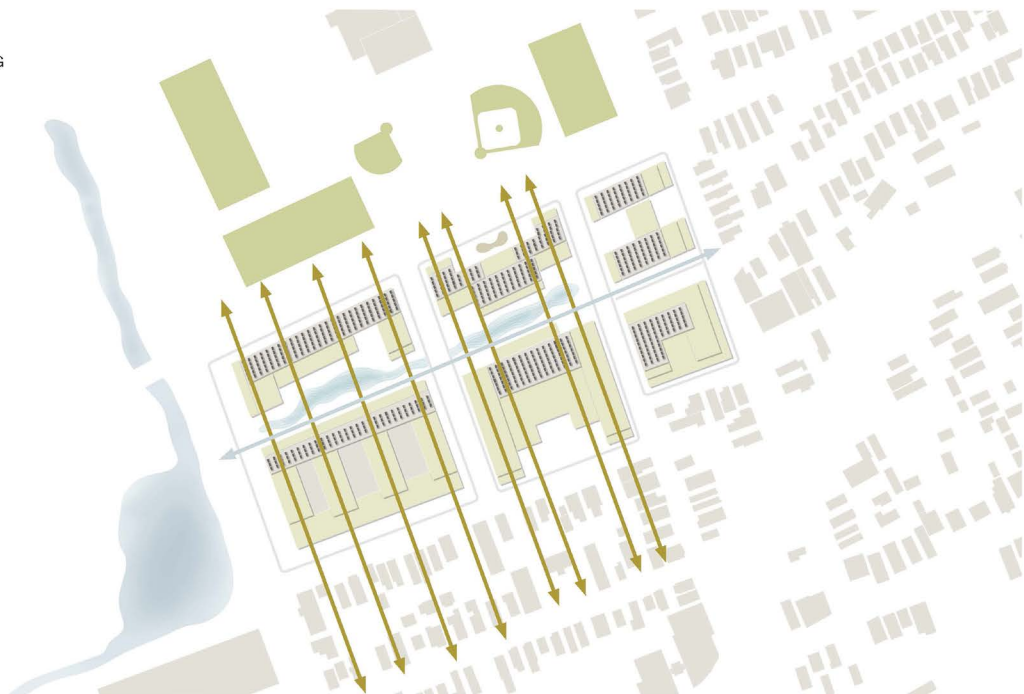
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CONTEXT

- INTEGRATION WITH THE SURROUNDING NEIGHBORHOOD FABRIC
- CONTINUATION OF THE CREEK AND ITS NATURAL PATH
- NATIVE PLANTING PALLET
- COMPLETE STREETS
- CONTEXTUAL PROGRAMMING



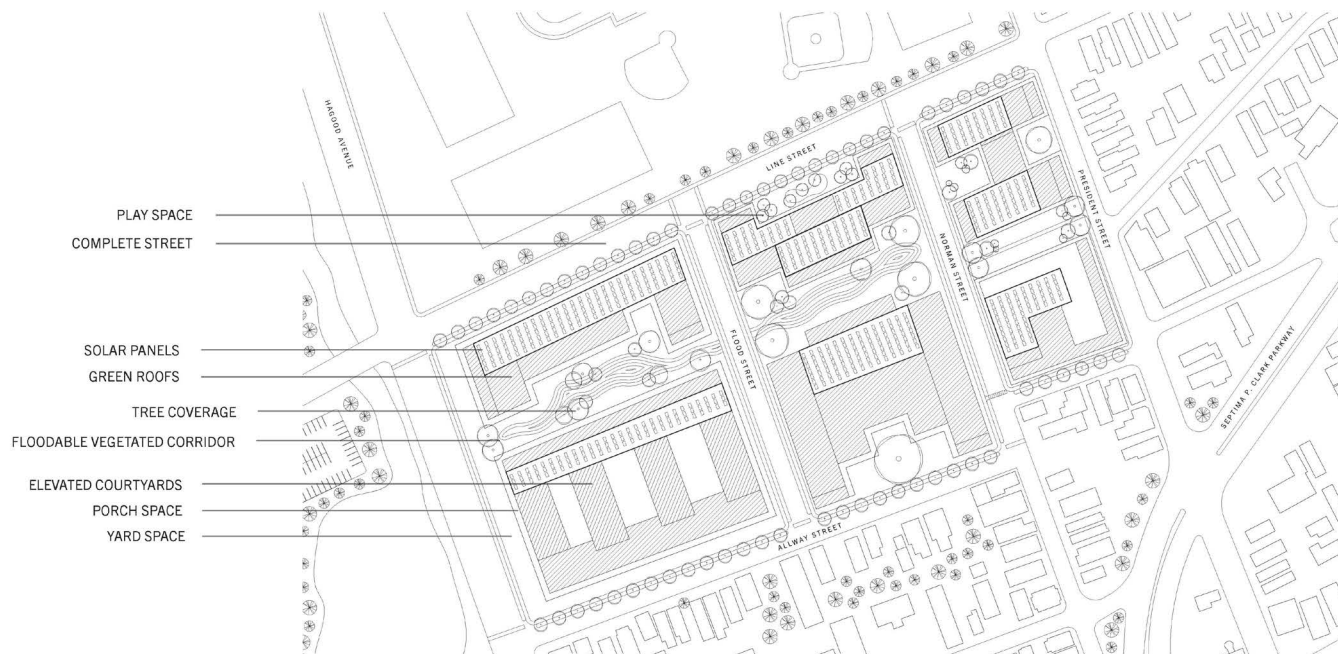
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SITE PLAN DIAGRAM



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WATER'S EDGE

FINAL REVIEW
4.30.2024



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PRESENTATION



RESEARCH



ANALYSIS



PRECEDENTS



DESIGN PROCESS & STRATEGY



WATER'S EDGE



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RESEARCH



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BACKGROUND

1870 - 1930s:

- Gadsden Green becomes the largest group of black property owners in any single area of Charleston

1938 - 1970s:

- Urban Renewal - era policies promoting slum clearance
- City seizes land from homeowners, using property damages from 1938 tornado to claim eminent domain
- Radically segregated Gadsden Green Homes public housing complex is completed in 1952 - over 50 homes lost to city
- 1965 - Colored Farmers' Fair shut down by Mayor Morris for being "unsightly"
- City designates Gadsden Creek as a landfill, which remained until 1971

1980 - 2020:

- City proposes many development schemes for areas surrounding Gadsden Green Homes
- City fails to maintain landfill cap + public housing conditions continue to decline
- Gentrification, displacement, and further disenfranchisement are impeding
- City approves WestEdge development permit



Informative Collage



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ANALYSIS



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THE SITE

Gadsden Green, colloquially known as "Back Da Green," serves as the site for this project. Nestled in the heart of the city, this community faces a unique set of challenges and opportunities. It is prone to regular flooding, posing a significant risk to both residents and infrastructure. In our analysis of the site, we considered various factors that influence the design process. We conducted extensive research on the site's hydrology, studying flood patterns and exploring strategies for flood mitigation. We also, took into account the existing built environment and the layout of public spaces. This informed our approach in design, as we sought to create a cohesive and contextually responsive development that enhances the overall urban fabric.



Site



Acreage



Surrounding Green Space



Site Green Space



Flooding



5ft Storm Surge



Traffic & Transportation



Wind



Sun Diagram



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COMPREHENSIVE SITE ANALYSIS



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PROJECTIONS



10 WestEdge Development

The potential expansion of the WestEdge development could significantly impact our site and the creek. Increased construction and urbanization may lead to greater storm-water runoff, exacerbating flooding issues in the creek. Furthermore, changes in land use and infrastructure could alter the natural habitat and ecological balance of the area, emphasizing the need for careful planning and sustainable design practices to mitigate potential negative effects on our site and the surrounding environment.



Lowcountry Rapid Transit

The proximity of the Lowcountry Rapid Transit route to our site offers a solution to parking and travel concerns. With convenient access to public transportation, visitors and residents can rely less on personal vehicles, reducing parking demand and traffic congestion in the area. This promotes a more sustainable and efficient transportation system, enhancing accessibility and connectivity for all stakeholders.



Zoning

The zoning of our site, with appropriate building heights and designated retail spaces, enhances the user experience and program functionality. By allowing for mixed-use development and varied building heights, we can create a vibrant and pedestrian-friendly environment that integrates commercial, residential, and recreational amenities. This zoning strategy promotes urban vitality, encourages social interaction, and supports the diverse needs of our community and program.



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PRECEDENTS



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675 EAST SANTA CLARA

DAVID BAKER ARCHITECTS
EAST SANTA CLARA, CA

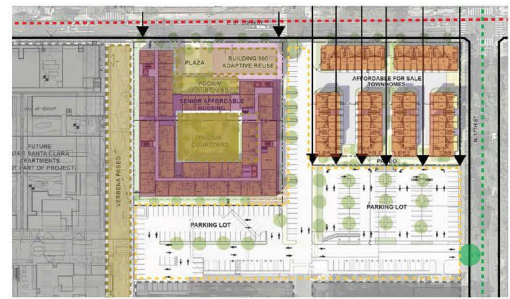
675 East Santa Clara Housing is a Mixed-Use Neighborhood Development Project. The planned program includes several affordable housing developments, ground floor retail, and open space. The project will provide much-needed housing, be the future home of the Santa Clara Housing Authority office, and activate the street for residents and neighbors alike" Santa Clara County Housing Authority).

Design Strategies
Demonstrated:

- Sense of place
- Environmental adaptive reuse Comfort
- Place Making



Ariel View



Enlarged Plan



Site Plan



Section



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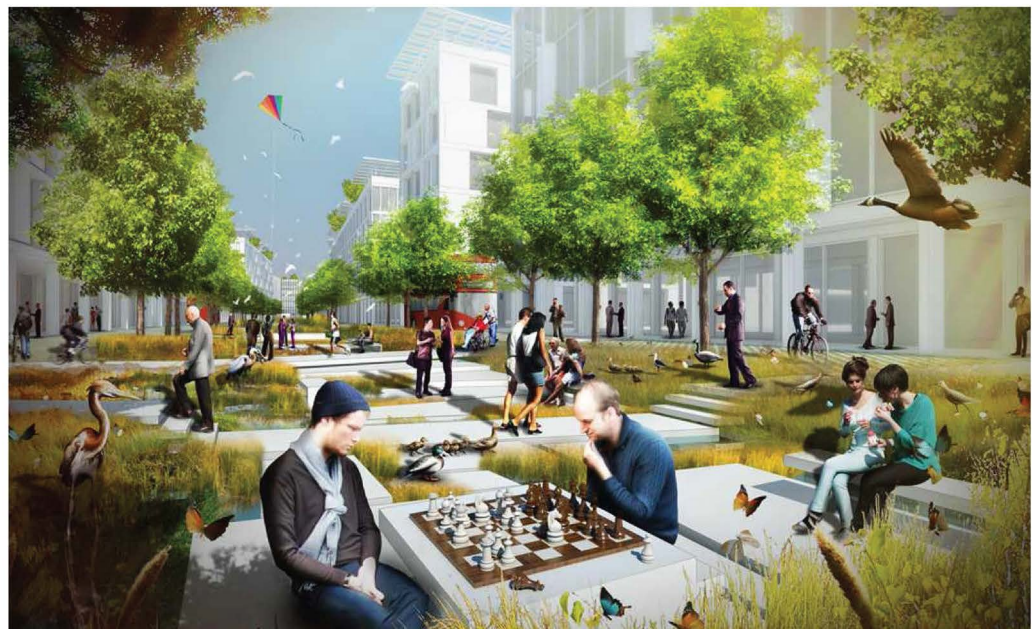
WATER BOULEVARDS

WATER SENSITIVE URBAN DESIGN
BAHARASH ARCHITECTURE
LONDON

"A solution to this problem is Water Boulevards, which mitigates the risks of flooding, whilst also creating healthy places for people to live, work and visit. The project integrates Green Infrastructure and Water Sensitive Urban Design into our streets, and can be applied as a network of green corridors to any city in risk of flooding to Promote the three pill of sustainability."

KEY TAKEAWAYS:

- Environmental Sustainability
- Social Sustainability



Building Section



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WATER BOULEVARDS



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WATER BOULEVARDS



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WATER BOULEVARDS



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THORNTON PLACE

SvR DESIGN COMPANY
SEATTLE, WA

Thornton Place converted a 9-acre suburban parking lot into a dense, mixed-use community centered on 2.7 acres of new open space. An attractive daylight storm-water channel, financed by a revolving public fund, treats runoff from 680 acres of the Thornton Creek watershed, while providing open space, habitat and pedestrian connections to the surrounding neighborhood. The project also reduced the site's impervious surfaces by 78 percent, allowing more storm-water to absorb into the ground, instead of becoming runoff. Parking is shared with a nearby transit facility, reducing the overall need by 200 spaces.

KEY TAKE-WAYS:

- Green infrastructure
- Walk-ability + Circulation
- Private + public relationship
- Shared parking compatibility



Master Plan



Interior Courtyard



Aerial View

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CHARLESTON SINGLE HOUSE

The Charleston single house, a distinctive architectural style originating in Charleston, South Carolina, features a narrow, two or three-story structure with a central hallway running from front to back. Designed for natural ventilation and privacy in the hot, humid climate, its orientation and piazza provide shade and social spaces. Functionally, rooms are arranged off the central hallway, with public spaces on the ground floor and bedrooms above, showcasing a timeless blend of form and function. We found the aesthetic and form of the Charleston single house to be helpful as to how we could approach our design.

KEY TAKEAWAYS

- Rhythm
- Space-making
- Form
- Scale
- Functionality



Charleston Single House & Typical Elevation



Rhythm



Outdoor/Green Space



Solid & Void



Height



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DESIGN PROCESS & STRATEGY



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DESIGN CRITERIA



SENSE OF PLACE



ENVIRONMENTAL SENSITIVITY



COMFORT

DESIGN THESIS: Water's Edge is centered around the integration of sense of place, environmental sensitivity, and comfort. This project achieves these goals through architectural design by create meaningful and sustainable spaces, enhancing user experience and promoting well-being.



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DESIGN CRITERIA



SENSE OF PLACE

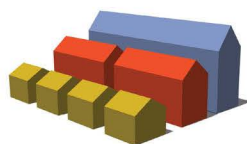


ENVIRONMENTAL SENSITIVITY



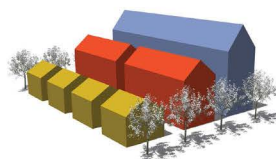
COMFORT

SENSE OF PLACE



- Scale appropriate to context
- History of place driving design
- Integration with surroundings
- Identity through materials

ENVIRONMENTAL SENSITIVITY



- Harness + mitigate environmental challenges
- Reintroduce canopy coverage
- Passive design building strategies
- Strategic native planting design
- Environmental justice

COMFORT



- Private + public space
- Sufficient + efficient circulation
- Community amenities
- Accessibility
- Connection to nature



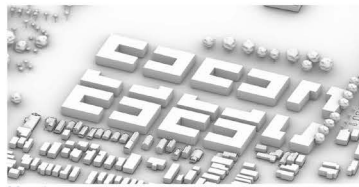
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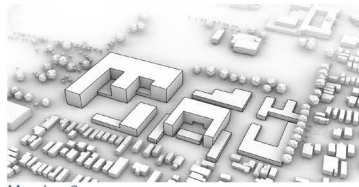
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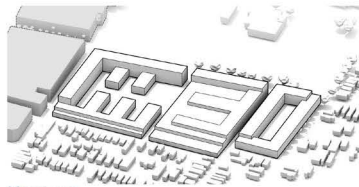
PREVIOUS MASSINGS



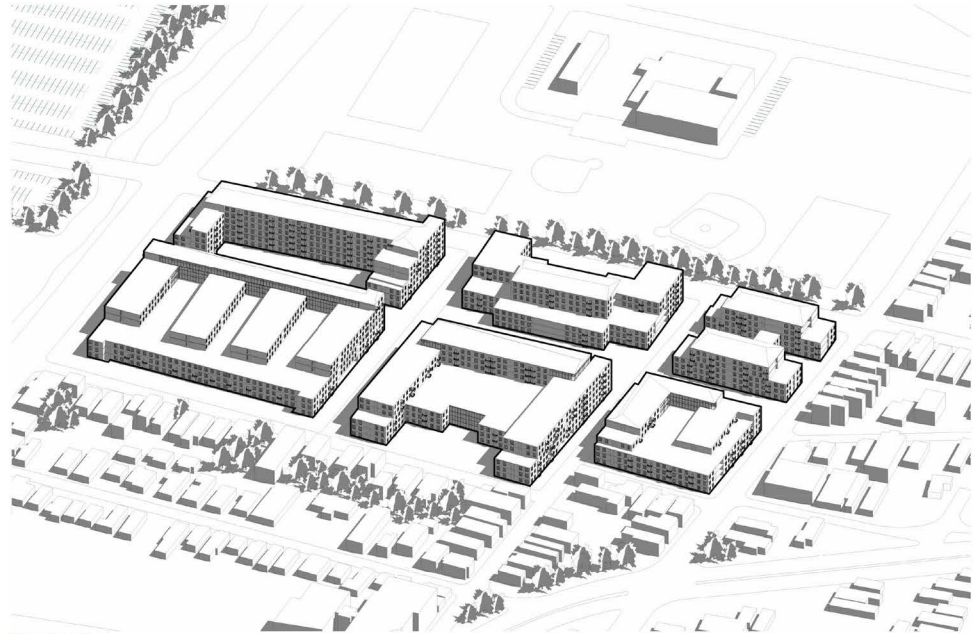
Massing 1



Massing 2



Massing 3



Massing 4



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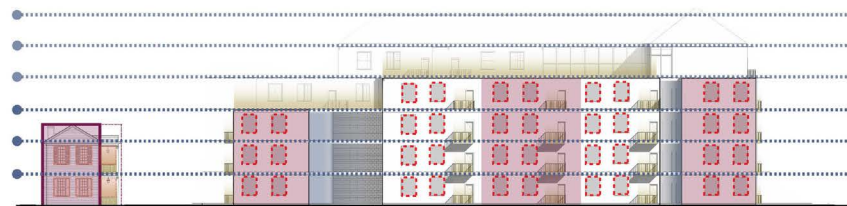
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CHARLESTON SINGLE HOUSE

In our design inspired by the Charleston single house, we're using rhythm, space-making, solid-void relationships, and scale to create a dynamic and functional architectural experience. We're incorporating a consistent rhythm in facade elements, optimizing interior space along a central circulation spine, balancing solid and void elements for light and ventilation, and tailoring proportions to human scale and context. This approach honors the heritage of the Charleston single house while offering a contemporary interpretation.



Charleston Single House & Massing



Allway St. Elevations



Rhythm



Outdoor/Green Space



Solid & Void



Height



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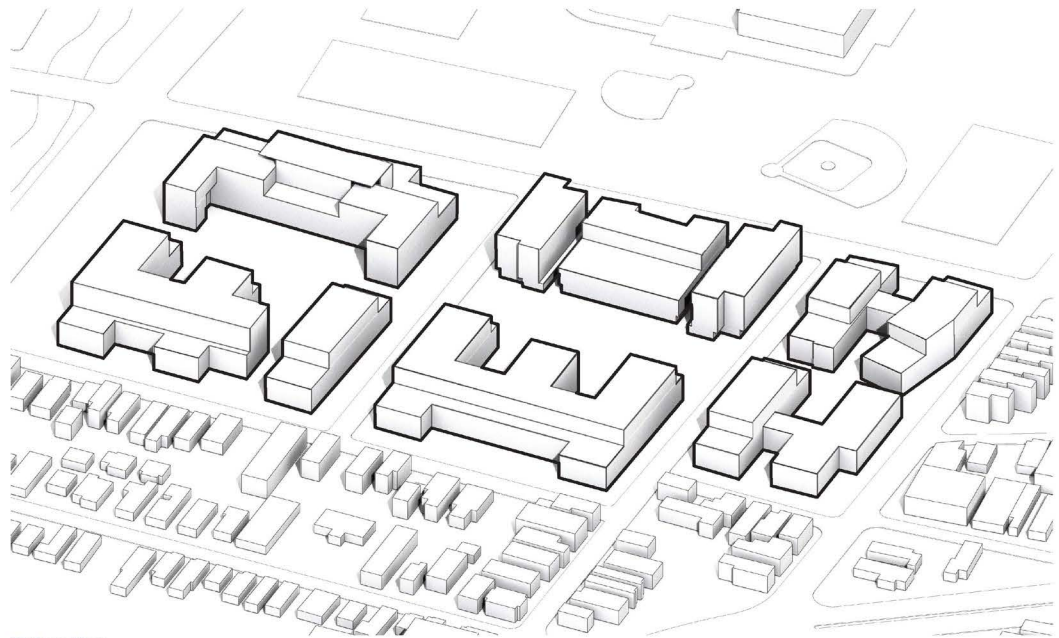
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FINAL MASSING

Our final massing consists of many compromises and reworks resulting in a unique residential experience, combining the natural resources of Charleston with the necessary housing organization. With our design strategies in mind, we set out to disperse our occupation across the site within several varying sizes of buildings. Our buildings vary in height across the site in order to better acclimate this project to the fabric of Charleston and to not overshadow any of the natural resources in the proximity. The massings were aligned specifically, in order to allow the maximum use of the site's variables, and with focus on circulation between massings. The segue points between the massing are aligned in a way to enhance the pedestrian experience and to enhance the city's connective fabric.



SE Axon View



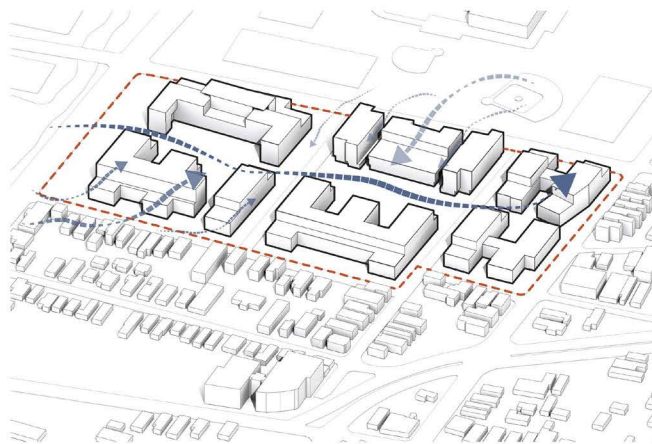
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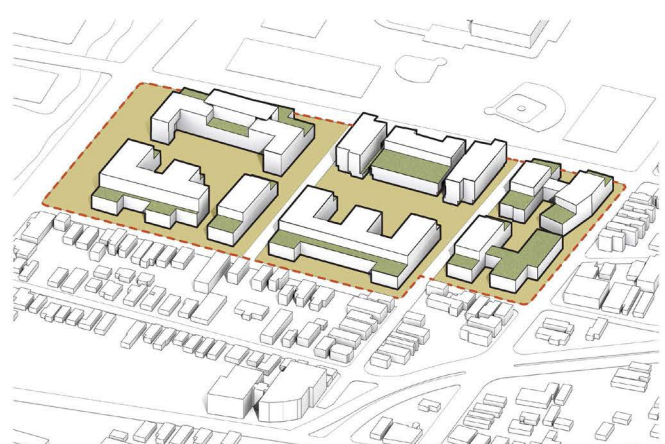
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MASSING ANALYSIS



Wind Circulation



Green space



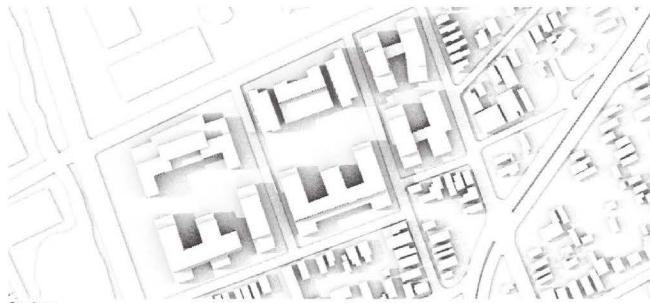
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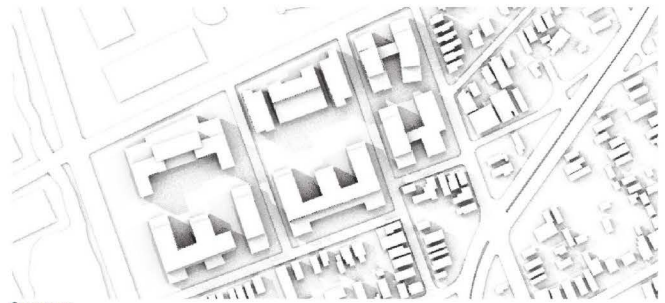
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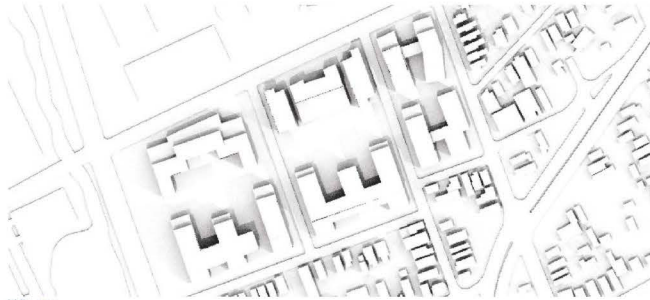
SUNLIGHT ANALYSIS



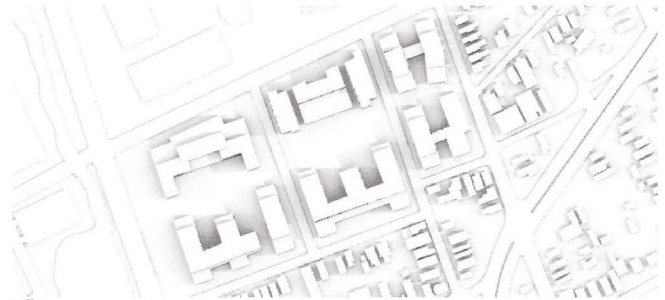
Spring



Summer



Winter



Fall



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SUNLIGHT ANALYSIS



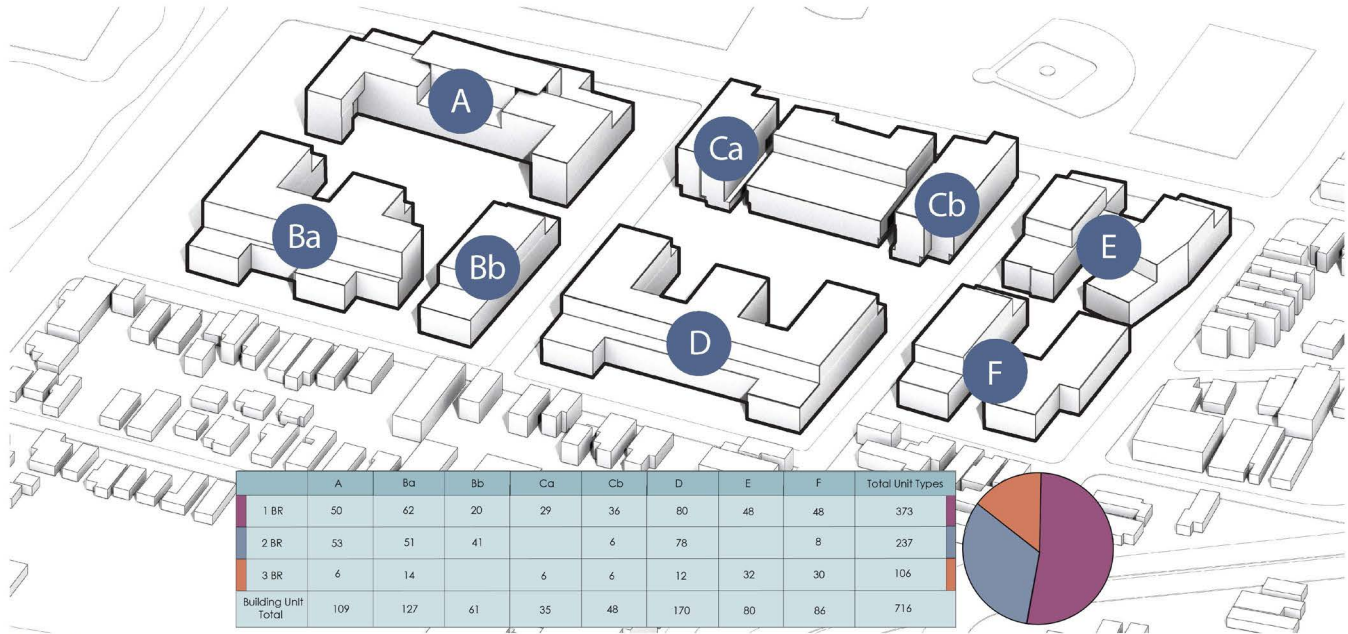
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PROGRAM



SE Axon View



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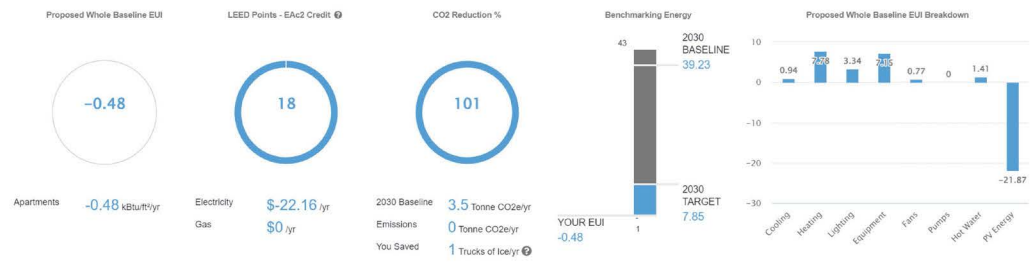
COVE TOOL

BASELINE ENERGY:

- Starting Baseline of 41.27 EUI
- Addition of sensors for daylighting and occupancy
- Adjustment of heating and cooling temperature set points
- Making all building systems electric
- Addition of solar panels to 40% of roof area
- Change the heat reduction system
- Adjusted number of projected occupants
- Addition of interior blinds
- Overall building system changes to natural Vent with electric resistance & direct expansion
- Alter R value of Walls
- Alter Glazing of windows

STORM WATER & GREY-WATER:

- Total Impervious Area = 175,000 sq ft
- Total Semi Pervious Area = 230,000 sq ft
- Total Pervious Area = 290,000 sq ft



Baseline Energy



Storm-water Storage & Grey-water Usage



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WATER'S EDGE



Mahogany Christopher

Shelbie Hyland

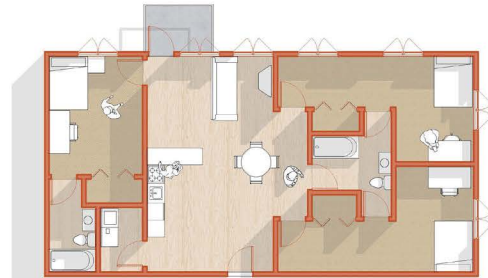
Watson Snowden



UNITS:



1 BDR: 373 Units



3 BDR: 106 Units



2 BDR Unit



2 BDR End Unit



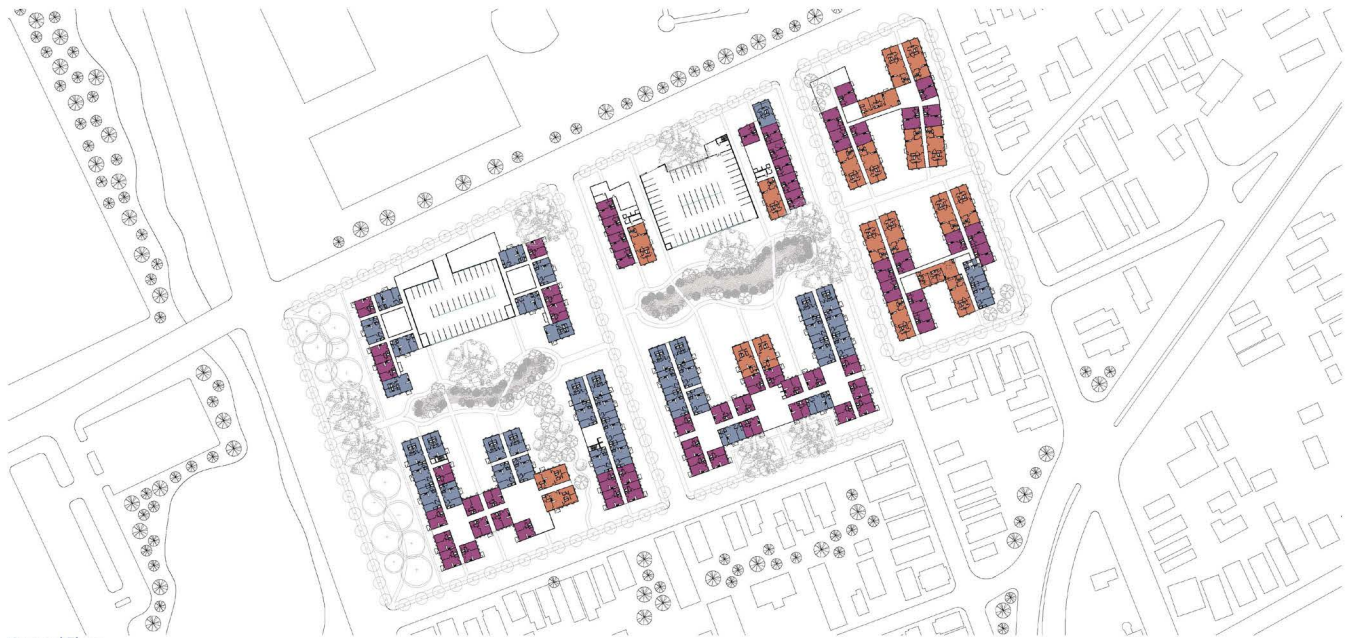
Mahogany Christopher

Shelbie Hyland

Watson Snowden



UNIT PLANS



Ground Floor



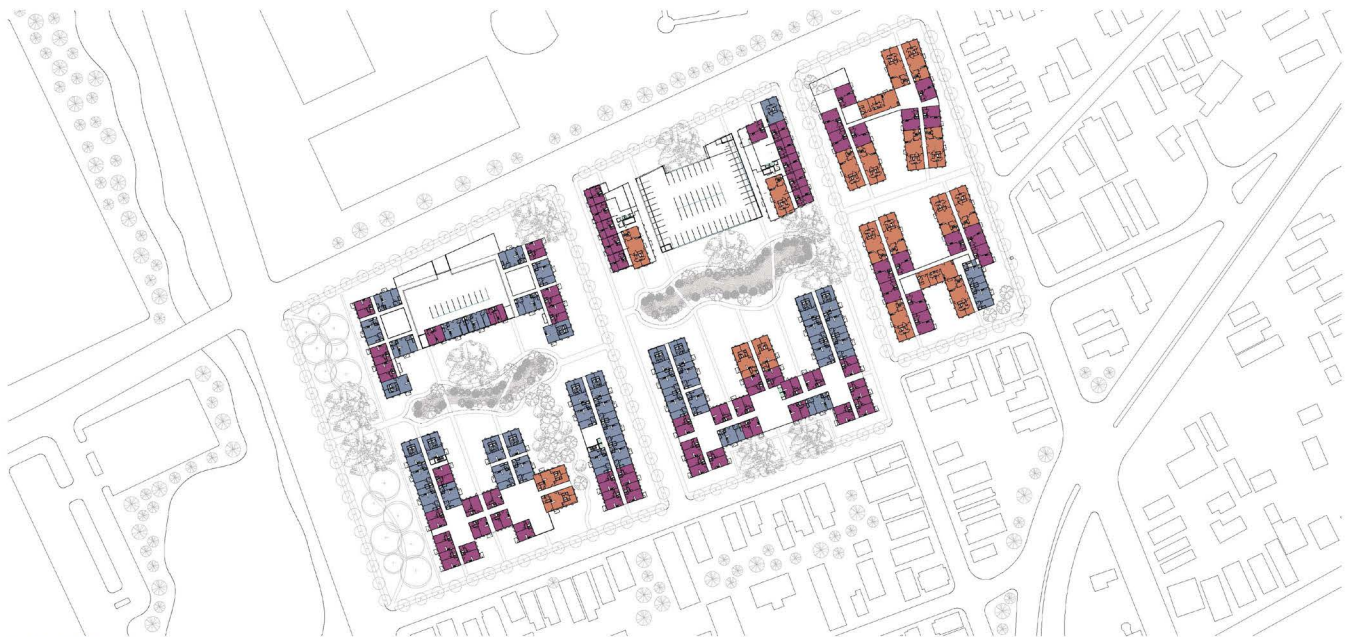
Mahogany Christopher

Shelbie Hyland

Watson Snowden



UNIT PLANS



2nd & 3rd Floor



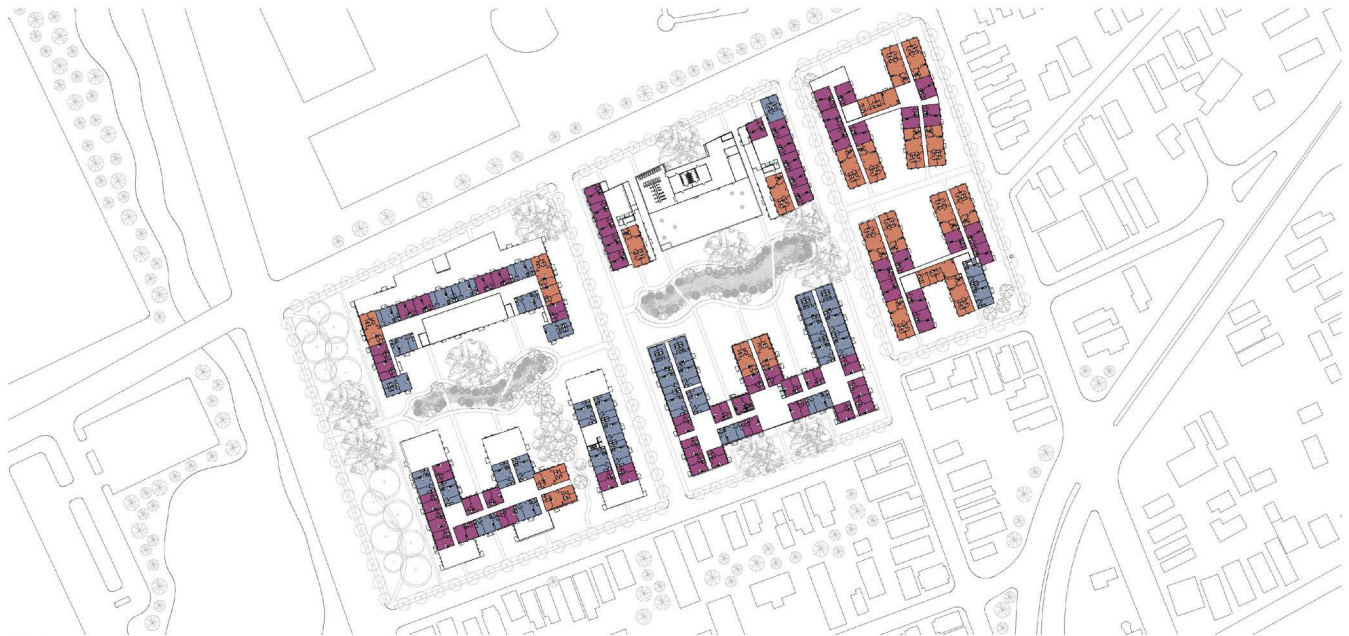
Mahogany Christopher

Shelbie Hyland

Watson Snowden



UNIT PLANS



4th Floor

CACC
CLEMSON
ARCHITECTURE
CENTER CHARLESTON

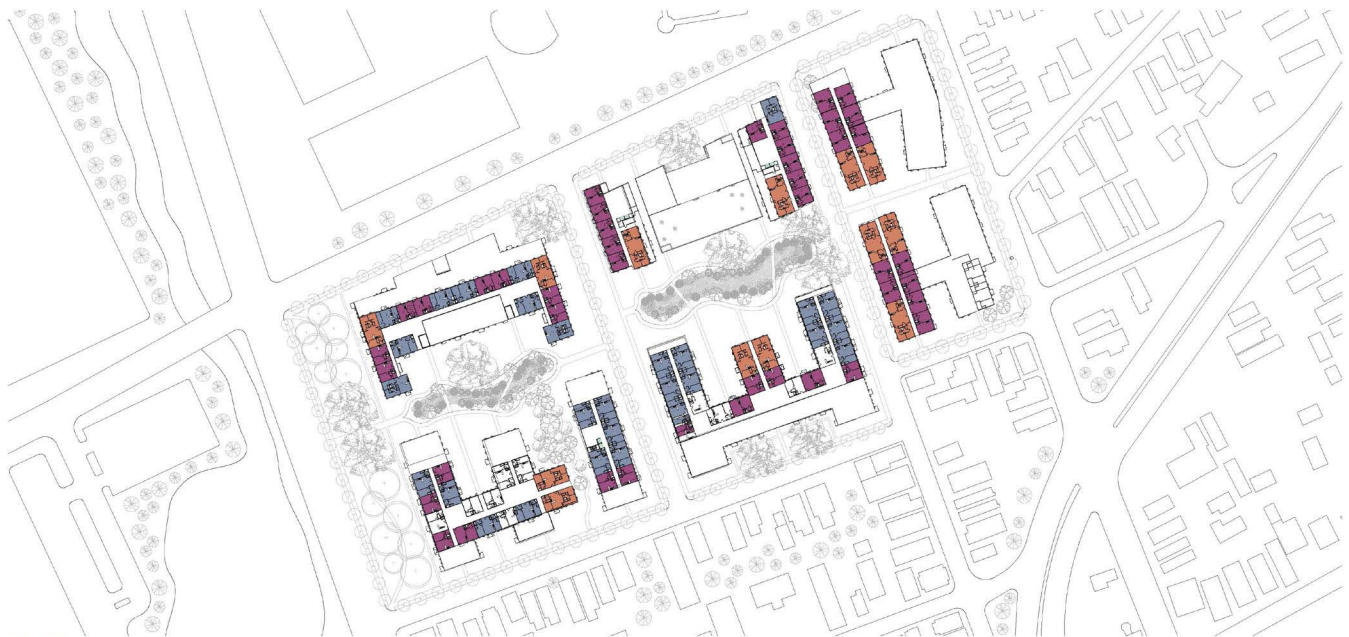
Mahogany Christopher

Shelby Hyland

Watson Snowden



UNIT PLANS



5th & 6th Floor

CACC
CLEMSON
ARCHITECTURE
CENTER CHARLESTON

Mahogany Christopher

Shelby Hyland

Watson Snowden



SECTIONS



CACC
CLAYSON
ARCHITECTURAL
CENTER CHARLESTON

Mahogany Christopher

Shelbie Hyland

Watson Snowden



GROUND FLOOR PLAN



CACC
CLAYSON
ARCHITECTURAL
CENTER CHARLESTON

Mahogany Christopher

Shelbie Hyland

Watson Snowden



ENLARGEMENT

Vegetated streets +
intersection crosswalks

Retail space

112 sq ft porches

Interior parking

Amenity spaces

Elevator access

Cypress grove privacy
screen + retention

Courtyard gathering
spaces

High traffic circulation

Flood-able retention
planting

Canopy covered
walkways

1"=20'-0" 0' 20'



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Shelbie Hyland

Watson Snowden



PLANTING PLAN



QUERCUS VIRGINIANA

SOUTHERN LIVE OAK



TAXODIUM DISTICHUM

BALD CYPRESS



CARPINUS CAROLINIANA

AMERICAN HORNBEAM



BETULA NIGRA

RIVER BIRCH



CHIONANTHUS VIRGINICUS

FRINGE TREE



ITEA VIRGINICA

VIRGINIA SWEETSPIRE



HYDRANGEA QUERCIFOLIA

OAKLEAF HYDRANGEA



SOLIDAGO SEMPERVIRENS

SEASIDE GOLDENROD



SWEET PEPPERBUSH

CLETHRA ALNIFOLIA

NATIVE | NATURALIZED | FUNCTIONAL



Mahogany Christopher

Shelbie Hyland

Watson Snowden



TREE PLANTING PLAN

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

TAXODIUM DISTICHUM
BALD CYPRESS

QUERCUS VIRGINIANA
SOUTHERN LIVE OAK

BETULA NIGRA
RIVER BIRCH

CARPINUS CAROLINIANA
AMERICAN HORNBEAM

CHIONANTHUS VIRGINICUS
FRINGE TREE

NATIVE | NATURALIZED | FUNCTIONAL



Mahogany Christopher

Shelbie Hyland

Watson Snowden



RIPARIAN PLANTING PLAN

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

BETULA NIGRA
RIVER BIRCH

CLETHRA ALNIFOLIA
SWEET PEPPERBUSH

ITEA VIRGINICA
VIRGINIA SWEETSPICE

SOLIDAGO SEMPERVIRENS
SEASIDE GOLDENROD

HYDRANGEA QUERCIFOLIA
OAKLEAF HYDRANGEA

NATIVE | NATURALIZED | FUNCTIONAL



Mahogany Christopher

Shelbie Hyland

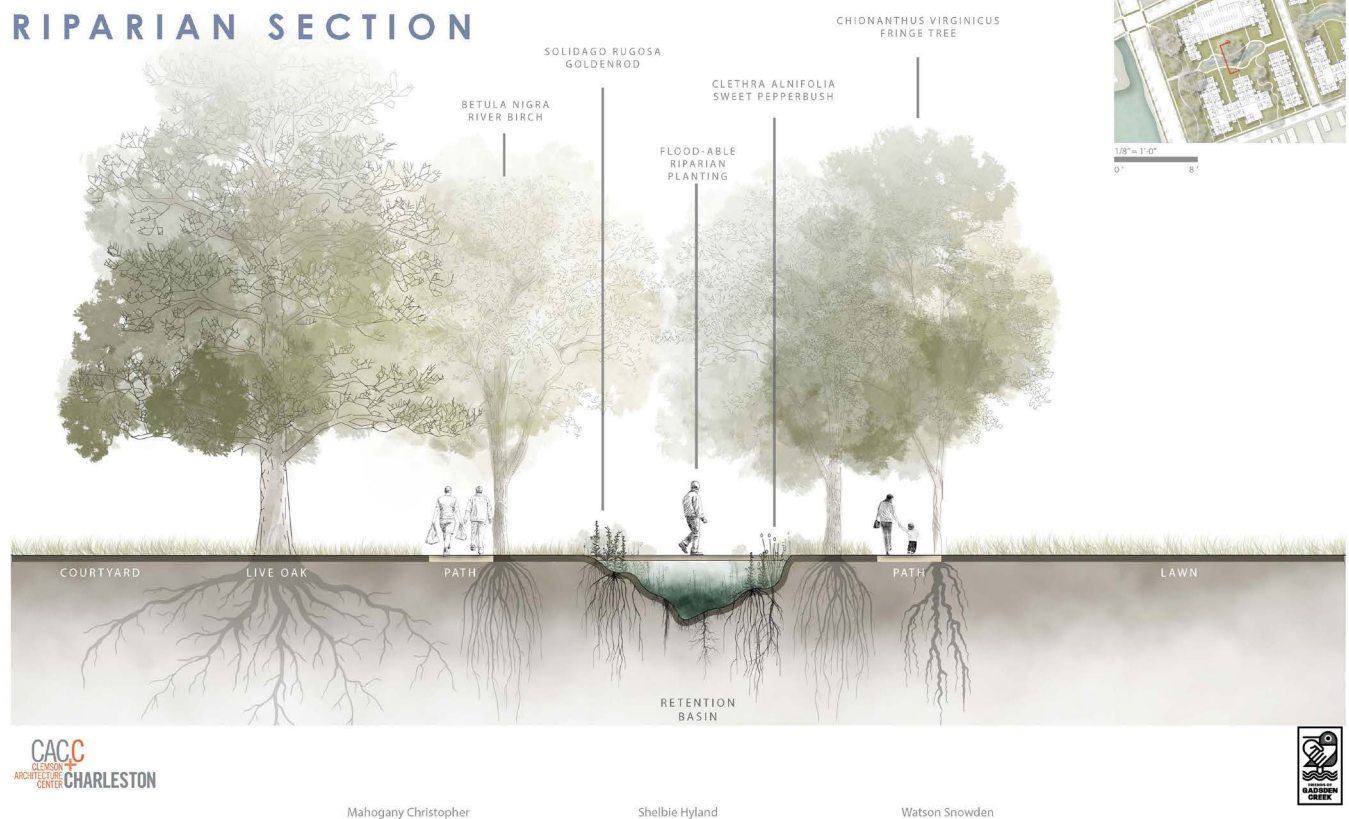
Watson Snowden



STREET SCAPE

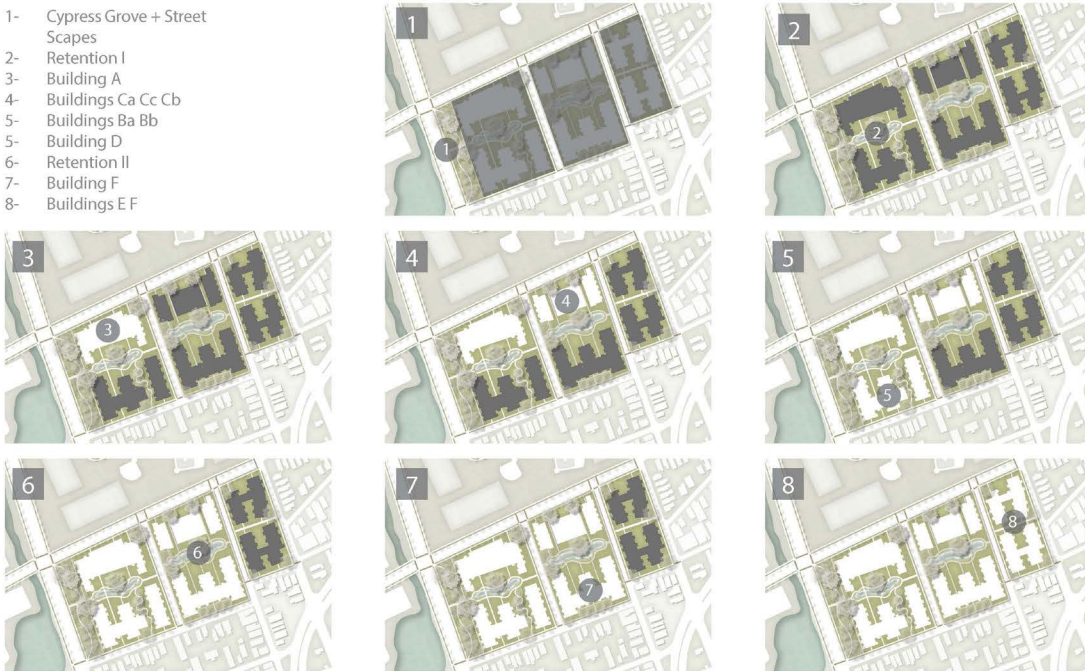


RIPARIAN SECTION



CONSTRUCTION PHASING

- 1- Cypress Grove + Street Scapes
- 2- Retention I
- 3- Building A
- 4- Buildings Ca Cc Cb
- 5- Buildings Ba Bb
- 5- Building D
- 6- Retention II
- 7- Building F
- 8- Buildings E F



CACC
CLEMSON
ARCHITECTURAL
CENTER CHARLESTON

Mahogany Christopher

Shelbie Hyland

Watson Snowden



RENDERS



SW Axon

CACC
CLEMSON
ARCHITECTURAL
CENTER CHARLESTON

Mahogany Christopher

Shelbie Hyland

Watson Snowden



RENDERS



SITE AXON



Mahogany Christopher

Shelbie Hyland

Watson Snowden



RENDERS



ALLEY PERSPECTIVE



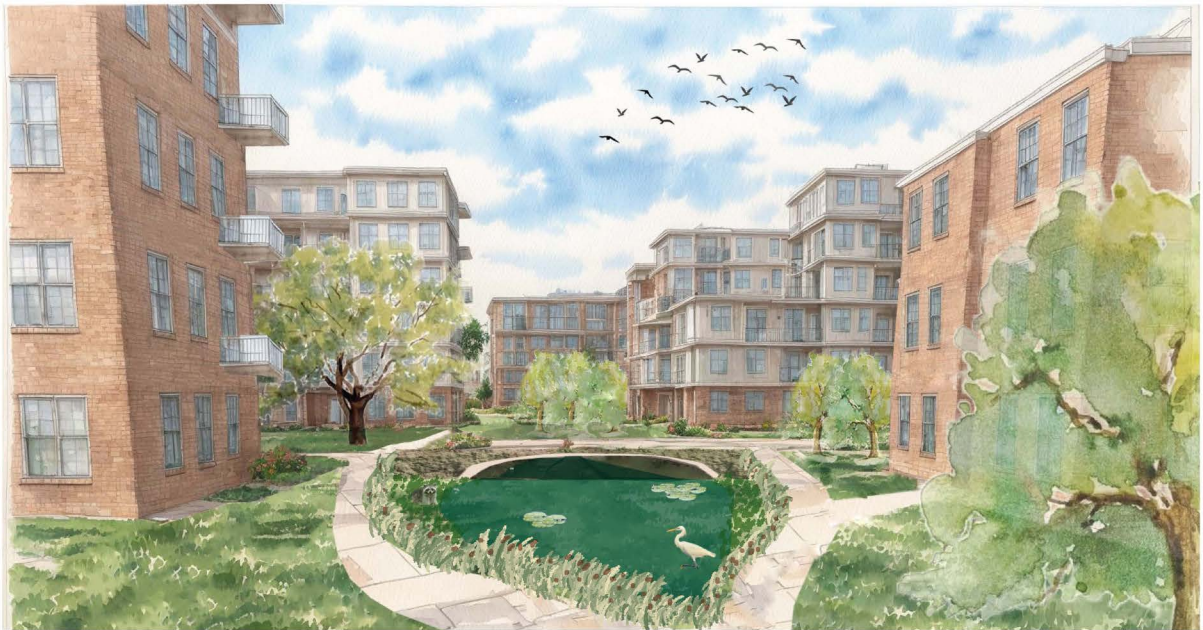
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RENDERS



CORRIDOR PERSPECTIVE



Mahogany Christopher

Shelbie Hyland

Watson Snowden



COMPREHENSIVE PLANT RESOURCES

ENVIRONMENTAL SYSTEMS

NATIVE PLANTS + WHAT THEY SUPPORT

<https://www.audubon.org/native-plants/search?zipcode=29412&tab=best-results>

SALT TOLERANT PLANTS FOR COASTAL SC

<https://hgic.clemson.edu/factsheet/salt-tolerant-plants-for-the-south-carolina-coast/>

PROTECTING TIDAL CREEKS - VEGETATED BUFFERS

<https://hgic.clemson.edu/factsheet/life-along-the-salt-marsh-protecting-tidal-creeks-with-vegetative-buffers/>

LAND AND WATER ANALYSIS

<https://www.charleston-sc.gov/DocumentCenter/View/28986/City-Plan-Land-and-Water-Analysis>

CITY OF CHARLESTON TREE ANALYSIS

https://www.fs.usda.gov/psw/topics/urban_forestry/products/cufr_661_CHSMFRA_6-06.pdf



Mahogany Christopher

Shelbie Hyland

Watson Snowden



SOURCES

ENVIRONMENTAL SYSTEMS

<https://www.charleston-sc.gov/1981/Flooding-Sea-Level-Rise-Strategy>
- Flooding and Sea Level Rise Strategy

<https://storymaps.arcgis.com/stories/e2d4de9677bd49f3877f2635e9882854>
- Charleston Urban Displacement Maps

<https://storymaps.arcgis.com/stories/ef3a8bd2115140c287064f7f1a32992a>
- Charleston Racial Equity Maps

<https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>
<https://www.fema.gov/glossary/flood-zones>
https://www.dnr.sc.gov/water/flood/documents/SCQG_FloodplainManagement.pdf
- FEMA

https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=SC_ASOS&station=JZI
- Wind

<https://sealevelrise.org/states/south-carolina/#:~:text=Around%20Charleston%2C%20it%20took%20around,level%20to%20rise%206%20inches.&text=Scientists%20now%20forecast%20that%20in,rise%20by%20another%206%20inches.>
- Sea Level Rise

<https://coast.noaa.gov/slr/#/layer/slr/0/-8900641.117543688/3867573.153146113/15/satellite/none/0.8/2050/interHigh/midAccretion>
- Sea Level rise
- Local Scenarios
- Marsh Migration
- Vulnerability
- High tide Flooding

<https://www.charleston-sc.gov/DocumentCenter/View/29030/Climate-Action-Plan-May-2021?bidId=>
- Climate Action Plan

<https://www.heat.gov/pages/nihhis-urban-heat-island-mapping-campaign-cities>
- Urban Heat Island Map

<https://weatherspark.com/y/19488/Average-Weather-in-Charleston-South-Carolina-United-States-Year-Round#Sections-Temperature>
- (2016-present)

<https://charleston-sc.maps.arcgis.com/apps/instant/attachmentviewer/index.html?appid=1fa5a93597204d9387d3b6da87aef30c>
- Rainproof Showcase & Locations

<https://storymaps.arcgis.com/stories/593cdef7583444949e70845a6bf1f8fd>



Mahogany Christopher

Shelbie Hyland

Watson Snowden

THANK YOU!



Mahogany Christopher

Shelbie Hyland

Watson Snowden

LARC 3550/3210 OFF-CAMPUS STUDIO/LA Seminar
BLA

New Market & Vardell's Creek Area

Charleston, SC peninsula highlighting the New Market and Vardell's Creek Area. Its boundaries are Meeting St., Huger St., East Bay St. and Cooper Grace Bridge St.

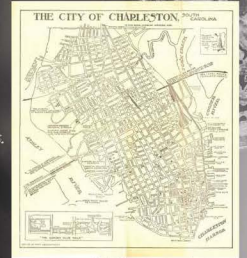
This area is comprised of mostly diverse residential space, along with a few small businesses throughout.

Being in close proximity to bridge access and union pier this area is seen and passed by many daily.

It is most noticed during storms and excessive rain, due to flooding issues because of lack of infrastructure.



1711 peninsula map

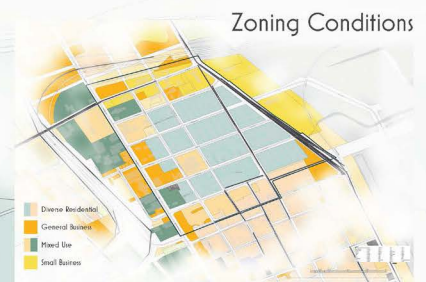


1930 peninsula map

New Market & Vardell's Creek Area

Ecological Conditions

This map shows the dark spots as the high points from which water flows from and towards the water to the east. There is minimal change in topography, therefore the area is extremely flat and subject to frequent flooding. The areas highlighted in dark blue are the roads that frequently closed due to flooding events.



Zoning Conditions

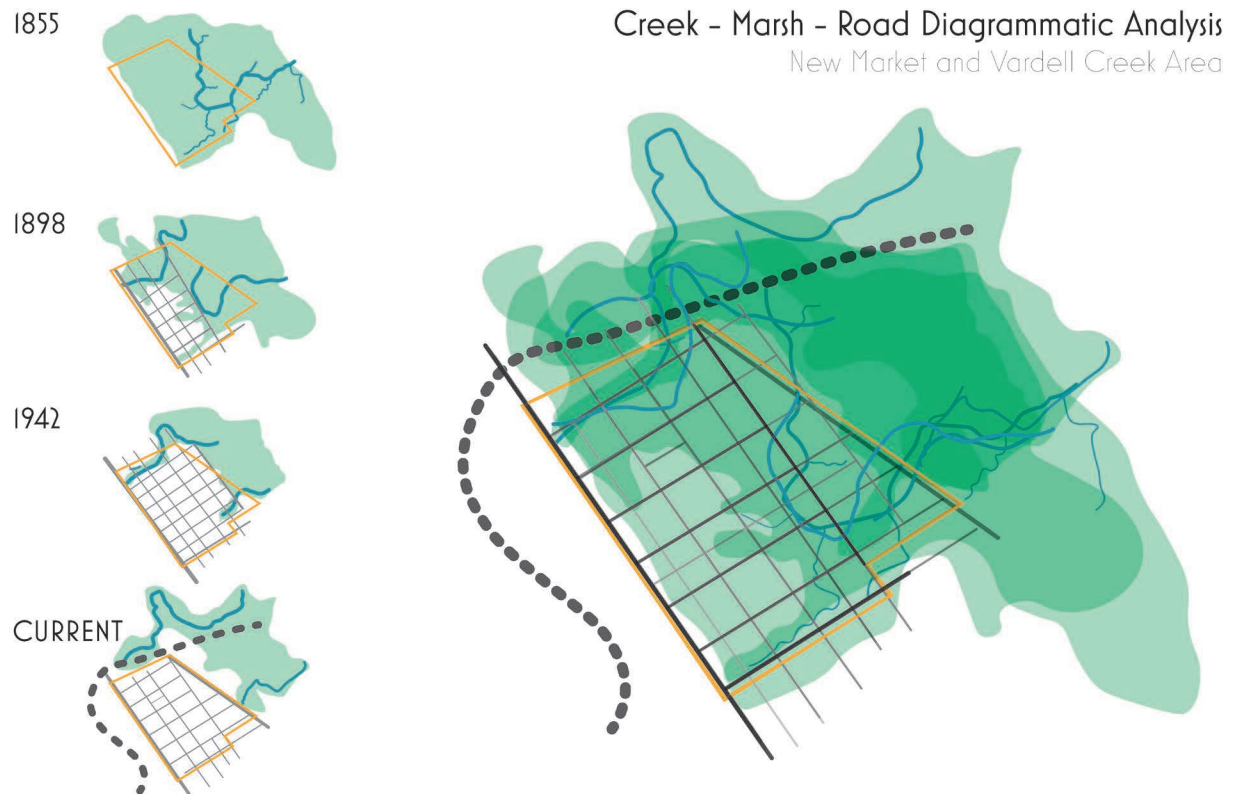


This area is mostly residential with some area of business. The ecological factors of this area are affecting peoples homes and businesses.

ALTERED CHARLESTON SITE



MIAMI BEACH SITE



Studio Assignment 2 Key Fact and Takeaways

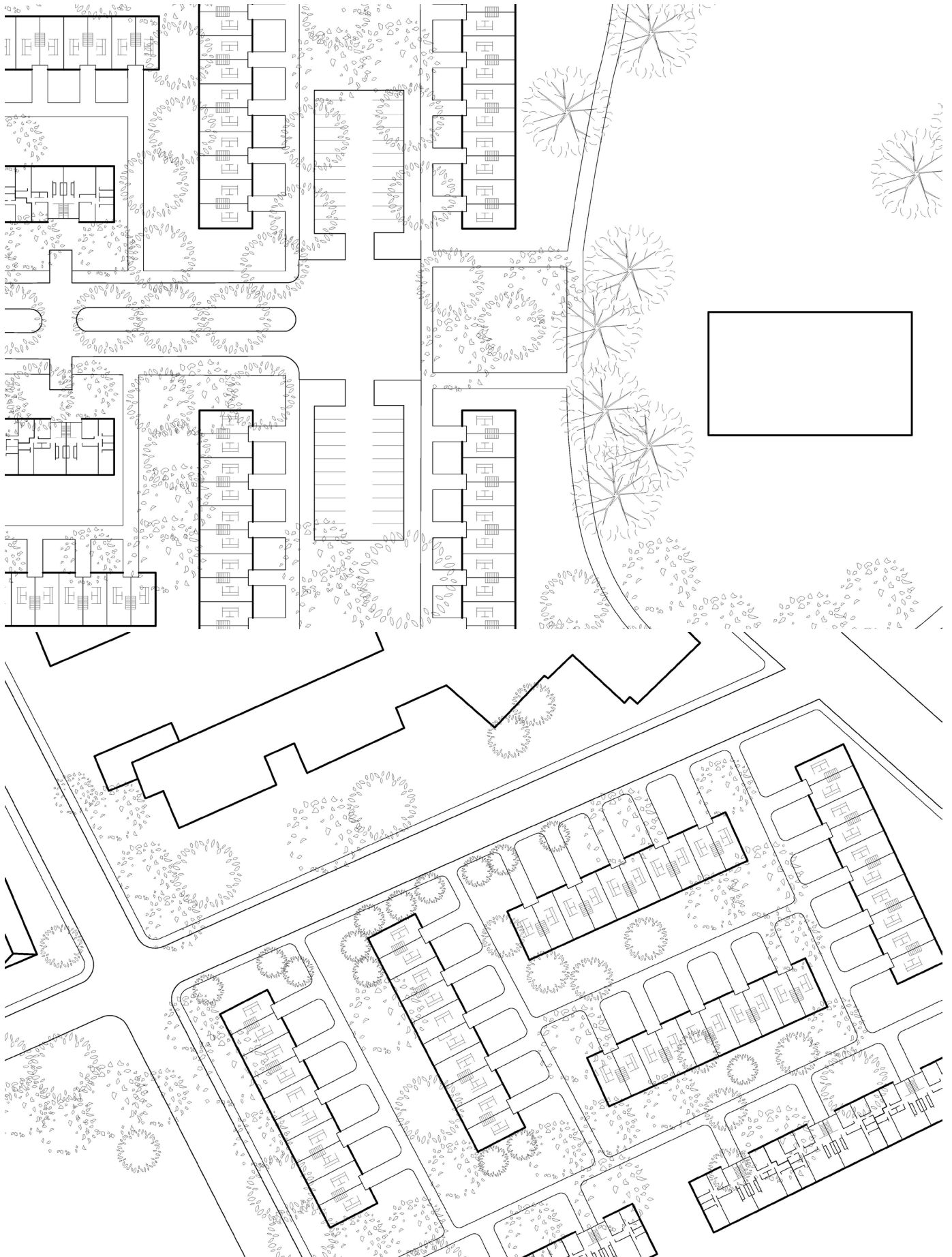
Figure Ground Takeaways:

The scale of Charleston, SC and Miami Beach, FL are very similar. The streets are set up in a grid like pattern that allows for people to navigate from place to place with ease. Figure grounds show larger areas of white for either open space or wider roads. These spaces indicate, most likely, some form of public space that people use or that is available for people to use.

Charleston and Miami Beach are similar in that they are both coastal cities and are oriented around that idea with streets being a major means of transportation and navigation. Because of this it was rather simple to reorient the figure ground of Miami Beach to fit the form of Charleston, SC. A major takeaway that I see from this exercise is that cities that have similar goals and maybe even similar history, have similarly designed and scaled streets, blocks, and buildings.

Diagram Takeaways:

Having done a diagram that tracks the path of creek, marsh, and roads, there are some major indicators of why there may be issues today with flooding and street structure. The streets in Charleston today are similar if not the same as 100 years ago, which can be good and bad. Good in the sense that these are major means for navigation and transportation. Bad in the sense that their implementation also means the disruption of the natural environment. This disruption leads to major flooding on these roads and is only getting worse. The receding marshland can also be seen, which results in loss of habitat for several species of animals,





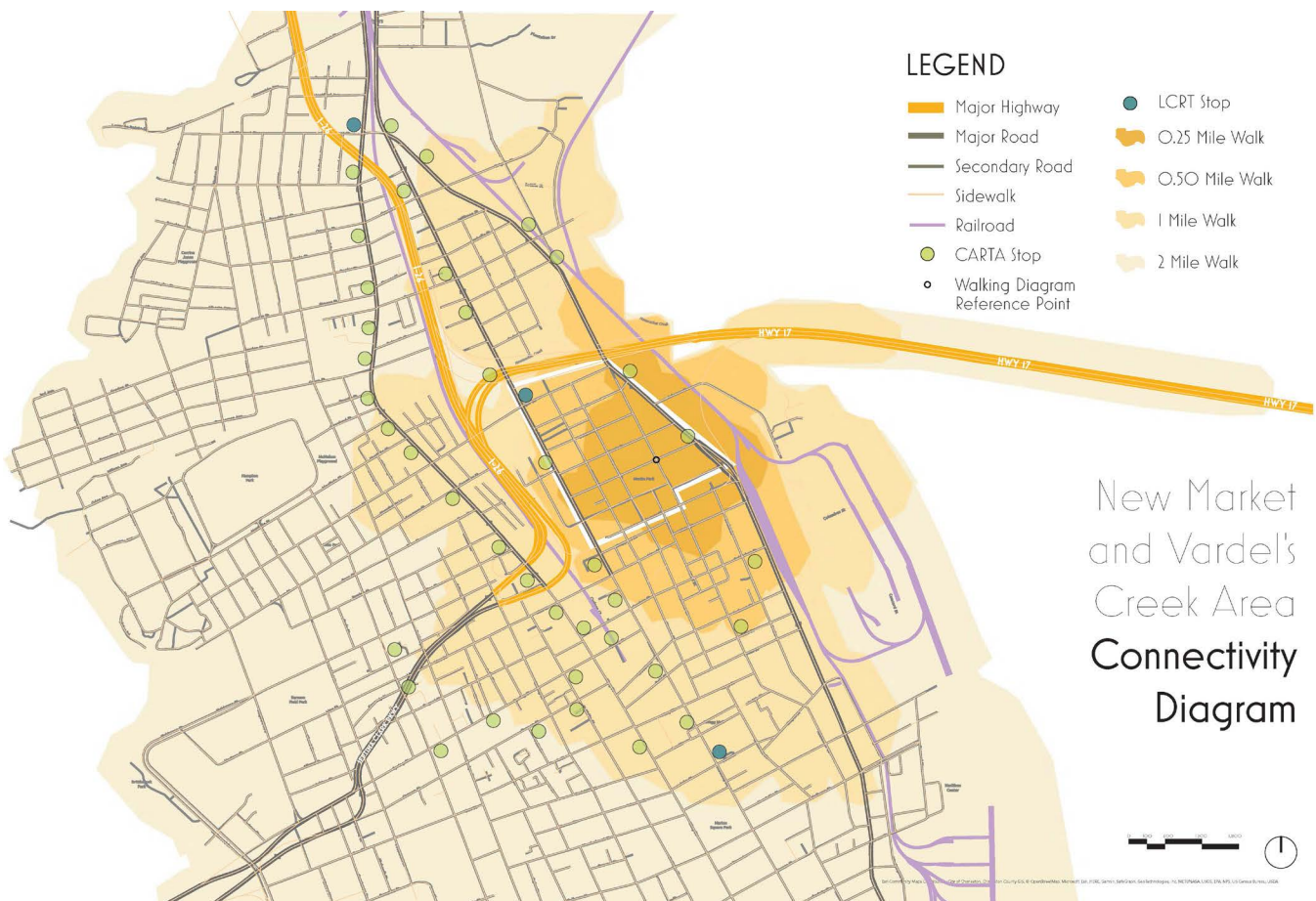
Studio Assignment 3 - Rachel Snider

Design Description

Townhouse - Mies Van Der Rohe : Lafayette Park, Detroit, MI. 1959

- Mies uses rectilinear forms of similar, but varying size, arranged in a grid-like pattern to create interesting space between each form and ensure users have the ability to experience privacy.
- These units consist of a concrete foundation, along with steel reinforcements and light colored brick is used on each end. What makes these units interesting and unique is the use of glass and aluminum framing to create a sense of openness within an enclosed space.
- The townhouse units are 182 feet long and 38 feet deep, consisting of 10 units within each form, and there are 10 of these on site in Lafayette Park in Detroit, MI.
- Each of these forms is arranged within a canopy of trees to reinforce this concept of privacy, but also allowing users to have a sense of escape from the city, and feel at home in their own space.

<https://detroitmi.gov/sites/detroitmi.localhost/files/2018-08/Lafayette%20Park%20Mies%20van%20der%20Rohe%20HD%20Final%20Report.pdf>



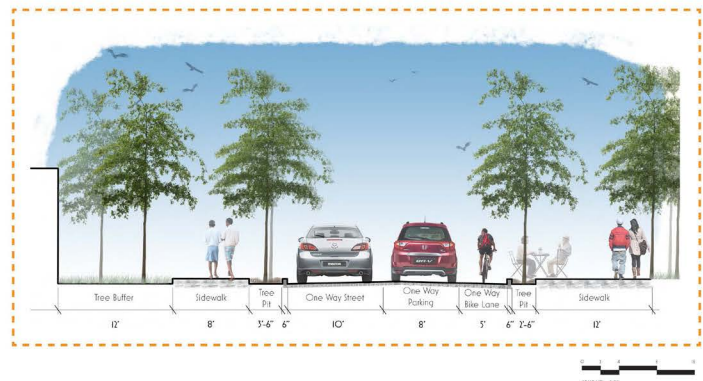
JACKSON ST. REDESIGN

Intersecting at America St. & Hanover St.



Section Cut

- Expanded Sidewalks
- Expanded zone between road and sidewalk
- Narrowed one way road
- One way parallel parking
- Street gathering and seating area



Rachel Snider

Assignment 4

The current roads and intersections within my site vary from one-way and two-way roads with varying speeds and streetscapes. My site is well connected to the surrounding peninsula throughout the CARTA and LCRT systems. This connectivity also includes major roads and highways in the area. My particular site is in very close proximity to Highway 17 and Interstate 26, meaning it is within a five minute drive. In terms of transit connectivity and walkability, my site includes several CARTA bus stops and one LCRT stop directly on the site at the intersection of Huger and Meeting Street. With that being said, the streets themselves are in need of the most attention. Most every street has a sidewalk but some are in disrepair and have issues with accessibility and have flooding issues.

Moving forward, the streetscape and safety will need to be rethought and redesigned in a way that pays close attention to pedestrians and children. Some processes that must be done to make these streets more safe are to expand the zones between the road and sidewalk, as well as expanding the size of the sidewalk. In order to slow down traffic on these streets, the streets need to be narrowed so that cars will slow down and pay more attention to pedestrians. Also, in order to include the accessibility of more forms of transportation, bike lanes should be added on streets that see higher cyclist activity.

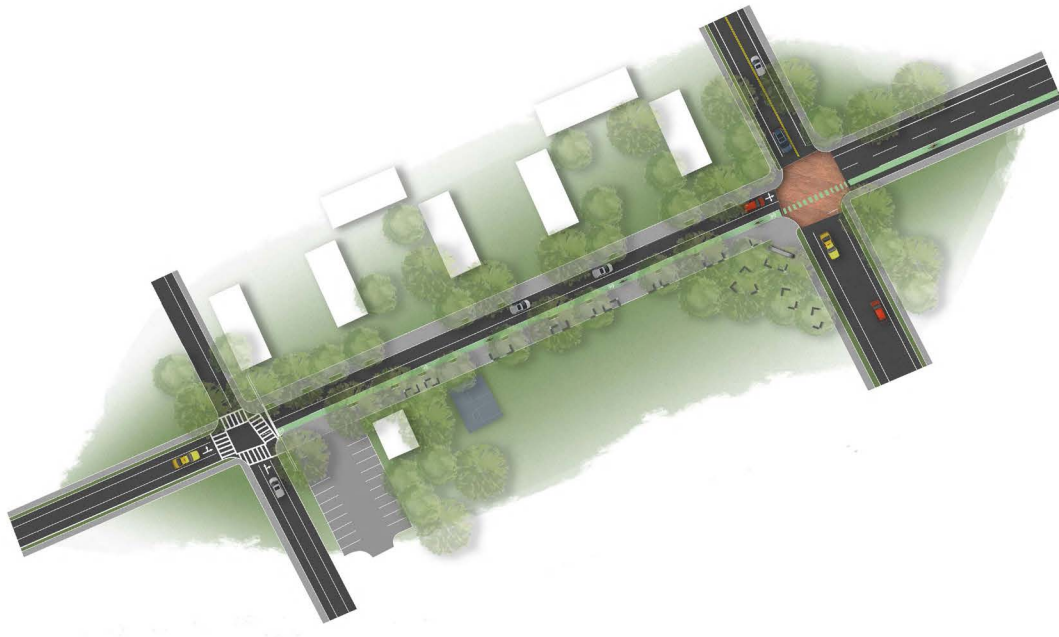
JACKSON STREET INTERVENTIONS

Isometric Abstraction



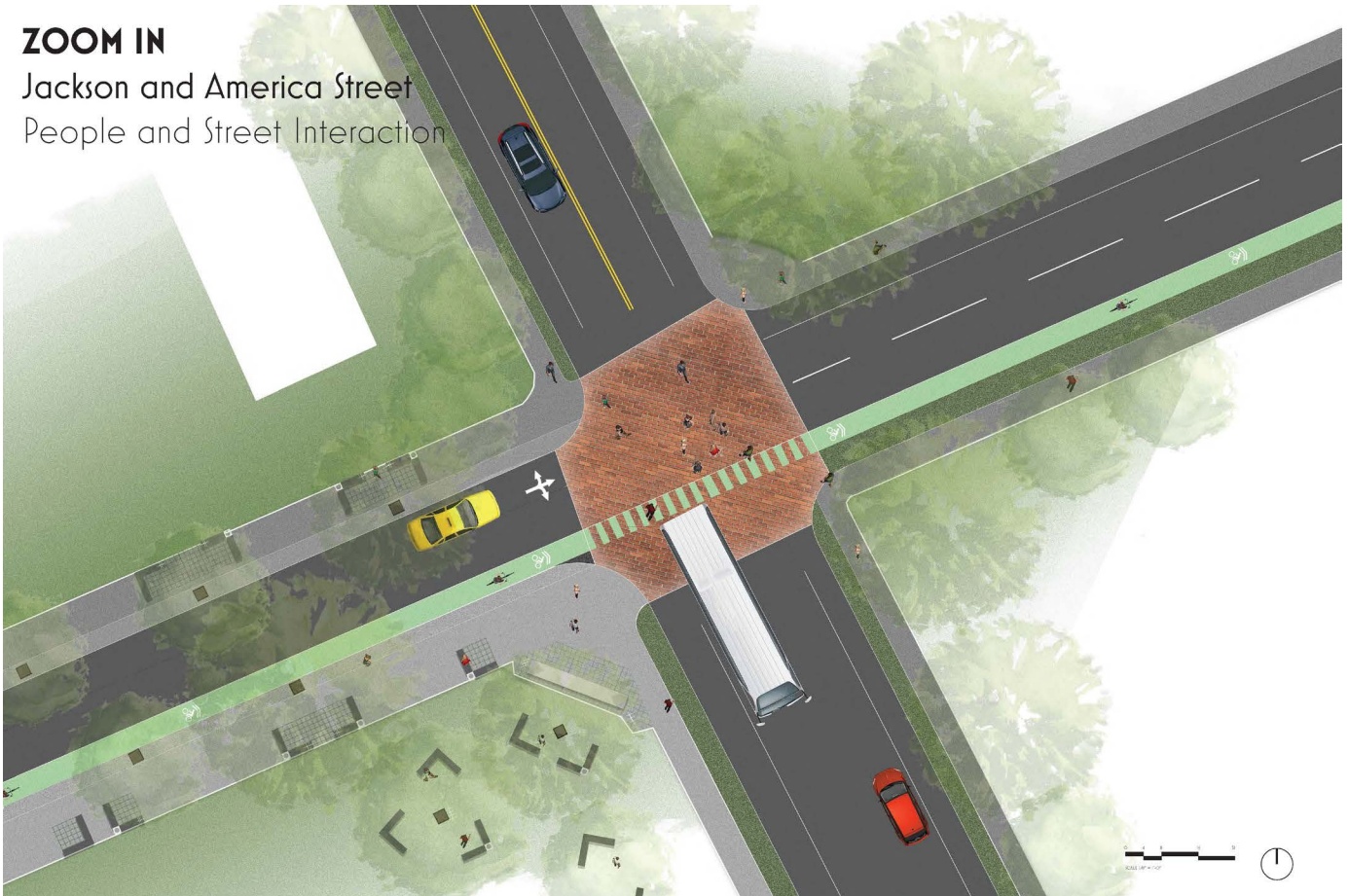
JACKSON STREET INTERVENTIONS

Plan View



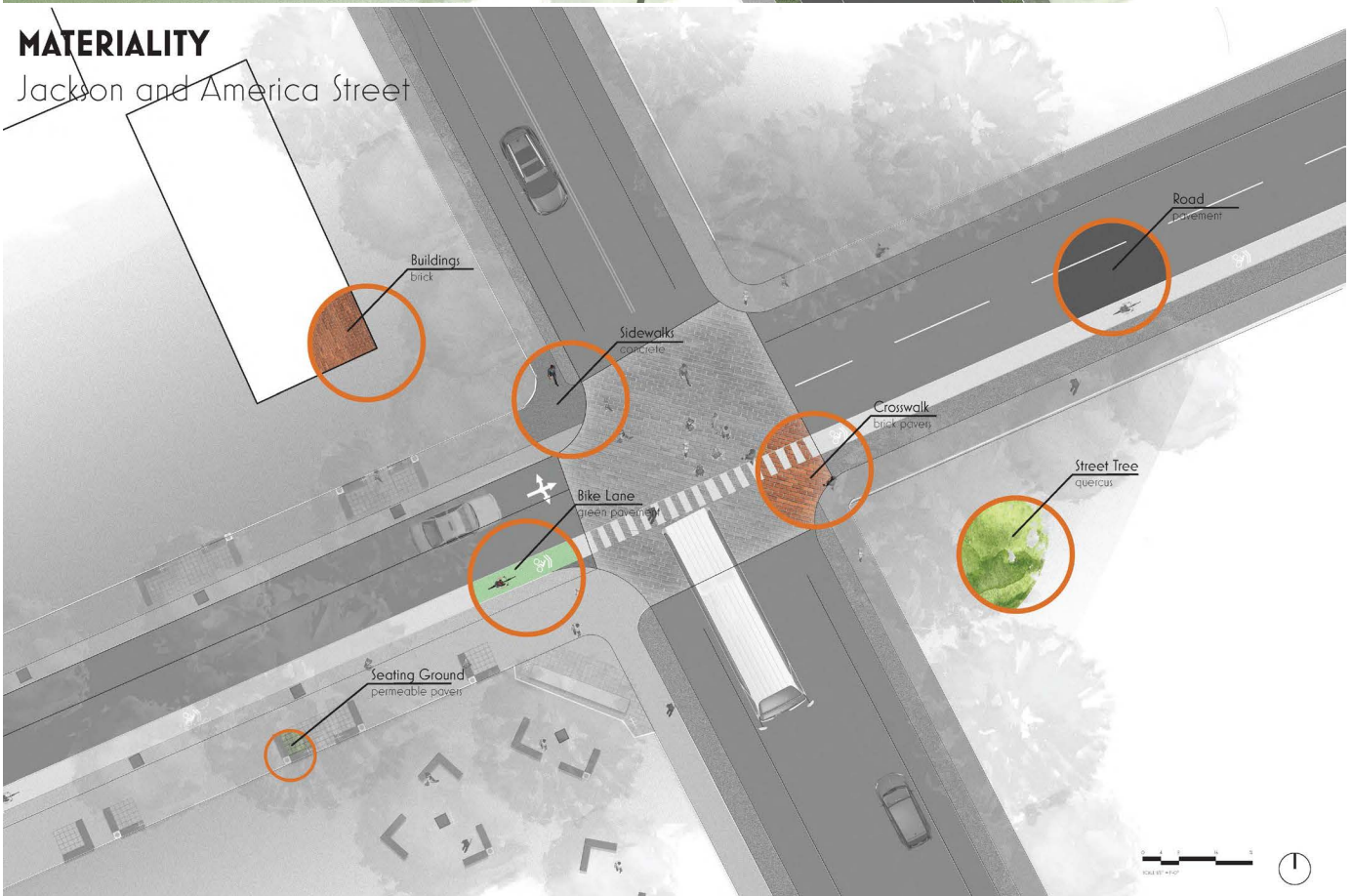
ZOOM IN

Jackson and America Street
People and Street Interaction



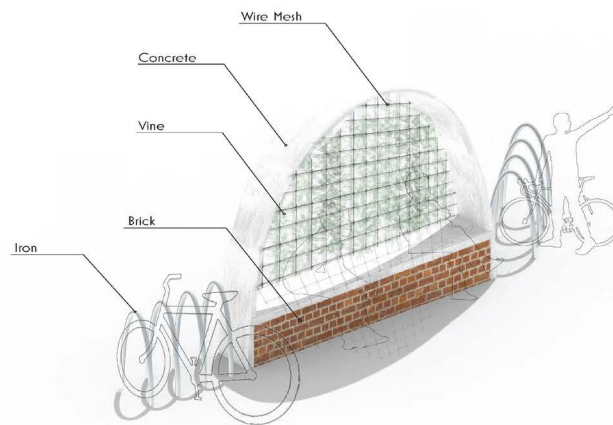
MATERIALITY

Jackson and America Street



TRANSIT STOP & BIKE RACKS

Corner of Jackson and America Street



Revisualized: Grace Bridge Street Area Adaptation and Marsh Migration



Section Cut Comparison: Marsh and Road Before



After



Section Cut Comparison: Townhome Community Before



After



Enlargement:
Tower Park, Bioretention Area,
Boardwalk Parking, and Boardwalk

