LAND USE AND PARKS / STRATEGIC PLANNING & VISIONING
SPECIAL JOINT COMMITTEE MEETING
Wednesday, March 24, 2020, 1:00 p.m.
City Hall, Council Chambers
116 First Street, Neptune Beach, FL 32266

Agenda

1. Call to Order
2. Vision Plan Final Draft Discussion
3. Stormwater Preliminary Draft Report
4. Proposed Ordinance-Creating New Section 2-388 Professional Service Requirements
5. Purchasing Process – Local Beach Businesses
6. Tree Protection and Planting Policy Update
7. Additional Tree Planting – Beautification Committee
8. Public Comments
9. Adjourn

*Council Members in attendance at the Committee Meeting may include:

Chair- Land Use & Parks Committee
Councilor Josh Messinger

Chair-Strategic Planning & Visioning Committee
Vice Mayor Fred Jones

Mayor Elaine Brown
Councilor Kerry Chin
Councilor Lauren Key

Please register for **Joint Land Use & Parks/Strategic Planning & Visioning Committee Meeting** on **Mar 24, 2021 1:00 PM EDT** at:

https://attendee.gotowebinar.com/register/1943070556415209232

OOVY, JARBOE PARK, S

FRIENDLY, WALKABLE,

ET, THE CORNER, QUIET

NT, **NEPTUNE**, HOMEY,

RY, **BEACH**, BREWHOUN

, THE OCEAN, FIRST ST

NTIAL **COMMUNITY**, FU

R, EAST COAST GREENW

ALK, **VISION**ARY, DIVE

ADAPTATION **PLAN**, HO

ST STREET, PETE'S BAR

AY, SAFE, HOPKINS CR

FINAL DRAFT PLAN - March 23, 2021

IGHBORLY, VIBRANT, S

PROJECT TEAM

DOVER, KOHL & PARTNERS
Town Planning

Victor Dover, FAICP, LEED-AP, CNU-A, Founding Principal

Amy Groves, AICP, Principal

Luiza Leite, Assoc. AIA, Project Manager

Brenda Diaz, Town Planner

Xu Zhang, ASLA, Landscape Architect

Wantman Group Inc (WGI)
New Mobility & Planning

Lisa Nisenson, VP of New Mobility & Connected Communities

Heather Danforth, PLA, AICP. Project Manager

Tabb Ormsby, ASLA LEED AP ND, Planner

Thad Crowe, AICP, Senior Planner

HALL PLANNING & ENGINEERING (HPE)
Transportation

Richard Hall, P.E., Principal

ACKNOWLEDGEMENTS

Neptune Beach Residents

City of Neptune Beach

City Council

City Manager

City Attorney

Planning & Community Development Department

Finance/Utilities Department

Police Department

Public Works Department

Community Development Board

Community Partners & Stakeholders

Beaches Town Center Agency

Surfrider Foundation

Neptune Strong

Hotel Palms

Neptune Beach Elementary

Fletcher Middle School

Beaches Chapel

Neptune Baptist Church

NEPTUNE BEACH COMMUNITY VISION PLAN

FINAL DRAFT PLAN - MARCH 23, 2021

WHY A COMMUNITY VISION PLAN NOW?

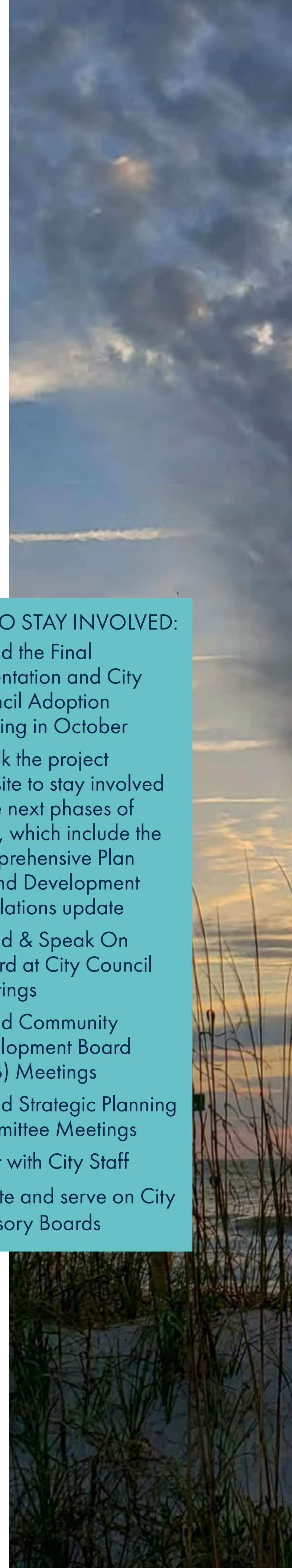
With several ongoing and upcoming stormwater infrastructure projects, growing community concerns about how to properly redevelop large vacant commercial properties, and strong consensus to build more complete and safe streets, elected officials and staff decided it was the right moment to invest in a community-driven planning process before updating the City's comprehensive plan and land development code. The purpose of this Community Vision Plan is to establish a community-approved blueprint for future growth, development, and public investments in Neptune Beach that balances community goals with market feasibility and long-term sustainability.

The planning process was initiated to allow community members to engage with each other, city staff, leadership, and planning consultants and envision the future of Neptune Beach together. The Final Draft Vision Plan summarizes the community's big ideas and the resulting recommendations. This first draft of the Plan was an initial sounding board and temperature check for how well the consultant team has listened to community feedback when refining ideas produced during the April Design Charrette. Members of the community had a 4 week public comment period to submit written feedback on the draft. These comments were consolidated into a Summary Comments Memo (Appendix B) and, to the extent possible, incorporated along with City staff and City Council input into this final draft version of the Vision Plan. The final plan will be used by the City, community members, local businesses, and property owners as a road map to guide future change and improvements. More specifically, it will serve as the roadmap used for the next phases of work including updating the City's comprehensive plan and land development code.

PROJECT TEAM

At Dover, Kohl & Partners, there is a belief that each community deserves planners as interested in the history and future of the town as the most passionate local resident. For 33 years, Dover-Kohl has helped communities engage in the process of redefining themselves, successfully implement their vision, and create meaningful places and thriving downtowns. Our firm's work includes restoring existing urban centers and towns, reconfiguring sprawling suburbs, conserving natural environments, and preserving our society's built legacy.

Dover, Kohl & Partners has proven experience in directing the work of multidisciplinary team members. This has given us the capability to know how to best organize a project schedule to bring in the required expertise at the right times, providing the most benefit to our clients. For the Neptune Beach Citywide Master Plan, we have included Lisa Nisenson and Heather Danforth from Wantman Group Inc. (WGI), national experts in new mobility and innovative urban planning solutions, and transportation engineer Rick Hall, a leader in walkable and holistic transportation planning.



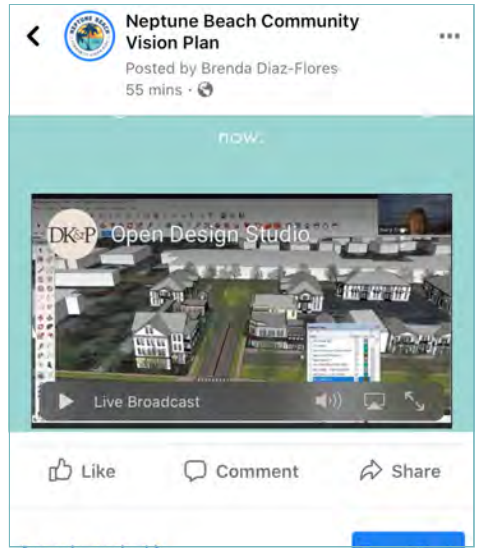
HOW TO STAY INVOLVED:

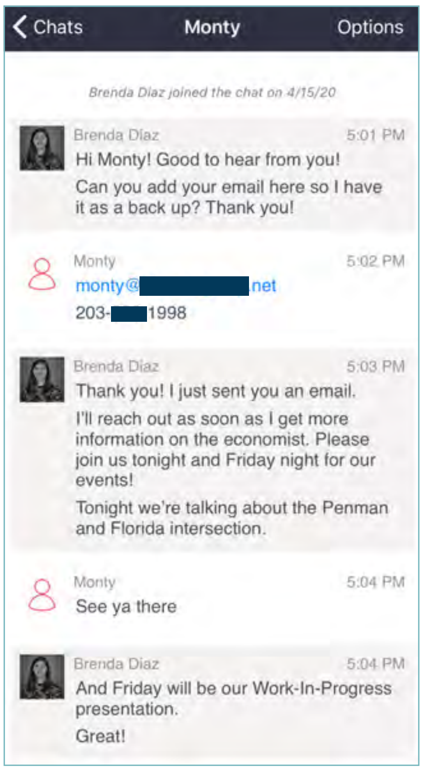
- Attend the Final Presentation and City Council Adoption Hearing in October
- Check the project website to stay involved in the next phases of work, which include the Comprehensive Plan & Land Development Regulations update
- Attend & Speak On Record at City Council Meetings
- Attend Community Development Board (CDB) Meetings
- Attend Strategic Planning Committee Meetings
- Meet with City Staff
- Create and serve on City Advisory Boards

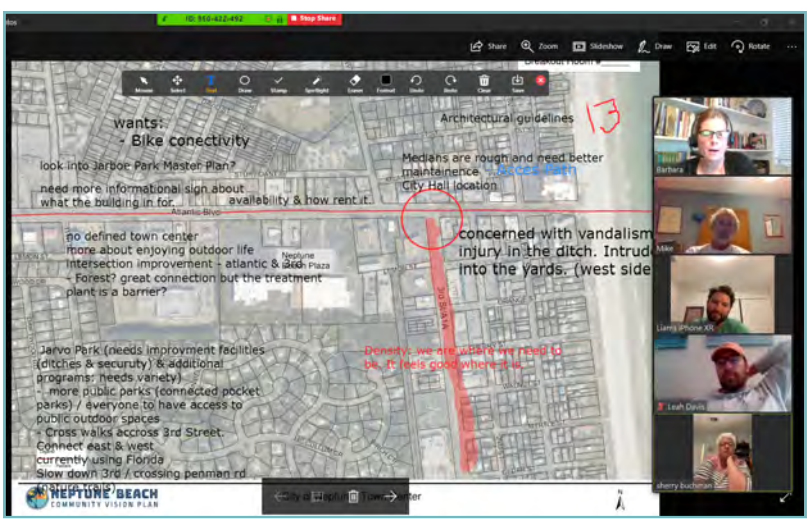
Photo Credit: Harriett Pruett

Chapter 01:

PROCESS & COMMUNITY ENGAGEMENT


Neptune Beach Community Vision Plan
Posted by Brenda Diaz-Flores
55 mins ·
DK&P Open Design Studio
Live Broadcast
Like
Comment
Share


Chats
Monty
Options
Brenda Diaz joined the chat on 4/15/20
Brenda Diaz 5:01 PM
Hi Monty! Good to hear from you!
Can you add your email here so I have it as a back up? Thank you!
Monty 5:02 PM
monty@[redacted].net
203-[redacted]1998
Brenda Diaz 5:03 PM
Thank you! I just sent you an email.
I'll reach out as soon as I get more information on the economist. Please join us tonight and Friday night for our events!
Tonight we're talking about the Penman and Florida intersection.
Monty 5:04 PM
See ya there
Brenda Diaz 5:04 PM
And Friday will be our Work-In-Progress presentation.
Great!


wants:
- Bike conectivity
look into Jarboe Park Master Plan?
need more informational sign about what the building in for, availability & how rent it
Architectural guidelines
Medians are rough and need better maintenence
City Hall location
concerned with vandalism injury in the ditch. Intrud into the yards. (west side
no defined town center
more about enjoying outdoor life
intersection improvement - atlantic & 3rd
- Forest? great connection but the treatment plant is a barrier?
Jarvo Park (needs improvment facilities (ditches & securuty) & additional programs: needs variety)
- more public parks (connected pocket parks) / everyone to have access to public outdoor spaces
- Cross walks accross 3rd Street.
Connect east & west
currently using Florida
Slow down 3rd / crossing penman rd
NEPTUNE BEACH
COMMUNITY VISION PLAN

ESTABLISHING A COMMON VISION: NEPTUNE BEACH VISION PLAN

ENGAGEMENT SCHEDULE:

JAN 9 Project Kickoff Presentation

FEB 18-FEB 20 Neighborhood Design Workshops
East of 3rd St: 2/18
Penman Rd to 3rd St: 2/19
West of Penman Rd: 2/20

APRIL 13 Charrette Kickoff & Small Group Exercise

APR 14 - APR 16 Open Design Studio

APRIL 15 Penman Rd. & Florida Blvd. Intersection Webinar

APRIL 17 Work-in-Progress Presentation

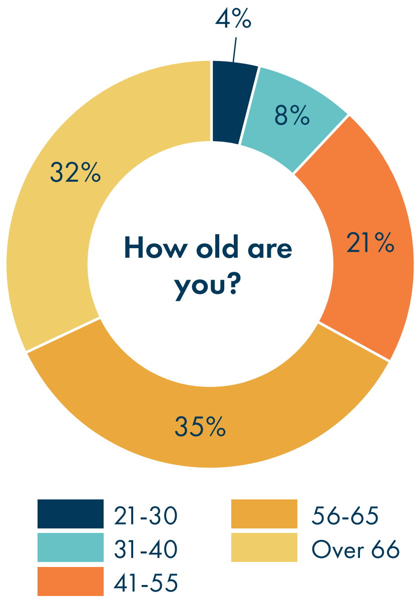
The Neptune Beach Community Vision Plan is the first of a 3-phase process to gather big-picture input from citizens and to establish a long-term vision for the future. Before the City's comprehensive plan and land development regulations can be updated (Phases 2 and 3 respectively), it is important to establish a shared vision of what Neptune Beach should look and feel like when it grows up. In the Vision Plan Phase, the Dover, Kohl & Partners Team worked with the City of Neptune Beach, community stakeholders, and the public to determine how the City should continue to grow and evolve and how it should prioritize public investments. During the winter and early spring of 2020, the Consultant Team and the City hosted a Project Kickoff Presentation, three consecutive Neighborhood Workshops, and a Virtual Design Charrette. These events gave the team a chance to work closely with citizen-experts and develop a common vision that reflects the needs and desires of the community-at-large. There were multiple opportunities to engage with the team throughout the visioning process. Community members were able to provide feedback in person and online through the project website: www.neptunebeachvisionplan.com.

From January to April, citizens had various opportunities to participate, engage and present ideas, questions, comments, or concerns to the Team. Each event had a different format that allowed community members to speak at-large or discuss in small groups with a planner or designer from the team, addressing specific neighborhoods and topics as needed. Following the Design Charrette, the consultant team worked on refining recommendations and returned to Neptune Beach in June to lead a public meeting about redevelopment and present the Draft Vision Plan. A month-long public comment period followed and community feedback was compiled and incorporated into the Final Draft Vision Plan.

PROJECT KICKOFF PRESENTATION

The Phase 1 Vision Plan began with a Kickoff Presentation at Neptune Baptist Church on January 9, 2020, where 110 people attended. The presentation was introduced by the City Manager Stefen Wynn and featured Luiza Leite and Victor Dover of Dover, Kohl and Partners along with Lisa Nisenson of WGI. The Planning Team shared best practices and set expectations for what this process could do to enhance the community.

The consultants walked through the Phase 1 timeline, which extended from January to August 2020, and highlighted that there were many opportunities for community engagement throughout the process. During the presentation, the community was also asked various keypad polling questions to get a sense of who was present and what the audience's priorities were. At the end of the meeting, attendees filled out a survey that asked more questions about what they expected from this process.



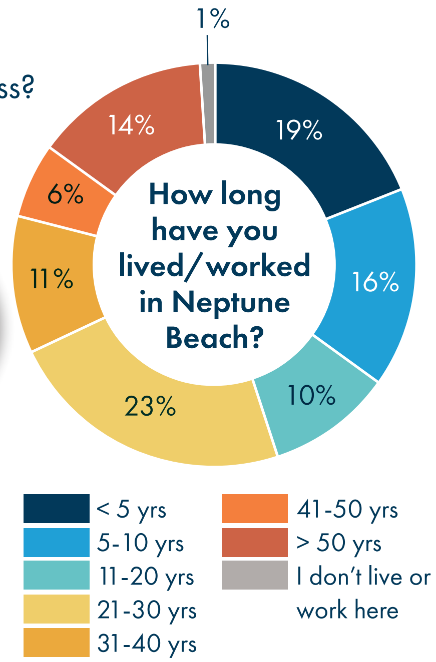
SAMPLE OF COMMUNITY RESPONSES FROM THE JANUARY PROJECT KICK-OFF PRESENTATION SURVEY:

What do you most want to see come out of this public visioning process? What would make this visioning process a success in your eyes?

"Receiving input from residents of all ages, races, socio-economic groups."

"Making NB a more pedestrian-friendly place. Vehicular traffic competes against cyclists & pedestrians."

"Our Town Center needs to be extended allowing for realistic shopping, walking with shade trees."



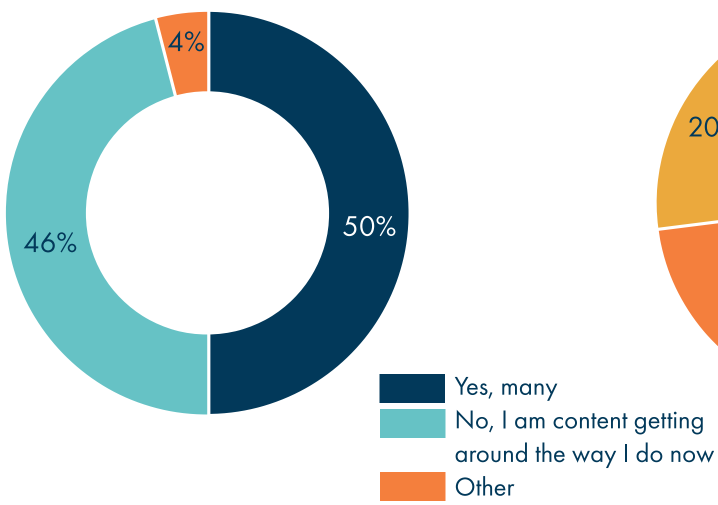
KEYPAD POLLING

During the Kick-Off presentation, participants were asked a series of keypad polling questions. These responses helped the Dover-Kohl team to gain a better understanding of the makeup of the group, identify potential areas for consensus, and to see what topics might be more pressing than others to residents. Questions included:

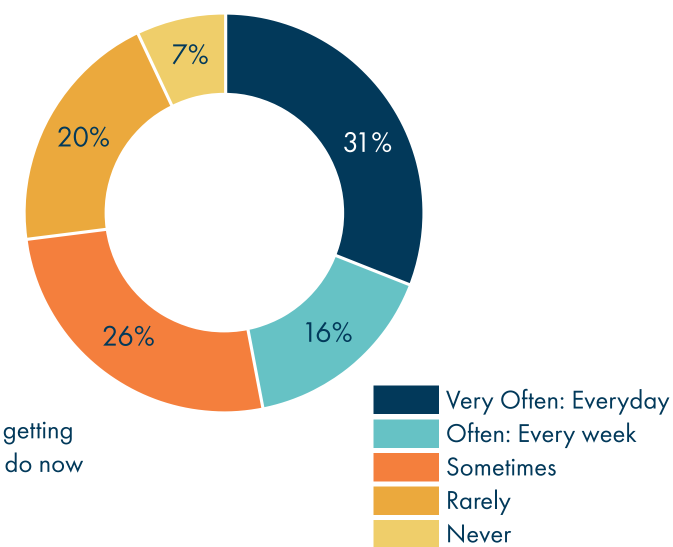
- What is your main interest in Neptune Beach?
- How long have you lived/worked in Neptune Beach?
- What do you see as Neptune Beach's top strength?
- How old are you?
- Which neighborhood do you live in?
- Are there any car trips you wish you could replace with another mode?
- How often do you walk or bike instead of driving?

The information gathered from the Kickoff polls have been included in the form of charts and graphs.

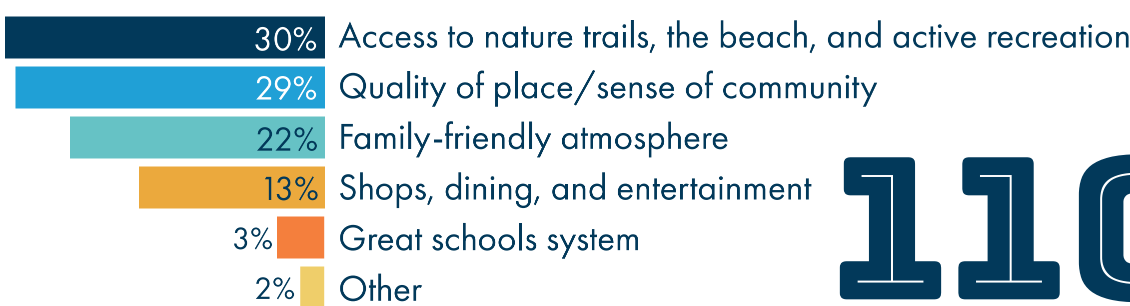
Are there any car trips you wish you could replace with another mode?



How often do you walk or bike instead of driving?



What do you see as Neptune Beach's Top Strength?



110+

PARTICIPANTS

Figure 1.1: Kickoff Meeting Keypad Polling Results

NEIGHBORHOOD WORKSHOPS

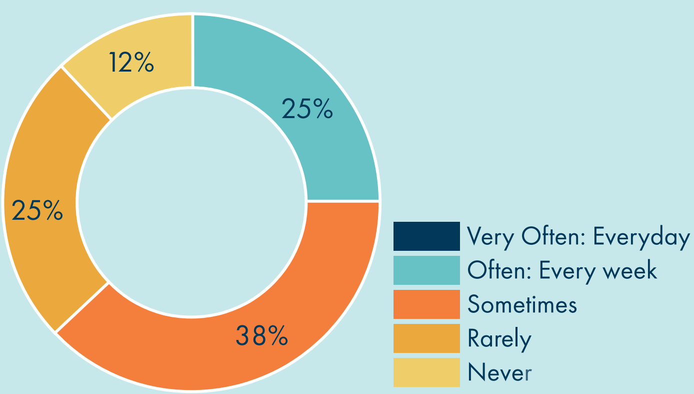
The visioning engagement process was split into three main events. The second main piece after the Project Kickoff was a three-day traveling event from February 18th through 20th called the Neighborhood Workshops. Each workshop started with a short presentation by Luiza Leite of Dover, Kohl and Partners. The rest of the time attendees visited multiple stations that covered topics including mobility and trails, street classifications, open and civic spaces, housing, commercial uses, sustainability, and resilience. The first night the Neighborhood Workshop was held at the Neptune Baptist Church for the area East of 3rd St/A1A. The second night was held at the Neptune House for the area West of 3rd St/A1A. The last night was held at Neptune Beach Elementary night, and despite stormy weather several people still attended for the area West of Penman Road. Over 75 people attended each night.

Attendees sharing ideas with the Planning Team at the East of 3rd Neighborhood Workshop.

YOUTH ENGAGEMENT

On the first day of the Neighborhood Workshops, the team started the day by visiting Ms. Downs' 7th and 8th grade social studies classes. Luiza Leite gave a short presentation that included an introduction to urban planning, food for thought, and polling questions. The questions asked students what types of buildings and spaces they preferred visually. The rest of the time was spent with students drawing on a map and discussing ideas about how to improve Neptune Beach to help them get around more easily and to include more places and activities that serve them.

How often do you go to Beaches Town Center?



Do you wish you could walk/bike to more places?

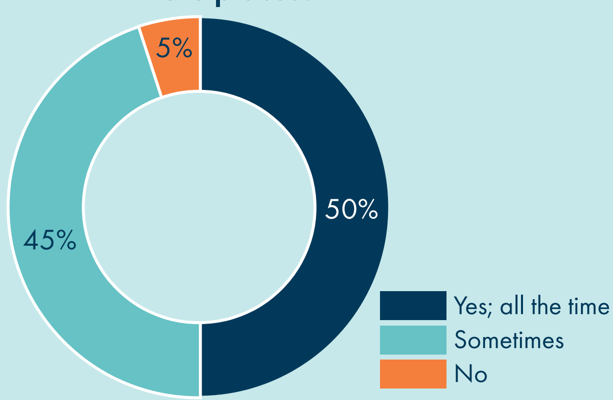


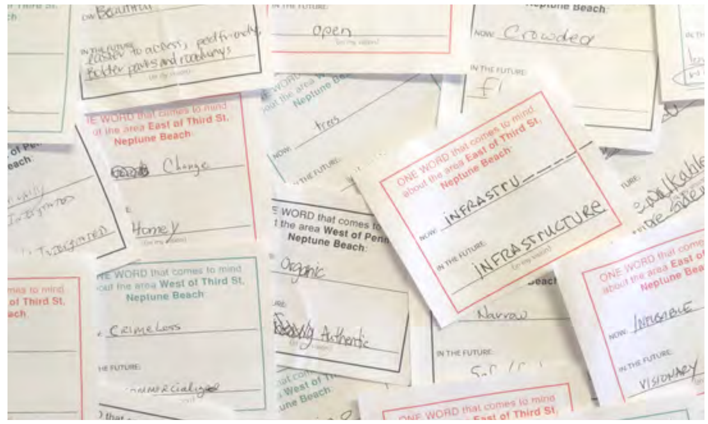
Figure 1.2: Middle School Students Keypad Polling Results

230+ PARTICIPANTS

During the Neighborhood Workshops, we asked the community to tell us in

One word that comes to mind about **Neptune Beach.**

TODAY:



IN THE FUTURE:

Figure 1.3: One Word Card Results

5-DAY DESIGN CHARRETTE

The third large community engagement event was a five-day Design Charrette. Due to unforeseen circumstances related to the COVID-19 pandemic, in-person meetings were not possible. The Planning Team and the City discussed at length various alternatives. Because the opportunity to meet again in-person was unknown, a Virtual Design Charrette was planned for the week of April 13, 2020. The community's ability to adapt quickly, coupled with the use of creative online tools and all of the great input that was gathered from previous in-person events, helped make this virtual event a success. The charrette helped bring new residents into the process and helped highlight the issues that needed to be addressed through this process.

CHARRETTE KICKOFF PRESENTATION & SMALL GROUP VISIONING EXERCISE

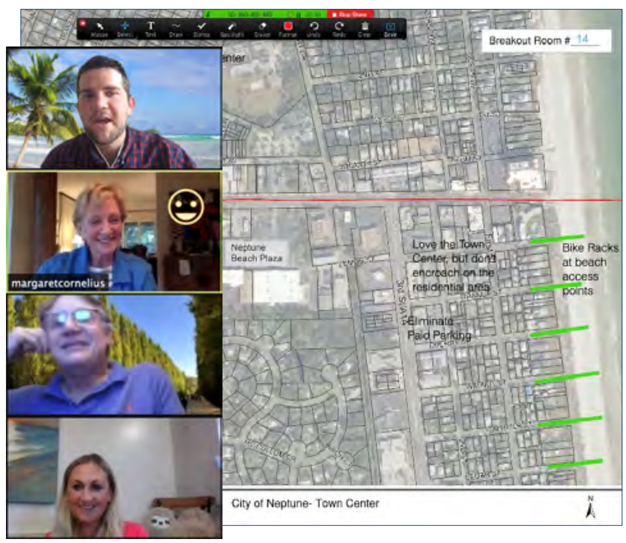
The team started the charrette week with a virtual Kickoff Presentation and Small Group Exercise. The meeting began with a presentation by Luiza Leite and Victor Dover of Dover, Kohl and Partners and Lisa Nisenson of WGI. During the presentation, the team summarized community input received so far and gave participants food for thought regarding important questions that remain, which could be discussed further during the small group exercise.

For the small group exercise, participants were separated into breakout rooms with a trained facilitator to draw on maps, brainstorm improvements, and fill out a survey of their three big ideas. Of the 80+ attendees who joined the live presentation, just over 70 remained for the 45-minute exercise. The small group exercise gave participants a chance to connect with fellow residents and professional planners more intimately and reach some consensus around future improvements and priorities. At the end, the larger group reconvened and spokespersons from a few groups were selected at random to present their big ideas.

The Kickoff Meeting & Small Group Exercise was both live streamed and recorded. After the meeting, the recording was posted on the project website for anyone to watch and provide feedback at their own convenience.

APRIL 13
Charrette Kickoff & Small Group Visioning Exercise: 6 PM

The Charrette Kickoff & Small Group Exercise was done virtually. Victor Dover presents some 'Food for Thought.'



Breakout Room #14 participants discussing their ideas on the map of Neptune Beach live via from home.

80+

LIVE PRESENTATION ATTENDEES

VIRTUAL DESIGN CHARRETTE SCHEDULE

APRIL 14 - APRIL 16
Open Design Studio:
10 AM - 4 PM

APRIL 15
Penman Rd & Florida Blvd
Intersection Webinar: 6 PM

APRIL 17
Work-In-Progress Presentation:
6 PM

SUMMARY OF THE BIG IDEAS

After the small group exercise was finished, everyone reconvened into the larger group meeting to share their ideas as they were called on. The Big Ideas were gathered as a survey based on topics. This is the summary of those ideas by topic:

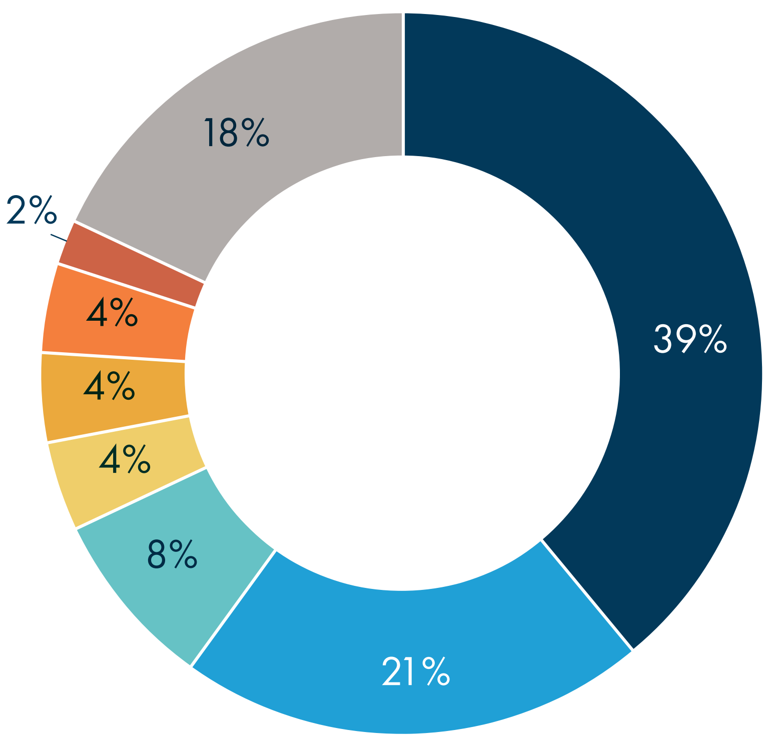


Figure 1.4: Charrette Kickoff Big Idea Results

70+

SMALL GROUP PARTICIPANTS IN 14 BREAKOUT ROOMS

Streets, Trails, Transportation & Parking

39%

- Safer crossings on 3rd, Penman, Florida, Seagate & Cedar
- Highlight 1st Street; make it one-way with dedicated space for people walking & biking, limit north/south traffic
- More bicycle parking, especially at beach access points
- Consider a circulating trolley or shuttle system
- Coordinate parking with new trails/transportation options
- Manage car speeds

Public Space, Parks & Recreation

21%

- Public access to Intracoastal for kayaks & recreation
- More shade trees along all connecting streets/trails
- Improve Jarboe Park & add new pocket parks/plazas
- Create trail along drainage to Jarboe, Fletcher and marsh
- Maintain a permanent Senior Center

Local Businesses & Commercial Redevelopment

8%

- Redevelop Atlantic Blvd, add greenery and consider structured parking
- Make the Kmart Site part of the walkable Town Center
- Kmart: owner-occupied mixed-use, greenspace & trails

Town Center

4%

- Keep the charm!
- Consider pedestrian-only portion of the BTC

Housing

4%

- Stop shrinking lots
- Keep current density

Stormwater & Resilience

4%

- Address stormwater & flooding issues
- Increase permeability and add more green space

Municipal Buildings

2%

- Leave City Hall in place, move Police/Fire across 3rd St.

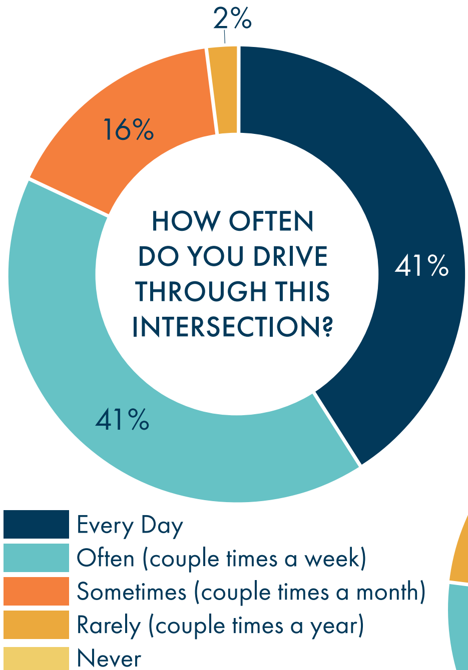
Other

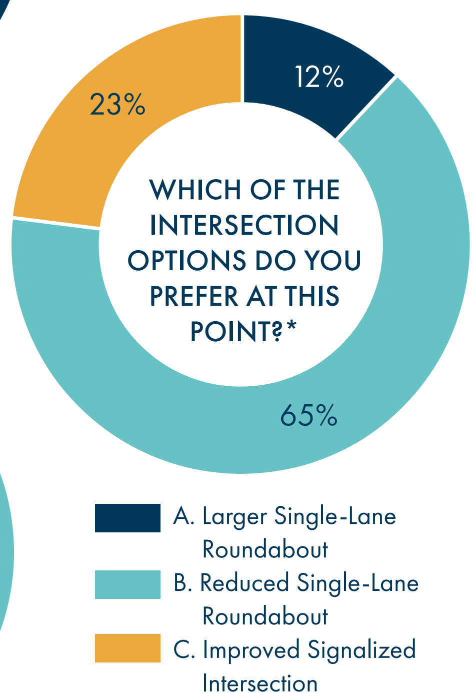
18%

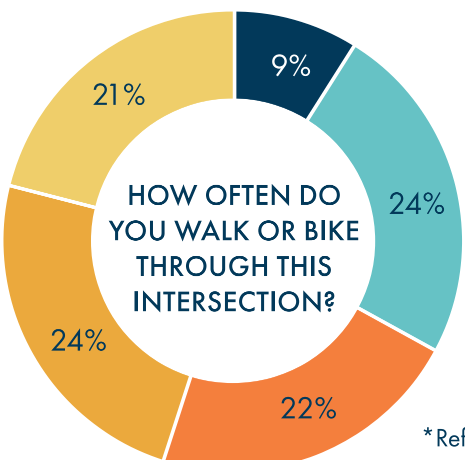
- Infrastructure, infrastructure, infrastructure!
- Resilient, durable, and quality design of buildings, streets, and public spaces

PENMAN RD. & FLORIDA BLVD. INTERSECTION WEBINAR

On April 15th, the third evening of the design charrette, 64 people attended a special webinar to look at options for improving the 5-point intersection at Penman and Florida Boulevard. Traffic engineer Rick Hall walked through the highlights of the City of Jacksonville's in-depth analysis of this intersection, including crashes and projected traffic volume with and without a roundabout. He explained the pros and cons of each alternative being considered, as well as how cars, bicycles, and pedestrians would use each alternative. Participants were able to submit questions for the panel. Two polls were used to see who was attending, how they used the intersection, and which preliminary option they preferred. This meeting was recorded and posted for the community to view at any time.







*Reflects 49 poll responses (Note: a few participants mentioned that there should be another option: 'D. None of the above', for those who do not like any of the draft proposals

A: Larger Single-Lane Roundabout

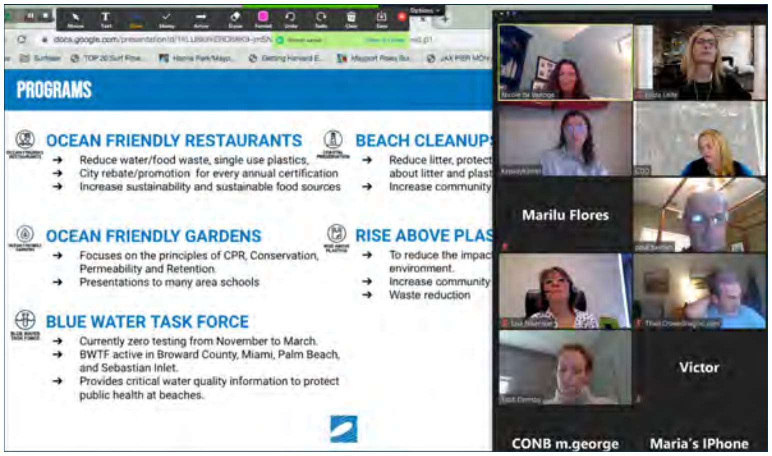
B: Reduced Single-Lane Roundabout

C: Improved Signalized Intersection

Figure 1.5: Penman Rd & Florida Blvd Intersection Workshop Polling Results

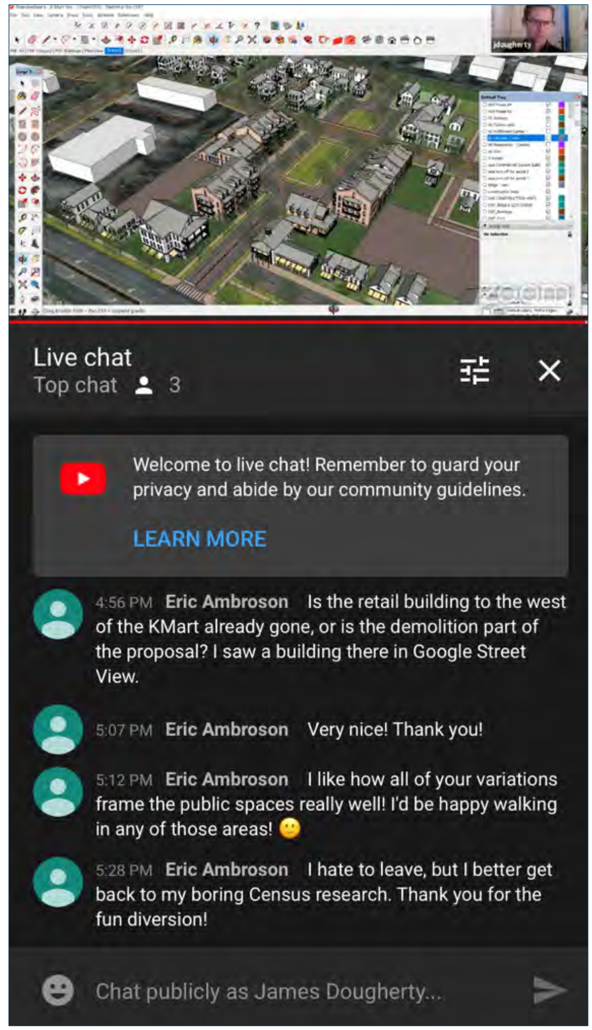
TECHNICAL MEETINGS

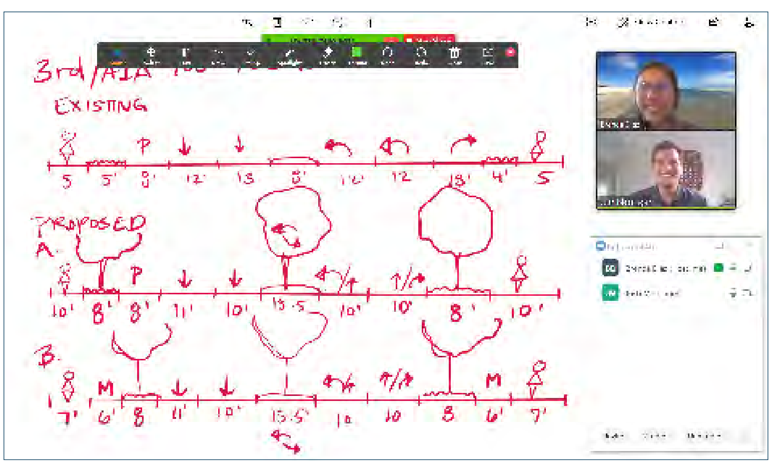
During the charrette, the City and planning team met with expert groups to discuss transportation & streets, arts & culture, and sustainability & the environment. All of these technical meetings were video conferences, detailed summaries of which were made available on the project website. Ideas that were discussed in the meetings were incorporated into draft work.



OPEN DESIGN STUDIO

The Virtual Design Charrette had Open Design Studio hours Tuesday through Thursday , from 10 am to 4 pm. The community could join the open meeting anytime to talk with a planner who was sharing their screen and working in real-time. The Open Design studio was live streamed and viewers could also comment through their viewing platform of choice.





Clockwise Starting at the Top Left Corner:

1. Surfrider Foundation presenting information at the Sustainability & Environment Technical Meeting
2. James Dougherty shares his work and gets feedback from a community member in the Open Design Studio
3. Brenda Diaz is shown working from home
4. Councilor Messinger joined to discuss the work Brenda Diaz was sharing in the Open Design Studio

CHARRETTE WORK-IN-PROGRESS PRESENTATION & SURVEY:

At the end of the Virtual Design Charrette on April 17th, the team presented the draft illustrations and recommendations that the designers and planners worked on throughout the week. The presentation was a webinar format and the community was able to join and ask questions through a virtual Q&A during the presentation. Over 50 people joined and spent their Friday evening with the team.

The goal of the presentation was to get initial reactions to draft work and determine what questions still need to be answered. After the presentation, the recorded meeting was uploaded and a survey was sent out asking the community whether the plan was on the right track.

The survey has helped identify other issues or solutions that the planning team might have missed during the charrette week. Many people have also sent questions and other ideas that can be incorporated into the draft plan. From the survey results, 52% said the plan was on the right track and 35% said some ideas are on the right track, while other ideas are not.

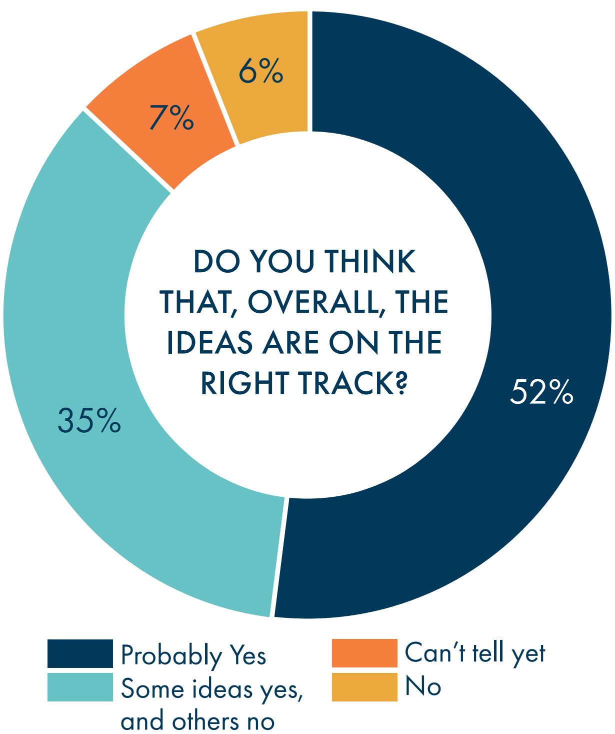
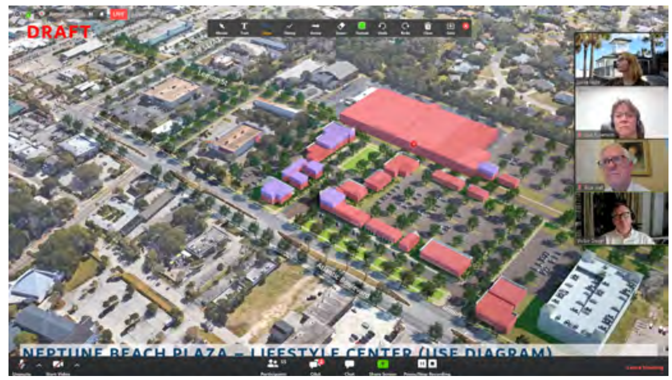


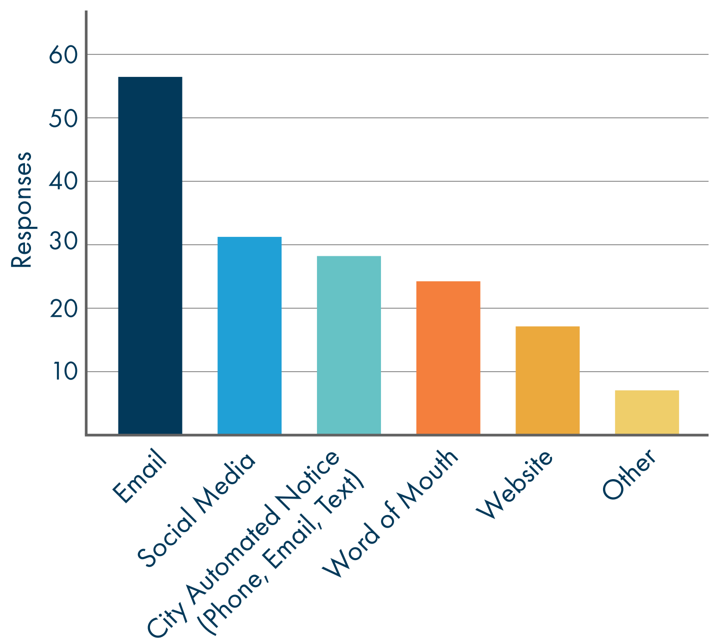
Figure 1.6: Charrette Work-In-Progress Survey Results



Top: The Charrette Work In Progress Presentation was online through Zoom

Middle: Planning team presenting options for the Kmart site

HOW DID YOU HEAR ABOUT THESE EVENTS?



COMMUNITY ENGAGEMENT REACH

PARTICIPANTS AND VIEWS:

110+ Project Kickoff Presentation Attendees
62 Site Visit Stakeholder Meeting Attendees
230+ Neighborhood Workshops Attendees
200+ Charrette: Kickoff Presentation and Small Group Exercise (86 Attendees, 42 Live Stream Views, 72+ Recording Views)
253+ Charrette: Penman & Florida Intersection Webinar (64 Attendees, 54 Live Stream Views, 135+ Recording Views)
331+ Charrette: Work-in-Progress Presentation (52 Attendees, 32 Live Stream Views, 247+ Recording Views)
181 Charrette: Open Design Studio (37 Visitors, 144+ Live Stream Views)
38 Charrette: Technical Meetings Attendees

FEEDBACK:

43 Project Kickoff Presentation Exit Survey Responses
49 Neighborhood Workshops One Word Card Responses
230 In-Person Neighborhood Visual Preference Survey Responses
144 Online Neighborhood Visual Preference Survey Responses
253 Citywide Input Survey Responses
86 Work-In-Progress Survey Responses
28 General Feedback Responses

NEPTUNEBEACHVISIONPLAN.COM

2,527 Visits
6,439 Page Views
2,476 Unique Visitors

REACHED BY SOCIAL MEDIA

80+ @NBVisionPlan Followers
813 City of Neptune Beach Facebook Group Members

REACHED BY PROJECT EMAIL SUBSCRIPTION LIST

1,225 Mailchimp Emails Sent to Individuals
529 People Subscribed to Email List

REACHED BY CITY AUTOMATED MESSAGES

3,220+ Everbridge Automated Emails, Text Messages, and Phone Calls

Figure 1.7: Community Engagement Reach Results


1005

Chapter 02:

EXISTING CONDITIONS & KEY ISSUES

NEPTUNE BEACH EXISTING CONDITIONS

DEMOGRAPHICS

The following summary statistics show data from the US Census Bureau's American Community Survey (ACS) 5-Year Estimates for 2018, unless otherwise specified.

1. POPULATION:

- 7,080 residents
- 2,924 households
- 5.6% population growth from 2013 to 2018, less rapid than Duval County (8.9%)and Florida (7.9%)

2. AGE DISTRIBUTION:

- Median Age: 40.6 in 2018
- 19% of the population is aged under 18
- 11% of the population is 18-24
- 14% of the population is 25-34
- 12% of the population is 35-49
- 25% of the population is 50-64
- 15% of the population is 65 and over
- This age distribution very closely matches the age distribution of overall country and State of Florida

3. INCOME & TENURE:

- 69% of HH are owner-occupied
- Duval County: 57% HH are owner-occupied
- Florida: 65% HH are owner-occupied
- Median Value Owner-Occupied Units: $381,400 (9% annual increase from 2017)
- Median HH Income: $89,500 (1.5 times the amount in the Jacksonville Metro area and more than 1.5 times the amount in Florida)

4. EMPLOYMENT:

- 69% of residents aged 16+ are working or looking for work (5,980 residents in total)
- 75% of employed residents work in white-collar professions, 15% in service professions, and 10% in blue-collar professions

ANALYSIS MAPS

The following maps present a snapshot of the existing conditions in Neptune Beach. Key takeaways by topic for each of these maps are summarized below.

1. EXISTING DEVELOPMENT PATTERNS:

The most dominant development pattern found in Neptune Beach is conventional suburban sprawl, though there is a significant area of traditional urban development patterns, with smaller blocks and a regular street grid, east of 3rd and 5th Street.

2. ZONING MAP:

With the exception of the Central Business District, no other zones in the City's existing code are mixed-use in the truest sense; meaning they do not allow for a combination of commercial, office, and residential uses. The vast majority of Neptune Beach is zoned for low intensity (single-family) residential uses.

3. FUTURE LAND USE MAP:

A large portion of the City's total acreage (56%) is dedicated to residential development. Of this, 80 percent is dedicated to low-density residential and 2 percent is dedicated to high-density residential. A third (30%) of the city's land is dedicated to parks, natural, and conservation areas and only 9 percent is meant for varying intensities of commercial development.

4. FEMA FLOOD HAZARD MAP:

The flood hazard areas mapped by FEMA show that areas along the Intracoastal, along with residential areas between 1st Street and the Neptune Beach equivalent of 10th Street are at the highest risk of flooding. This closely matches the experience of homeowners in these areas who confirmed flooding issues there.

5. SEA LEVEL RISE MAP:

Areas along Intracoastal Waterway and existing drainage canals are the most vulnerable to the impacts of sea level rise in the short and long-term.

Figure Ground Map

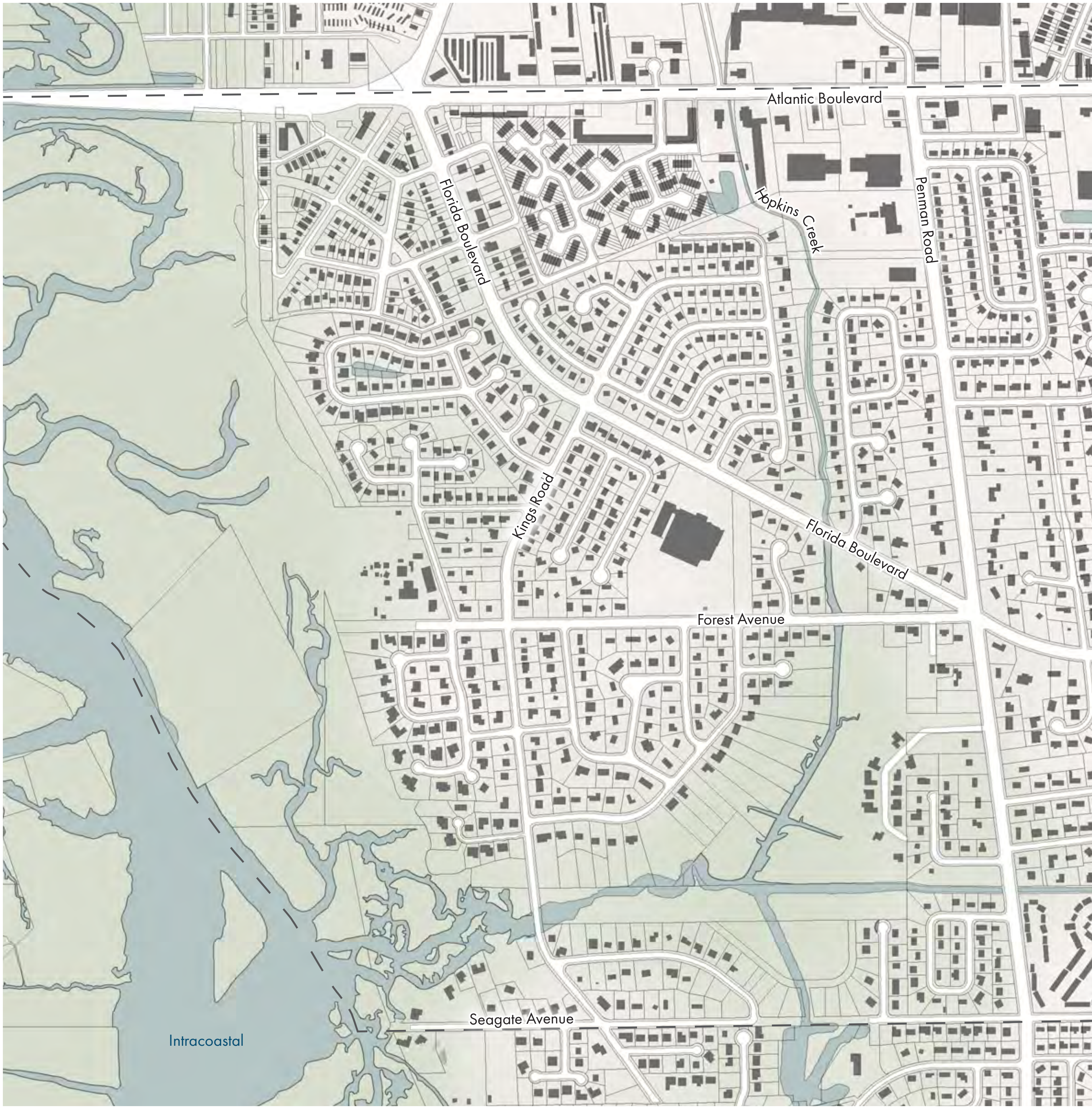


Figure 2.1: Figure Ground Map

EXISTING DEVELOPMENT PATTERNS

The City of Neptune Beach has four primary development patterns, as illustrated by the street and building footprints on this map. There is the traditional neighborhood pattern found in the older parts of town east of 5th and 3rd Street, which features smaller blocks sizes and a regular grid of streets, the more sprawling suburban pattern of subdivision homes that branch off of Penman Road, Florida Boulevard, Forest Avenue, and Kings Road, the low rise suburban office buildings along 3rd Street, and the highway commercial pattern found along Atlantic Boulevard, which features deep building setbacks and larger footprint buildings.

MAP LEGEND

- Building Footprint
- Canal/Lake/Intracoastal
- Marsh
- City Boundary

Zoning Map

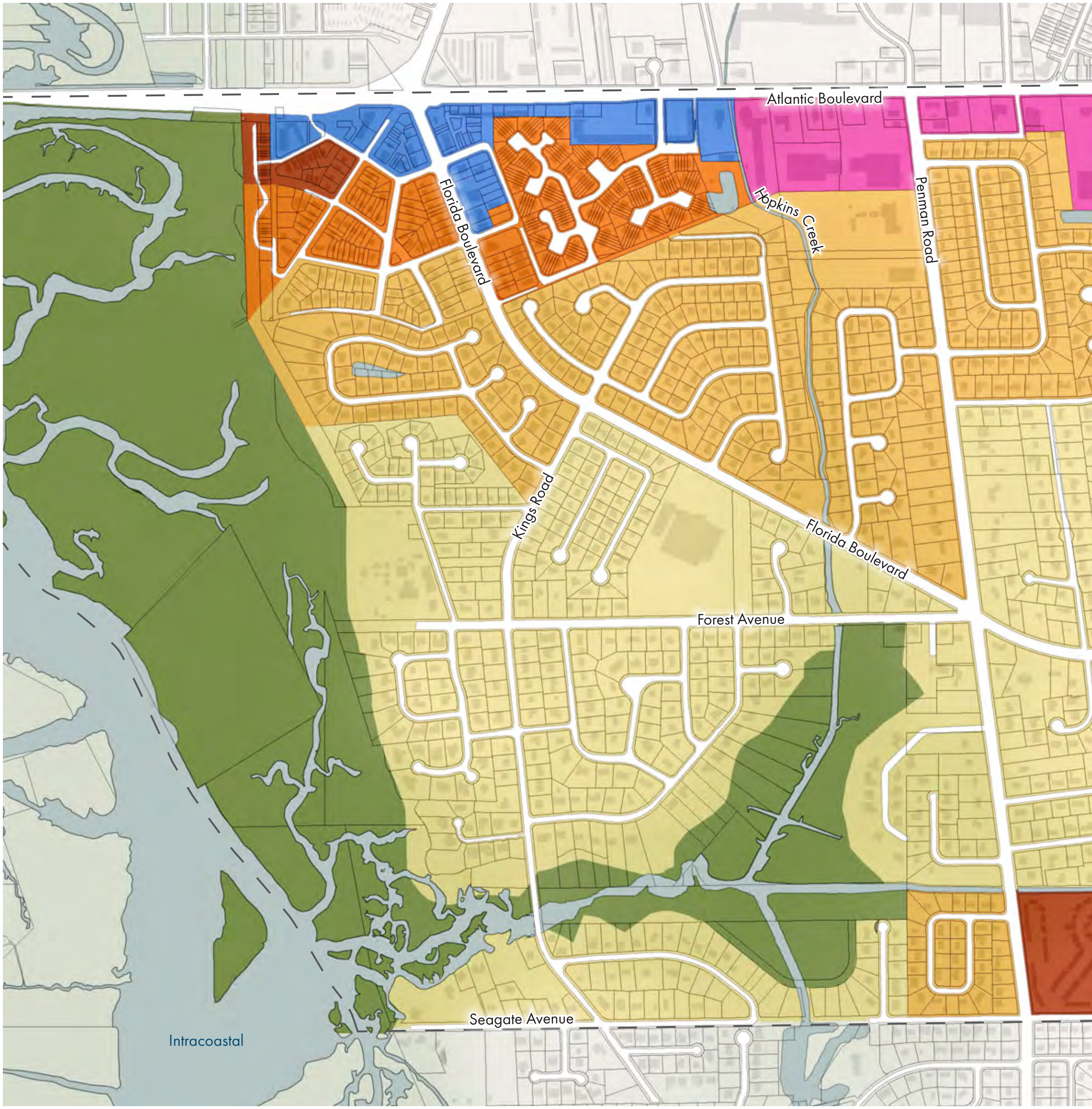


Figure 2.2: Zoning Map

ZONING MAP

Neptune Beach has a core of commercial zoning in the Beaches Town Center, and along Atlantic Boulevard and the west side of 3rd Street. These commercial areas vary in type from walkable retail and offices in the Central Business District, to low-rise offices along 3rd Street, to large big box commercial and strip centers along Atlantic Boulevard, and to commercial warehouses, offices, and more light industrial uses around Florida and Atlantic Boulevard. The zoning code also distinguishes between five different intensities of residential development. Notably, with the exception of the Central Business District, the zoning does not describe many mixed-use areas, though C-2 zoning does also include a mix of commercial, office, and light industrial uses.

MAP LEGEND

Residential

- R-1
- R-2
- R-3
- R-4
- R-5

Commercial & Mixed-Use

- C-1
- C-2
- C-3
- Central Business District

Other

- Conservation
- City Boundary

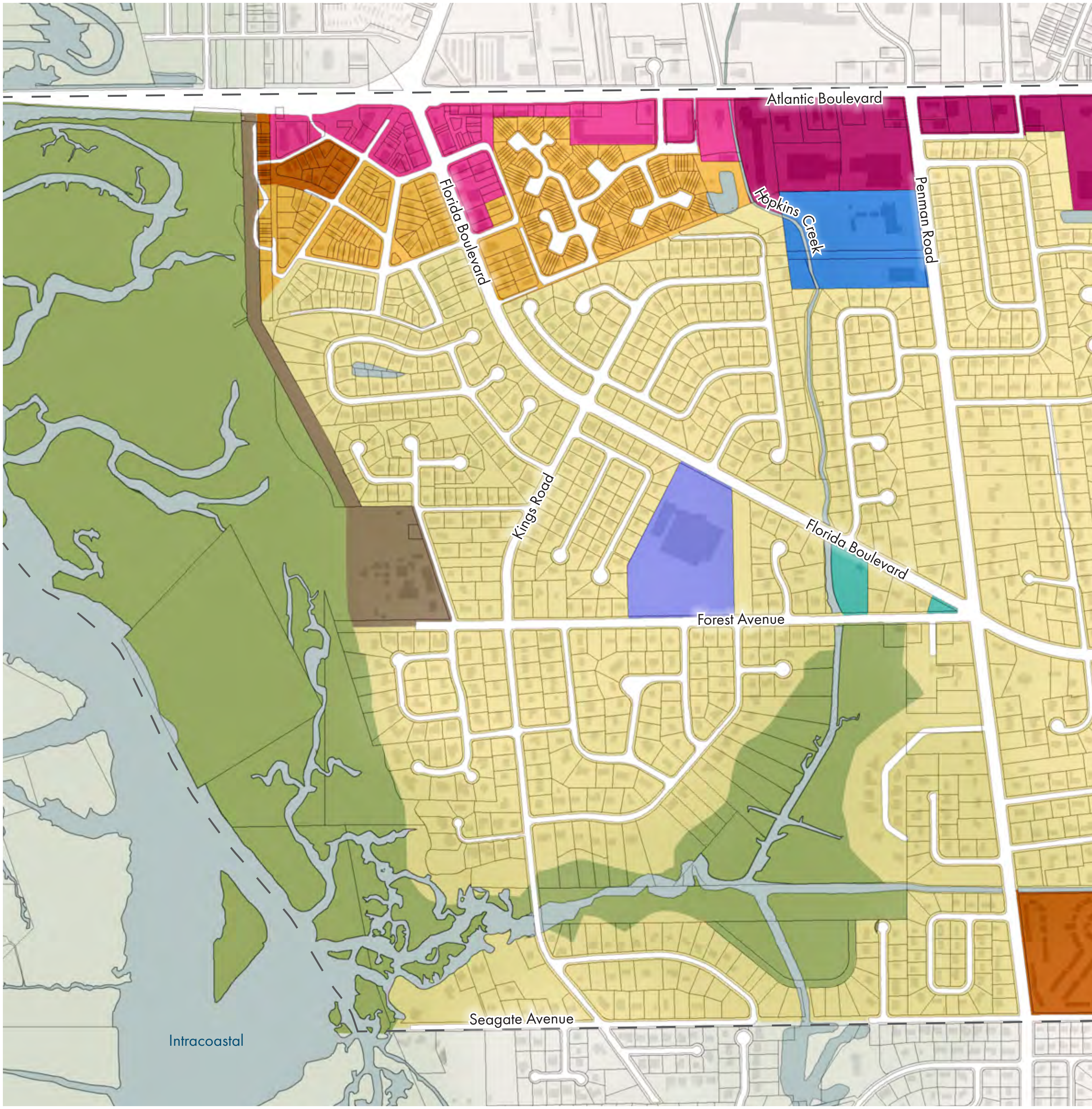
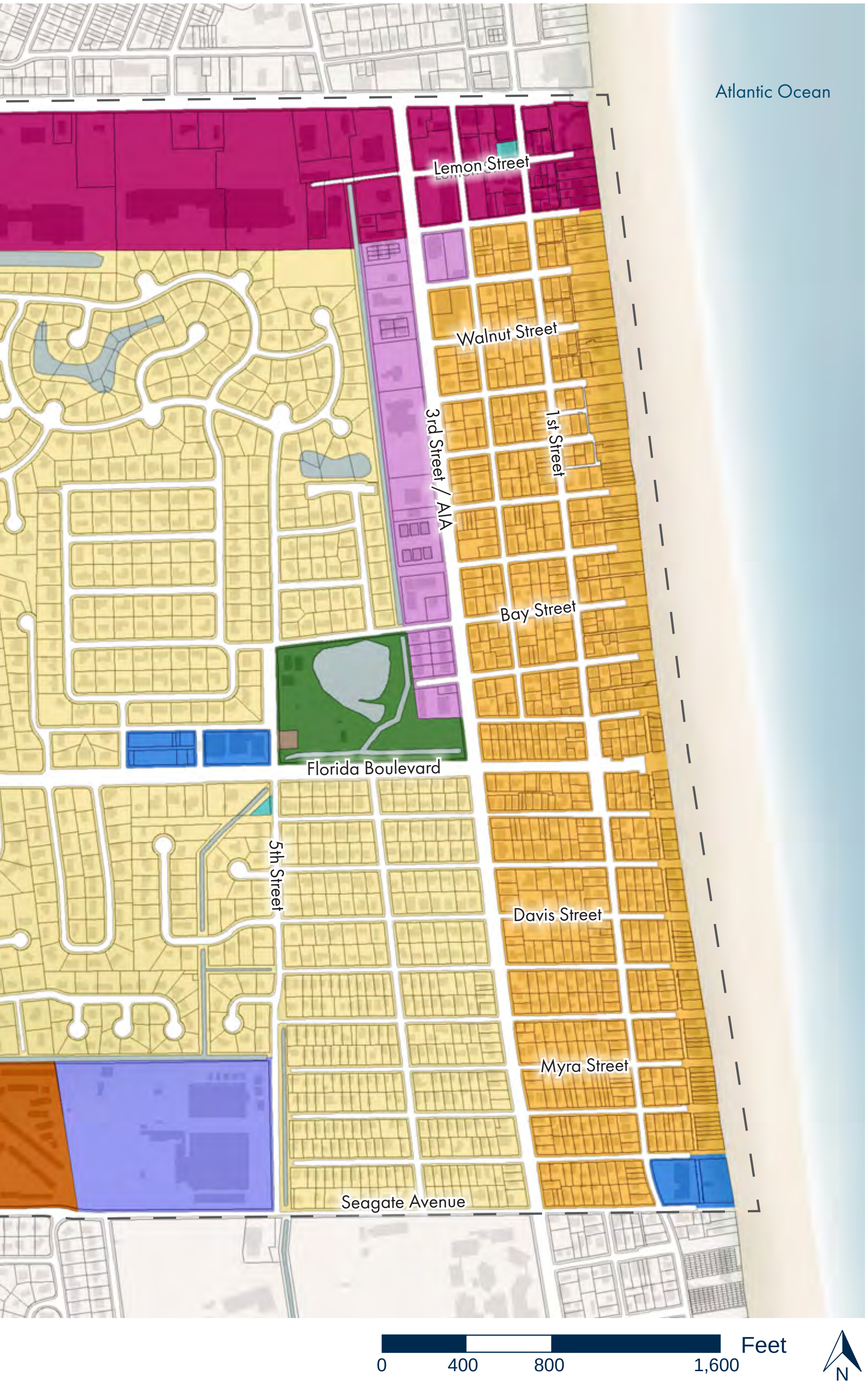


Figure 2.3: Future Land Use Map



FUTURE LAND USE MAP

The Future Land Use Map defines the desired pattern of commercial residential, industrial, public, and environmental land in the City, as established in the City of Neptune Beach's Comprehensive Plan 2012-2022. A large portion of the City's total acreage (56%) is dedicated to residential development. Of this, 80 percent is dedicated to low density residential, 18 percent is dedicated to medium-density residential, and 2 percent is dedicated to high density residential. Just about a third (30%) of the city's land is dedicated to parks, natural, and conservation areas, and about 4 percent is dedicated to civic and institutional uses. The remaining land (9%) is meant for varying intensities of commercial development.

MAP LEGEND

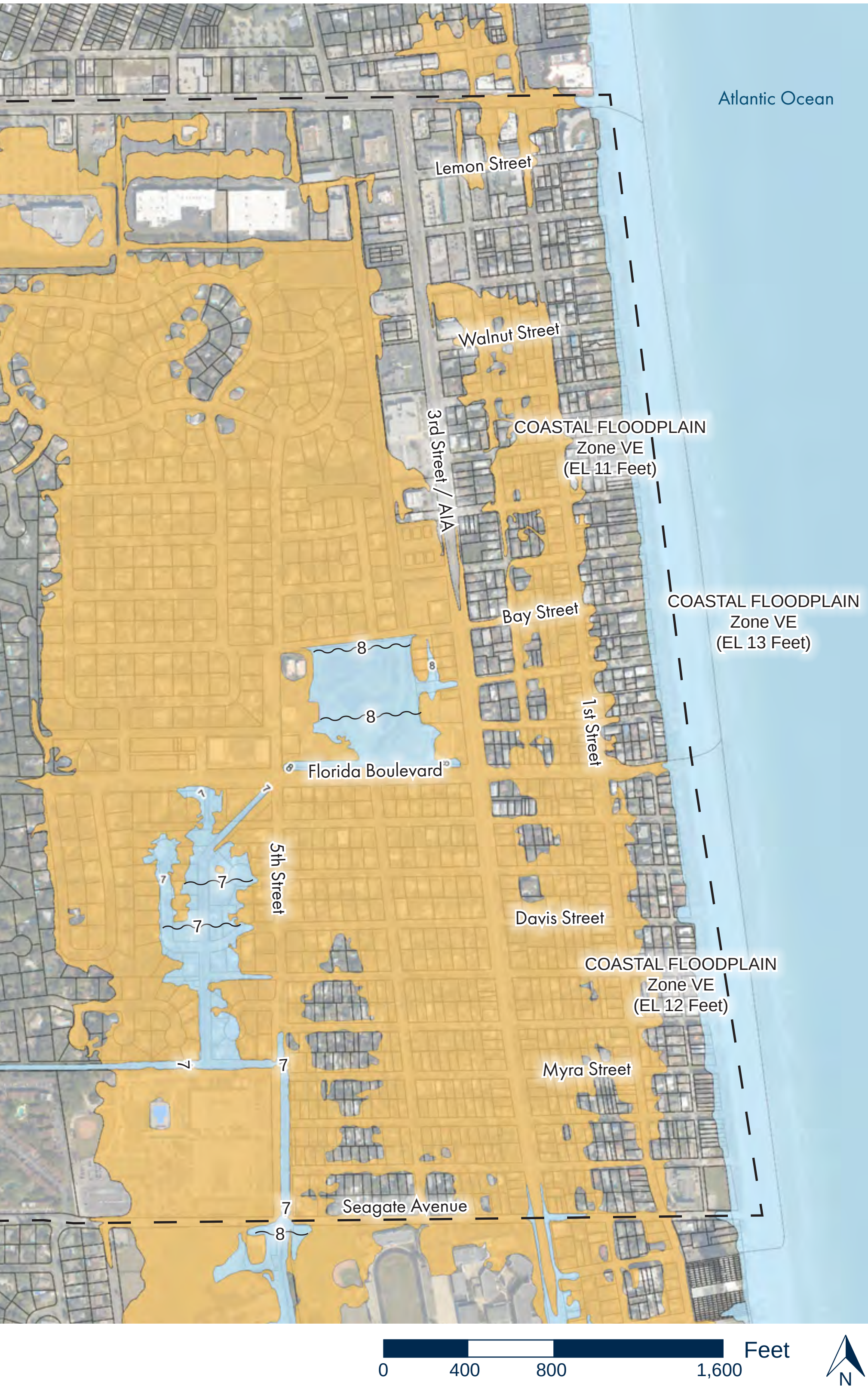
Residential
- Low
- Medium
- High

Commercial
- Low
- Medium
- High

Other
- Education
- Church
- Governmental
- Recreation
- Conservation/Wetlands
- Public Utilities
- City Boundary

FEMA Flood Hazard Map

Figure 2.4: FEMA Flood Hazard Map



FEMA FLOOD HAZARD MAP

The Federal Emergency Management Association (FEMA) is responsible for assessing flood risk for coastal areas across the country and producing Flood Insurance Rate Maps (FIRMs), to establish insurance rates and premiums in at-risk zones. Flood hazard areas identified on these maps as Special Flood Hazard Areas (SFHA). These are areas that will be inundated by flood events having a 1-percent chance of being equaled or exceeded in any given year, also known as the base flood or 100-year floodplain. SFHAs present in Neptune Beach are labeled as Zone AE and Zone VE. Moderate flood hazard areas, are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) floodplain.

This map was shared with the community during the Neighborhood Workshops. During those sessions, residents confirmed that the flooding they experience closely matches the flood hazard areas mapped by FEMA.

MAP LEGEND

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Base Flood Elevation
- City Boundary

Sea Level Rise Map

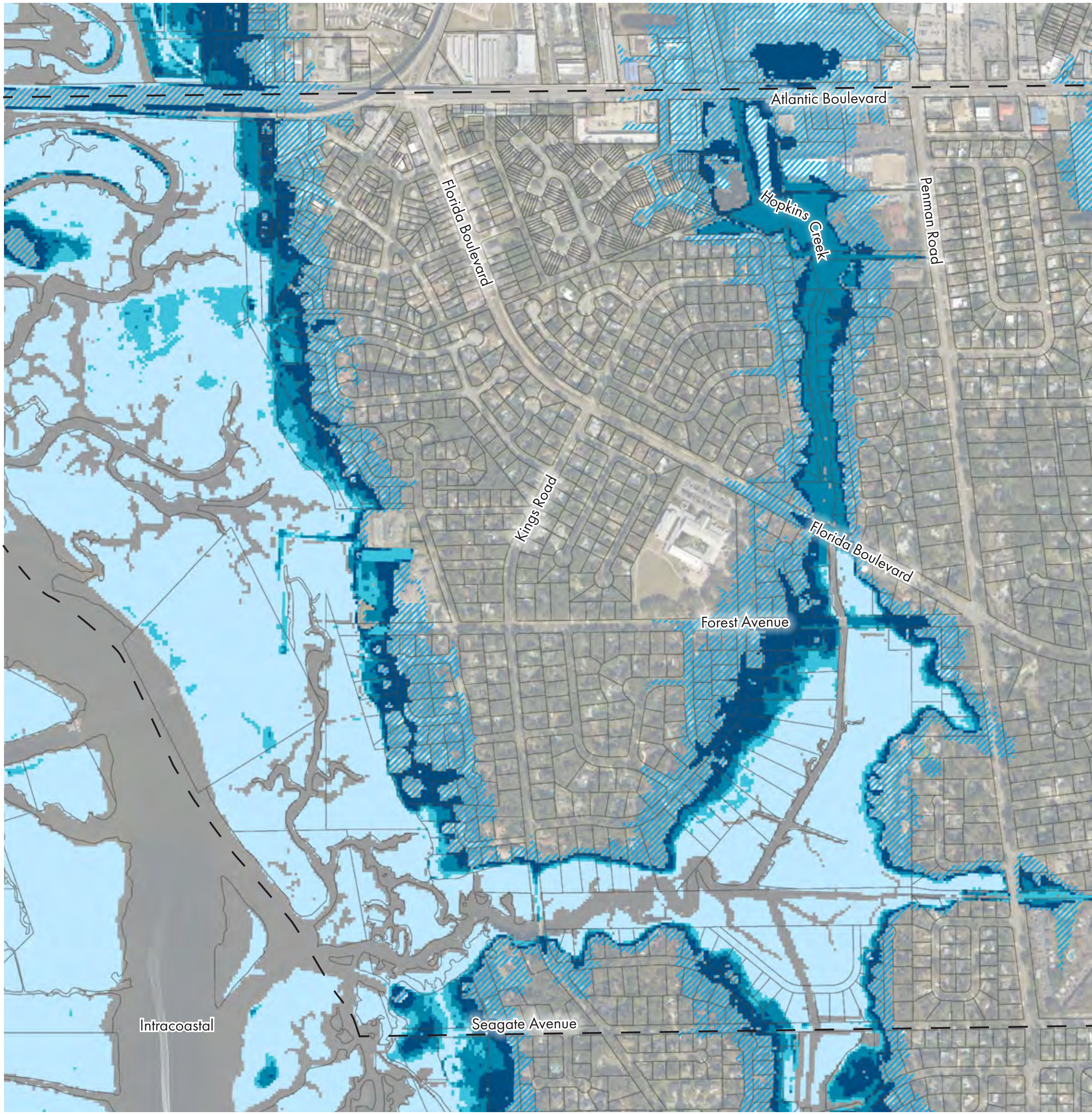
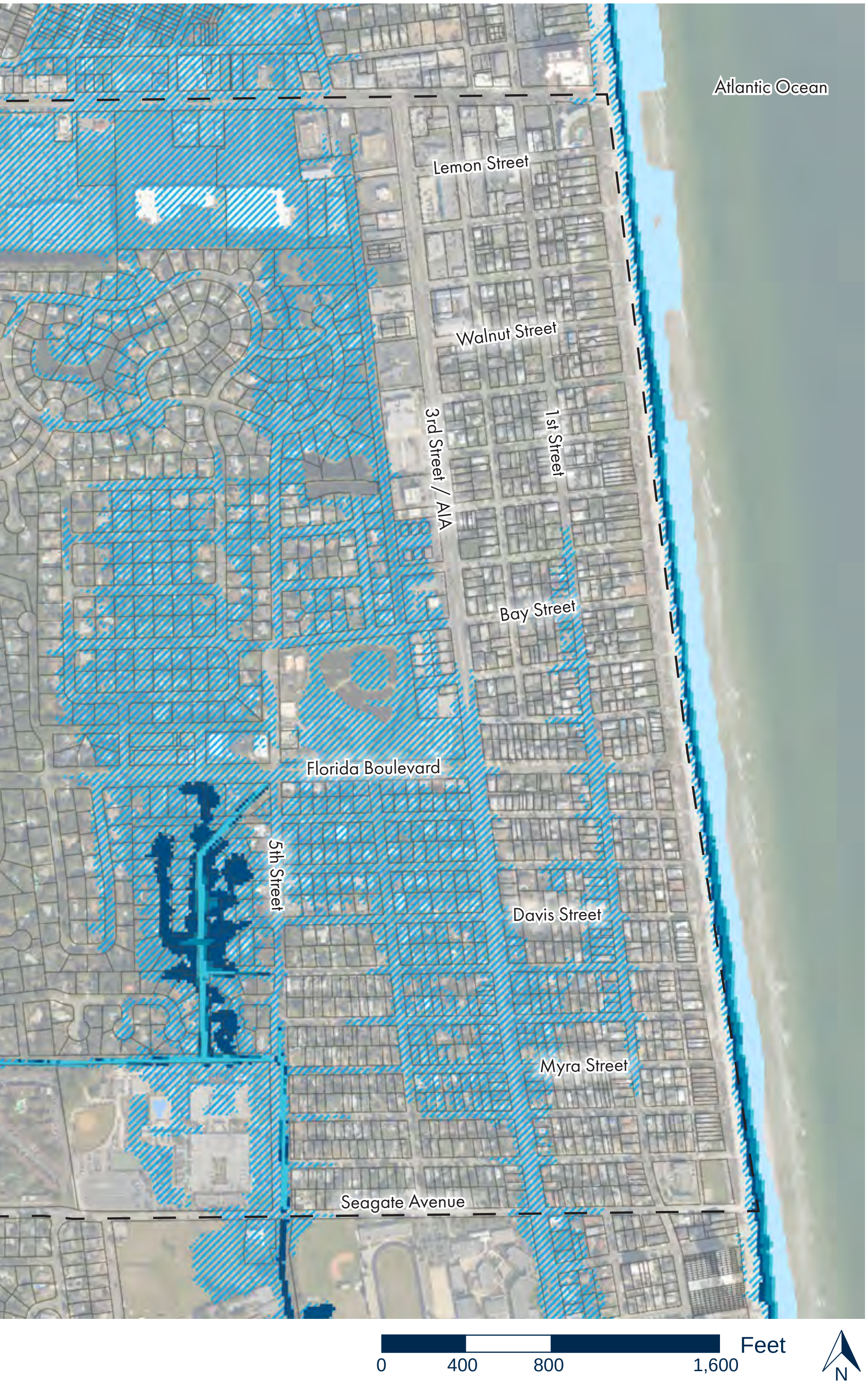


Figure 2.5: Sea Level Rise (Moderate Scenario) Map



SEA LEVEL RISE MAP

This map shows sea level rise data from the National Oceanographic & Atmospheric Administration (NOAA). In particular, this model illustrates how different sea level rise projections would inundate the City of Neptune Beach given it existing topography and its natural systems of waterways and stormwater drainage. More specifically, this map shows NOAA's 'intermediate high' sea level rise scenario projections, which represent a mid-range forecast of how severe sea level rise will be in the coming decades. For comparison sake, the 'high' scenario for 2100 was included as a worst case scenario.

In Neptune Beach, the most vulnerable areas are those along the Intracoastal, Hopkins Creek, and the drainage canals along Fletcher High School and parallel to 5th Street.

MAP LEGEND

NOAA Intermediate Projections

- Inundation 2040
- Inundation 2060
- Inundation 2080
- Inundation 2100

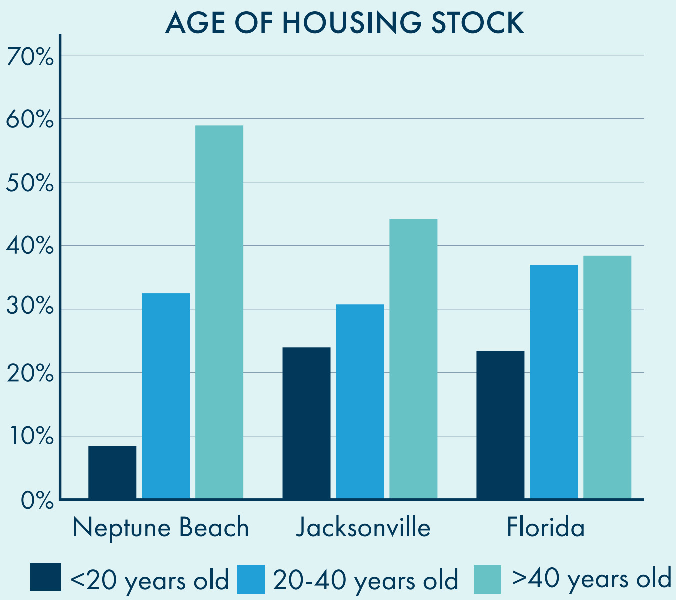
NOAA High Projections

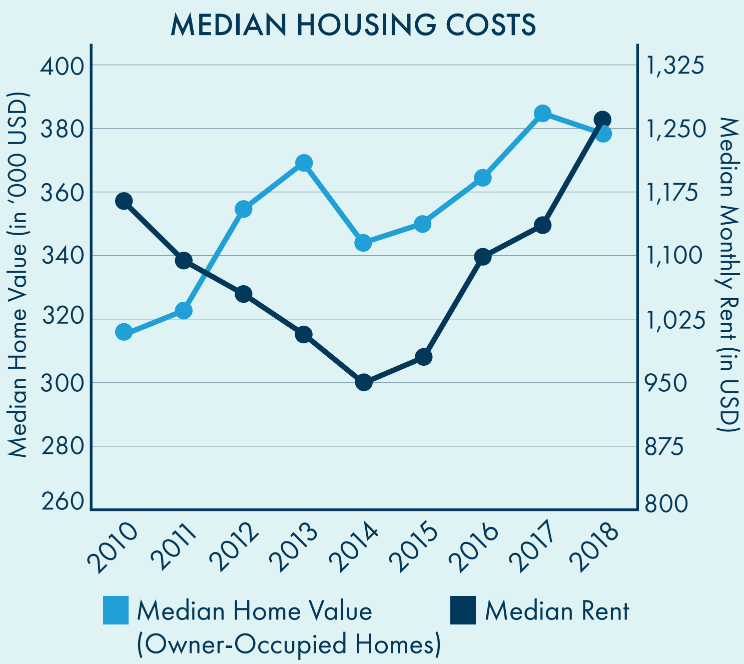
- Inundation 2100
- City Boundary

HOUSING TYPES

Housing Unit Type	Neptune Beach	City of Jacksonville	State of Florida
Single-Family Detached	57.7%	60.7%	54.1%
Single-Family Attached (Townhome)	16.7%	5.4%	6.1%
Duplex	8.0%	1.9%	2.3%
Triplex or Quadruplex	10.7%	3.8%	3.9%
Multi-Family 5-9 Units	1.2%	6.2%	5.1%
Multi-Family 10-19 Units	1.9%	8.1%	6.0%
Multi-Family 20+ Units	3.4%	8.4%	12.7%

Source: 2010 ACS 2014-2018 5-Year Estimates Data Profiles, US Census Bureau





HOUSEHOLD DATA

Household Data	Neptune Beach	City of Jacksonville	State of Florida
Persons Per Household	2.42	2.57	2.65
Percent of Owner-Occupied Housing Units	68.5%	56%	65%
Median Home Value of Owner-Occupied Units	$381,400	$160,900	$196,800
Median Monthly Owner Costs (with Mortgage)	$1,951	$1,341	$1,466
Median Rent	$1,243	$1,029	$1,128
Median Household Income	$89,500	$52,576	$53,267
Households with 3 or More Vehicles	16.4%	14.7%	14.6%

Source: 2010 ACS 2014-2018 5-Year Estimates Data Profiles, US Census Bureau

Figure 2.6: Housing Snapshot Summary Data

HOUSING SNAPSHOT

HOUSING TYPES

The majority of dwelling units in Neptune Beach are single-family detached, as they are in Jacksonville, and overall in the State. However, when comparing to the City and State, the City has a considerably higher proportion of "Missing Middle" housing types – townhomes, duplexes, triplexes, and quadruplexes, and a much lower proportion of multi-family buildings and complexes over four units. This is a product of the historic development pattern of this small city and its smaller lot sizes.

AGE OF HOUSING STOCK

Just under 60 percent of homes in Neptune Beach are 40 years and older. This is substantially higher compared to the City of Jacksonville and the State of Florida (45% and 39%, respectively). Even more significant is the fact that only 8 percent of homes are younger than twenty years old, compared to 24 percent of homes in Jacksonville and Florida as a whole. While this does not account for homes that have been updated or remodeled, it is still a point of concern when considering how vulnerable Neptune Beach is to hurricanes and sea level rise.

HOUSEHOLD DATA

Table 3 demonstrates the following characteristics of the City when compared to Jacksonville and the State.

- Slightly higher owner-occupancy
- Considerably higher home value (237% of Jacksonville home value)
- Higher mortgages
- Slightly higher rent
- Considerably higher household income (170% of Jacksonville household income)
- Slightly higher percentage of households with three or more vehicles.
- Dense development pattern (double the population density of Jacksonville)
- Higher labor force participation
- Almost all-white community
- Population older than Jacksonville, younger than the State
- Smaller population growth

MISSING MIDDLE HOUSING TYPES CURRENTLY AT RISK

Recent changes to Neptune Beach's land development regulations, including a moratorium on new lot subdivisions, make it difficult for new duplexes to get built, while previous changes to the R-4 zoning found east of 3rd Street has rendered many of the existing duplexes, triplexes, and quadruplexes nonconforming. This gives little incentive to those property owners to update and remodel their buildings and makes it likely that these missing middle types will be replaced by single-family homes over time, thus reducing the overall supply of housing and eliminating much of the City's current stock of naturally affordable housing.

COMMERCIAL SNAPSHOT

FLORIDA / ATLANTIC BOULEVARD COMMERCIAL NODE

Existing Conditions

Shopping Plaza on Florida Blvd.

Sky Enterprises Office Building

Underutilized Lots on Kings Circle S

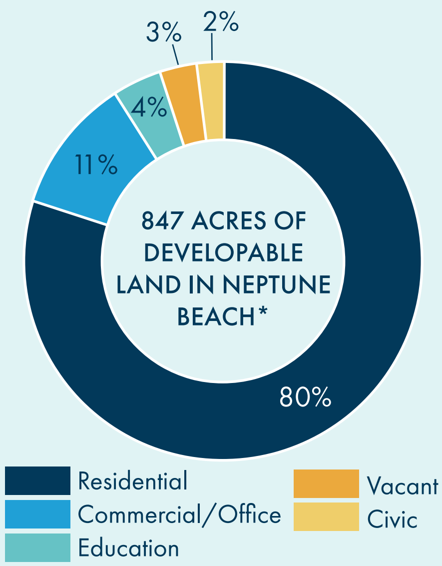
This area comprises approximately 20 acres and is bounded by Atlantic Boulevard on the north, Summer Sands townhomes to the east, Bay Road to the south and Pine Place/Kings Circle to the west. This is a commercial/light industrial area centered on Florida Boulevard and Kings Circle. The area has gained recent visibility and attention with the establishment of the BrewHound Dog Park and Bar. Other businesses include:

- a pool company on Pine Place;
- the Sky Enterprises office building on Marsh Point Road;
- an electrical contractor, office building, and exotic vehicle sales on Kings Circle South;
- an auto AC repair business; convenience store; realtor office; five-unit strip center with skate shop, leather shop, attorney, hair salon, and dog groomer; maid service; lodge/social club; boarded up building; dog daycare; and a school on Florida Avenue; and
- a heating and air contractor on Atlantic Boulevard east of Florida Boulevard; this small segment of Atlantic Boulevard is set apart from the rest of the road due to its isolation by the Mayport Road overpass.

Opportunities

This area has potential to redevelop over time into a walkable mixed-use commercial area, which is in keeping with the general intent of the existing C-2 zoning. The zoning allows a wide range of commercial, office, service, and contractor (no outdoor storage) uses. Light manufacturing is allowed by exception, and the City may wish to consider allowing limited craft manufacturing by right.

A growing number of entrepreneurial manufacturers that create apparel, sewn products, food and beverages, and lifestyle products are small operations that fit well into a neighborhood business setting. Production, distribution, and repair (PDR) include a small retail space for the sale of the goods made on site. Distribution/warehouse uses with scale limitations and required retail/showroom space would be appropriate for properties closer to the intersection of Atlantic and Florida Boulevards, where delivery



*Includes all land except streets and public right-of-way, utilities, and natural/open space.

COMMERCIAL/OFFICE LAND AREAS (ACRES), 2020

Commercial/Office Land	102.0 Acres	100%
Big Box Commercial	32.0	31.4%
Strip Center Commercial	31.6	31.0%
Low-Density Office	13.1	12.8%
Suburban Hotel	4.5	4.5%
Warehouse/Storage	4.1	4.0%
Other (Commercial Recreation, Parking)	4.0	3.9%
Main Street Commercial	1.1	1.1%
Mixed-Use (Office & Retail)	1.1	1.0%
Vacant Commercial*	10.5	10.3%

Source: UrbanFootprint Base Canvas data 2020 (derived from CoreLogic parcel data), and spot-checked against Duval County Property Assessment Database

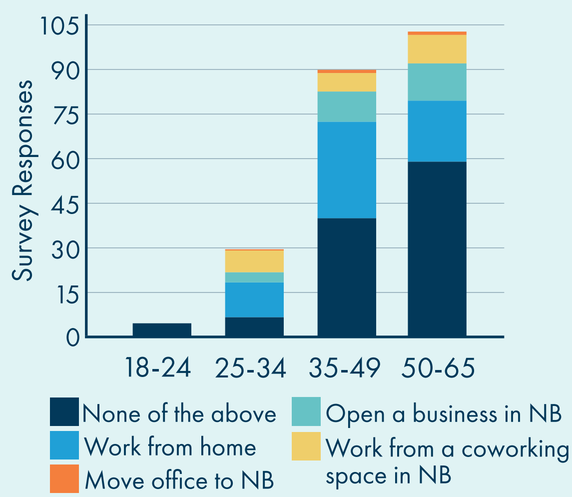
EMPLOYER FIRM STATISTICS, 2012 VS. 2017

Employer Firms in Neptune Beach	Firms	Employees
Total, Firms with Employees, 2017	**288**	**1,583**
Total, Firms with Employees, 2012	**240**	**1,583**
Professional Office & Technical Services, 2012	60	179
Retail & Hospitality, 2012	53	420
Construction, 2012	41	NA
Transportation & Warehousing, 2012	29	NA
Administrative & Waste Management, 2012	24	NA
Health Care & Social Assistance, 2012	24	NA
Educational & Other Services, 2012	9	14

Source: US Census Bureau, Annual Economic Surveys 2012 and 2017

CITYWIDE SURVEY: OFFICE DEMAND

In the future I would like the option to:



trucks can easily access these roads and nearby neighborhoods, as door-delivery becomes increasingly common. Small scale live/work buildings should also be considered to help round out this area and provide more affordable housing options for artists, young couples, and entrepreneurs. Finally, the wide 120' right-of-way on Florida Boulevard allows for expanded pedestrian and non-vehicular space, as well as outdoor space, that will become more important as businesses expand their operations outside. Redevelopment thresholds should trigger bicycle and pedestrian connections, bicycle parking, and civic space with some commercial.

Figure 2.7: Commercial, Office & Jobs Snapshot Summary Data

ATLANTIC BOULEVARD CORRIDOR

Existing Conditions

The segment of Atlantic Boulevard between Mayport Road and 3rd Street is a suburban strip commercial corridor, which includes four shopping centers and 23 outparcels. When FDOT installed medians, which limited full access to the block level, multiple right-turn-only driveways remained, creating a hazardous setting for pedestrian movement. Street trees and landscaping are minimal, and the view is dominated by parking lots. Equipment/trailer outdoor storage and tire store bays facing the street add to the unattractive view of the corridor.

Seminole Shoppes Shopping Plaza on Atlantic Boulevard

The four shopping centers are, from west to east: Tradewinds Shopping Plaza, Shoppes at Summer Sands, Penman Plaza (Winn Dixie), Publix Shopping Center, and Neptune Beach Plaza. Total commercial building space, with the approximations above and assuming an average outparcel building size of 3,000 SF, is 425,000 SF.

Opportunities

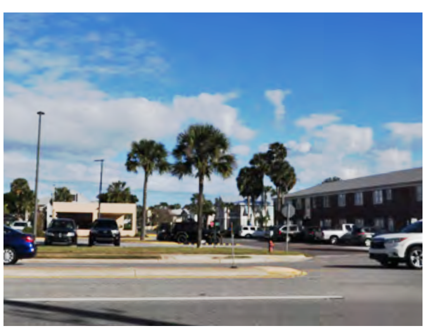
This section of Atlantic Boulevard is an outdated, auto-oriented commercial strip. Given the excessive space given to surface parking, there is tremendous potential to shift to mixed-use residential-commercial development, which will create a more efficient use of land, allow for new business opportunities, provide for a variety of housing types, and improve the aesthetics of the corridor. The K-Mart redevelopment project represented a recent effort to redevelop the Neptune Beach Plaza into a project including a hotel, apartments, and commercial space. Given the unity of the community in its opposition to the proposed apartment complex, future residential development along the corridor should include second-floor units, townhomes, and "bungalow courts" all of which are woven into the fabric of future development at a smaller scale.

Local Businesses along Atlantic Boulevard Between Penman Road and 11th Street

It is advisable to amend the Zoning Code to improve corridor appearance, including prohibiting front-facing auto bays and screening outdoor storage. Many, though not all, survey respondents and meeting participants showed support for extending the Beaches Town Center across 3rd Street to the easternmost part of this corridor. If mechanisms for a safe pedestrian crossing across 3rd Street are developed, this could be a way to support the vision of an expanded walkable Town Center.

3RD STREET/A1A CORRIDOR

Existing Conditions



Bank of America on 3rd Street/A1A

Similar to Atlantic Boulevard, 3rd Street is an automobile-oriented corridor dominated by commercial and office buildings each with associated surface parking lots. This corridor varies from Atlantic Boulevard in that there are no shopping centers, and also the 18 blocks on the east side of the street (south of Cherry Street) and the west side of the street south of Florida Boulevard are residential. The predominance of residential uses in this corridor has limited the length of the 3rd Street commercial corridor south of Atlantic Boulevard to around 3,000 feet on the west side of the street, and 1,000 feet on the east side. The C-1 zoning applied to this corridor does not allow for retail uses and narrowly limits allowable uses to offices, financial institutions, travel agencies, and photographic studios, with a few uses like day spas, dance/art and other studios by zoning exception.

Local Business at the Office Plaza in along 3rd Street in Jarboe Park

Opportunities

Similar to Atlantic Boulevard, a number of properties on 3rd Street are obsolete and underutilized, so there is redevelopment potential. Given that much of the corridor is already residential, it is worth considering allowing mixed-use development in the C-1 zoning district that would allow for “missing middle” housing such as second-floor residential, bungalow courts, and employee housing.

BEACHES TOWN CENTER

Existing Conditions

The Beaches Town Center (BTC) is an outgrowth of the historic small downtowns of Neptune Beach and Atlantic Beach which clustered around the terminus of Atlantic Boulevard at the beach. The BTC has grown into a walkable area comprising around 13 acres in Neptune Beach, with an additional eight acres in Atlantic Beach. The area had reached a low point of disrepair in the 1980s, but began revitalizing when the Cities of Neptune and Atlantic Beaches joined forces in the early 1990s to form the Beaches Town Center Agency. The BTC is now a successful entertainment center with a core group of restaurants, bars, and boutiques. Public and private funding have put into place improvements such as refurbished brick streets, decorative lighting, landscaping, and public parking.

Hawkers Mixed-Use Building on Atlantic Boulevard in the Town Center

Opportunities

The Beaches Town Center is the heart of the Cities of Neptune and Atlantic Beach, and highly valued by residents and visitors alike. The BTC has the additional advantage of thousands of resident patrons living in easy walking and bicycling distance. Like other walkable town centers, popularity has resulted in parking congestion problems, which led to the two cities instituting a paid parking pilot program and an on-demand shuttle system. Public officials and residents have discussed additional solutions such as a parking garage and the expansion of the Town Center across 3rd Street to allow for growth and additional parking.

Drift Boutique on 1st Street in the Beaches Town Center

While The Beaches Town Center may seem to be almost entirely built out, due to parking limitations and height restrictions, there are existing surface parking lots that could be put to better use as redevelopment sites for future businesses and new public gathering spaces. There is also the possibility of expanding the Town Center across 3rd Street, if a safe pedestrian crossing can be designed and constructed.

TRANSPORTATION SNAPSHOT

It is important for the transportation system to provide Neptune Beach residents access to places in and out of the City with different choices on how to get there, albeit walking to the beach, biking to school, driving to work or taking a shuttle to the airport. We must look at the entire system and how it works today to create a transportation policy that focuses on people having access to multiple travel modes instead of just the one mode of driving solo in a car. Examining the full spectrum of existing conditions supports recommendations that can improve the use of existing mobility services while identifying where innovation and entrepreneurship can fill gaps. Current multi-modal needs, combined with the rise in the number and type of vehicles, require planning and policy to manage growing competition for travel ways within streets sidewalks and along curbsides.

JTA Route 11 Bus Stop on 3rd Street

JTA First Coast Flyer Bus

REGIONAL CONNECTIVITY

The City of Neptune Beach residents has numerous options for regional connectivity made possible through the service offerings of the Jacksonville Transportation Authority (JTA). Regional connections available to residents of the City of Neptune Beach provide access to downtown Jacksonville, the Airport, and the Port.

Bus Service

There are three bus routes providing service to residents of Neptune Beach and the surrounding area. Of these three routes, only the Atlantic Route (#10) passes directly through the jurisdictional boundary of the City. The Atlantic Route in its current form went into effect on May 2020 and includes a stop on Royal Palms Drive and Atlantic Boulevard at the Atlantic Village Shopping Center, which further connects residents of Neptune Beach to commercial centers along A1A and within Downtown Jacksonville. The Atlantic Route assimilated the service area of the discontinued Beaches Trolley, which was supplanted in 2017 by an on-demand shuttle service called Beach Buggy.

For travel from south to north beyond Atlantic Boulevard, Neptune Beach residents may ride the Mayport Route (#24), which is also accessible via Atlantic Boulevard and Royal Palms Drive. This route travels north and terminates in a stop by the St. Johns River Ferry, and the Wonderwood Park-n-Ride station. Residents can connect to the Mayport Express (#202) at this Park-n-Ride station allowing for faster east to west travel between

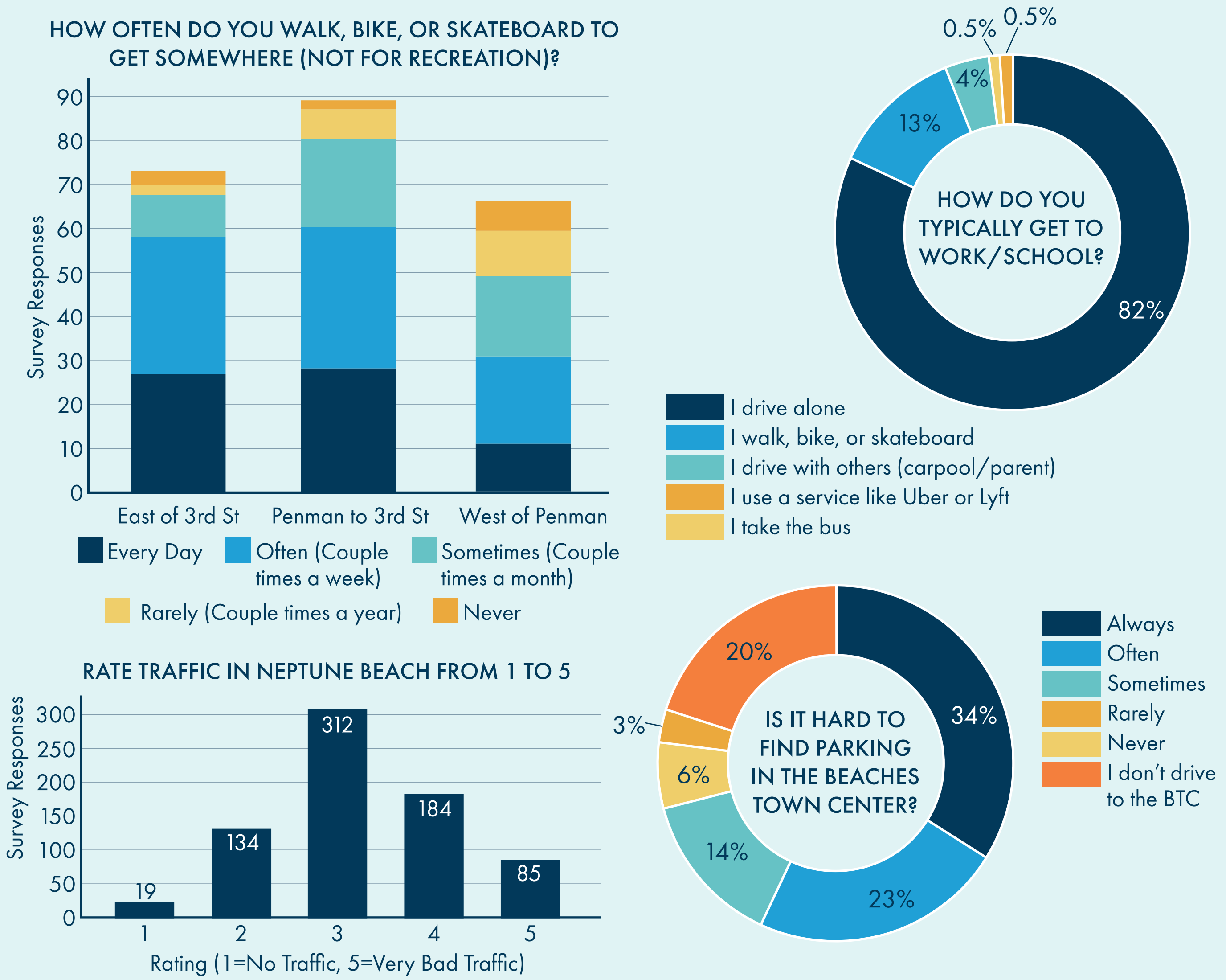


Figure 2.8: Transportation & Mobility Snapshot Summary Data

Neptune Beach and Downtown Jacksonville—an advantageous connection for commuters from the Neptune Beach and Jacksonville areas. For travel from north to south, Neptune Beach Residents may ride the Atlantic Route to 3rd Avenue South and A1A where they can transfer to the First Coast Flyer Red Line, a new service offering (effective May 2020) providing a second east to the west connection between the region's east coast and Downtown Jacksonville.

The routes herein described allowing residents of Neptune Beach access to critical connections and attractions, including the TIAA Stadium (via the

Rosa Parks Station), Jacksonville Executive Airport (Atlantic Route), and Downtown Jacksonville (Atlantic, First Coast Flyer, and Mayport Express).

Bus Route	Total Ridership	Average Weekday Ridership
10	29,556	1,105
24	4,097	152
202	1,076	51

Figure 2.9: JTA Beaches Bus Routes Ridership Data

There are a variety of payment methods available, namely an e-commerce website, the STAR card website, and the MYJTA mobile application. Fares range from free (for riders age 65 and older) to $2.75 for express route fares. As of May 2020, there was no indication that JTA intended to expand service offerings within the Neptune Beach area.

Private bus companies also serve Neptune Beach, bringing tourists on day trips to the Beaches Town Center.

On-Demand Ride Service

Jacksonville Transportation Authority offers "affordable, on-call transportation" to 11 communities in Jacksonville, including parts of Neptune Beach. Dubbed "ReadiRide," this service facilitates pre-scheduled rides using the MyJTA app anywhere within a designated zone from Monday through Saturday (6 AM - 7 PM) at the rate of $2.00 per passenger each way. On-demand service must be in the same designated zone. For example, if you are picked up within the Beaches zone, you must be dropped off within the Beaches zone.

MyJTA App "ReadiRide" Service

Boat/Marine

There are no boat routes within the City of Neptune Beach. The closest port is JaxPort located approximately 20 miles to the northwest of the City. Residents may traverse the St. Johns River by way of the St. Johns River Ferry proximal to the Mayport Route bus connection on Atlantic Boulevard and Royal Palms Drive. There also do not appear to be any docks or public boat ramps within the City.

Airport

The closest airport to the City of Neptune Beach is the Jacksonville Executive at Craig Airport (CRG), located in the City of Jacksonville. The airport is accessible by way of the Atlantic bus route, which includes a stop at Atlantic Boulevard and St. Johns Bluff Road.

LOCAL CONNECTIVITY

There are a variety of local connections available to Neptune Beach residents, including paratransit service, local school bus stops, seasonal buses and trolleys, bike paths, and shared use trails.

JTA Paratransit Service: The Jacksonville Transit Authority's Connexion and Connexion Plus services constitute paratransit options for Neptune Beach residents. JTA describes the beneficiaries of Connexion and Connexion Plus as "people with disabilities who are functionally unable to use fixed-route services for some or all of their transportation needs, and for people who are transportation disadvantaged (TD)." The cost of Connexion ranges from $3.00 (American with Disabilities Act) or $3.50 (Transportation Disadvantaged) or $6.00 for out-of-county TD fare for authorized medical trips. In addition to offering an alternative to fixed-route transit, residents may also take advantage of travel training for individuals using fixed-route transit who are eligible for ADA transit. The Connexion Plus service provides an enhanced (private, same-day, door-to-door) service option for a marginal increase in price ($6.00 per passenger).

Local School Bus: The walk/bikeshed of Neptune Beach, based on local schools, saturates the entirety of the City of Neptune Beach, necessitating extensive walking and biking connections throughout the city boundaries. The public schools existing within the City are listed below:

- Neptune Beach Elementary School #246
- Duncan U. Fletcher High School #223
- Duncan U. Fletcher Middle School #63
- San Pablo Elementary School #80

Seasonal Buses & Trolley: Following the discontinuation of the Beaches Trolley circulator, the Jacksonville Transit Authority (JTA) partnered with Beach Buggy to provide transportation to residents and visitors of Neptune Beach. Beach Buggy provides free rides and recommendations to residents and visitors of Neptune Beach and other contiguous east coast municipalities including Jax Beach, and Atlantic Beach. The vehicle offerings are environmentally friendly, zero-emission, long-range, and 8-10 seater electric carts and 14-passenger vans.

Bicycle Trails: Currently, the City of Neptune Beach's trails include the East Coast Greenway along Florida Boulevard, with multiuse paths lining 1st Street. These paths serve as a nexus to regional cycling infrastructure.

Future improvements are guided by several regional plans. In September of 2017, the City of Jacksonville published Pedestrian and Bicycle Master Plan. This plan incorporated improvements identified in the 2016 report by the North Florida Transportation Planning Organization titled, " Downtown to Beaches Bike-Ped Connectivity Study" and accompanying "Duval County Beaches Bicycle and Pedestrian Focus Area Study. In 2018, the TPO published the *Northeast Florida Regional Multi-Use Trail Master Plan*.

Beaches Buggy Car

Beaches Buggy Service Area

People Riding Along a Newly Completed Segment of the East Coast Greenway on Florida Boulevard

Two Bicyclists Riding on 1st Street, Crossing into the Town Center

Atlantic Boulevard by Pine Street

For Neptune Beach, the focal planning areas within the regional bicycle network include:

- The TPO's Downtown to Beaches regional plan
- The TPO's Atlantic/ Neptune Path. This 8.2 mile trail through City of Atlantic Beach and City of Neptune Beach connects the East Coast Greenway network along Mayport Road, Sherry Drive, Plaza, and Jarboe Park
- Multi-Use Paths along Penman Road from the northern to the southern extent of the City, Indian Woods and forest Marsh Drive, Kings Road, Seagate Avenue, and 5th Street
- FDOT investment in crossing safety measures (e.g. Pedestrian Hybrid Beacons)

Pedestrian Trails: In addition to the multi-use paths, pedestrian connections are proposed along A1A to reduce long-standing traffic safety hazards along the corridor. Maps included in the "Duval County Beaches Bicycle and Pedestrian Focus Area Study" provide some insight into existing sidewalk infrastructure. Of note is the dearth of sidewalk connections to the west of the city, and the limitations of existing sidewalks. For example, sidewalks may only be available to pedestrians on one side of a street or sidewalks may only be available on one side of the street. Since the city is only a total of 2.5 square miles pedestrian connectivity should be prioritized.

STREETS & VEHICULAR CONNECTIVITY

Like many American cities located outside a large urban center, Neptune Beach residents primarily commute to a regional employment center in single occupancy automobiles. According to the 2017 Census Data American Community Survey update, 84.8% of workers in Neptune Beach drove alone, followed by 7.41% who worked at home, and 2.73% of those who Carpooled. In accord with many residents having to drive, car ownership in Neptune Beach is very high; only 1% (44 people) reported not have access to a personal automobile. 40% of households reported having three or more cars.

Major Thoroughfares

State Road A1A is a major four-lane roadway that passes through the City. On the north side of the City, for approximately 1.3 miles, it is called Atlantic Boulevard. Then it makes a 90 degree turn to go south. It is then called 3rd Street paralleling the ocean shoreline for approximately 1.2 miles. From there, A1A Atlantic Boulevard continues west as State Road 10 over the Intracoastal Waterway towards Jacksonville. AIA branches off Atlantic Boulevard north as Mayport Road and continues south as Florida Boulevard.

According to FDOT District 2 *2010 Census Functional Classification*, the functional classifications of roadways in Neptune Beach, by the North Florida Transportation Planning Agency, are:

- Atlantic Boulevard (A1A): Major Collector
- 3rd Street (A1A): Principal Arterial
- Seagate Avenue (20th Ave): Major Collector
- Penman Road: Minor Arterial

Even more significant than FDOT's functional classification of roadways, is its newer system of context classifications. This new system is used to plan and design state facilities in greater harmony with the surrounding land use characteristics. The context classification assigned to a roadway determines key design elements, including speed, lane width, street tree placement, on- and street parking, among other things. The classification system includes:

- C1 - Natural
- C2 - Rural
- C2T - Rural Town
- C3R - Suburban Residential
- C3C - Suburban Commercial
- C4 - Urban General
- C5 - Urban Center
- C6 Urban Core

Young Bicyclist Trying to Cross Atlantic Boulevard on 3rd Street

The FDOT's current context classification map for Neptune Beach assigns Atlantic Boulevard west of Seminole Road as C3C and Atlantic Boulevard from Seminole Road to 3rd Street, as well as all of 3rd Street, as C4.

The traffic counts and level of service for Neptune Beach's primary roadways are included in the table below.

Road	Link	AADT Traffic Count[1]	LOS AADT Capacity[2]
Atlantic Boulevard	ICW to Mayport Road	51,500	33,800 (LOS D)
	Mayport Road to Penman Road	38,500	33,800 (LOS D)
	Penman Road to 3rd Street	25,000	33,800 (LOS D)
3rd Street/A1A	Atlantic Boulevard to Florida Boulevard	25,500	33,800 (LOS D)
	Florida Boulevard to 15th Avenue	29,000	33,800 (LOS D)
Florida Boulevard	3rd Street to Atlantic Boulevard	18,000	17,160 (LOS E)
Penman Road	Seagate Avenue to Florida Boulevard	18,000	17,160 (LOS E)
	Florida Boulevard to Atlantic Boulevard	5,900	17,160 (LOS E)
Seagate Avenue	3rd Street to Penman Road	4,700	17,160 (LOS E)

Figure 2.10: Neptune Beach Traffic Counts

IMPACTS OF COVID-19 GLOBAL PANDEMIC

As 2020 moved into March, the United States was affected by a global novel coronavirus pandemic moving around the world. The COVID-19 coronavirus caused most of the United States to implement quarantines and lockdown procedures to limit the spread of the virus. The State of Florida initiated a lockdown on March 5 and began "Phase 1" of reopening on May 4. A recent controversy developed as Jacksonville opened its beaches, including Neptune Beach, amid criticism that it was too soon. Projections as of June 18, 2020 show Duval county with 2,309 total cases and a 3.1% positive test rating. This is lower than the state positive test rating of 5.7% which has been higher than around 2% on May 1.[1]

Since the pandemic hit the U.S., the national GDP and unemployment rates have taken a significant hit. According to Deloitte Insights, GDP is forecasted to decline 17% in the first two quarters of 2020 with a strong recovery predicted for mid-2021.[2]

The decline in U.S. GDP is reflected in the impact to businesses. According to Moody's Analytics, most delinquencies are focused on retail and hotel loans while industrial uses seem to be largely unaffected. This means that retail and hospitality businesses in Neptune Beach may benefit from a focused assistance effort from the city.

As businesses have seen a decline, employment has also been affected in Florida. Latest data from the Florida Department of Economic Opportunity has shown that the Unemployment Rate for April of 2020 was at 12.9% compared to the national rate of 14.7%.[3] As fewer people have income, less is being spent on goods and services. This may also affect homeowners associations by increasing the number of delinquencies on dues, leading to maintenance issues, higher fees, and decreasing affordability.

Throughout the pandemic, certain trends have also emerged, such as an uptick in delivery services being used for items such as food, groceries, and home goods. Neptune Beach will need to consider how to accommodate these delivery options using its existing infrastructure and manage this growing industry as an employment opportunity and source of income for the city. Additionally, restaurants will be requiring more space for outdoor seating during the first phases of reopening. Some cities have been creative in reusing public space such as streets and parks to accommodate the additional space needed for restaurants and recreation, while still adhering to social distancing requirements. Having procedures in place will facilitate future adaptations, if necessary.

As Neptune Beach continues to reopen following on the Governor's plan, it is important to note that residents will approach this differently based on their comfort level. This means that it will still take time for local businesses to bounce back. As a result, the city will likely need to continue support services for residents and businesses over the next year.

1 Florida's COVID-19 Data and Surveillance Dashboard; https://experience.arcgis.com/experience/96dd742462124fa0b38dddedb9b25e429

2 *United States Economic Forecast, 2nd Quarter 2020*; Deloitte Insights, June 15, 2020; Dr. Daniel Bachman

3 *Unemployment Rate Seasonally Adjusted January 1976 to April 2020; http://lmsresources.labormarketinfo.com/charts/unemployment_rate.html*

SUMMARY OF KEY ISSUES AND OPPORTUNITIES

ISSUES,CONCERNS & THREATS	OPPORTUNITIES & RECOMMENDATIONS
• Lack of safe dedicated places to walk, ride a bike, and skateboard • High-speed streets and oversized intersections that make it difficult to for people to cross safely and restrict access for some neighborhoods to community assets like Jarboe Park, the Beaches Town Center, and the beach • Lack of parks and open spaces to host community events, kid-friendly programming, and other recreational activities • Fears that if and when new mobility technologies, including electric scooters and shared electric mopeds, come to Neptune Beach, they may make it less safe to walk and bike • Concerns about the demand and supply of visitor parking and how this takes up spaces that would otherwise be used by locals going to the BTC or parking in front of their homes • Impact of the COVID-19 pandemic on commercial real-estate development, local businesses, and the economy as a whole • Concerns that allowing multi-family residential in commercial redevelopment areas will create more traffic and negatively impact the surrounding areas • Concerns that extending the Beaches Town Center will attract too many visitors and add harmful competition to existing small businesses • Need to revitalize the commercial center on Florida and Atlantic Boulevard, including improving the streets and infrastructure there • Threat of sea level rise and more frequent storms • Concerns about the cost of adapting homes and infrastructure to sea level rise, and what this means for individual property owners	• Creating a truly car optional community where people living in Neptune Beach can travel within the City without depending on their cars • Constructing new public spaces to host community events and recreational activities, both as a part of future redevelopment and by redesigning existing rights-of way • Improving the health and quality of life of residents by updating Jarboe Park, creating a network of nature trails throughout the city, and by investing in marsh access and related recreational amenities like kayaking and fishing • Preparing for future mobility technologies to ensure safer outcomes and leveraging the City of Jacksonville and JTA's cutting-edge autonomous vehicle pilot programs, to implement clean future transit options for the Beaches communities • Using commercial redevelopment as a way to improve walkability, add new needed open spaces, increase property values, support more local businesses, and to potentially build a new city parking garage • Revitalizing and improving the commercial center at Florida and Atlantic Boulevard, allowing for new mixed-uses that attract artists, makers, young families, and budding entrepreneurs to the area • Adopting sustainability programs that reduce Neptune Beach's carbon footprint and protect its natural habitats • Investing in updated stormwater infrastructure, as well as a vulnerability assessment and adaptation plan to help the city prepare for future climate-related threats

Chapter 03:

PRESERVING COMMUNITY CHARACTER

GROWTH & CHANGE THROUGH TIME

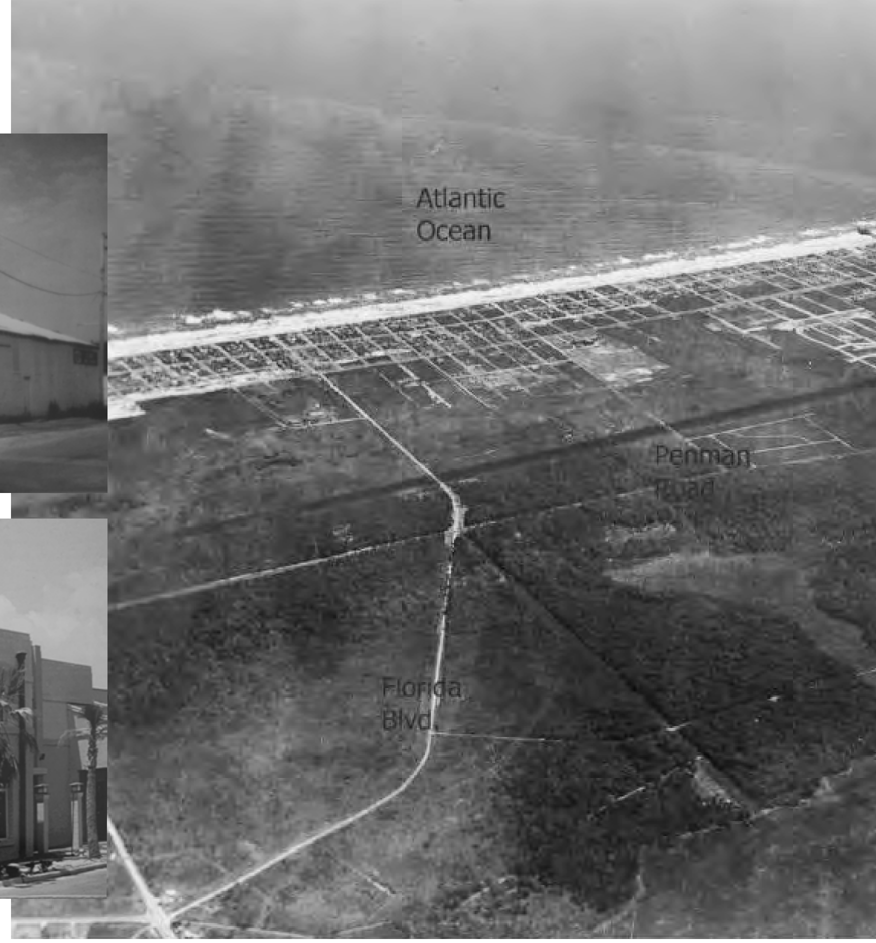
The physical form of Neptune Beach has shifted gradually through the years, though its laid-back and eclectic charm has always been a key ingredient to its identity as the region's friendliest beachside hometown. Despite multiple efforts from the 1880s to 1930s by early investors and founders to transform Neptune Beach into a premier resort town, the city remained a quiet cluster of beach cottages. Even after the establishment of a few commercial businesses along 1st Street, like the iconic Pete's Bar, and a small housing boom in the 1930s and 1940s, the City still remained a predominantly residential community; quite a contrast to the bustling entertainment district and boardwalks of Jacksonville Beach and the posh resorts of Atlantic Beach. What began as a place to buy a summer cottage for Jacksonville's upper-middle class would eventually evolve into a permanent community of locals responding to the call of a year-round beachfront lifestyle.

Peter Jensen in front of Jensen's Market, 1920s; Source: *The Florida Times-Union, Jacksonville.com* [Newspaper Archives], https://www.jacksonville.com/photogallery/LK/20191125/PHOTOGALLERY/112509991/PH/1

The compact street and block network of the older parts of town east of 3rd Street and 5th Street would also evolve over time. In the 1950s and 1960s motels and strip commercial buildings began popping up along Atlantic Boulevard, together with new homes between Penman Road and 3rd Street, as well as along Forest Avenue and Florida Boulevard. While these homes were often built on larger lots than the beach cottages of early Neptune Beach, they were still platted with a more traditional and interconnected street network. From the 1970s through the 1990s, the city began to complete its westward growth

Commercial buildings on 1st Street and Atlantic, post WWII; Source: http://www.historicaltextarchive.com/sections_action_read_artid_447.html

Adaptive Reuse of 200 First Street: Before & After



Aerial view of Neptune Beach, 1946; Source: Mabry, Donald "Arthur G. Penman: Real Estate Baron & Fisherman", courtesy: Penman Collection, Beaches Museum.

with the addition of several new suburban housing communities, such as Secluded Woods, Summer Sands, and Neptune by the Sea. Unlike previous residential developments, these subdivisions are characterized by suburban growth patterns, including disconnected and branch-like street clusters, deeper building setbacks, and larger, non-rectilinear blocks.

Today, development covers a large portion of the City. The Beaches Town Center, which began as a small grouping of commercial buildings in the 1940s and 1950s and was later revitalized in the 1990s with the creation of the Beach Town Center Agency, has become an authentic and inviting place to eat, drink, and shop. On the other hand, the current fate of some of the city's large commercial properties along Atlantic Boulevard and 3rd Street have become a big topic of discussion. With the failed Kmart site at 500 Atlantic, the closing of the Lucky's market adjacent to it, and a few other struggling strip commercial strip centers, it is time for the community to envision what comes next in the City's evolution.

This planning process marks the City's first true investment in community planning. Up until this point, growth management in Neptune Beach has been a largely passive and occasionally reactionary activity, rather than the proactive, inclusive, and transparent process currently underway. While several key members of the community have worked hard to improve the city since it was first incorporated in 1931, it's been mentioned that much of what Neptune Beach is today is pure happenstance. This planning process puts the pen in the community's hand, so that Neptune Beach can be fully prepared to manage the next 20 to 30 years of change.

A BRIEF HISTORY

What is presently known as the City of Neptune Beach was originally part of Jacksonville, Florida. In 1900, Jacksonville's population was 28,429, making it the largest city in Florida. The City of Neptune Beach got its name from a train station where the present day One Ocean Hotel is located. The railway, owned at that time by Henry M. Flagler, was part of the Florida East Railway System and had stops between Jacksonville and Mayport. Everyday, as part of his commute to work in Jacksonville, Dan Wheeler would have to walk to the Mayport station. He was informed by a friend who worked for the railroad that if he were to construct a station, the train would have to stop for him. In 1922, when Dan Wheeler built a train station next to his home and named it Neptune.

Little growth came to the area, which at the time was still part of Jacksonville Beach. By 1924, there were only 29 cottages and, 7 years later in 1931, there were approximately 70 cottages. These beach cottages were summer residences owned largely by Jacksonville residents as second homes.

It was not until 1931 when, due to a special tax levy revolt, residents of Neptune voted 113 to 31 to secede from Jacksonville Beach. The movement was fueled by resistance to Jacksonville Beach's pressure for consolidation and a desire for improved civic services. The first mayor of the City of Neptune Beach was O. O. McCollum. The city council and government met in Wheeler's old train station until a new town hall was completed in 1935.

At the time city leaders and investors set out to create a city by the sea calling it a "resort town." They planned a business district to which they were prepared to welcome everything from ferris wheels to bakeries. Despite these efforts, the city remained a predominantly residential community. Today, Neptune residents appreciate the neighborly character and laid-back beach lifestyle.

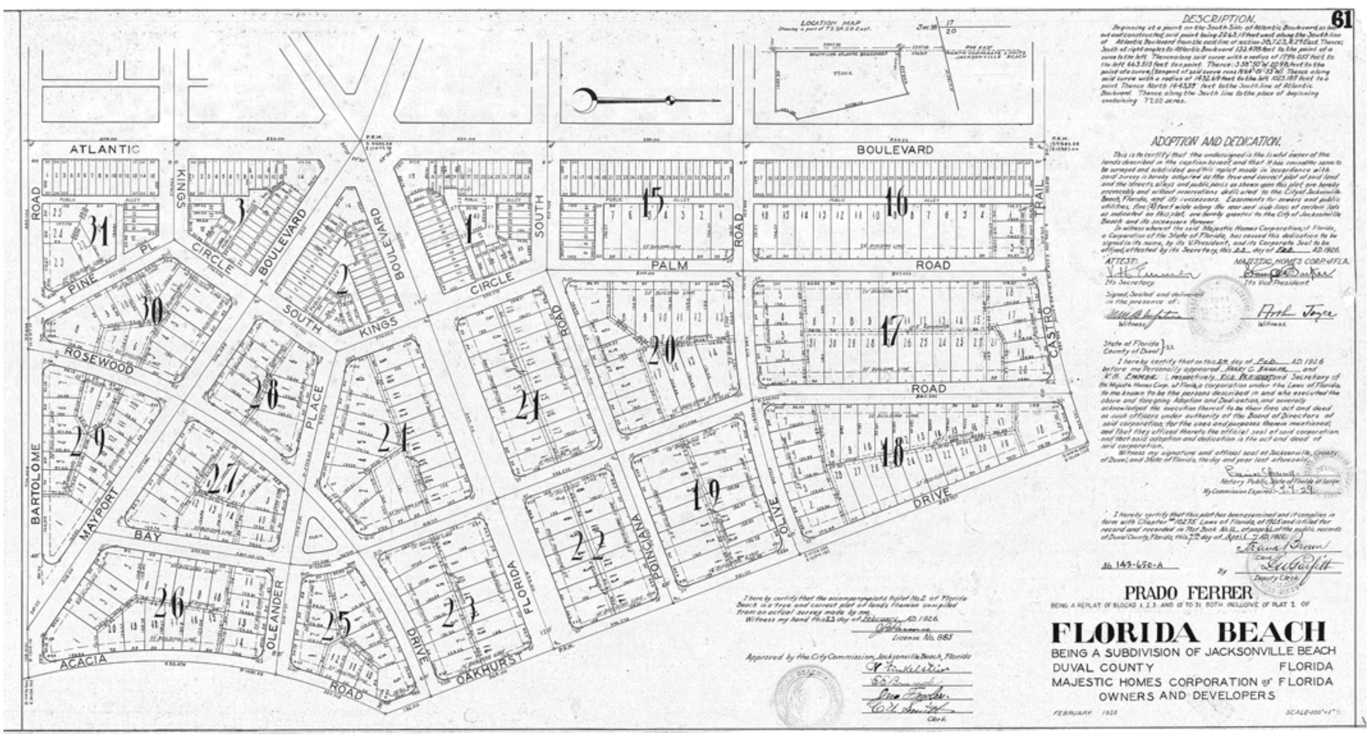


Figure 3.1: Planned Historic Plat 1926

HISTORIC PRESERVATION

Future Cultural and Historic Landmarks

Although Neptune Beach is a relatively new city it has many historical assets that contribute to the culture of the city. These assets can be preserved and protected from new development and land use policy changes by becoming a landmark.

Figure 3.2: Pete's Bar

Figure 3.3: Lifeguard Station

A landmark is a site and/or building that has a historical, aesthetic, or cultural importance to the city and it is required to be preserved. In an attempt to preserve history and the culture of Neptune Beach, the City should nominate the following sites to the National Historic Landmarks Program.

- Pete's Bar on 1st Street has been a city staple and family owned since 1933.
- Lifeguard Station
- Original City Hall is located in Jarboe Park and was restored in 1976 with help from local Boy Scouts.

Figure 3.4: City Hall at Jarboe Park

Works Cited for History Section:

J. Mabry, Donald. "World's Finest Beach: A Brief History of the Jacksonville Beaches, 2010, pp. 17-30. Book, https://books.google.com/books/about/World_s_Finest_Beach.html?id=mHh0CQAAQBAJ Accessed 25 June 2020.

"History: Railway Gives Way to Railroad" 2006-2017 Jacksonville Beach, FL https://www.beachesmuseum.org/neptune-beach/ Accessed 25 June 2020.

Crooks, James B. "Changing Face of Jacksonville, Florida: 1900-1910." The Florida Historical Quarterly, vol. 62, no. 4, 1984, pp. 439–463. JSTOR, www.jstor.org/stable/30146594. Accessed 25 June 2020.

"Neptune Beach." Beaches Museum, https://www.beachesmuseum.org/neptune-beach/ Accessed 25 June 2020.

COMMUNITY PRIORITIES

Throughout the planning process the most often cited response to what the future vision for Neptune Beach should be was: "a family-friendly, walkable and residential beach town." Citizens expressed a desire for the community, in the future, to have beautiful streets and safer places to walk and bike. Similarly, the most often cited concern regarding the vision plan was the potential traffic and environmental impacts of commercial redevelopment and how these might change the quaint character of the City.

COMMUNITY INSPIRED MISSION STATEMENT

Based on hundreds of public comments received during the vision plan process, a series of five vision statements were created to guide the future of the City. These statements, which will be elaborated as individual chapters, are described below as:

"In the future, Neptune Beach will _____"

1. *Be connected from the Intracoastal to the ocean, and to the surrounding beaches communities, by a network of safe and comfortable places to walk, ride a bike, skateboard, and drive.*
2. *Have even more vibrant places for the community to gather and celebrate, in addition to easily accessible parks and recreational amenities that allow residents to connect with nature and lead healthy lifestyles.*
3. *Provide safe and innovative transportation options to reduce car trips in town~~, while at the same time managing parking needs in a way that enhances local character.~~*
4. *~~See its auto-oriented commercial areas incrementally transformed into welcoming and walkable places with high quality mixed-use development that connects seamlessly to the Beaches Town Center and surrounding neighborhoods.~~*
5. *Continue to protect the natural environments that make it so special, while adapting infrastructure, regulations, and procedures to better address changing social, economic, and climate-related realities.*

WHAT IS YOUR #1 HAPPY PLACE IN NEPTUNE BEACH?

Results based on 245 responses to the Citywide Input Survey (April 2020)

Figure 3.5: #1 Happy Place - Citywide Input Survey Responses

DEVELOPMENT TOOLS TO HELP GUARANTEE BETTER OUTCOMES

The previous few pages covered a brief history of growth and change in Neptune Beach, as well as the fear that the community has regarding how commercial redevelopment might change the long-standing character of the City. This section outlines specific strategies relating to land use and urban form that can help ensure that growth in Neptune Beach is well-managed, predictable, and that it enhances the local character. These tools include land development regulations like form-based codes and architectural standards, as well as historic preservation strategies.

Tools that Neptune Beach could utilize to encourage good development include:

Adopt a Form-Based Code

Focusing on the shape that a building takes and the types of public spaces that it creates rather than just the uses of a building can bring more control to what development looks like in Neptune Beach.

Establish Architectural Standards

A form-based code (FBC) can incorporate architectural standards to codify what a community wants to see as land is developed. This helps reduce the guesswork that a developer needs to do and points development in a direction in which the community is happy.

Adopt Incremental Development Policies

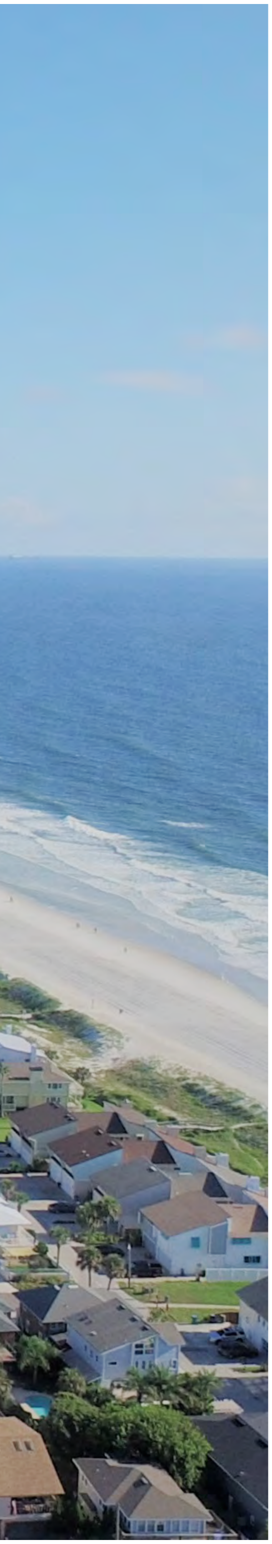
One way to help maintain the small-town feel of Neptune Beach is to encourage development that is similar in size to what was historically achieved. Historic photos reveal that buildings were typically under three stories in height and that development rarely took up an entire block. Encouraging incremental development can help preserve this heritage. It also empowers small local residents and firms to develop the land who are generally more comfortable taking on smaller projects, thus employing more local people, and keeping more of the money in town. Methods to incentivize this type of development are expedited approvals and permitting, pre-approved building types, flexible permitting schedules, and financial assistance.

Designate Landmarks and Consider Investing in a Survey of Contributing Historic Buildings

While the community has not listed formal historic preservation measures, they have emphasized the desire to preserve the overall character of the city. Part of preserving this beachy and eclectic feel is protecting the buildings that make Neptune Beach so special. A simple way to accomplish this is to designate local landmarks for buildings of cultural and historic significance. Neptune Beach does have a number of historic beach homes built from the 1920s through the 1940s that could qualify for a local register. If the preservation of these homes is desired, the City can conduct a formal survey of contributing structures and establish a local register of historic buildings that would give them stronger anti-demolition regulations than is typically possible with structures listed only on the National Register or on the Florida Master Site File.

Managing Parking Supply & Demand

The eclectic cottage homes and multiplexes found in the older parts of town by the beach are a key ingredient to Neptune Beach's diverse and eclectic charm. Over time, however, bad behavior from some property owners and tenants, as well as a limited capacity for code enforcement, has led to many complaints around parking in these same areas. Updated parking standards and residential parking programs can be implemented to help reduce these issues, while still preserving these unique "missing middle" homes.



IMPLEMENT SMART GROWTH STRATEGIES

To provide a clear guide to the form, direction, and timing of future growth, this Vision Plan contains two separate but related components. The first is the Opportunity Sites Map, Figure 3.2. This map indicates areas where redevelopment is most likely to occur in the near and long term. These are the areas where the City's zoning and land development regulations should be carefully examined to ensure better outcomes as properties redevelop. The remaining areas are largely stable, though public investments in infrastructure and complete streets should still be prioritized in these neighborhoods.

The second component is a base map that defines distinct "Future Character Areas" for all of Neptune Beach. This Future Character Areas Map, Figure 3.3, defines six types of character areas that reflect the desired type and form of development in each part of the City. In addition to these base character areas, this map identifies the locations of neighborhood centers and crossroads as well as a campus overlay that defines key districts with unique characteristics that differentiate them from surrounding development patterns.

These are not zoning maps, but are intended to guide local decisions concerning zoning, the subdivision of land, infrastructure investment, and the provision of services.

GUIDE TO IMPLEMENTING A FORM-BASED CODE

WHAT IS A FORM-BASED CODE (FBC)?

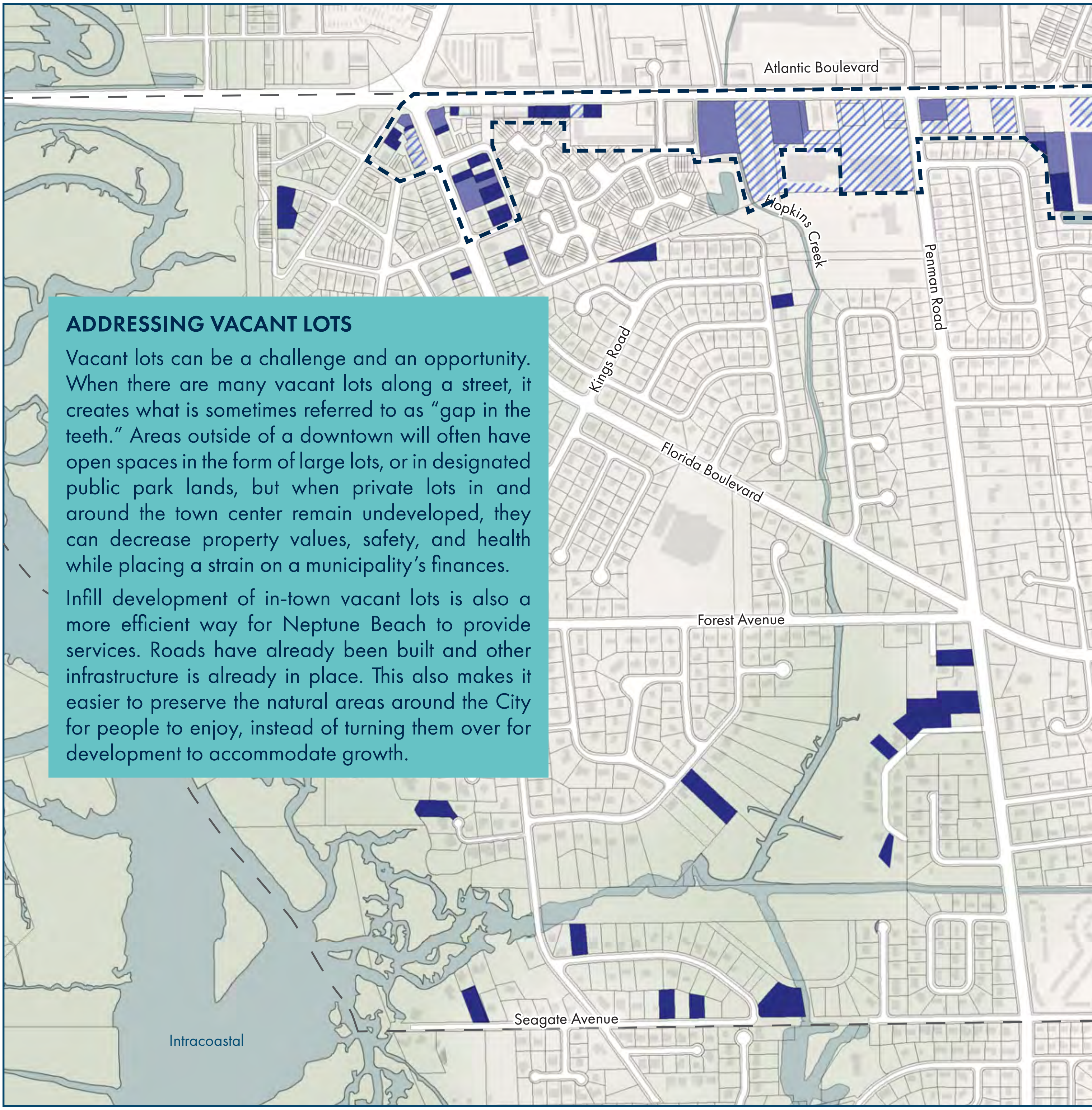
A form-based code is a land development regulation that fosters predictable built results and a high-quality public realm by using physical form as the organizing principle of the code. Form-based codes address the relationship between building facades and public spaces, in including streets and parks, the form and mass of buildings in relation to one another, and the scale and type of streets and blocks.

A form-based code uses a regulating plan to designate transect zones, each with varying urban characteristics, calibrated to fit with the envisioned future context. Each transect zone is defined by particular characteristics that correspond with building placement, building form, and frontage standards, all of which influence the level of walkability and vibrancy in a particular place.

FRAMEWORK FOR A FORM-BASED CODE

The Future Character Area Map (Figure 3.3) establishes a framework in which to develop a form-based code (FBC). The desired type and form of development in each part of the City, as defined by the Future Character Areas Map, corresponds with the intent of an FBC to use physical form instead of land use as the primary regulating tool. The Future Character Areas are more general in description and broader in coverage than an individual FBC transect zone, though each Character Area corresponds with at least one typical transect zone.

An FBC can translate the intent of the comprehensive plan into zoning law. Because each character area is defined by the physical characteristics of the development within it, a form-based code is the natural land development regulation to implement the ideals of the comprehensive plan.

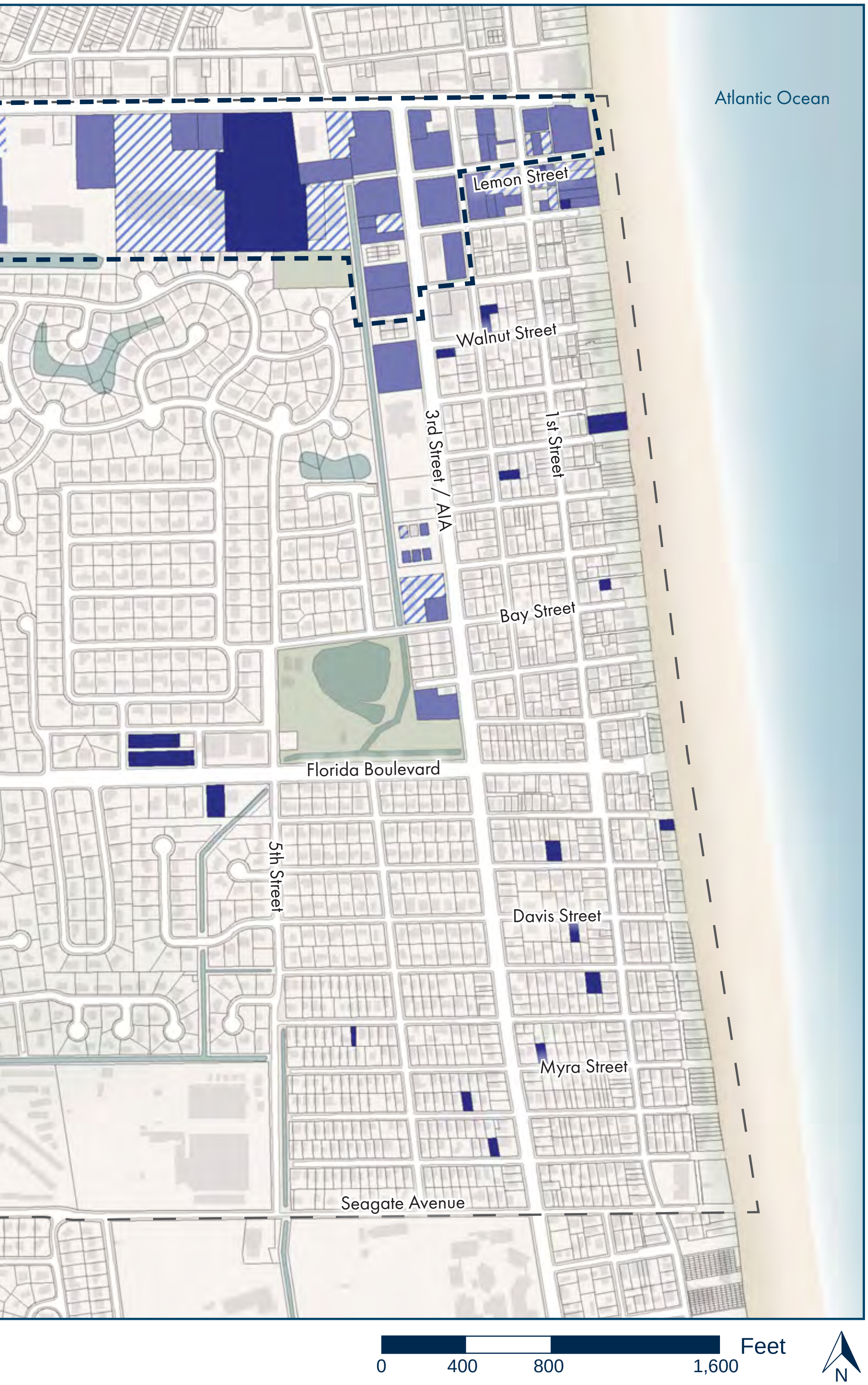


ADDRESSING VACANT LOTS

Vacant lots can be a challenge and an opportunity. When there are many vacant lots along a street, it creates what is sometimes referred to as "gap in the teeth." Areas outside of a downtown will often have open spaces in the form of large lots, or in designated public park lands, but when private lots in and around the town center remain undeveloped, they can decrease property values, safety, and health while placing a strain on a municipality's finances.

Infill development of in-town vacant lots is also a more efficient way for Neptune Beach to provide services. Roads have already been built and other infrastructure is already in place. This also makes it easier to preserve the natural areas around the City for people to enjoy, instead of turning them over for development to accommodate growth.

Figure 3.6: Opportunity Sites Map



FOCUSING ON STRATEGIC INFILL & REDEVELOPMENT

This Master Plan will focus its urban design and land use recommendations on a few key areas throughout the City of Neptune Beach. These areas present the biggest opportunities for growth and change that will help the City to reach its goals of embracing walking and biking, creating an even more vibrant town center, providing residents west of Penman Road with nearby places to gather, eat, and building more beautiful and inviting public spaces.

This map identifies redevelopment opportunities sites selected based on the following criteria:

- Existing Property Use: Vacant

  or

- Land Use: Commercial, and
- Land Improvement Ratio < 1

Improvement ratios are a useful measure to reveal parcels that are under-utilized. It is calculated by dividing the value of improvements on a property by the value of the land itself. The lower the ratio, the more likely a property is to be redeveloped.

MAP LEGEND

Key Redevelopment Focus Area

Redevelopment Opportunity Sites

Vacant Parcels

Improvement to Land Value Ratio ≤ 0.5

Improvement to Land Value Ratio between 0.5 - 1.0

Building Footprints

Existing Parks & Green Spaces

City Boundary

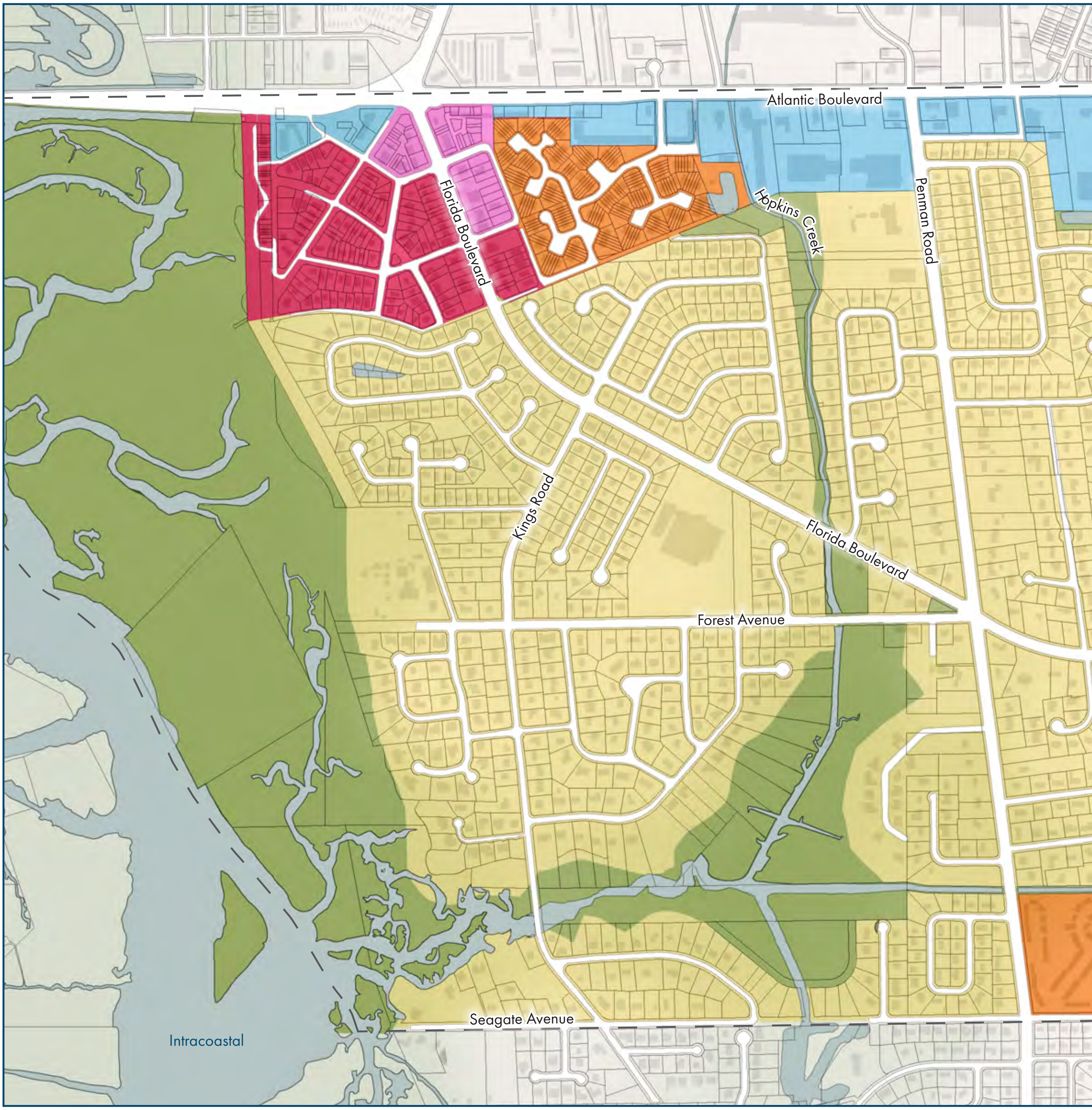
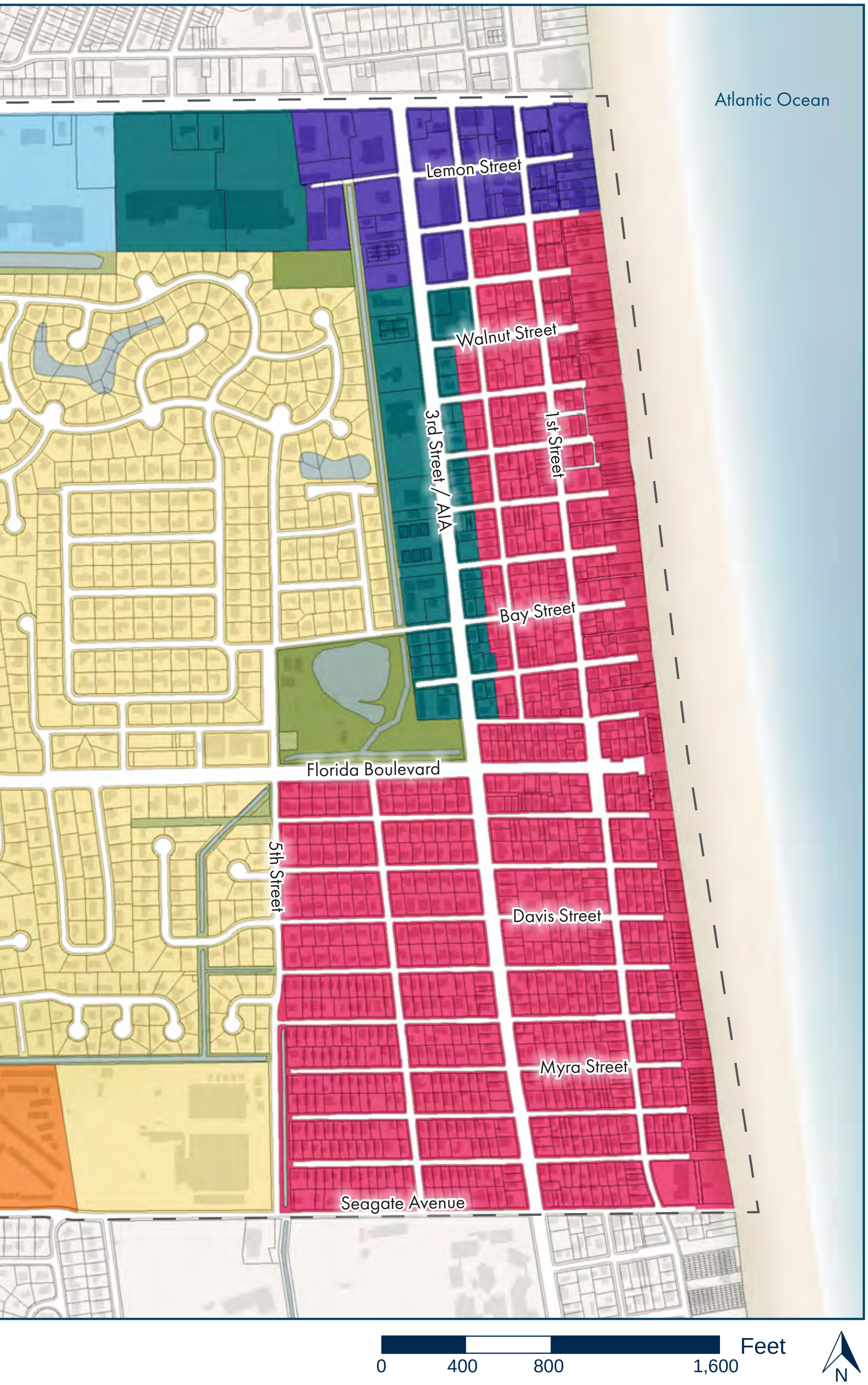


Figure 3.7: Future Character Areas Map



PROPOSED CHARACTER AREAS

The Future Character Areas Map categorizes the City into eight Character Area types, largely based on existing development patterns and logical extensions into the future. The purpose of this Map is to guide future development to help ensure that it is compatible with existing development and the City's vision. The areas have been defined such that they can be further subdivided into more specific place types and transects.

MAP LEGEND

- Town Center
- Neighborhood Center
- Traditional Neighborhood
- Walkable Mixed-Use Corridor
- Flex Commercial Corridor
- Suburban Residential I
- Suburban Residential II
- Natural/Open Space
- City Boundary

Less Intense

	NATURAL / OPEN SPACE	SUBURBAN NEIGHBORHOOD I	SUBURBAN NEIGHBORHOOD II	TRADITIONAL NEIGHBORHOOD
				
INTENT STATEMENT	The Natural Future Character Area consists of protected land that is, for the most part, in a natural and unimproved state, though it can also include public parks and recreation areas. City regulations and policy decisions should help keep these lands in their natural state for drainage, natural habitat, and scenic protection. Hiking and biking may occur in this area. This area also features protected waterfront and wetland areas.	The Suburban Neighborhood I areas are generally the more recently developed portions of Neptune Beach. The design of these neighborhoods necessitates the use of automobiles as individual buildings are spread farther apart with few pedestrian facilities. These neighborhoods are defined by single-family houses and low-rise isolated apartments. Office, retail, and mixed-use buildings can be built at key intersections, at neighborhood centers, and along the main corridors. Civic buildings should respect the character of a primarily residential neighborhood, but can also be used as landmarks.	The Suburban Neighborhood II areas are very similar to Suburban Neighborhood I, with the primary difference being the intensity of the buildings. While Area I predominately features single-family detached homes, Area II features mostly multi-level condo and apartment homes. This area also necessitates the use of automobiles, though investments in landscaping and shade trees, along with new bicycle infrastructure, will increasingly make these areas more pedestrian and bicycle-friendly. Limited office, retail, and mixed-use buildings can be built at key intersections, and neighborhood centers.	These neighborhoods are typically older and primarily residential. They are defined by a unique mix of single-family and multi-family housing types such as duplexes, ~~quadruplexes, and small apartment buildings, the latter of~~ which are designed to blend cohesively with smaller single-family homes. Some commercial and civic uses are mixed in, particularly in neighborhood gateways or nodes or in special overlay districts where conditions are slightly denser. Thoughtfully designed small office, retail, and mixed-use buildings can be built at key intersections and along main corridors to provide neighborhood amenities.
BUILDING FORM	**Lot Width** Large	**Lot Width** Narrow-to-Medium	**Lot Width** Medium-to-Large	**Lot Width** Narrow-to-Medium
	Footprint NA	**Footprint** Small-to-Medium	**Footprint** Medium-to-Large	**Footprint** Small-to-Medium
	Front / Side Setback NA	**Front / Side Setback** 12 Feet Minimum	**Front / Side Setback** 20 Feet Minimum	**Front / Side Setback** 0-20 Feet
	Height 1 story (landscape elements)	**Height** 1-2 stories	**Intensity** 1-2 stories	**Intensity** Compact, 1-2 stories
	Frontages NA	**Frontages** Dooryard, Porch, Terrace, Forecourt	**Frontages** Porch, Terrace, Forecourt	**Frontages** Dooryard, Stoop, Porch, Shopfront, Gallery, Arcade
	Ground Floor NA	**Ground Floor** Elevated	**Ground Floor** Elevated	**Ground Floor** Elevated (Residential); Flush with Sidewalk (Non-Res)
USES	Parks, playgrounds, agricultural, and nature preserve/environmental conservation	Primarily residential with some commercial and civic uses (library, day care, house of worship, community center)	Primarily residential with some commercial and civic uses (library, day care, house of worship, community center)	Primarily single-family detached, townhouses, duplexes, quadruplexes, small apartments, and some shared office and mixed-use.

Figure 3.8: Land Use Character Areas: The proposed land use character areas would implement the Specific Plan land use vision. The standards describe the intent, desired uses, and building form for each area.

More Intense →

NEIGHBORHOOD CENTER	FLEX COMMERCIAL CORRIDOR	WALKABLE MIXED-USE CORRIDOR	TOWN CENTER	
				
Following the principles of traditional neighborhood design, new neighborhood centers can be located on vacant or retrofitted suburban areas at strategic locations to create new gateways in the City and to provide neighborhood-serving commercial to meet daily needs of local residents close to where they live. This is especially important for areas that are currently not well served with commercial uses. Neighborhood centers feature walkable and well-connected streets with public spaces and active ground floor uses. Height and bulk in these areas should blend well with the surrounding residential context.	The "Flex Commercial Corridor" character area is designed to accommodate a wide array of commercial and office uses. Though today these areas feature primarily highway-oriented and strip-commercial uses, they can also accommodate light industrial uses and class A office~~, as well as new street-oriented mixed-use development, especially adjacent to neighborhood centers and key crossroads~~. These areas have been given the highest amount of flexibility in order to absorb as much new office, commercial, and light industrial development as the market demands, maximizing the potential return to the City of Neptune Beach.	The "Walkable Mixed-Use Corridor" areas serve as a natural extension of the Beaches Town Center as the City evolves. This area currently includes low-rise office buildings, vacant big box stores, and strip commercial centers, with the goal being to transform these auto-oriented buildings into more walkable, urban areas that feature ~~a greater mix of uses and~~ an interconnected street network. ~~Flexibility in permitted uses means this area of medium-to-large footprint buildings encourages a variety of investment and economic opportunity all in comfortable walking distance to the heart of the town center.~~	The "Town Center" describes the most intense urban development in the City. As a social gathering place for many events in Neptune Beach, it serves an important role for both the City's economy and culture. It includes multi-story mixed-use buildings with commercial, office, and residential uses. Large surface parking lots along key main streets have the potential to unlock new development and community amenities like new parks and open spaces. Small multifamily buildings and attached townhouses serve as an appropriate transition between the Town Center and surrounding residential neighborhoods.	**INTENT STATEMENT**
Lot Width Narrow-to-Large	**Lot Width** Medium-to-Block Size	**Lot Width** Medium-to-Block Size	**Lot Width** Narrow-to-Block Size	**BUILDING FORM**
Footprint Small-to-Large	**Footprint** Medium-to-Large	**Footprint** Medium-to-Large	**Footprint** Small-to-Large	
Front / Side Setback 5-20 Feet	**Front / Side Setback** 10-30 Feet	**Front / Side Setback** 5-20 Feet	**Front / Side Setback** 0-10 Feet	
Intensity Compact, 1-3 stories	**Intensity** 1-3 stories	**Intensity** Compact, 1-3 stories	**Height** Compact, 1-3 stories	
Frontages Stoop, Porch, Forecourt, Shopfront, Gallery, Arcade	**Frontages** Porch, Terrace, Forecourt, Shopfront (Entrance Every 75')	**Frontages** Porch, Terrace, Forecourt, Shopfront, Gallery, Arcade	**Frontages** Stoop, Porch, Forecourt, Shopfront, Gallery, Arcade	
Ground Floor Elevated (Residential); Flush with Sidewalk (Non-Res)	**Ground Floor** Elevated (Residential); Flush with Sidewalk (Non-Res)	**Ground Floor** Flush with Sidewalk or Slightly Elevated	**Ground Floor** Flush with Sidewalk or Slightly Elevated	
Multi-story mixed-use, live/ work, office, neighborhood retail, non-residential ground floors at corners and along main corridors	Multi-story mixed-use, light-industrial, office, and retail (no residential)	~~Multi-story mixed-use, live/ work,~~ office, retail~~, non-residential ground floors~~	Multi-story mixed-use ~~apartments~~, attached townhouses, office, cultural & entertainment uses, and some single-family detached	**USE**


PHOTOGRAPHY
DRIFT
BOUTIQUE
MON-SAT 11-6
SUN 12-5

Chapter 04:

THE VISION

BUILDING A SHARED VISION

WHY SHOULD WE PLAN?

If community planning during a global pandemic has confirmed anything, it's that we are all deeply social beings who need outlets and places to connect with ourselves, our neighbors, and our natural and urban environments. It has also reminded us of the importance of planning ahead and being adaptable in the face of uncertain future conditions.

That being said, deciding what a place should be when it grows up is not always an easy task. Rarely do all parties agree on the same solutions, nor do they always agree on what the problems are in the first place. A community vision process is, however, an important first step in bringing citizens closer together and establishing a solid blueprint for sustainable growth and positive change—the ideal result being that everyone who participated feels that at least some, if not all, of their hopes and expectations were met along the way!

Throughout this vision process, residents, city leaders, and stakeholders have shared their hopes and concerns for the future of Neptune Beach. The Project Kickoff Presentation, Neighborhood Workshops, online surveys, and Design Charrette, have helped bring to light the future vision for Neptune Beach: an eclectic and friendly beachside hometown with beautiful streets and open spaces, where all residents are able to get around safely and easily without depending on their cars. More specifically, five guiding vision statements have been drafted to help guide future capital investments, programs, and policies. These five vision statement, listed below, are elaborated throughout this chapter.

"In the future Neptune Beach will _____"

1. *Be connected from the Intracoastal to the ocean, and to the surrounding beaches communities, by a network of safe and comfortable places to walk, ride a bike, skateboard, and drive.*
2. *Have even more vibrant places for the community to gather and celebrate, in addition to easily accessible parks and recreational amenities that allow residents to connect with nature and lead healthy lifestyles.*
3. *Provide safe and innovative transportation options to reduce car trips in town~~, while at the same time managing parking needs in a way that enhances local character.~~*
4. *~~See its auto-oriented commercial areas incrementally transformed into welcoming and walkable places with high quality mixed-use development that connects seamlessly to the Beaches Town Center and surrounding neighborhoods.~~*
5. *Continue to protect the natural environments that make it so special, while adapting infrastructure, regulations, and procedures to better address changing social, economic, and climate-related realities.*






Marshwalk
Boardwalk Trail


IN THE *FUTURE* NEPTUNE BEACH WILL:

be connected from the Intracoastal to the ocean, and to the surrounding Beaches communities, through a network of safe and comfortable places to walk, ride a bike, skateboard, and drive.

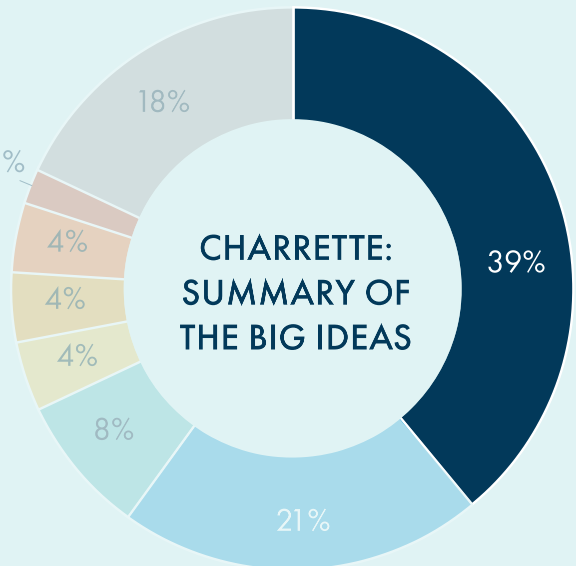
PART 1: SAFE, BEAUTIFUL STREETS & TRAILS

Without question, the one topic that residents, stakeholders, staff, and elected leaders agree is key to the future of the Neptune Beach is safer and more complete streets. Being a small coastal community that is only a mile and a half wide from the Intracoastal to the beach, Neptune Beach has all the ingredients to be a premier city for walking and biking. Already, residents, particularly those living east of 3rd Street/A1A, pick walking, biking, and skateboarding as a favorite means of travel. For those living further west, the lack of dedicated facilities for people outside of their cars, coupled with suburban-style arterial and collector streets that are very difficult to cross safely, there is still room for improvement. This chapter proposes new street designs and recommendations to achieve a truly walkable community.

PART 1: *Beautiful Streets & Trails*

KEY ISSUES TO ADDRESS	PROPOSED IMPROVEMENTS & POLICIES
• Need for more dedicated and safe places to walk, skateboard, and ride a bike • Difficulty crossing Penman Road, and in particular the need for a solution at the five-points intersection that prioritized bicycle and pedestrian safety • Lack of pedestrian crosswalks along 3rd Street and the difficulty of crossing 3rd Street at the existing crossing areas, particularly at Atlantic • Lack of safe street crossings and too many high speed cars near Neptune Elementary and Fletcher High School • Lack of shade trees along sidewalks, particularly on Atlantic Boulevard, 3rd Street, 1st Street, and the northernmost section of Florida Boulevard	• Work with FDOT to adopt a new Context Classification Map for state roads and create a local classification of street types to guide improvements on city roads • Implement intersection safety improvements, including high visibility crosswalks, signage, and pedestrian activated (HAWK) that are outlined in the Figure 4.8 Recommended Bicycle & Pedestrian Improvements Map • Complete the East Coast Greenway multi-use path widening project along Florida Boulevard • Transform Penman Rd into a complete street with dedicated paths for pedestrians and cyclists and more frequent crossing areas • Prioritize a bicycle and pedestrian friendly design for the five-point intersection of Florida and Penman Road • As part of the upcoming stormwater construction projects consider above ground improvements on 1st and 3rd Street including multi-use paths and/or separated bicycle and mobility lanes • Work with FDOT to implement improvements along Atlantic Boulevard and study the possibility of widening the sidewalks and/or incorporating a two-way cycle track on one side of the road • Create a trail along the canal running from Lemon Street to the Library and Jarboe Park and study how this might also eventually continue all the way to Fletcher High • Build a bicycle and pedestrian marsh walk to connect Seagate Avenue over Hopkins Creek • Prioritize improvements along school routes and implement a safe routes to school program • Invest in neighborhood traffic calming programs

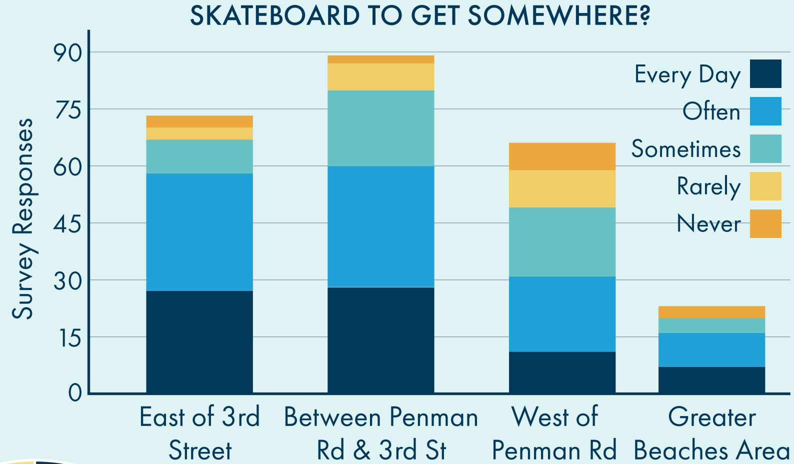
SUMMARY OF WHAT WE HEARD:



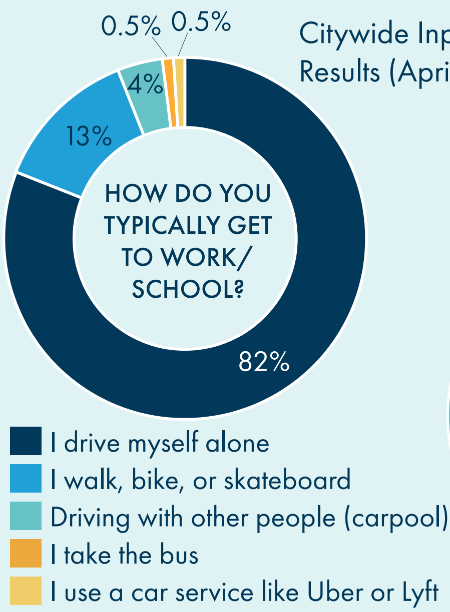
Streets, Trails, Transportation & Parking

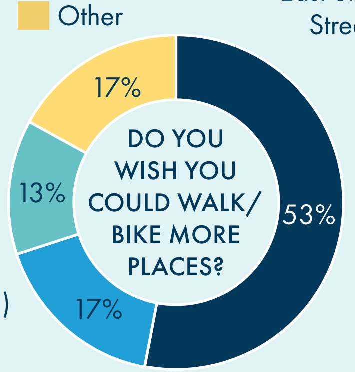
39%

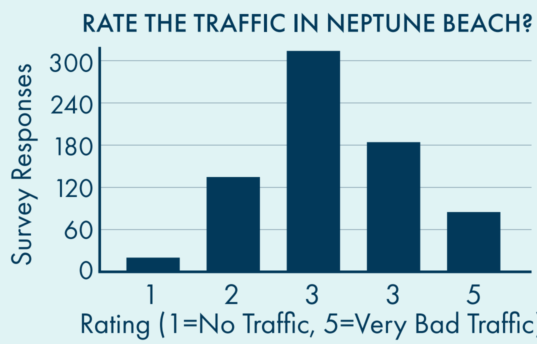
- "Safer crossings on 3rd, Penman, Florida, Seagate & Cedar"
- "Highlight 1st Street; make it one-way with dedicated space for people walking & biking, limit north/south traffic"
- "More bicycle parking, especially at beach access points"
- "Consider a circulating trolley or shuttle system"
- "Coordinate parking with new trails/transportation options"



Citywide Input Survey Results (April 2020)

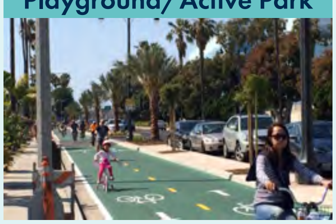






Neighborhood Workshop & Survey Responses: Most Popular Types of Streets & Mobility Options

Playground/Active Park



Kayak Launch

Neighborhood Square

Marsh Walk

Figure 4.1: Summary of What We Heard: Streets & Trails

DESIGNING STREETS THAT ACCOMMODATE EVERYONE

The ability to bike and walk safely in Neptune Beach is a clear priority for residents, business owners, and stakeholders. The public participation process revealed that access to safe streets and the ability to walk and bike to parks, restaurants, and the beach are a major draw for residents. There are several gaps in the existing network and challenging intersections that should be addressed to improve safety and ensure that people of all ages and abilities are able to benefit from bicycle and pedestrian facilities throughout the city.

CONTEXT SENSITIVE STREET DESIGN

Land use and transportation planning are tightly interwoven disciplines. Streets not only form the network along which people and goods move through our cities, but they are also our most vital and basic public spaces. Trying to create a successful town center with a six-lane highway running through it is a difficult proposition. That is why designing streets that are context sensitive is so important.

The function of context-based design is to balance the multiple and sometimes competing demands placed on streets to create a transportation system that provides mobility and also functions as vibrant places of commerce and community. Context describes the physical form and characteristics of a place. What happens within the bounds of the right-of-way should largely be determined by the type of private development laying outside of the right-of-way lines. The Future Character Areas Map (Figure 3.7) shown in Chapter 3 provides a vision for what each area of the city should be like in the future in terms of development patterns, land uses, and street types.

Well defined existing or desired future character areas help planners and engineers to determine whether streets should, for example, be designed to prioritize commerce and community gathering or whether they need to prioritize truck deliveries and mass transit. In all cases, streets should be designed to safely and comfortably accommodate all modes of travel, although some modes may be given a higher degree of importance than others depending on the context.

CONTEXT CLASSIFICATION MAPS

A new way to ensure that streets, including County and State roads, enhance the character of the community and support biking and walking in desired neighborhoods is to have the Florida Department of Transportation (FDOT) adopt a community-approved context classification map.

FDOT created this new context classification system to plan and design state facilities in greater harmony with the surrounding land use characteristics. The context classification assigned to a roadway segment determines key design elements, including speed, lane width, street tree placement, on-street parking, and sidewalk width, among other things. The classification system includes eight context zones, or character areas, ranging from natural to urban core.

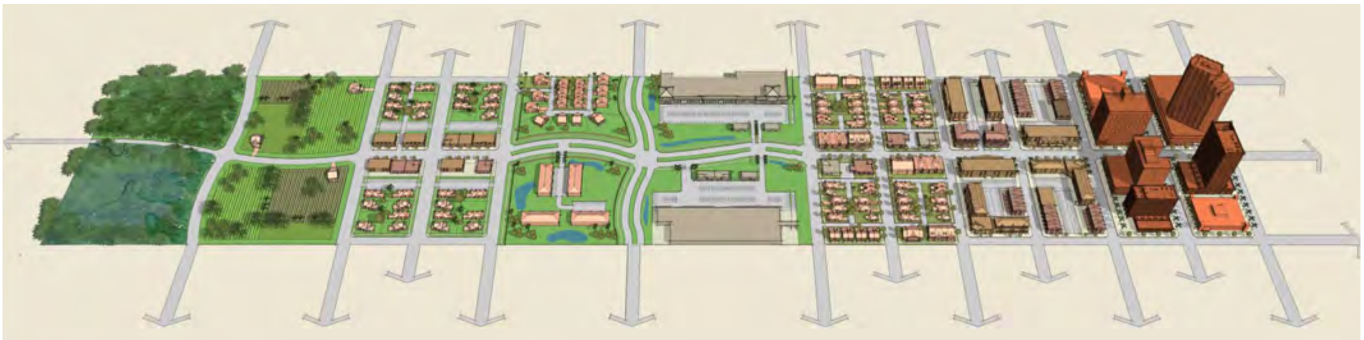
These maps inform which places are intended to be walkable urban or car oriented suburban. The design

FDOT CONTEXT CLASSIFICATION CHARACTERISTICS FOR STATE ROADS

Context Classification	Speed Range (Arterials & Collector)	Minimum Lane Widths (ft)	Sidewalk Width (ft)	Minimum Tree Spacing
C3 - Suburban	30-45 mph	10′ (25-35 mph), 11′ (40-45 mph)	6′	24′-40′
C4 - Urban General	25-35 mph	10′ (25-35 mph)	10′	25′-30′
C5 - Urban Center	20-30 mph	10′ (25-35 mph)	12′	25′

Figure 4.2: Context Classification Area Characteristics (Source: FDOT Design Manual, Topic #625-000-002)

FDOT CONTEXT CLASSIFICATIONS ZONES



C1	C2	C2T	C3R	C3C	C4	C5	C6
Natural	Rural	Rural Town	Suburban Residential	Suburban Commercial	Urban General	Urban Center	Urban Core

Figure 4.3: Context Classification Area Characteristics

of streets should thus reflect the Future Character Area in which it is located. In those areas that are envisioned as walkable urban places, which given the size of Neptune Beach and its already active residents is almost the whole city, streets should prioritize pedestrians and bicyclists. In those areas envisioned as primarily drivable suburban neighborhoods, streets should be designed for all users, although an emphasis *may* be placed on the cars.

The maps on the following pages show the Existing Context Classification Map used by FDOT's District 2 office (Figure 4.4) and this plan's Proposed Context Classification Map (Figure 4.5), which revises the existing map to better reflect the Future Character Areas illustrated in Chapter 3.

While the FDOT Context Classification guide and Design Manual were developed for state facilities, the same classifications can be applied to local streets across the City, to guide future street design elements. To achieve the City's multiple goals of quality walkable commercial redevelopment and improved safety and connectivity, the City will need to adopt new street standards with the following features:

- Lower target speed;
- Shorter curb radii;
- On-street parking;
- Street trees; and,
- Narrower travel lane widths.

Arterial roads should become urban main streets as they enter urban areas or neighborhood centers. High-speed roads should transition to low-speed designs in traditional neighborhoods to slow traffic to pedestrian-friendly speeds of 25 miles per hour or less.

Widening roads to accommodate through-traffic decreases local livability and should be avoided. New road capacity created through widening is quickly absorbed by drivers who previously avoided the congested road. This is known as "induced travel demand" and explains the failure of newer, wider roads to reduce traffic congestion. Every increase in roadway capacity leads to increases in vehicle miles traveled. To reduce congestion, the city should explore more public transit, bikeways, sidewalks, and mixed-use zoning that allow people to walk between destinations rather than drive.

Existing Context Classifications

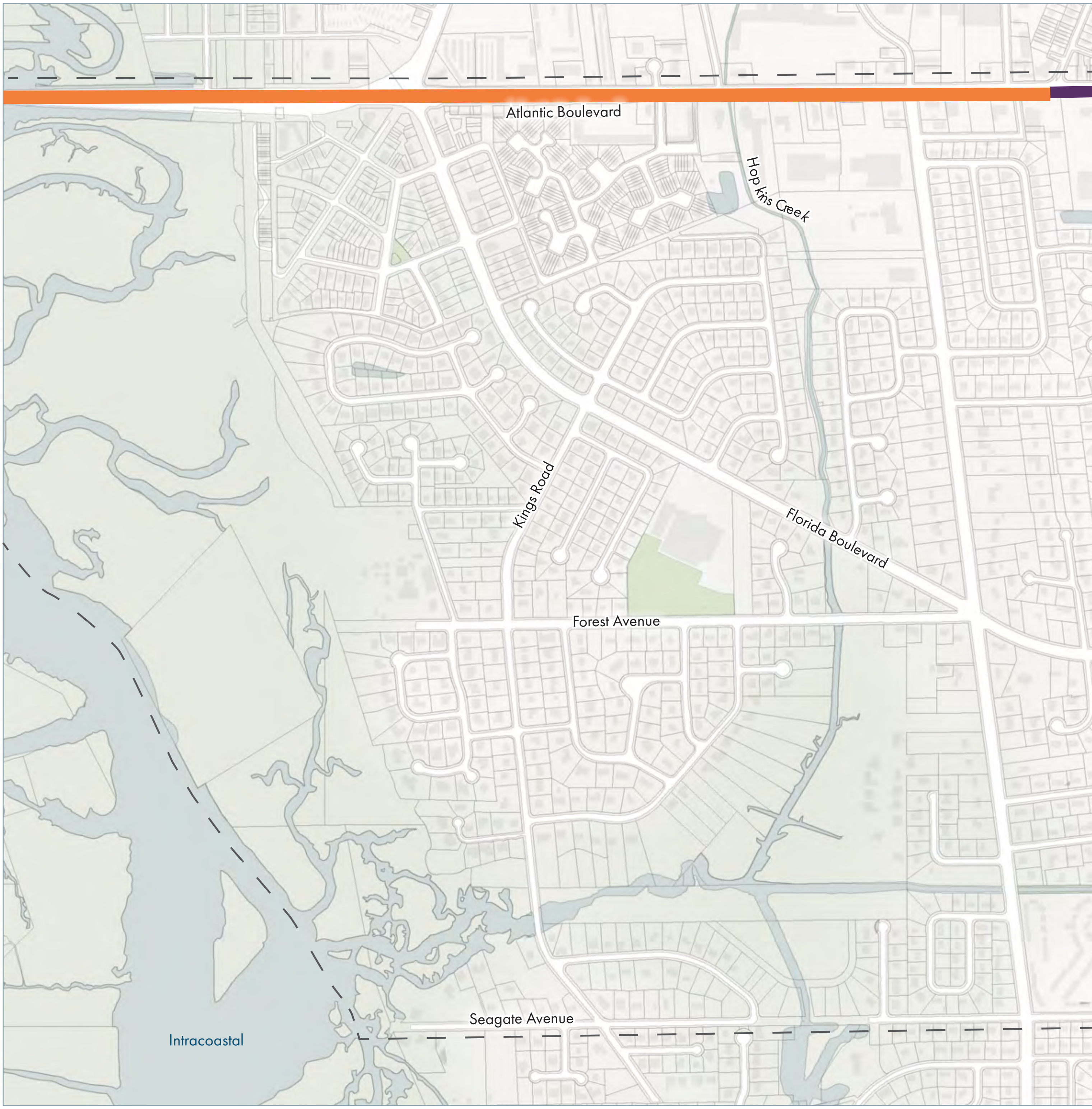
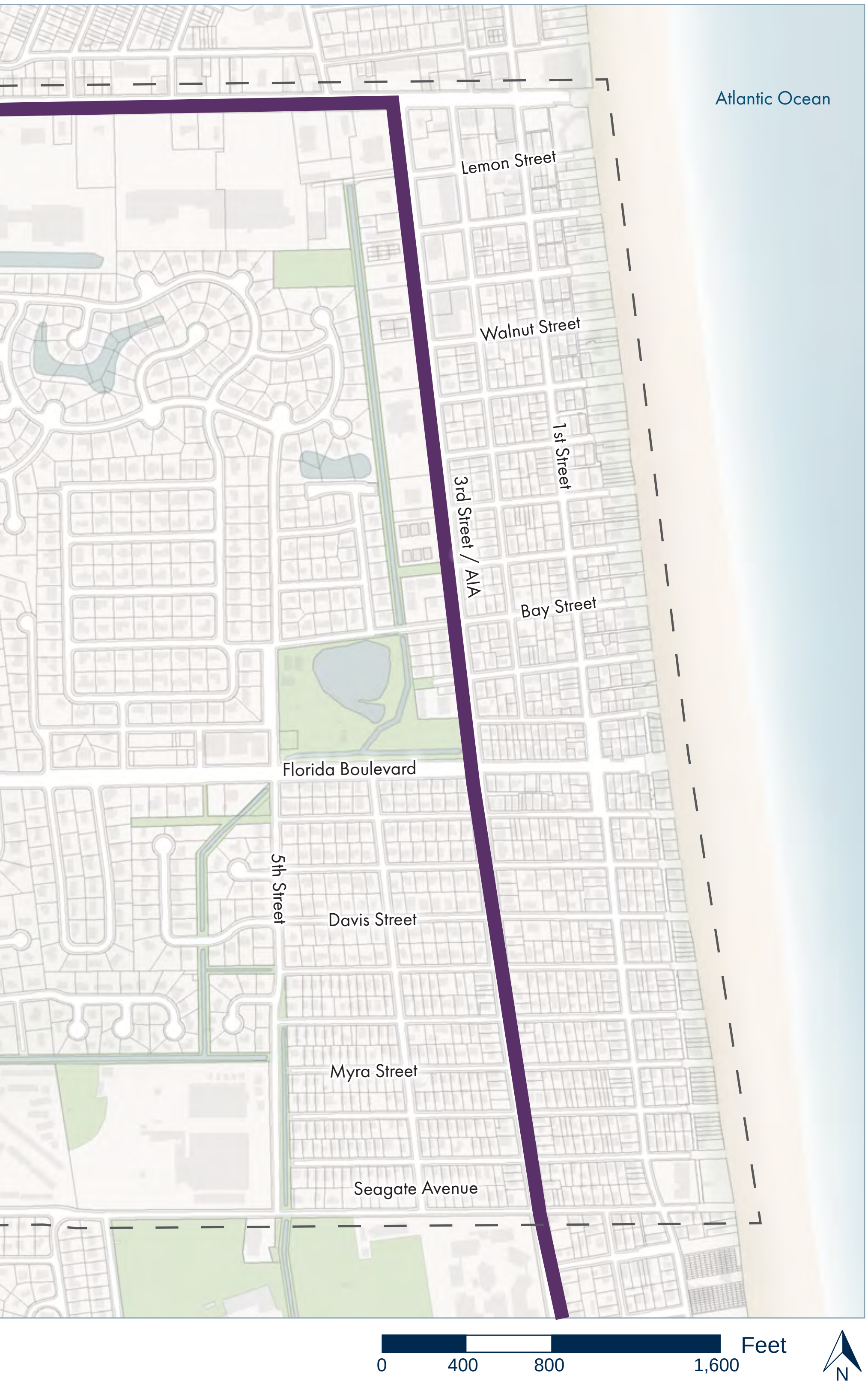


Figure 4.4: Existing FDOT Context Classification



EXISTING CONTEXT CLASSES

The existing context classification has only been applied to Florida Department of Transportation (FDOT) roads, which are Atlantic Boulevard and 3rd Street/A1A. The area on Atlantic Boulevard west of the Neptune Beach Plaza is classified as C3C - Suburban Commercial. C3C is described as a road that has large building footprints with large parking lots within large blocks and lacks a connected street network. The rest of Atlantic and all of 3rd Street/ A1A is C4 - Urban General and that is described as a mix of uses on small blocks with a connected street network that connects to residential neighborhoods.

MAP LEGEND

- C3C- Suburban Commercial
- C4- Urban General
- Building Footprints
- Existing Parks & Green Spaces
- City Boundary

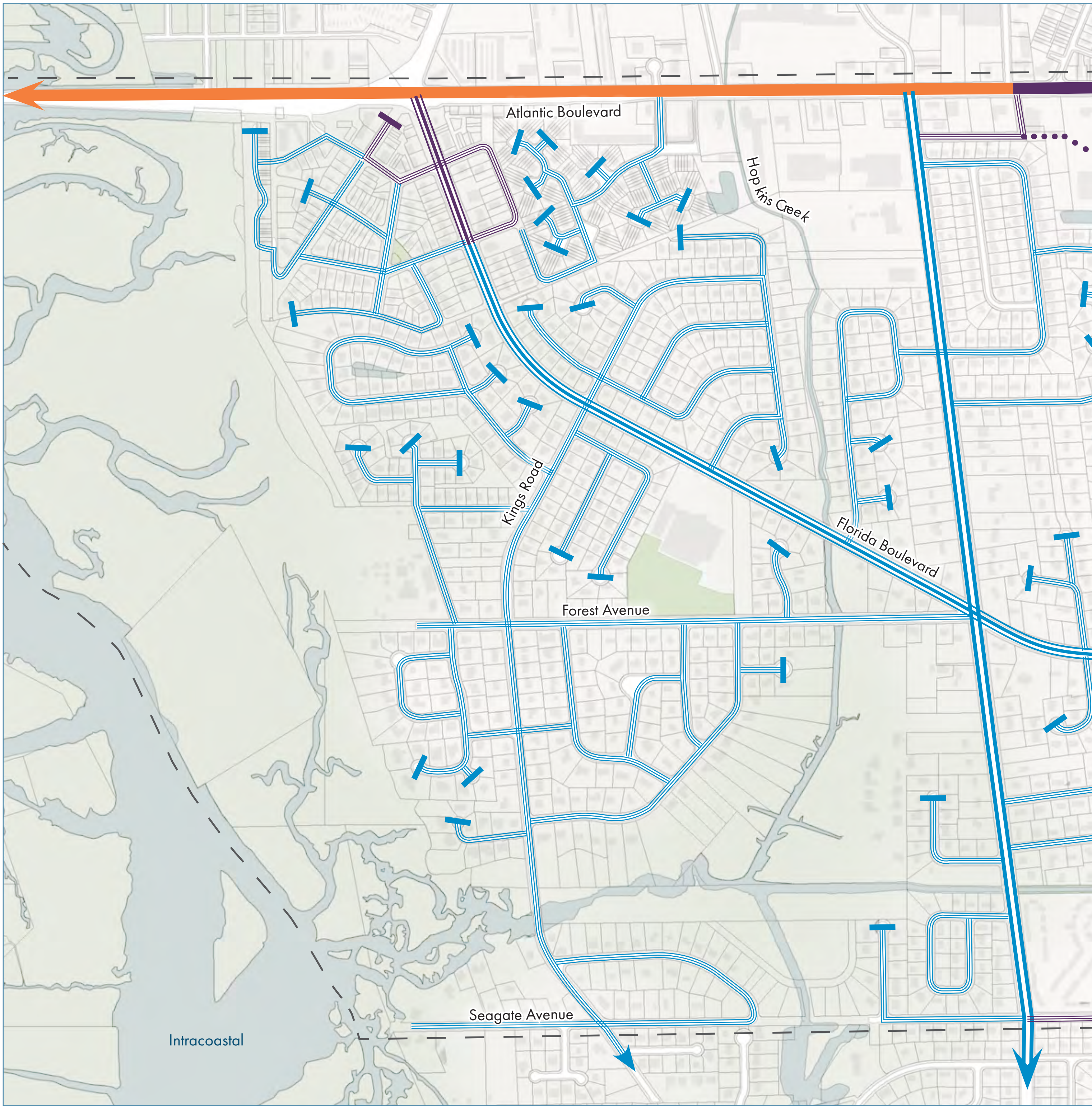
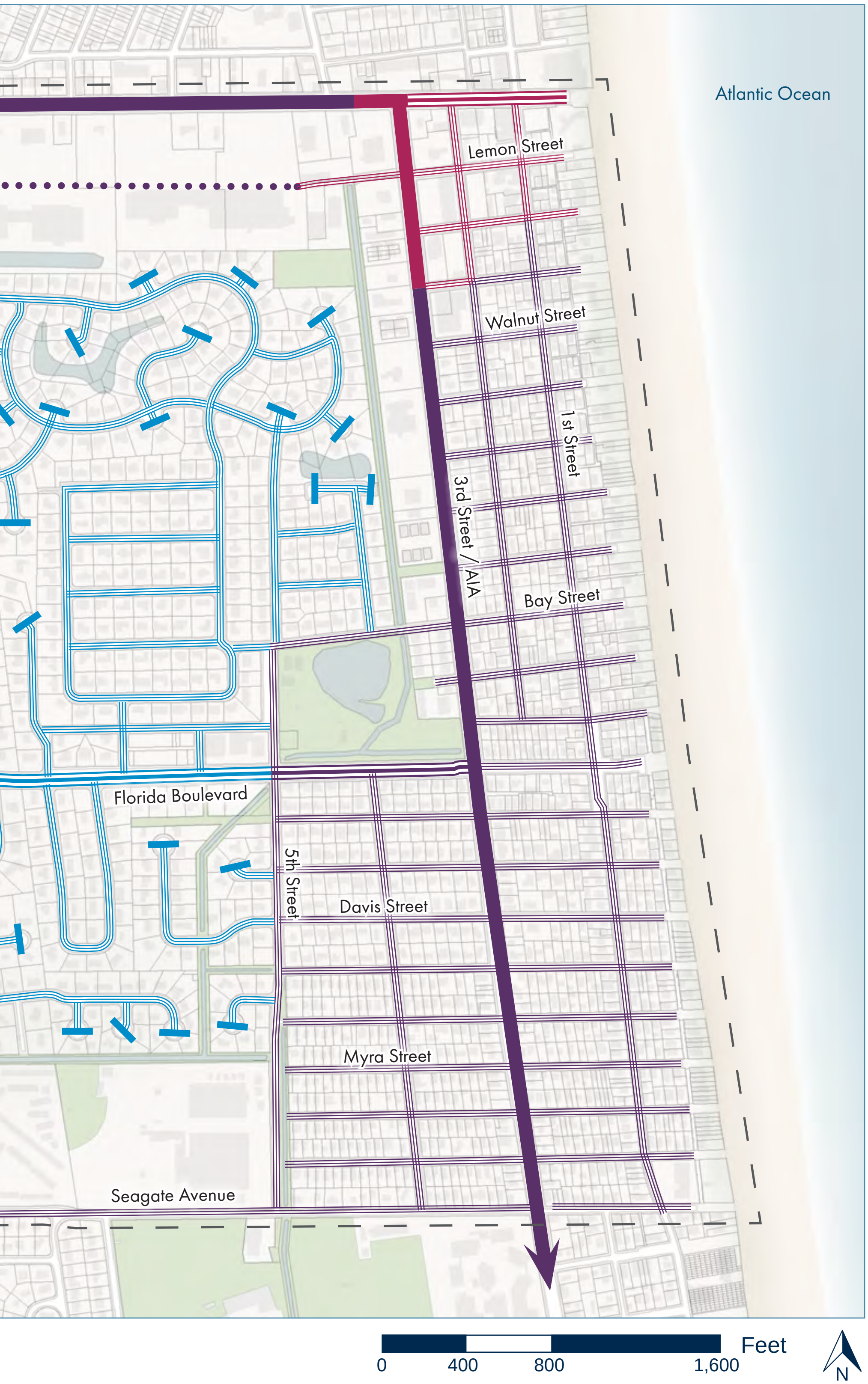


Figure 4.5: Proposed Context Classification



PROPOSED CONTEXT CLASSES

The proposed context classifications for Neptune Beach include local, City of Jacksonville, and FDOT roads. Adding local road contexts will help guide future reconstruction of these roads and development along them. The Beaches Town Center character would be extended west to include the Neptune Beach Plaza where the road classification would be upgraded to C5-Urban Center. This will match buildings that contain a mix of uses within small blocks and an interconnected network of streets with wide sidewalks and street trees. C4-Urban General would remain south of Cherry Street on 3rd Street/A1A; this classification is also proposed on the section of Atlantic Boulevard between Mayport Road and Sailfish Drive.

MAP LEGEND

Context Classification

- C3R - Suburban Residential
- C3C - Suburban Commercial
- C4 - Urban General
- C5 - Urban Center

Street Type

- Major Arterial (FDOT)
- Major Collector (COJ)
- Minor Collector (CONB)
- Local Street (CONB)
- Proposed Local Street

- Building Footprints
- Existing Parks & Green Spaces
- City Boundary

STRATEGIES TO EXPAND WALKABILITY & BIKEABILITY

Towns and cities throughout the country are in the process of restoring old neighborhoods and creating new neighborhoods that are more walkable and accessible. Strategies that make Neptune Beach easier to navigate on foot or by bicycle will also make the city more livable and attractive. Transportation corridors should be more than just roadways for cars. Corridors can be designed and classified to reflect a balance between many modes of transportation and the surrounding land uses.

This is especially relevant for smaller cities where many destinations are within walking and biking distance of residential areas, but poor or incomplete pedestrian and bicycling facilities make it uncomfortable or dangerous for people to choose those options when getting around.

Block Size & Grid Patterns

With respect to street design, walkable communities are best supported by street grids where the block length is 300 to 400 feet. Much of the existing neighborhood east of 5th and 3rd Street, including the Beaches Town Center, meets or comes close to this ideal condition, with typical blocks measuring about 300 by 325 feet. In the newer, more suburban parts of the city, the traditional street grid takes up a tree-like configuration with most streets and lots branching off of just a few main roads. The prevalence of cul-de-sacs has resulted in longer distances for people walking or biking. The addition of a few key pedestrian connections, like a new marsh path connecting the two sections of Seagate Ave, would greatly improve connectivity.

Complete Streets

“Complete Streets” is a concept for streets designed to enable safe access and mobility for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Where gaps in the bicycle and pedestrian networks exist, effective and safe circulation is hindered. In key locations, including the town center and neighborhood centers, schools, and parks, a well-connected network is especially important. While the City of Neptune Beach passed a nationally recognized Complete Streets Policy in 2018, it should move to adopt standards and earmark projects to implement that resolution. Streets within the Town Center and Traditional Neighborhood Future Character Areas, as well as Neighborhood Centers and key connecting roads like Penman and Florida, should be prioritized for complete street treatments.

Right-Sizing

One technique for creating Complete Streets is implementing road diets, or right-sizing streets, to balance the amount of road space for all people (pedestrians, bicyclists, transit users, and drivers). In the compact urban context, slow moving vehicles and shared space guides street design. In suburban settings, with higher vehicle speeds, design relies more on signal timing and separate dedicated spaces to dictate how people move through and use the roadway. When there are desired context changes, as have been suggested in the Context Classification Map (Figure 4.5), these changes should be documented as justification for right-sizing existing roads.

Current best practices, which are shaping local ordinances throughout the country, include the National Association of City Transportation Officials (NACTO) and the Congress for the New Urbanism/ Institute of Transportation Engineers Manual (CNU/ITE Manual). These references recommend adjustments to street dimensions that are required for a road diet (e.g. narrowed lane widths and parking space dimensions, wider sidewalks, minimum size of bike lanes, etc.). On existing four-lane streets with less than 25,000 (ADT), transportation experts around the country are recommending road diets as a priority.

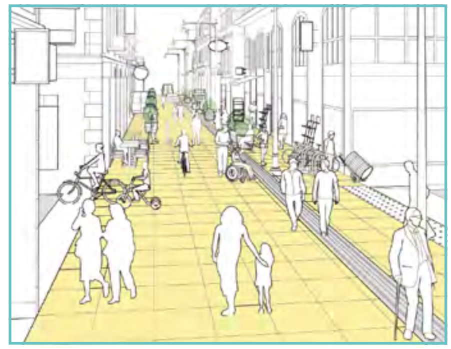
Benefits of road diets include:

- Overall crash reduction of 19 to 47 percent;
- Reduction of rear-end and left-turn crashes through the use of a dedicated left-turn lane;
- Fewer lanes for pedestrians to cross and an

Figure 4.6: Ten Tools for Traffic Calming

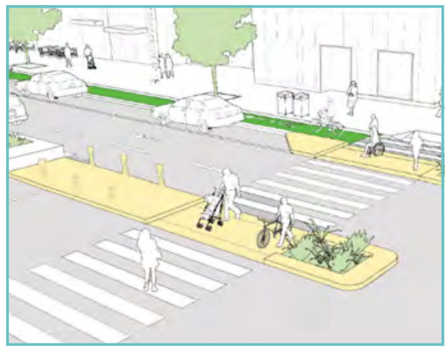
1. Trees and Street-Oriented Buildings

2. Two-Way Street, Narrowed Lanes



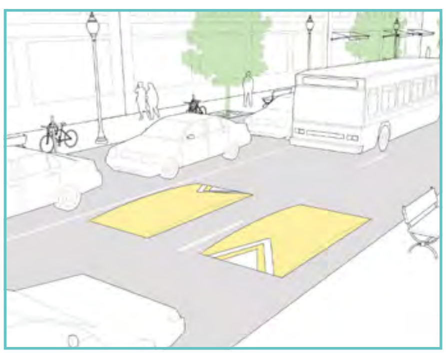
3. Shared Street Design

4. Reduced Turning Radius

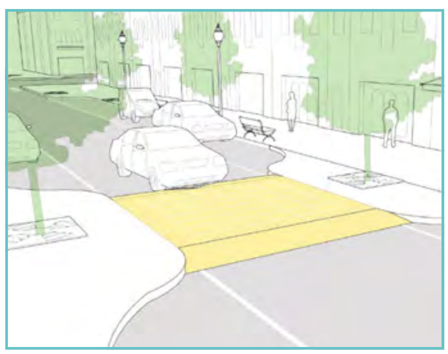


5. Pedestrian Refuges

6. Pinchpoints & Mid-Block Crossings

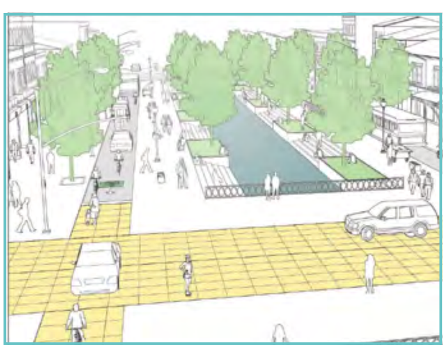


7. Speed Hump & Speed Cushions



8. Speed Tables/Elevated Crosswalks

9. Mini Roundabouts



10. Pavement Materials & Appearance

TEN TOOLS FOR TRAFFIC CALMING

In areas of the city where we want people walking, biking, eating, and interacting safely, these ten street design tools can be used to reduce car speeds and increase both driver and pedestrian awareness. These tools can be broken into two main buckets: design intent and design additions. Design intent describes how the street looks and feels. Are there active storefronts with on-street parking and shade trees? Do I have to slow down to make a right turn? Is there rough pavement? The second set of tools are elements that are typically added as a low-cost solution for dangerous streets, such as speed humps, mini roundabouts, and pedestrian refuges.

Graphics from globaldesigningcities.org

opportunity to install pedestrian refuge islands;

- The opportunity to install bike facilities when the cross-section width is reallocated;
- Reduced right-angle crashes as side street motorists must cross only two lanes of traffic instead of three;
- Traffic calming and reduced speed differential, which can decrease the number of crashes and reduce the severity of crashes if they occur;
- The opportunity to allocate the extra roadway width for other purposes, such as on-street parking, landscaping, street trees, and bike or pedestrian enhancements;
- Complete Streets environment with places for people, not only cars; and
- Simplifying road scanning and gap selection for motorists (especially older and younger drivers), making left turns from or onto the mainline.

Speed Management

Another important aspect of walkability and public safety involves reduced traffic speeds and the use of traffic calming devices. The speed of vehicles is a critical component of pedestrian safety and comfort. A pedestrian involved in a collision with a vehicle has a 95 percent chance of survival if the car is traveling at 20 miles per hour and a 10 percent chance of survival if the car is traveling at 40 miles per hour. Pedestrian-friendly speeds are typically 20-25 miles per hour, and are no more than 30 miles per hour.

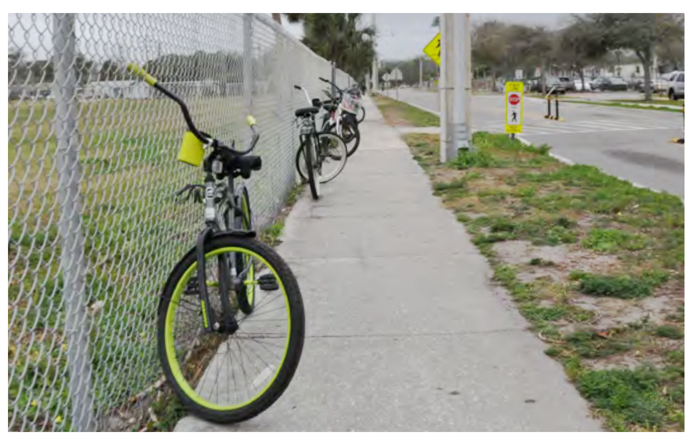
Furthermore, many of the key design criteria for streets that are safe and comfortable for pedestrians and bicyclists, as well as for streets that are beautiful, such as lane widths, tree placement, and curb radii, are dimensions stipulated in the design manuals as factors of speed. With slower speeds, acceptable lane widths decrease and the space between street trees and curbs is reduced. Designing for slower speeds is critical for creating streets that actually encourage motorists to travel at lower speeds rather than relying on signage and posted speed limits alone. The geometry of the street has a much greater effect on motorist behavior.

Sidewalks

For walking to become a regular, acceptable, and dignified means of transportation in Neptune Beach, the City should embark on a process of adding sidewalks where they are currently missing. A comprehensive sidewalk plan should be implemented which prioritizes sidewalk investments and ensures those investments result in a connected network. Emphasis should be placed on connecting Neighborhood Centers and Crossroads to their surrounding communities, especially along routes used by the estimated 4,000 kids and teens studying at Neptune Beach Elementary, Fletcher High School, and Fletcher Middle School, as well as along corridors with both high pedestrian and high automobile demand.

Sidewalks must also be comfortable places. In Florida's hot and humid climate, shade is needed to make walking an inviting means of getting around. Sidewalks should be lined with street trees that have shade-providing canopies. Street trees should be planted between the sidewalk and edge of pavement to provide a buffer between cars and pedestrians.

Road Diet, part of the Indianapolis Cultural Trail, Indiana



Lack of bicycle parking across from Fletcher High School creates an impediment on the sidewalk.

NEPTUNE BEACH BIKING CULTURE

Bicycling and skateboarding have long been popular in Neptune Beach, attracting both visitors and new residents in the process. 1st Street is the embodiment of the city's bicycle culture and past improvements, including closing car access across Orange Street and Seagate Avenue, and installing stop signs and traffic diverters have gone a long way to limit the amount and speed of cars traveling along 1st Street.

The installation of a wider multi-use path along Florida Boulevard, which is nearing completion, is a key segment of the East Coast Greenway (ECG). The ECG is a walking and biking trail. Once fully completed, it will stretch 3,000 miles from Florida to Maine, and Neptune Beach has a beautiful piece of the greenway running right through its center. Already, these path improvements are being enjoyed by people in the community. While these two routes are well used and loved, alone they do not a network make.

For many people living west of 3rd Street, accessing the beach and Town Center are still a challenge. To continue the growth of bicycle culture in Neptune Beach, it is important to address safety for riders of all abilities and continue filling in gaps in the existing trail network. Riding a bicycle or crossing a street should not require bravery. Separated, buffered bike facilities, improved intersections, secure bicycle parking, and ADA compliant sidewalks are all ways to address these common concerns.

Bicyclists heading to the BTC on 1st Street


Young bicyclist trying to cross a busy Atlantic Boulevard on 3rd Street

Expanding and Enhancing the Network

Designing and implementing a non-vehicular mobility network that is appropriate in the surrounding context should be strongly correlated to land use characteristics and to the desired development or preservation goals for each neighborhood in Neptune Beach as outlined in Figure 3.7. The proposed network should be further fine-tuned at the scale of the block. This can occur through a Trail Master Plan that incorporates existing Neptune Beach multi-use trails, proposed bikeways, and the latest advancements in bicycle planning.

The Recommended Bicycle & Pedestrian Improvements Map (Figure 4.8) on the following pages recommends a network of different bicycle and personal mobility facilities, as well as necessary intersection and crossing improvement, that address many of the concerns raised by the community. This map is a great starting point for a more detailed Trail Master Plan.

In addition to a bikeway and trail network, numerous design countermeasures may be applied to streets to increase the visibility and safety of existing and proposed bikeways. These include bicycle boxes, bicycle detection and signal heads, wayfinding signs, refuge islands, and ongoing bicycle safety campaigns.

COMMITMENT TO SAFETY

Based on workshops and stakeholder comments, one of the barriers to walking and biking is concern for safety. As such, many of this Vision Plan's concepts for updated streets and intersections include designs to calm traffic and enhance pedestrian visibility.

Infrastructure improvements are only one aspect of safety. Around the country, communities are realizing success by transitioning safety planning and analysis from a reactive to proactive approach. In addition to Safe Routes to Schools programs, several cities along with the Florida Department of Transportation are embracing "Vision Zero" as a new safety standard and program-setting approach. This approach relies on a system-wide perspective (rather than individual problem site identification), the use of quantitative data to inform decision making, and focal shift from collision reduction to injury prevention.

Adopting a Vision Zero approach means setting a goal of zero traffic fatalities and severe injuries for all travelers, whether on foot, by bike or scooter, on transit, or in automobiles. In November 2015, Fort Lauderdale became the first city in the state of Florida and the first city in the Southeastern United States to become a Vision Zero city. Since then, Orlando, West Palm Beach, Tampa, and Hillsborough County have also adopted Vision Zero programs and policies.

Forming a program typically begins with coalition building around topics of safety and injury prevention. Once a coalition is in place, cities typically adopt a resolution on Vision Zero (a process similar to creating Neptune Beach's Complete Streets resolution). While most of the adopted programs began in larger cities, there are elements that apply to smaller cities. Neptune Beach can also work with the City of Jacksonville to adopt a broader Vision Zero program for the region.

When developing Vision Zero program, an important first step is to gather key baseline data to discern not only the locations, but also the pattern of crashes. Another important element involves crowdsourcing information from bicyclists, pedestrians, schools, and shopkeepers regarding areas that feel unsafe and why. This group can also provide information on "near misses," which can help focus in on additional data collection and improvements before injuries occur. See http://app01.cityofboston.gov/VZSafety.

Cities are using technology to help with data collection and reporting. For example, Boston, Massachusetts created a popular Safety Concerns map for pedestrian, bicyclists, and motorists to report unsafe conditions such as poor visibility, speeding, barriers, and near miss crashes.

These "bite sized" steps can be helpful in improving safety, though if desired, the city can adopt a more formal program for a larger citywide speed management and safety programs. For more information on Vision Zero programs in Florida and around the country, visit https://visionzeronetwork.org.

Figure 4.7: Vision Zero Cities Map

REGIONAL BICYCLE NETWORK

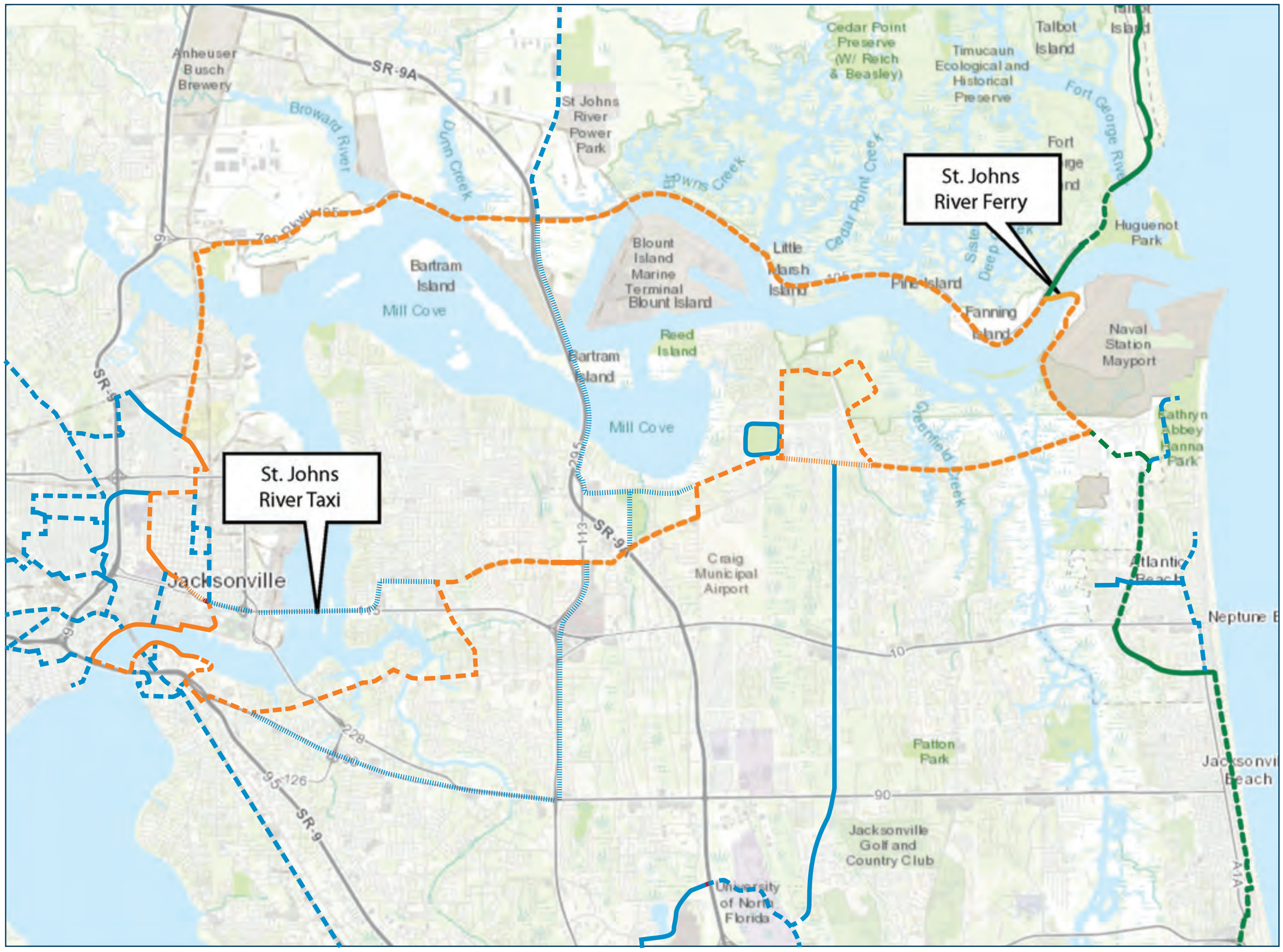


Figure 4.8: Regional Trail Map

CONNECTING TO A BIGGER NETWORK

The North Florida Transportation Organization (TPO) published their 2019 Regional Multi-Use Trail Master Plan, which includes an extensive network of new proposed trail connection, as seen above. Once these new proposed segments are complete Neptune Beach will be connected to a vast system of beautiful trails. The Coast to Coast Trail (C2C) alone is an ambitious 50-mile trail project meant to connect people from Downtown Jacksonville to the beaches and is currently in initially planning phases. It is the kind of project that will bring new recreational riders right through the center of Neptune Beach.

MAP LEGEND

Trail Network

- East Coast Greenway (ECG)
- Coast to Coast Trail (C2C)
- Other Trails

Existing vs. Proposed

- Existing Trail
- Proposed Trail
- C2C Loop Alternative

BICYCLE FACILITY & TRAIL TYPES FOR SAFER RIDING

Buffered Bike/Mobility Lanes

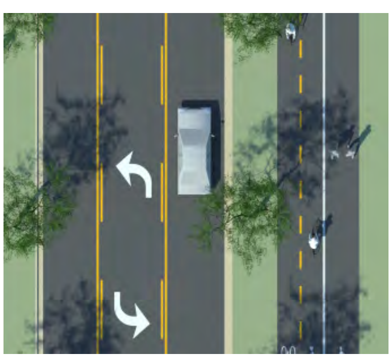
Like conventional bike lanes, buffered bike lanes run along the curbs of the roadway or adjacent to on-street parking. However, they offer additional protection from moving traffic in the form of a buffer space between the edge of the bike lane and the edge of the vehicular travel lane. Adding a buffer encourages more cyclists to use the facility. Ideally the buffer should be at least 3 feet wide and marked with diagonal cross hatching or a chevron pattern. Buffered bike lanes are strongly preferred to conventional bike lanes in areas with greater traffic volume and higher travel speeds.

Separated or Raised Bike/Mobility Lanes

Separated or raised bicycle lanes are bike facilities that are physically separated from the roadway. Sometimes they are elevated to the plane of the sidewalk, often with a furnishing zone or planting strip between the bike lane and the roadway, and sometimes they are separated from moving or parked cars with a raised median that is at least wide enough to account for the opening and closing of parked car doors. Separated or raised bike lanes are more attractive to a wider variety of cyclists and work best along higher speed streets with few driveways and interruptions.

Two-Way Cycle/Mobility Track

Two-way cycle tracks are physically separated bicycle/mobility tracks that allow travel in both directions on one side of the road. They can be designed at the street level with a parking lane or other barriers between bikes and vehicles, or as a raised facility with the track separated vertically from the roadway. The benefits of two-way cycle tracks are that they reduce the risk and fear of collisions, they allow for contra-flow bike travel on one-way streets, and they can have lower implementation costs. These facilities work best on streets with fewer driveways and cross-streets on one side.



Shared-Use Path

Shared-use paths are a type of trail designed to provide off-road routes for many different users including cyclists, runners, pedestrians, and manual or motorized wheelchair users. While similar to other recreational trails, these paths are part of a larger transportation system and serve as a supplement to on-street bike lanes, shared roads, and paved shoulders. In some cases, these paths are marked for different speeds of travel (walking speed vs. biking speed) and in other cases, they are just extra wide paths and shared equally by different users.

Figure 4.9: Bicycle Facilities & Trail Types

Nature Trail

A nature trail is a path designed for both outdoor recreational use and transportation. They are not usually adjacent to any roadway, though like shared-use paths and other bike lanes, they can still connect key destinations and points of interests throughout a city. Being located in more natural and vegetated areas, these trails offer pedestrians, runners, and bicyclists the opportunity to experience the great outdoors close to home and help foster a healthier lifestyle for the overall community.

SHARED STREET APPLICATIONS:

Shared Street: "Sharrows"

Shared routes are typically located in compact or urban areas and on streets with low design speeds, where car traffic moves slowly and parallel parking lines each side of the street. They are often marked with a "sharrow", a marking indicating that the travel lane is to be shared by cars and bikes. While sharrow markings can increase driver awareness of the potential presence of cyclists, a picture of a bike painted on the road is no substitute for the safety of a protected bike lane; the shared lane marking is only appropriate in locations where a protected all-ages-and-abilities facility is not possible.

Shared Street: *Fietsstraat*

A *fietsstraat*, or "bicycle street", is the Dutch version of a bicycle boulevard. They are a type of shared street meant to provide a safe and slow environment for cyclists while still allowing access for local cars. This design, which includes elements like different colored asphalt, a central or pair of lateral bands of roadway pavers, and large clear markings identifying the street as a bicycle priority, is intended for use in very low traffic environments, such as quiet residential streets. Unlike a simple sharrow marking, a fietsstraat provides clearer visual and tactile cues to drivers that this is a different kind of street.

Shared Street: *Woonerf*

A *woonerf,* or "living street", is a concept made popular in The Netherlands. It is a street where bikes, pedestrians, and cars coexist. While cars can pass through, they do so with the feeling that they are entering a different kind of public space, one where they must slow down and be attentive to other users. This kind of street design can be applied on 1st Street between Atlantic Boulevard and Orange Street to provide Neptune Beach with a new pedestrian-dominated space for festivals and events, while still allowing car travel and on-street parking when needed.

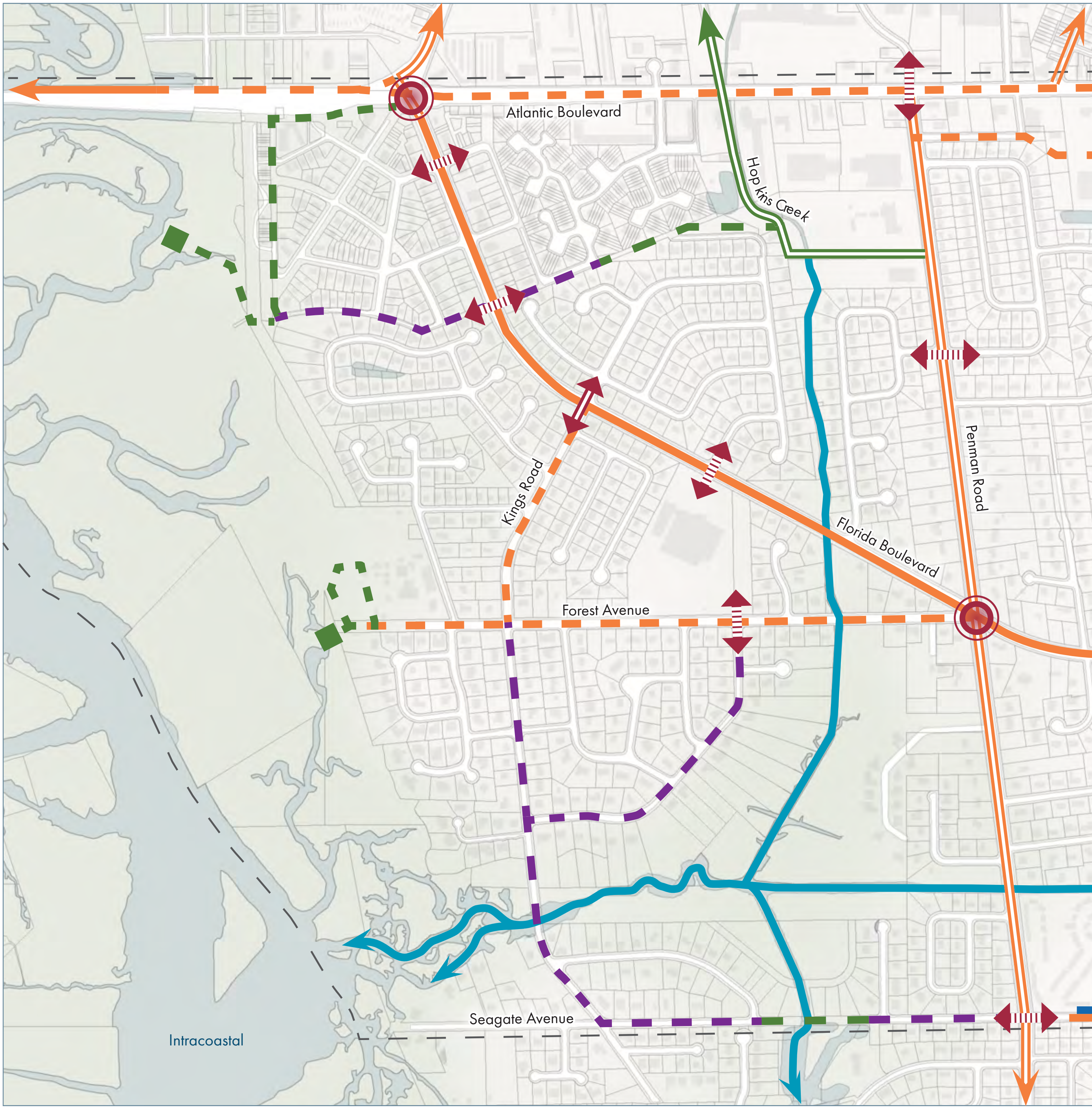


Figure 4.10: Bicycle & Pedestrian Improvements Map

BICYCLE & PEDESTRIAN IMPROVEMENTS

This map provides a blueprint of existing, planned, and proposed network and intersection/crossing improvements. Once completed, this network of nature trails, multi-use paths, separated mobility lanes, and shared streets would make it easy for people of all ages and abilities to get around the city and connect to key destinations including the beach, proposed kayak launches, Jarboe Park, the Beaches Town Center, the library, Neptune Elementary, and Fletcher High and Middle Schools.

MAP LEGEND

- Proposed Major Intersection Improvement
- Proposed High Visibility or Signalized Pedestrian/Bicycle Crossing
- Planned High Visibility or Signalized Pedestrian/Bicycle Crossing

Class of Facility

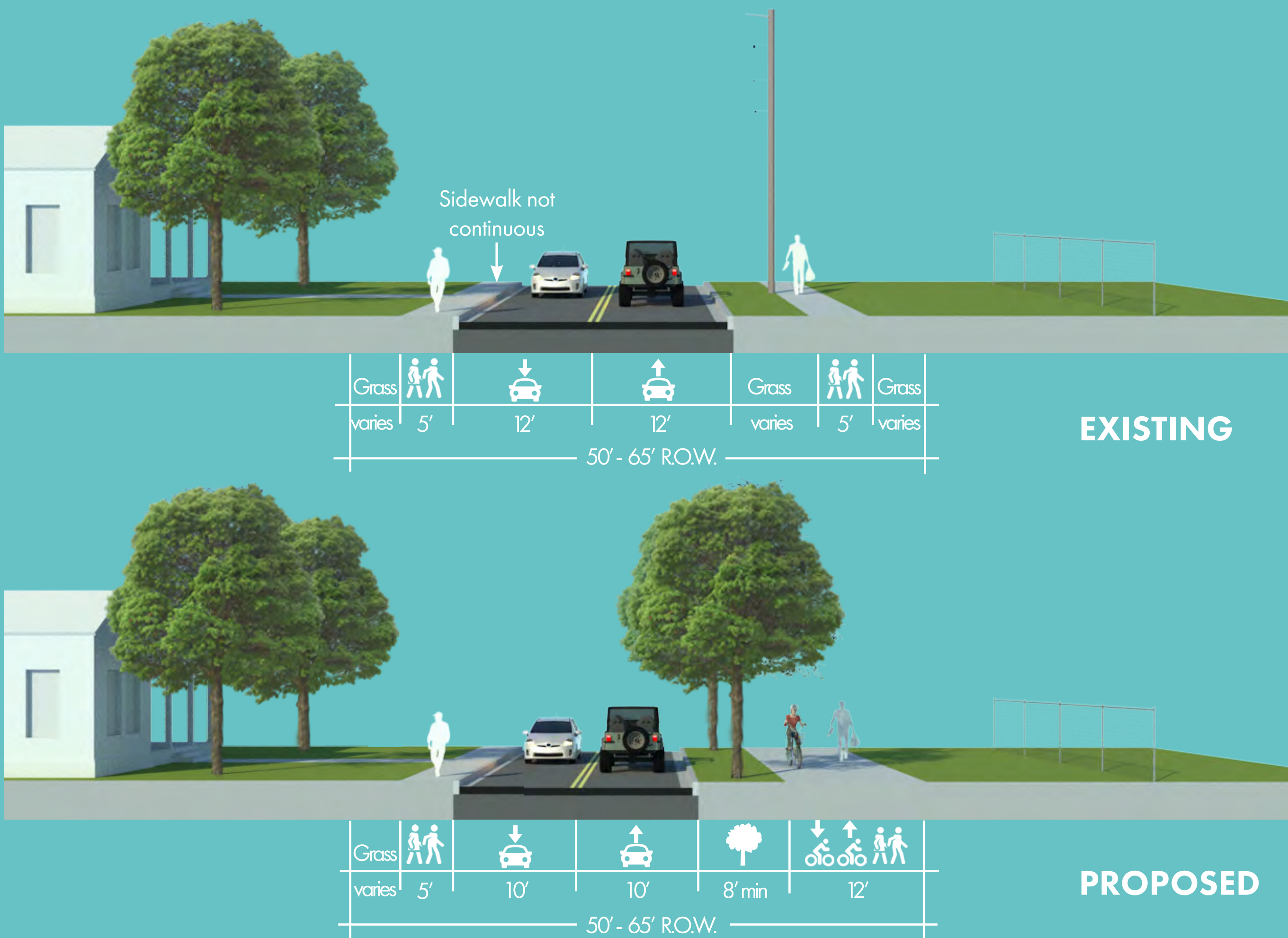
- Conventional Bicycle Lane
- Separated Multi-Use Path or Dedicated Mobility Track
- Shared Street/Woonerf
- Shared Lane Markings
- Slow Street
- Nature Trail
- Blueway/Kayak Network

Existing vs. Proposed

- Existing Facility
- Planned Facility
- Proposed Facility

- City Boundary

KEY STREET SECTION REDESIGNS

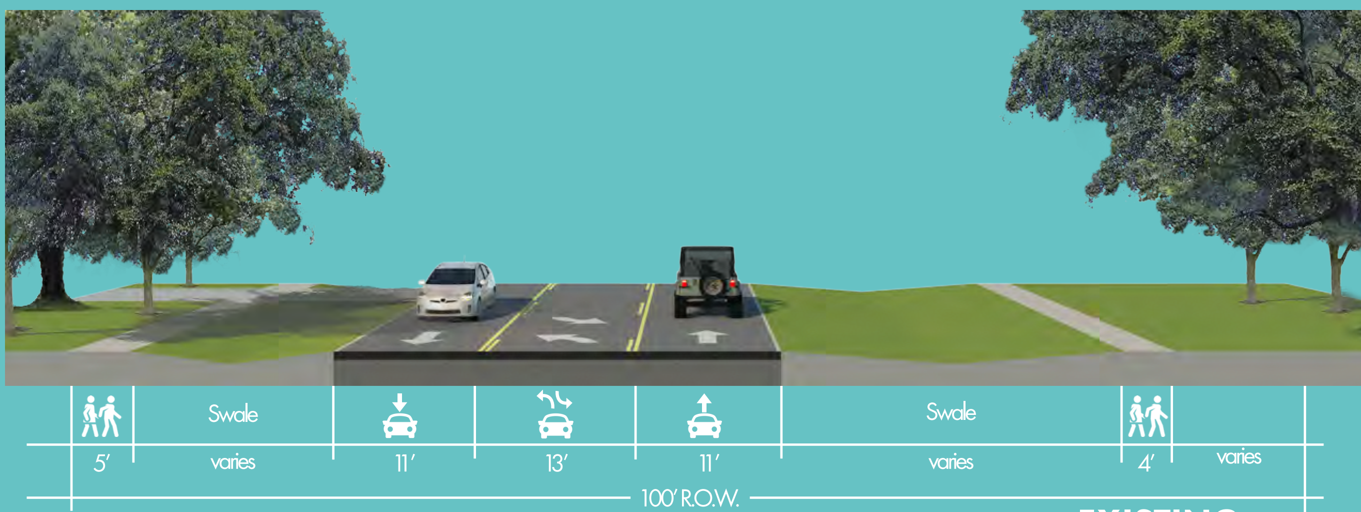


SEAGATE AVENUE - PENMAN TO 3RD STREET (LOOKING EASTBOUND)

Existing: Seagate Avenue is not only the dividing line between Neptune Beach and Jacksonville Beach, but it is also a key street for students trying to get to Fletcher Middle, Fletcher High, and San Pablo Elementary. Between Penman Road and 3rd Street the right-of-way fluctuates between 50' and 60', the northern sidewalk is not continuous, there is a conventional 5' wide bike lane from the Ocean Oaks apartments parking to 5th Street, and there are above ground power lines.

Proposed: Existing power lines are buried and in the process the roadway is narrowed to 20', slowing down car speeds and making space for a 12' wide multi-use path and shade trees on the south side. The existing on-street bike lane is also removed.

Figure 4.11: Seagate Avenue Proposed Street Section



EXISTING

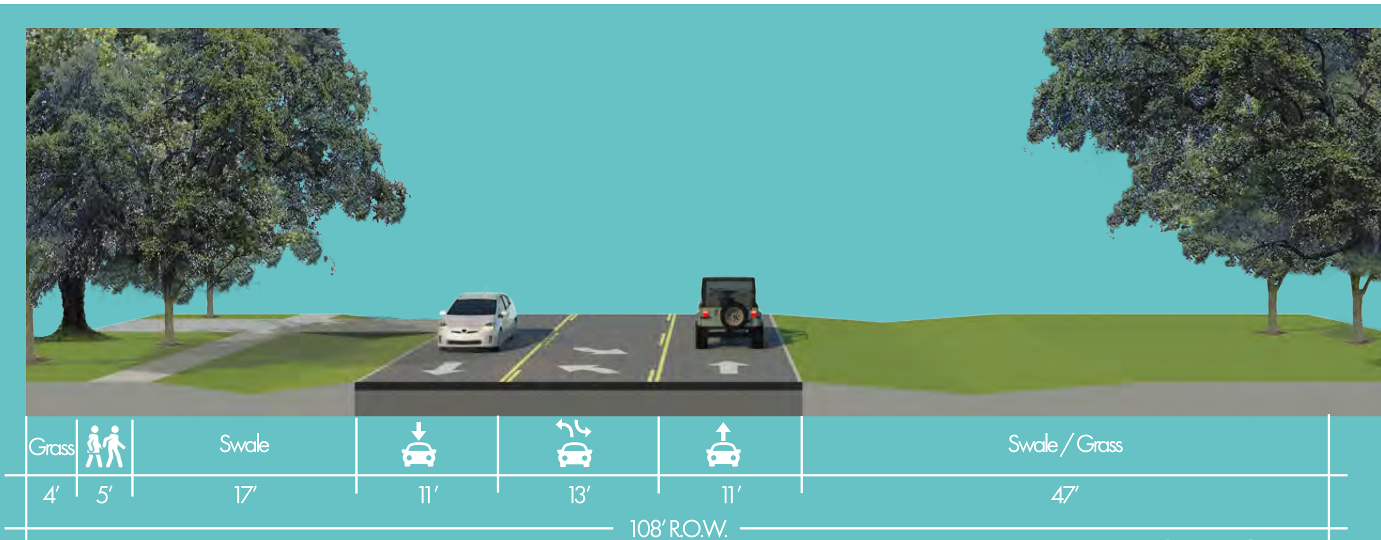
PROPOSED

PENMAN ROAD - NORTH OF FLORIDA BOULEVARD (LOOKING NORTHBOUND)

Existing: Penman Road has a right-of-way of approximately 100′ from Atlantic to Florida Boulevard. A sidewalk is consistent on one side of the two-lane road with a central left-turn lane to access the many residential driveways found along the street. The road is mostly residential and has beautiful existing trees outside of the right-of-way. Drainage swales exist on both sides of the street.

Proposed: A trail with a 6′ pedestrian path and two-way mobility lanes on the east side will encourage more users. This proposal includes shade trees on the same side that will absorb more water and provide shade for pedestrians, skateboarders, and bicyclists.

Figure 4.12: Penman Road Proposed Street Sections A



EXISTING

PROPOSED

PENMAN ROAD - SOUTH OF FLORIDA BOULEVARD (LOOKING NORTHBOUND)

Existing: Penman Road has a right-of-way of approximately 108′ from Florida to Seagate Avenue. A consistent sidewalk runs on the west side of the two-lane road, which also has a central left-turn lane for easier access to the many residential driveways found along the street. There are drainage swales on both sides of the road that capture stormwater runoff.

Propose: A trail with a 6′ pedestrian path and two-way mobility lanes on the west side will encourage more users. Shade trees on the same side will absorb more water and provide shade for pedestrians, skateboarders, and bicyclists.

COMPLETE STREET RECONSTRUCTION

Penman Road currently is asymmetrical and varies from Atlantic Boulevard to Seagate Avenue. The previous proposals show more minor improvements that would keep the roadway pavement the same, but add street trees and safer pedestrian paths and mobility lanes for bicycles, skateboarders, and other users.

The option below would require a reconstruction of the entire street, including drainage, to make it symmetrical and allow for a new row of shade trees on both sides of the road that would create a beautiful shaded street. Two separated bike/mobility lanes with adjacent walkways will connect to the East Coast Greenway on Florida Boulevard. Bioswales will filter any stormwater runoff from the pavement before the water reaches private properties and shade trees will also absorb more water while providing shade for pedestrians, skateboarders, and bicyclists.

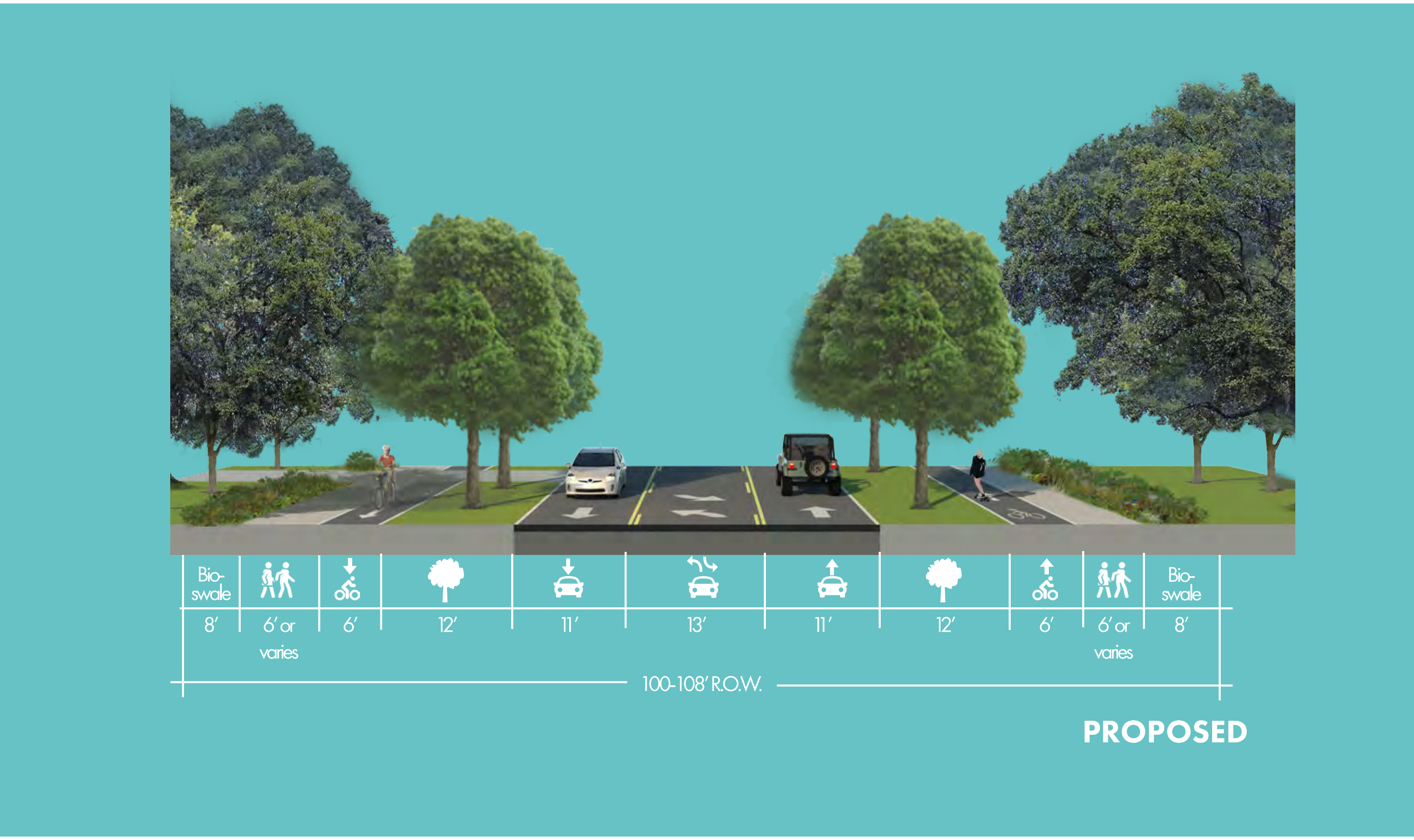
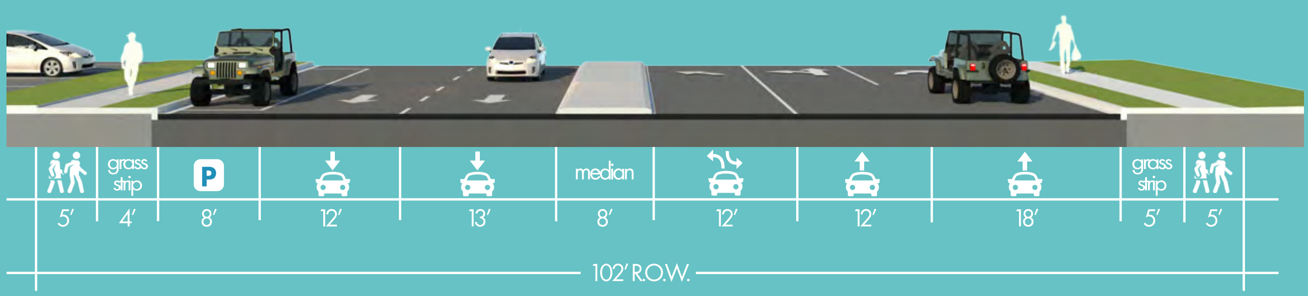


Figure 4.13: Penman Road Proposed Street Sections B

3RD STREET/ A1A (LOOKING SOUTHBOUND)

Many public comments described the danger of crossing 3rd Street/A1A from west to east to reach the beach. The FDOT highway has speeds of 35 miles per hour, but drivers drive much faster making it hard to see and stop for pedestrians. Currently, some areas have on-street parking and a median that serves as a left turn lane for the intersecting streets. Very shallow sidewalks and no street trees make this a very uncomfortable and dangerous road for pedestrians and other users like commuter cyclists, recreational bicyclists, bus riders, scooter riders, and skateboarders. Improvements to this arterial road that dissects Neptune Beach north to south are desperately needed. The two proposals narrow driving lanes and give the pedestrians and other users more space to walk and bike safely and comfortably. All street improvements will be within the approximate 100' right-of-way and outside of the power lines on the west side.



EXISTING

Proposed – Atlantic to Cherry: The improvements for this section of 3rd Street/A1A will have a 13' shared use path on both sides of the street with 8' planting areas for shade trees and landscaping. Lanes are narrowed to 10' or 11' for buses and parking was removed to increase the median size for more shade trees and landscaping. The median will transition to a left turn lane.

Proposed – Cherry to Seagate: The portion south of Cherry to the Neptune Beach boundary will have a shared use path on the western side to have easier access to the Beaches Public Library and the East Coast Greenway. Parking is proposed on the eastern side for beach goers and the sidewalk is widened to 8'. Lanes and the median stay consistent with the northern proposed section.

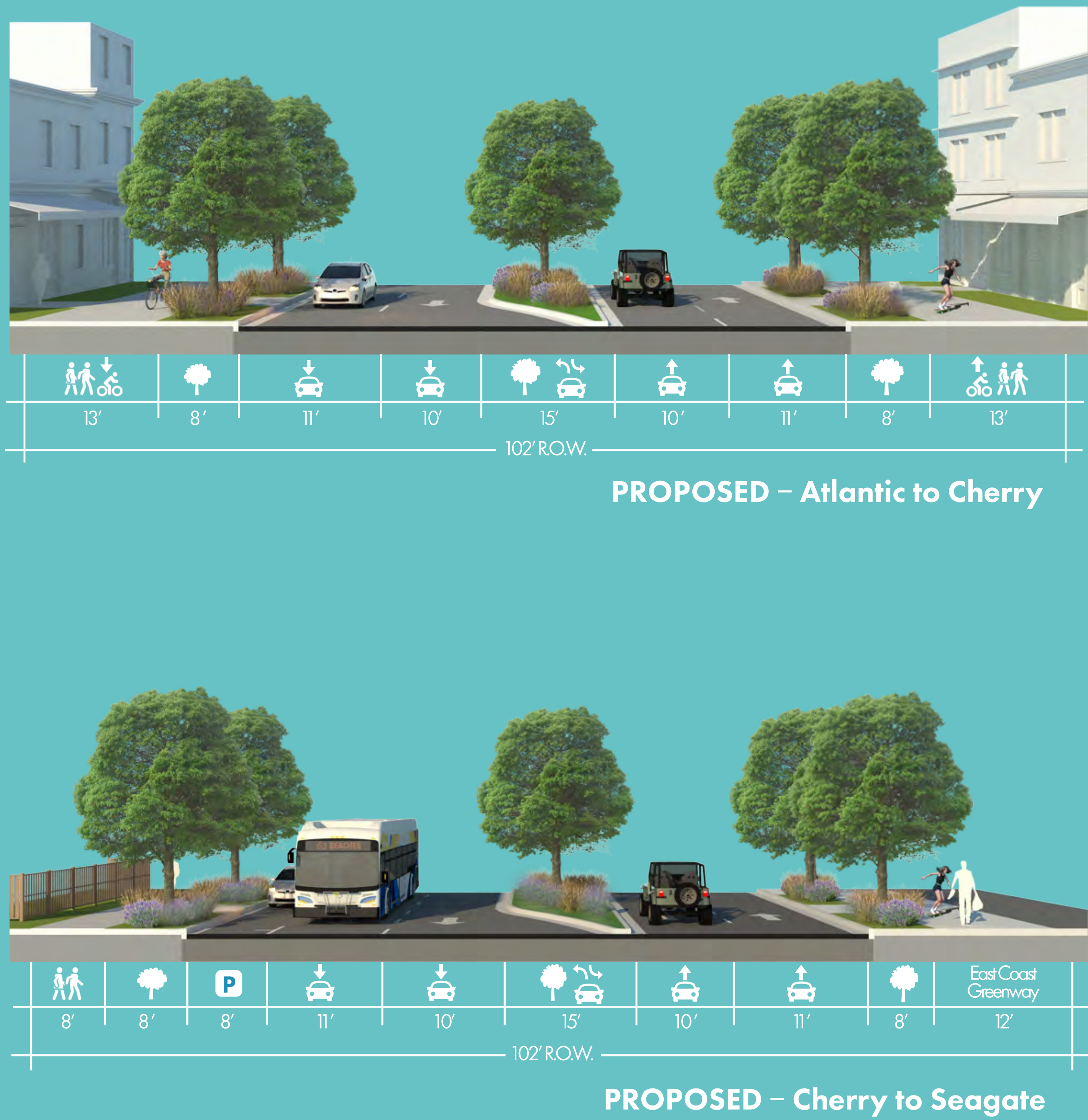
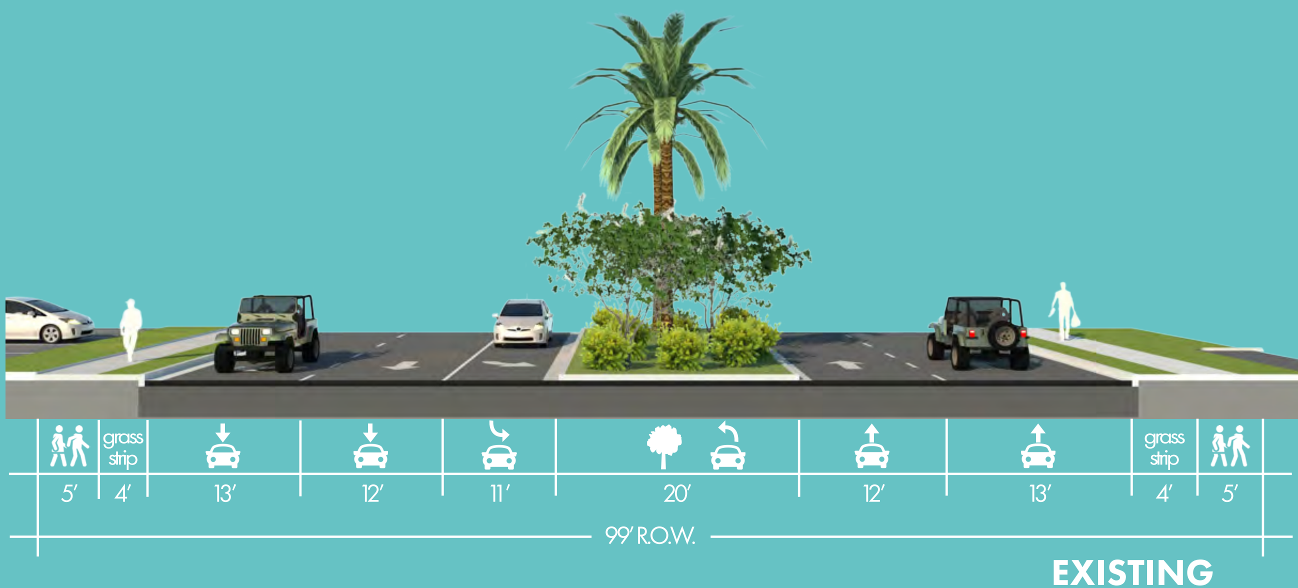


Figure 4.14: 3rd Street/A1A Proposed Street Sections

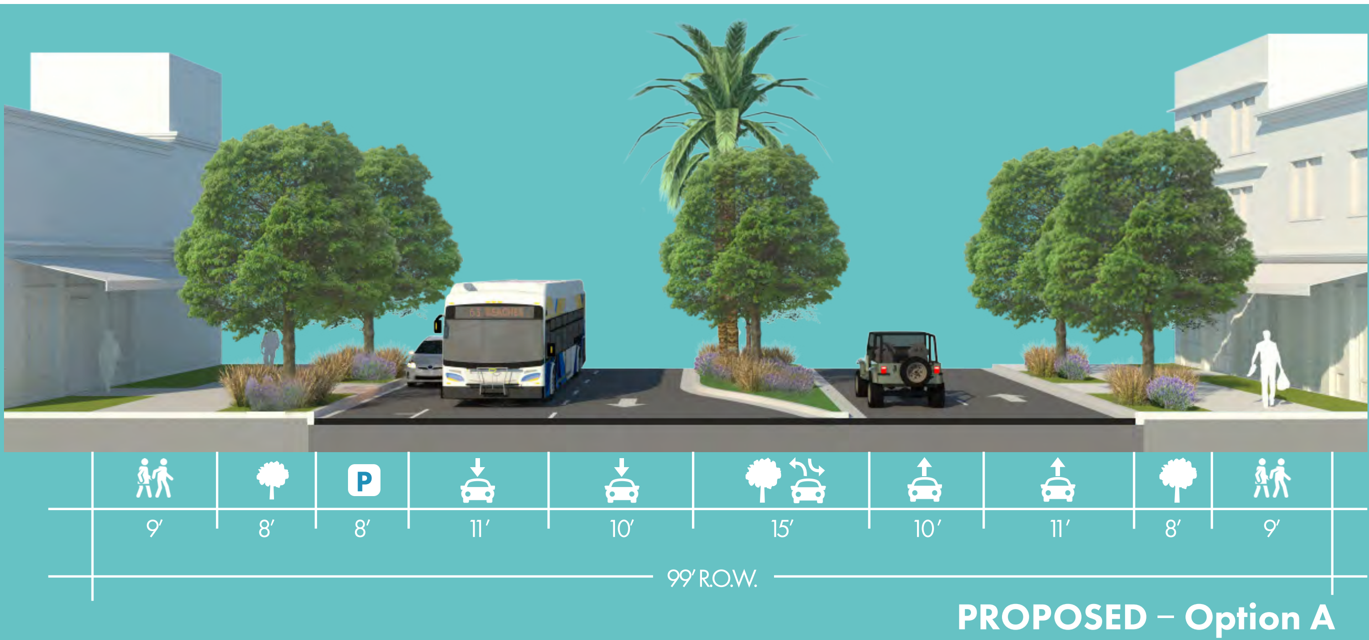
ATLANTIC BOULEVARD (LOOKING WESTBOUND)

Atlantic Boulevard is the northern boundary that separates Neptune Beach from Atlantic Beach. The FDOT street has five to six lanes with some lanes used for left-turns. The entire street is lined with suburban commercial lots or offices and a sea of parking. The speed is marked at 35 miles per hour, but cars drive much faster and pedestrians have difficulty crossing unless at a major intersection. A large median has palm trees and landscaping that transitions as a left-turn lane in areas. The sidewalks are 5′ on both sides and a small grass strip that makes it hard to walk alongside the fast moving cars.



Proposed – Option A: Lanes are narrowed to 10′ and 11′ for buses reducing the width to slow cars down. On-street parking is proposed on the Neptune Beach side to provide parking for businesses that front Atlantic. Buildings will be setback in accordance with setback requirements for the power lines. 10′ sidewalks and planting areas for shade trees will create a much more comfortable experience for pedestrians and users.

Proposed – Option B: Lanes widths remain consistent with Option A and the median stays the same width in both options 15′ to keep the existing Palm trees and add shade trees. In this option, a cycle track is proposed on the Neptune Beach side and 7′ sidewalks are shown on both sides. On-street parking is removed to accommodate the cycle track.



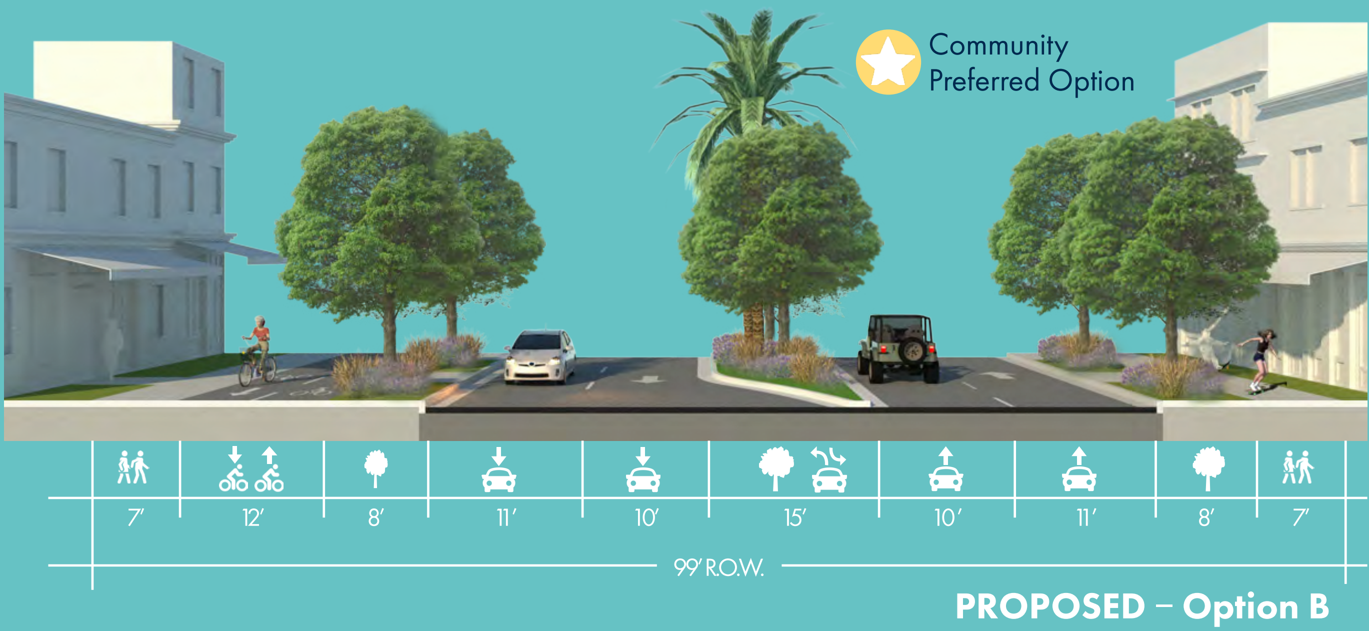
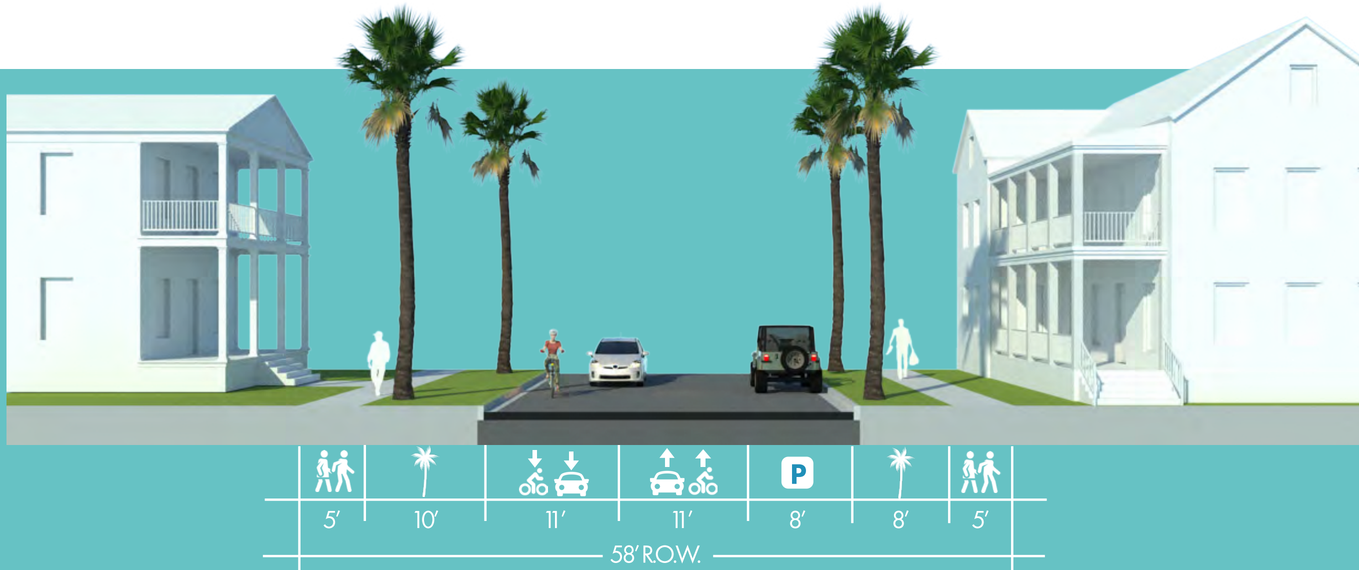


Figure 4.15: Atlantic Boulevard Proposed Street Sections



EXISTING

PROPOSED – Option A

1ST STREET (LOOKING SOUTHBOUND)

Existing: 1st Street is a residential street with approximately 58′ right-of-way that runs north to south as a two lane street. On-street parking is unmarked but available in some areas. Pedestrians and bicyclists share the street and although it feels safe the palm trees don't provide much shade for comfort.

Proposed – Option A: In this alternative, the pavement stays the same and shade trees and landscaping are added to the existing planting strips to provide more shade and to absorb more stormwater runoff.

Figure 4.16: 1st Street Proposed Street Sections

PROPOSED – Option B

PROPOSED – Option C

Proposed – Option B: The pavement width and curbs remain the same, however the street becomes one-way with a cycle track on the eastern side and on-street parking with pervious pavers on the left side. The on-street parking will have bulb outs with bioswales and shade trees and native landscaping to filter and absorb stormwater runoff.

Proposed – Option C: The last alternative is a yield street that has on-street parking on both sides with pervious pavers and bulb outs with bioswales and shade trees that provide a more comfortable experience for pedestrians. Where shade trees are not desired in front of the residences, palm trees will remain on all alternatives. Bicyclists will share the street as a sharrow lane.

IMPROVING ACCESS TO SUMMER SANDS

Figure 4.17: Summer Sands Entry, Brant & Atlantic Boulevard

ALTERNATIVE TO TRAFFIC SIGNAL AT BRANT BLVD.

While residents of the Summer Sands HOA voted no to open up Oakhurst Drive to vehicular access, this option would help alleviate some of the concerns expressed regarding Brant Boulevard. When traffic is at its peak on Atlantic Boulevard, Oakhurst Drive would provide an alternative exit route from the neighborhood, taking residents to Florida Boulevard and then left onto Atlantic with help from the traffic signal at that intersection. Though most Summer Sands residents are strongly opposed to opening Oakhurst Drive, they should take into consideration the fact that the Brant and Atlantic Boulevard intersection will not likely receive a traffic signal to facilitate left-turns out of the neighborhood any time soon.

Oakhurst Drive with bollards blocking off entry to Summer Sands

Residents of the Summer Sands subdivision have been vocal regarding the need for a traffic signal at Brant and Atlantic Boulevard. This has been an issue for residents of this area for years. Brant Boulevard is the only entrance into and out of Summer Sands. Without a traffic signal, residents complain about the time it takes to make left turns onto Atlantic Boulevard as they wait for a break in traffic. They also expressed safety concerns, as this movement requires them to wait in the median refuge, an area also shared by cars on Atlantic trying to make left turns and u-turns.

The City of Neptune Beach has brought these concerns to the Florida Department of Transportation's District 2 office, but they have rejected this intersection as a candidate to receive a new signal. The FDOT follows federal guidelines from the Manual on Uniform Traffic Control Devices (MUTCD) when determining whether traffic signals should be installed. The MUTCD describes a number of criteria, called "warrants", which define the need for a signal. These warrants are expressed in numerical requirements, namely volume of vehicular and pedestrian traffic. Proximity to other traffic signals and on/off ramps is another criteria taken into consideration.

Today, the volumes on Brant Boulevard and the land development context do not warrant a signal. Even if the FDOT context classification for this stretch of Atlantic Boulevard is changed from C3 Suburban Commercial to C4 Urban General, as recommended, that alone would not be enough. The one thing that could help is the mixed-use redevelopment of the commercial plazas on both sides of Brant, especially if designed as a truly walkable C4 environment. Additional traffic volume generated by more intense uses on these sites would also help support a signal.

ADDRESSING ATLANTIC BLVD & 3RD ST INTERSECTION

Throughout the Community Vision Plan process, residents have consistently highlighted the hazard that is the intersection of Atlantic Boulevard and 3rd Street. Only two of the three sides of this intersection have crosswalks. Both of these crosswalks are long and neither is considered a high visibility facility. In addition to the difficulty of crossing east to west and north to south on foot or by bicycle, this intersection has been the site of many car crashes.

Eastbound cars traveling fast on Atlantic Boulevard, which up until 3rd Street is designed as a 6-lane high speed suburban arterial, must suddenly slow down and adjust to the 2-lane urban main-street design of Atlantic Boulevard after this intersection. For speeding cars who travel this intersection on a green signal, the transition can be too much to handle, especially when alcohol is involved, leading to dangerous crashes.

In response to several recent collisions, the FDOT's District 2 office has fast-tracked this intersection for some quick-build safety improvements. While their design is an improvement, it focuses more on slowing down cars just before the signal and less on making this intersection a comfortable place for bicycles and pedestrians. The following pages show a series of design improvements for this intersection:

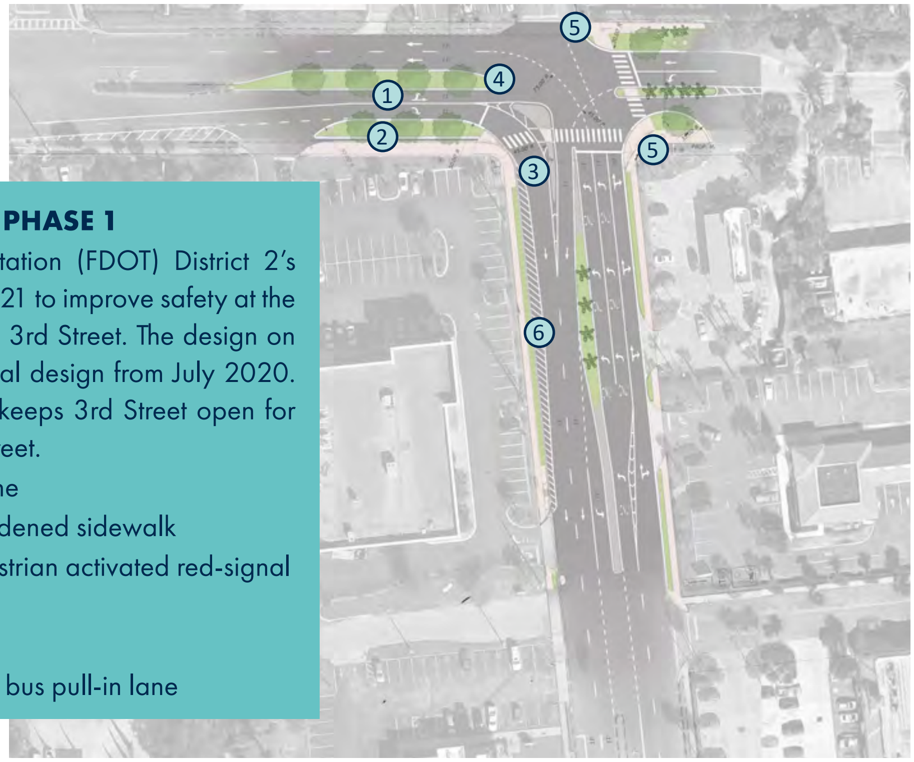
- Short-Term: Variation on FDOT's proposed design for implementation in 2021
- Mid-Term: Improvement to the short-term design, to be implemented with the extension of Lemon Street across A1A and back to Atlantic
- Long-Term: Major redesign of the intersection worthy of the desired C-5 context classification

Scene of a three-car crash on Atlantic in February 2019 (Source: News 4 Jax)

Young cyclist carefully crossing Atlantic Boulevard

Figure 4.18: Atlantic Boulevard & 3rd Street Intersection Improvements

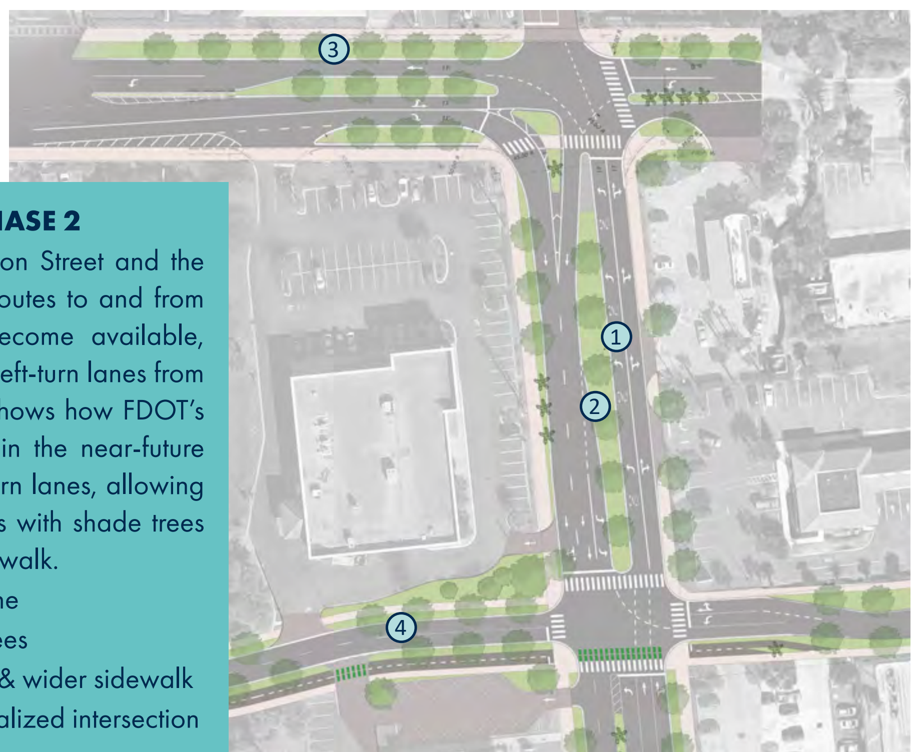
ATLANTIC BLVD & 3RD ST/A1A INTERSECTION



SHORT-TERM IMPROVEMENTS: PHASE 1

The Florida Department of Transportation (FDOT) District 2's office has fast-tracked a project for 2021 to improve safety at the intersection of Atlantic Boulevard and 3rd Street. The design on the right is a variation of the their initial design from July 2020. The key difference is that this design keeps 3rd Street open for left-turning movements onto Lemon Street.

1. Eliminated dedicated left-turn lane
2. Bulb-out with planting area & widened sidewalk
3. Free flowing right-turn with pedestrian activated red-signal
4. Expanded median
5. Reduced turning radius
6. Eliminated on-street parking and bus pull-in lane



MID-TERM IMPROVEMENTS: PHASE 2

With the westward extension of Lemon Street and the Town Center street grid, alternative routes to and from Atlantic Boulevard to 3rd Street become available, reducing the need for two dedicated left-turn lanes from 3rd to Atlantic. This Phase 2 option shows how FDOT's short-term design can be improved in the near-future with the elimination of one of those turn lanes, allowing for wider splitter islands and medians with shade trees and decreasing the length of the crosswalk.

1. Eliminated dedicated left-turn lane
2. Expanded median with shade trees
3. Curb extension with shade trees & wider sidewalk
4. Lemon Street extension with signalized intersection & separated two-way cycle track

LONG-TERM IMPROVEMENTS: PHASE 3 OPTIONS

After the extension of Lemon Street and the Town Center street grid, Neptune Beach can explore funding options with FDOT for a long-term reimagining of this key intersection. The following two options would greatly reduce the likelihood of vehicle speed and crashes, improving pedestrian and bicycle safety, while also creating a much more beautiful entry into the Beaches Town Center that provide opportunities for new public spaces and public artwork.

Option A: Single-Lane Roundabout*

1. Single-lane roundabout
2. Curb extension with shade trees & wider sidewalk
3. Wider medians with shade trees
4. Shorter crosswalk & pedestrian refuge
5. Separated two-way cycle track
6. On-street parking

Option B: Public Plaza

1. New public plaza
2. Wider medians with shade trees
3. Shorter crosswalk & pedestrian refuge
4. Purchasing of public easement in the Walgreen's property
5. Infill development

*FDOT has already studied a single-lane roundabout design for this intersection, which was deemed feasible so long as Lemon Street is extended and connected back to Atlantic.

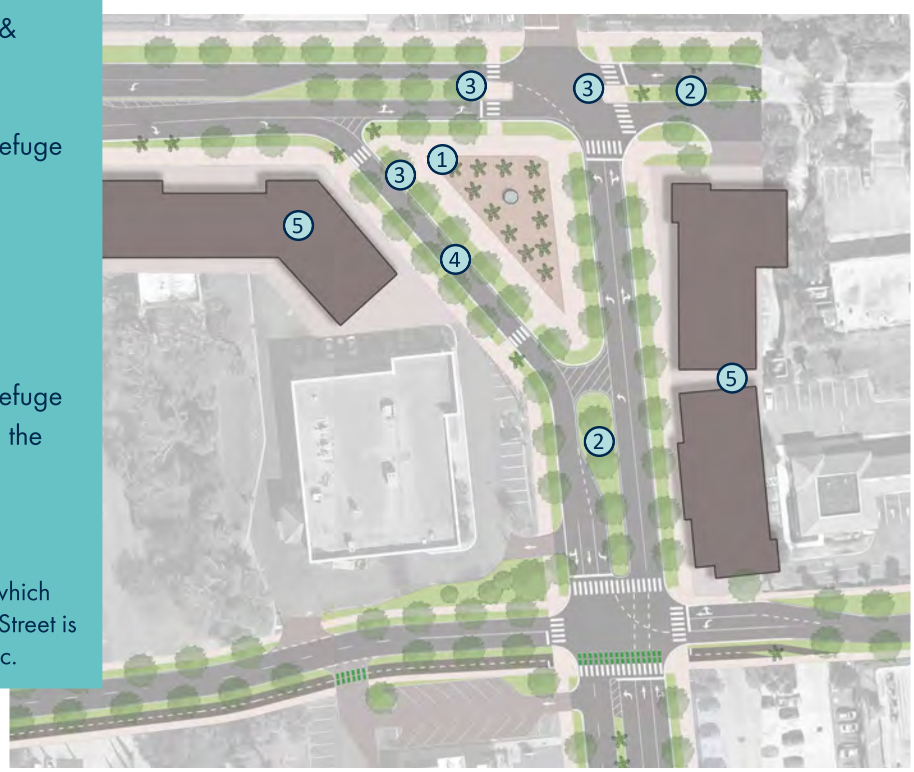


Figure 4.19: Atlantic Boulevard & 3rd Street Intersection Improvements

PENMAN AND FLORIDA FIVE-POINT INTERSECTION

TRAFFIC CALMING

The intersection at Penman Road and Florida Boulevard has a lot of congestion and slow signalized times for cars on Forest Avenue. To improve connectivity and safety a roundabout and an improved signalized intersection that prioritize pedestrians and the East Coast Greenway users are illustrated below.

An appropriately low speed is the key pedestrian safety element of roundabout design; roundabouts are designed to achieve a consistent, 15 to 25 mile per hour vehicle speed to minimize crash potential. When traffic volumes are light, many gaps are available for pedestrian crossing. When vehicle volumes are high, more vehicles pause at the yield line, allowing pedestrians to cross safely behind the first vehicle. The pedestrian crosswalk should occur one car length back (approximately 20 feet) from the yield line to place the pedestrian safely in view of the second waiting vehicle's driver.

The use of truck aprons in these conceptual designs allows the roundabouts to accommodate the turning movements of large trucks, buses, and boat trailers.

Figure 4.20: Penman & Florida Intersection: Existing Conditions

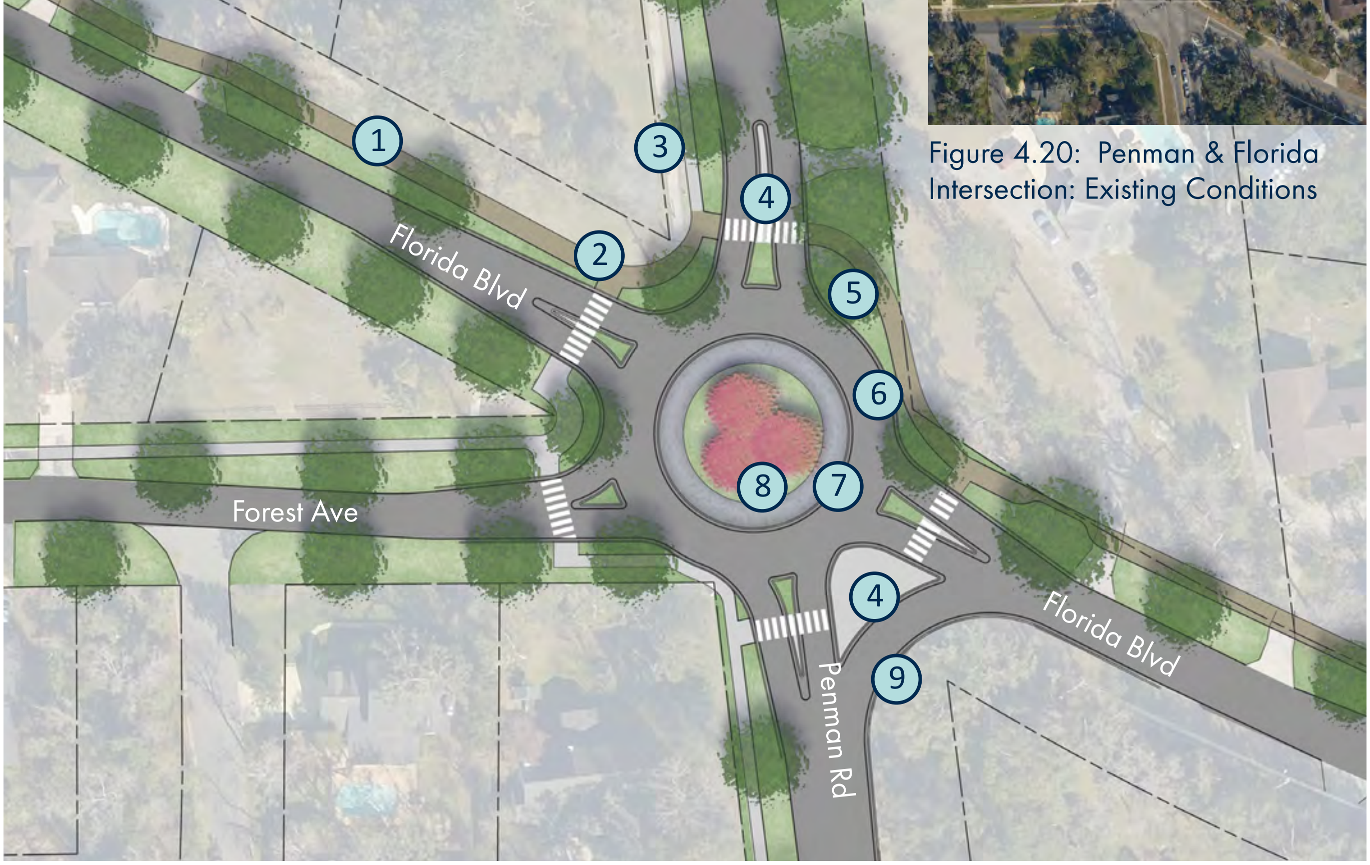


Figure 4.21: Penman & Florida Intersection: Proposed Roundabout Plan

FEATURES:

1. East Coast Greenway
2. ADA ramps
3. Proposed shade trees
4. Splitter Island and Pedestrian island with High visibility crosswalk
5. Smaller radii for slower right turns
6. Narrower lane in roundabout
7. Truck apron
8. Small inscribed circle with art or tree
9. Right turn only lane
10. Stop bar closer to the intersection for safer pedestrian crossings

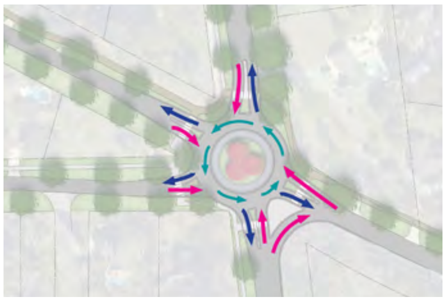


Figure 4.22: Roundabout: Direction of Car Traffic

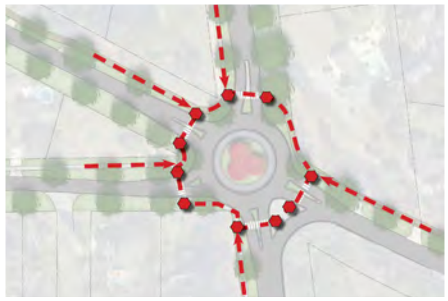


Figure 4.24: Roundabout: Pedestrian Route and Stops

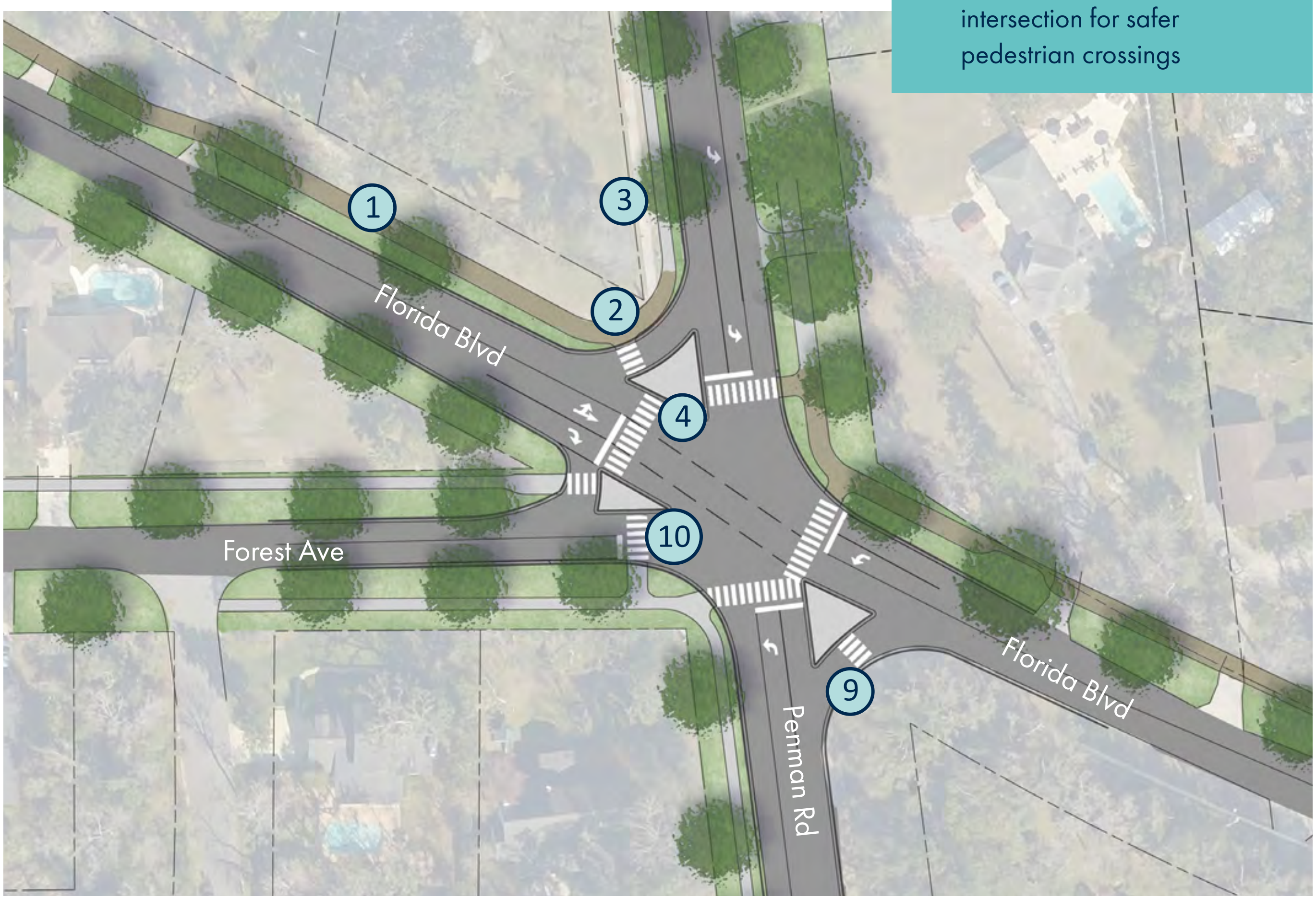


Figure 4.23: Penman & Florida Intersection: Proposed Signalized Intersection Plan

PENMAN AND FLORIDA INTERSECTION

SAFETY AND DESIGN

Modern roundabout intersections are safer for cyclists than traffic signals, due to the slower traffic speeds found in a roundabout. Entering and circulating at 25 mph or less, automobiles can easily share space with bicycles traveling through a roundabout. To traverse the roundabout, the cyclist simply travels through in the vehicle lane just like an automobile. Cyclists who are uncomfortable sharing the road with automobiles may, alternatively, go around the roundabout using the sidewalk system as if a pedestrian.

The improved intersection is a more economical option that can increase pedestrian safety through high visibility crosswalks, ADA ramps, pedestrian refuge islands, and more visibility at the intersection. The stop bars were moved closer to the intersection to slow cars turning right and increase visibility at crosswalks. Design alternatives can include a different pavement or pavers that will increase awareness as cars approach the intersection.

The intersection alternatives are a great opportunity to make this location feel like a gateway to Neptune Beach and a place that locals and visitors can feel safe using. Local artists can use the center of the roundabout as a platform to showcase an art sculpture or a signature tree can provide a great anchor.

Figure 4.26: Penman & Florida Intersection: Proposed Roundabout with Sculpture

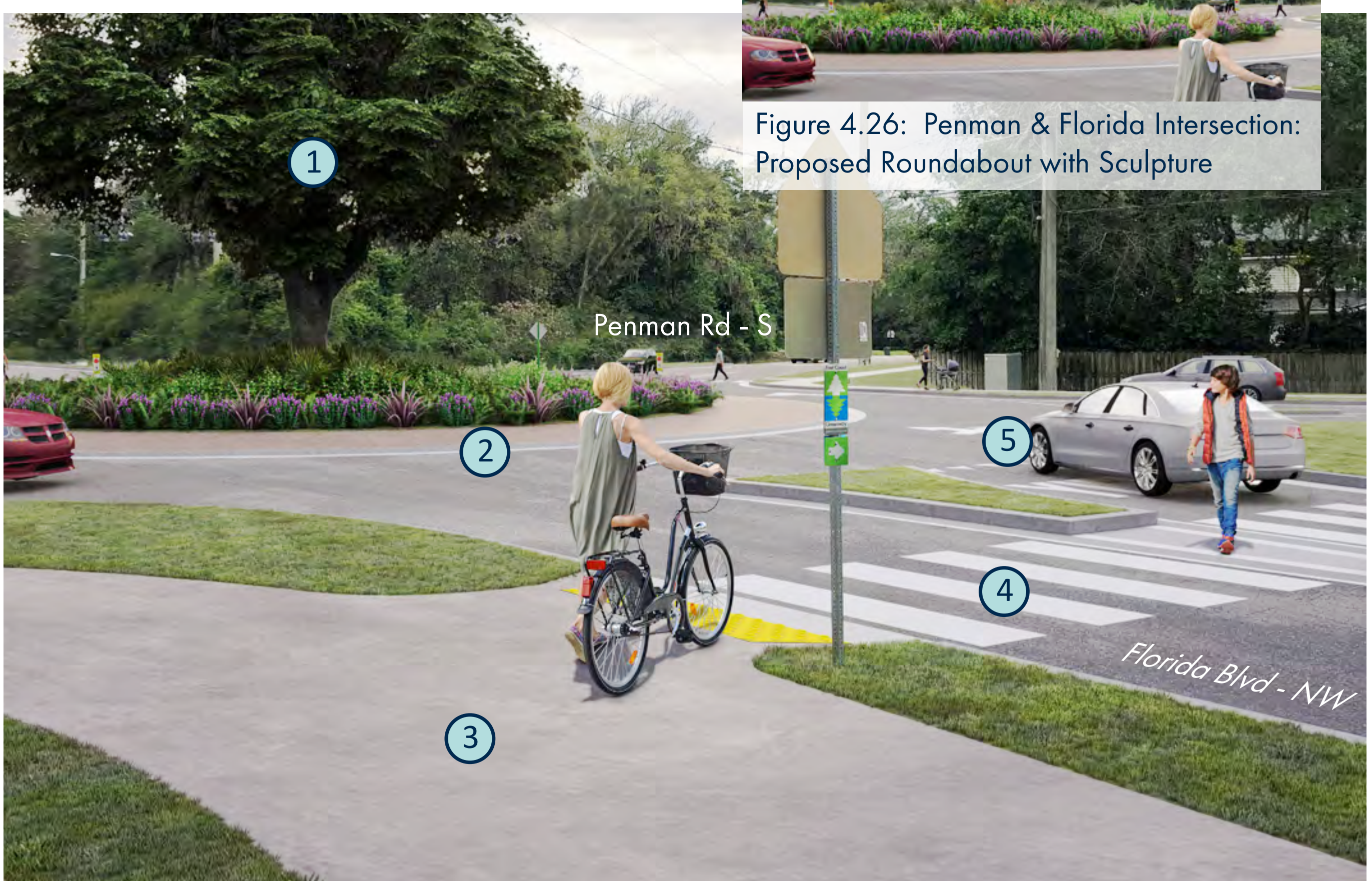


Figure 4.25: Penman & Florida Intersection: Proposed Roundabout with Tree

Figure 4.27: Penman & Florida Intersection: Existing Conditions

FEATURES:

1. Signature sculpture or tree in the roundabout options
2. Truck apron for buses, boat trailers, and large trucks
3. East Coast Greenway
4. High visibility crosswalk
5. Car yield zone; waiting space to enter the roundabout
6. Pedestrian Islands
7. Textured paver intersection
8. Right turn lane

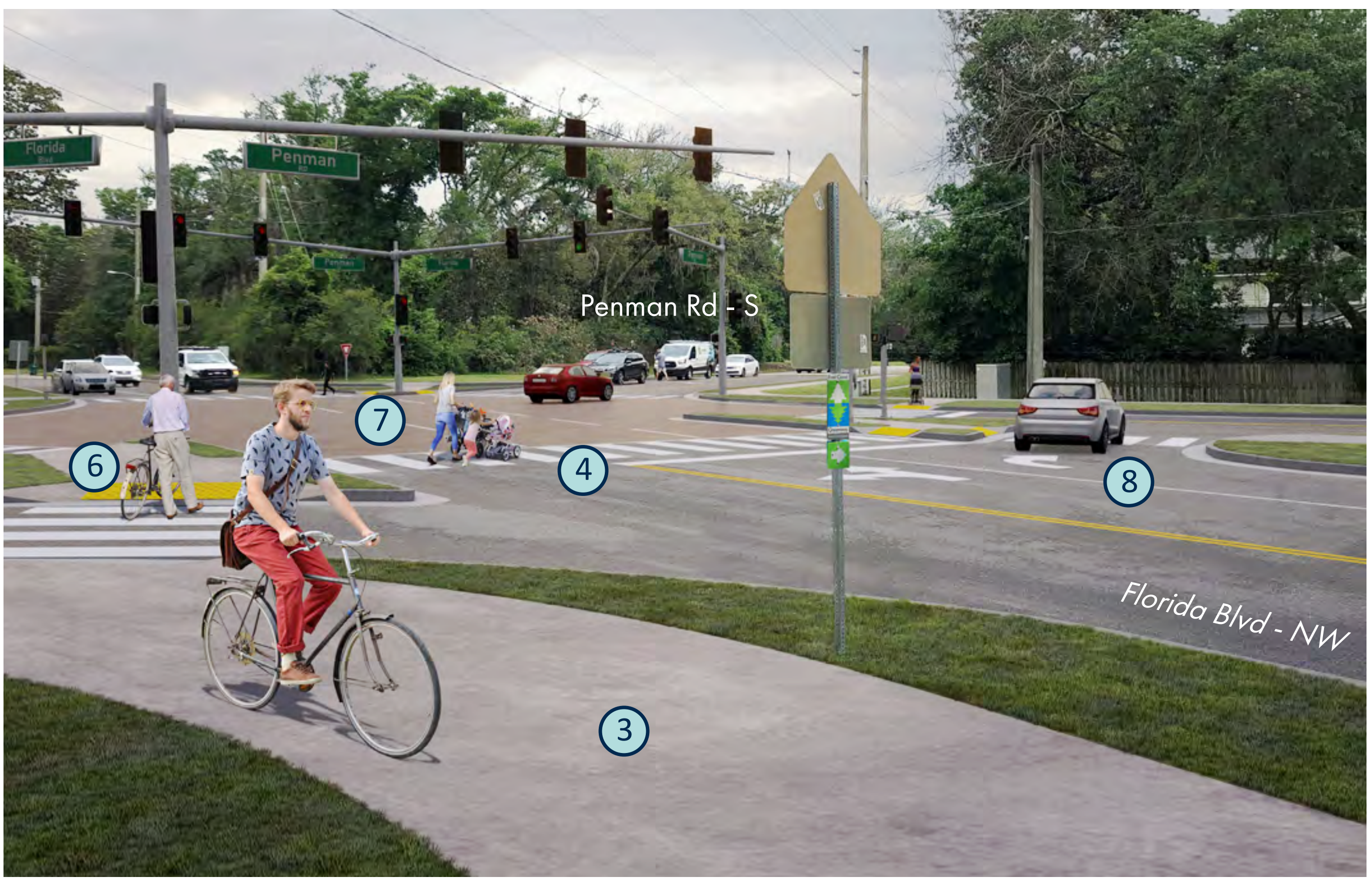


Figure 4.28: Penman & Florida Intersection: Proposed Signalized Intersection with Pavers

IN THE *FUTURE* NEPTUNE BEACH WILL:

have even more vibrant places for the community to gather and celebrate, in addition to easily accessible parks and recreational amenities that allow residents to connect with nature and lead healthy lifestyles.


Photo Credit: *The Florida Times-Union* archives, 2012

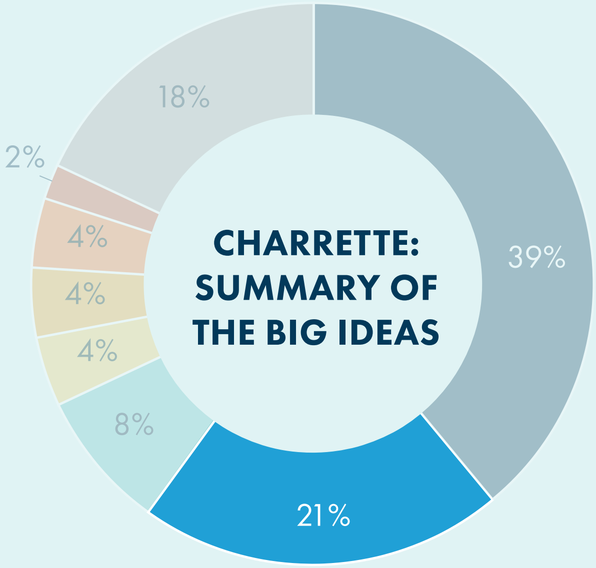
PART 2: WELCOMING OPEN SPACES & ACTIVE RECREATION

In a Citywide Input Survey circulated during the design charrette, citizens were asked what their favorite thing about Neptune Beach is. Out of 253 responses, 45 percent said "Quality of Place (local business, small town character,and beautiful streets)," 19 percent said "sense of community (festivals, social groups, and neighbors)," 18 percent said "family-friendly atmosphere," and 11 percent said "access to nature trails, and active recreation." Parks, recreation, public gathering spaces, and a connection to nature are integral ingredients in what makes Neptune Beach such a special place. This section deals with all of those topics and recommends improvements and policies that enhance all of the city's public and natural assets, and ensure that all people can safely access them.

PART 2: *Welcoming open spaces & active recreation*

KEY ISSUES TO ADDRESS	PROPOSED IMPROVEMENTS & POLICIES
• Need for more open spaces for the community to gather, especially in the Beach Town Center; right now the only places to host events are at Jarboe Park and on 1st Street • Improvements to Jarboe Park • Need for more shade trees, particularly east of 5th Street • Difficulty in safely accessing places like the beach, Jarboe Park, schools, and the Beaches Town Center on foot or by bike • Need for safer street crossings and more dedicated trails • Lack of public access to the Intracoastal waterways for kayaking, fishing, and walking • Concern that recreational amenities like trails and marsh walks will intrude on the security and privacy of property owners • Need for a permanent location for the City's Senior Activities Center • Lack of public art and murals	• Construct a low-stress network of trails, shared streets, mobility lanes, and multi-use paths that connect residents in all parts of town to parks, the beach, Intracoastal Waterway, schools, and the Beaches Town Center • Prioritize network and intersection safety along pedestrian and bicycle routes to Fletcher High School and Neptune Elementary and implement Safe Routes to School programs • Invest in recreational amenities along the Intracoastal, including kayak launches, marsh walks, and a pedestrian and bicycle bridge across Hopkins Creek that connects the two sections of Seagate Avenue • Transform 1st Street from Atlantic Boulevard to Orange Street into a shared plaza street, that can be easily closed down and used for public events • Transform the final segment of Atlantic Boulevard from 1st Street to the beach into a car-free public plaza and encourage infill development along the edges of the surface parking lot on that corner • Invest in public art and establish a public art steering committee to help curate pieces throughout the city • Invest in street trees that provide shade • Use native plants that help that help to filter stormwater and advocate for low impact and natural edge stormwater canals over conventionally engineered, hard edge channels • Follow Crime Prevention through Environmental Design (CPTED) principles when designing streets, parks, and public spaces • Find a permanent location for the Senior Activities Center and help support its programs

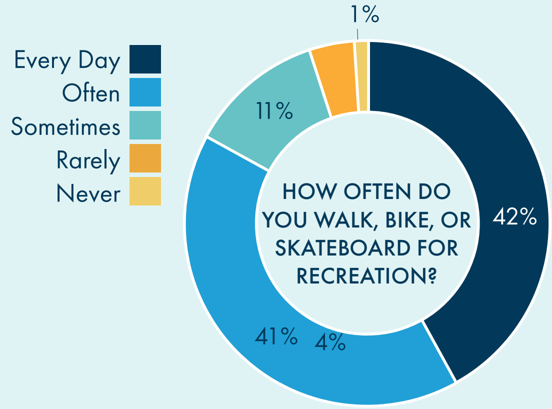
SUMMARY OF WHAT WE HEARD:

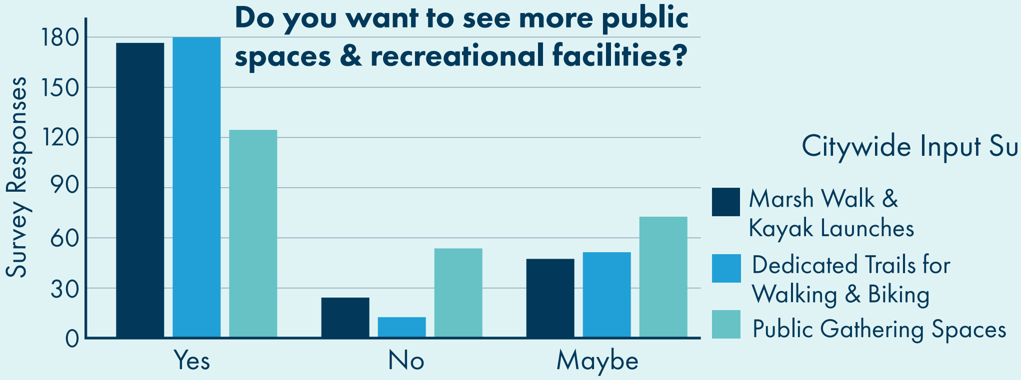


Public Space, Parks & Recreation

21%

- "Public access to Intracoastal for kayaks & recreation"
- "More shade trees along all connecting streets/trails"
- "Improve Jarboe Park & add new pocket parks/plazas"
- "Create trail along drainage to Jarboe, Fletcher and marsh"
- "Maintain a permanent Senior Center"





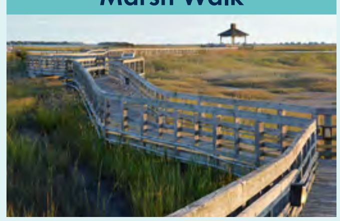
Citywide Input Survey Results (April 2020)

Playground/Active Park

Kayak Launch

Neighborhood Square

Marsh Walk



Neighborhood Workshop & Survey Responses: Most Popular Types of Public Spaces, Amenities & Community Facilities

Shared Street

Senior Center

Parklet/Pocket Park

Figure 4.29: Summary of What We Heard: Parks, Open Spaces & Recreation

Open Space & Recreation Improvements

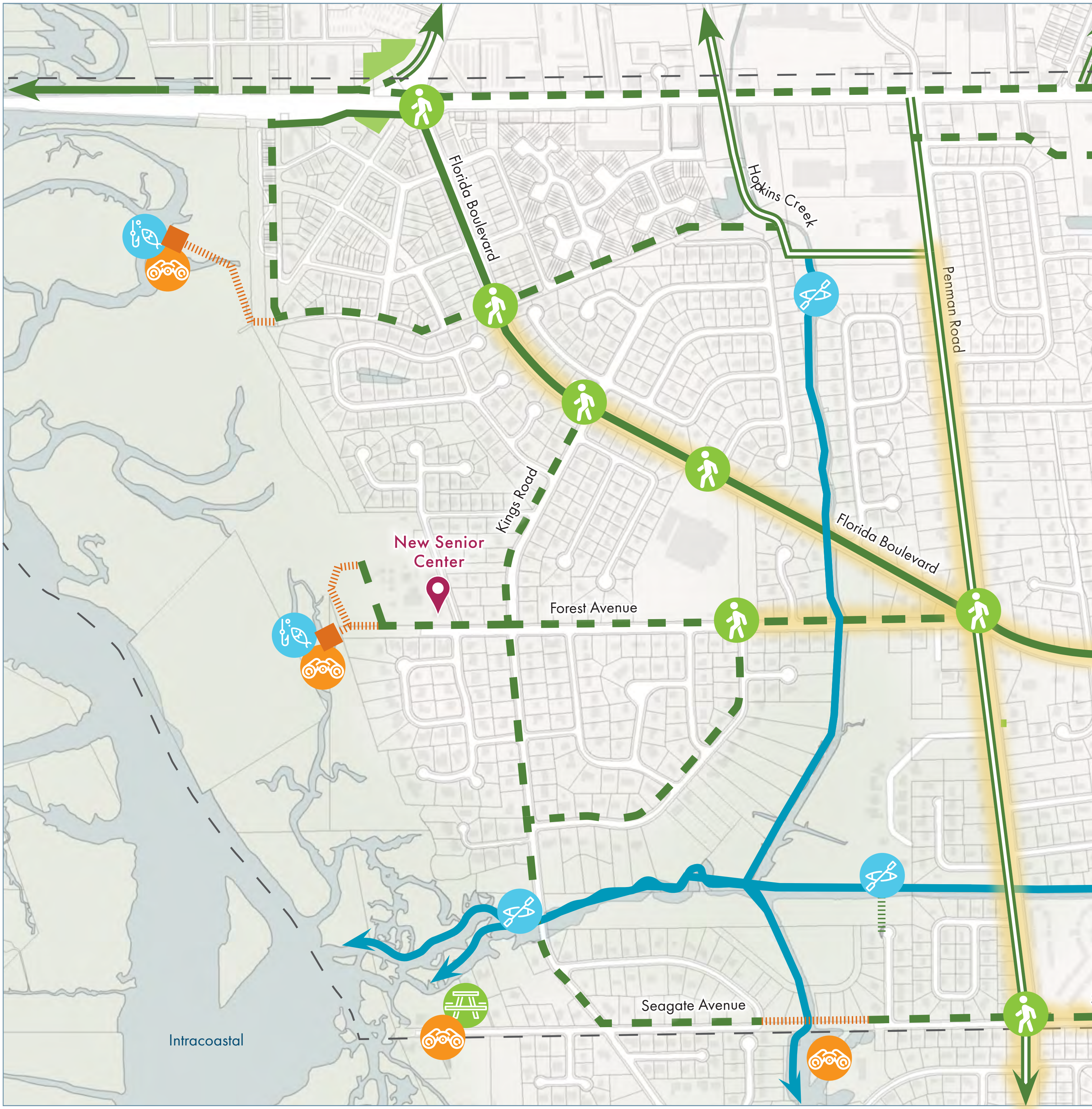
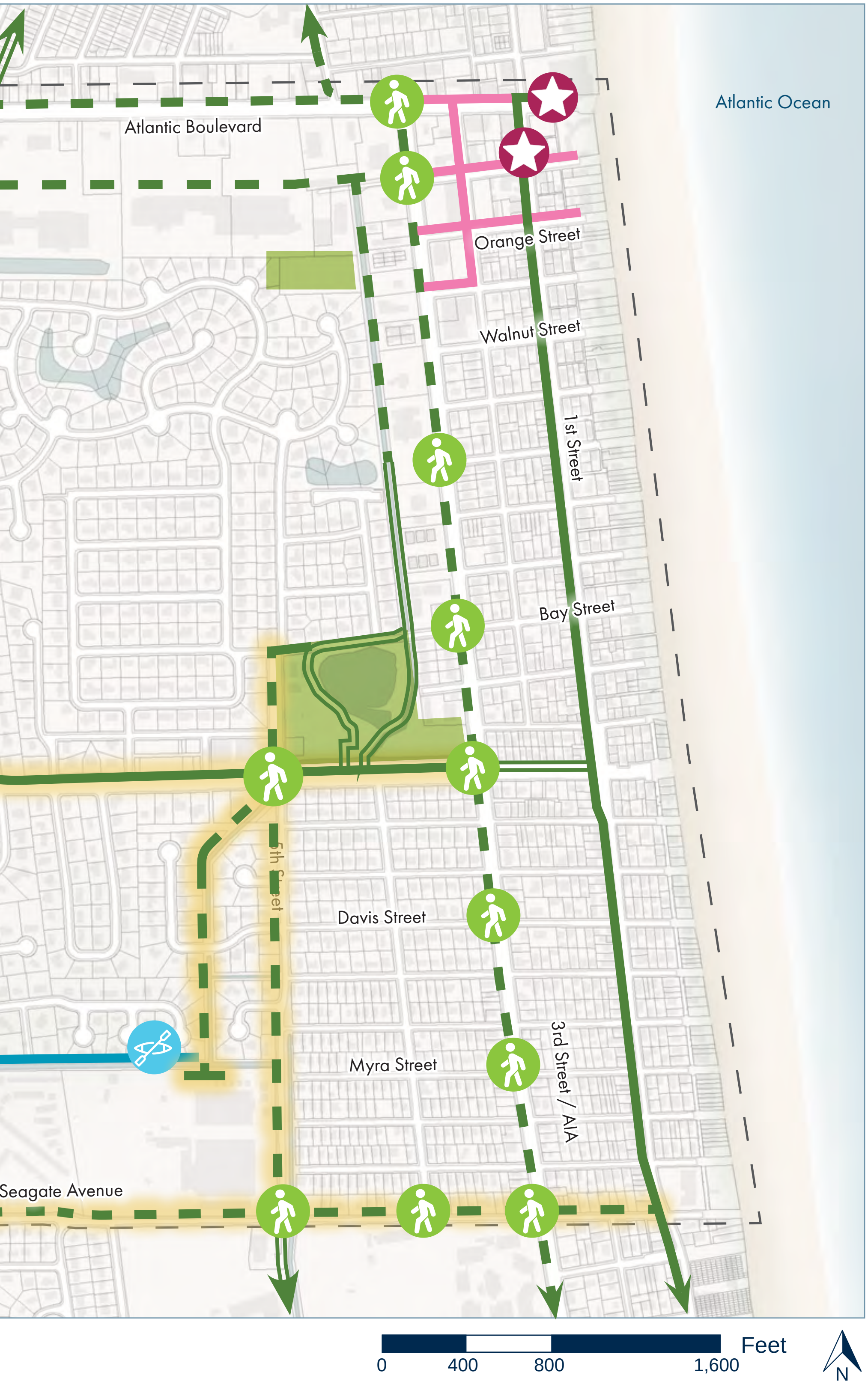


Figure 4.30: Open Space & Recreational Space Improvements Map



OPEN SPACE & RECREATIONAL SPACE IMPROVEMENT MAP:

Public open space and recreational space improvements were one of the most frequently visited topics during this public engagement process. The unique geography and landscape of Neptune Beach has endowed the city with valuable natural resources. The city has access to the beaches, marshes, and canals. However, not all the natural resources are easily accessible. People also want more opportunities to connect with the water, be it kayaking or fishing. The trail network can also be expanded to enhance connectivity in a sustainable and environmentally sensitive way.

MAP LEGEND

- New Signature Open Space
- Existing Park
- Pocket Park
- Street Crossing Priorities
- Lookout
- Kayak Launch
- Fishing
- Pedestrian Priority Slow Streets
- Bike/Ped Low-Stress Network
- Safe Routes to School Priority
- Marsh Walk

Existing vs. Proposed

- Existing Facility
- Planned Facility
- Proposed Facility

- City Boundary

1ST STREET REDESIGN: SHARED STREET / "WOONERF"

A big idea that came up during the design charrette was adding more public space to the Beaches Town Center. Some residents suggested closing down streets in the BTC to cars entirely. This illustration shows how 1st Street from Atlantic Boulevard to Orange Street could be redesigned as a *"woonerf"* or shared street. "Woonerf" is Dutch for "living street", a street built with people and gathering in mind. This curbless design makes the space feel like a plaza and can be easily closed off to cars during certain days of the week or for special events, while still allowing cars and delivery trucks to move through and park during off-hours or whenever needed.

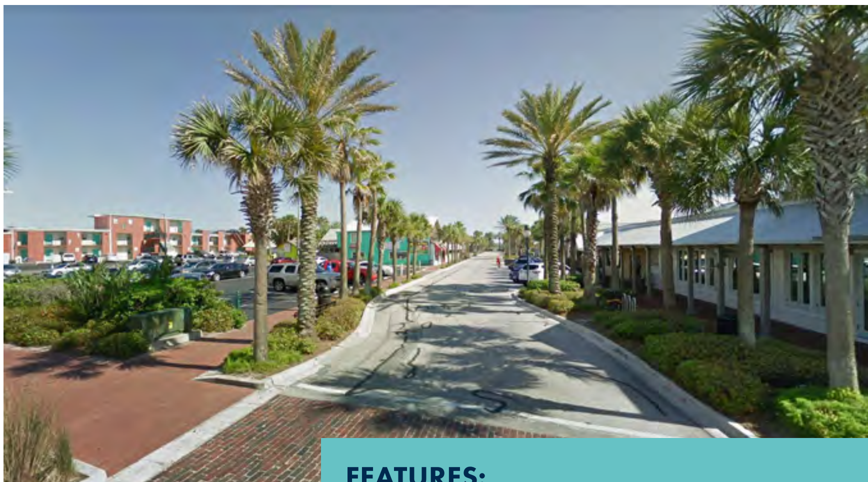


Figure 4.31: 1st Street Existing Condition

FEATURES:

1. Curbless design maximizes flexibility of how the street is used and programmed and gives the space a plaza-like feel
2. Tactile pavers and curbless street improve how the street functions for people with physical and visual impairments
3. Brick/stone pavers add beauty, increase permeability, and slow down cars
4. Street trees add much needed shade
5. Generous planting areas with underground silva cells ensure optimal tree growth
6. High visibility crosswalks help reduce vehicle/pedestrian conflicts
7. New infill development helps to define the space (parking would remain behind these new buildings)
8. Bicycle parking for people riding to the BTC
9. Utility boxes can be painted by local artists
10. Parallel parking spaces on both sides of the street replace the diagonal parking and can easily be used for overflow dining space too

Figure 4.33: 1st Street Proposed Redesign - Example When Open to Cars

Figure 4.32: 1st Street Proposed Redesign - Example When Closed to Cars

Atlantic Plaza Proposal

Figure 4.34: Atlantic Between 1st & Midway Street Existing Condition

ATLANTIC PLAZA PROPOSAL

Another idea to provide the Town Center with more open space is to transform the last segment of Atlantic Boulevard from 1st Street to the beach into a public plaza. This public space could become Neptune Beach's new postcard destination. Entrances into One Ocean and the Seahorse Inn could be easily re-routed and infill buildings along the edge of the Inn's parking lot would help define the space. Implementation would require coordination between Neptune Beach, Atlantic Beach, and the City of Jacksonville.

Figure 4.35: Atlantic Plaza Proposal

FEATURES:

1. Close off the final segment of Atlantic and transform the remaining space from 1st Street to the beach into a plaza
2. Curbless design at the Atlantic & 1st Street intersection ties together the 1st Street redesign and this new public plaza
3. Tactile pavers and curbless street improve how the street functions for people with physical and visual impairments
4. Brick/stone pavers add beauty, increase permeability, and slow down cars
5. Most of the existing palms remain to keep the character
6. A central green with large trees add much needed shade and a place to picnic
7. Several benches and moveable table and chairs give people a place to rest and gather
8. Street lights help keep the space safe at night
9. New infill development helps to define the space (parking would remain behind)
10. Ample bicycle parking to accommodate more people riding to the Town Center

VALUE OF STREET TREES:

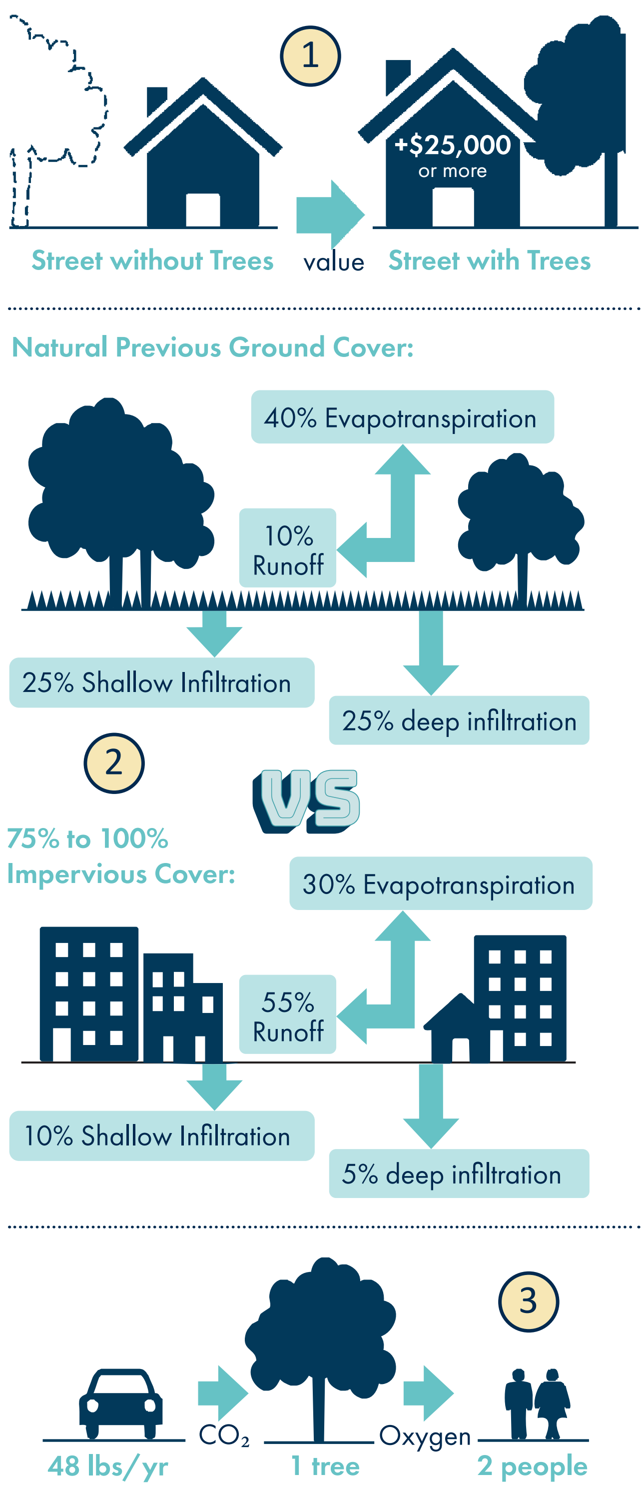


Figure 4.36: Value of Street Trees

There was a lot of public input on designing streets with more shade trees. Beyond design aesthetics, urban trees provide numerous economic and environmental benefits to the community.

Economic Value

Research has shown that trees positively affect both property values and office occupancy rates. National studies show that trees increase property values by 5 to 15 percent.

Human Health

Trees remove harmful pollutants from the air and soil and generate oxygen. Research has linked the presence of urban trees to reduced rates of cardiovascular disease, strokes and asthma due to improved air quality. Simply taking a walk down a tree-lined street, even in an urban setting can significantly reduce stress level by helping interrupt thought patterns that lead to anxiety and depression. Increased tree canopy can be directly correlated with wellness and social equity.

Reduce Stormwater Runoff and Pollution

Trees decrease the amount of stormwater runoff and pollutants that eventually reach local waterways. Trees perform this important service through evapotranspiration and retention. The leaves and branches of trees intercept rain and prevent a portion of it from reaching the ground. The root structure of trees improves conditions for the infiltration of stormwater into the soil, further reducing the amount of runoff. Trees are also capable of absorbing certain pollutants.

Carbon Storage and Sequestration

Carbon dioxide (CO2) is commonly known as a type of greenhouse gas associated with climate change. The photosynthesis process of trees helps to reduce concentrations of CO2 in the air by sequestering and storing carbon. Carbon sequestration varies based on tree species and age. Mature large trees store the most carbon.

THE SEVEN ROLES OF THE URBAN STREET TREE:

1 Define the space of the street

This particularly applies to streets that are too wide for the height of the buildings, streets with holes in the street wall, or suburban streets with buildings too far apart to contain the space of the street. Mature trees provide a canopy.

2 Define the pedestrian space

A mature canopy hides the tops of tall buildings, giving the sidewalk a consistent human scale.

3 Calm traffic and protect pedestrians

The tree is aided in this by on-street parking.

4 Filter the sunlight

Deciduous trees, unlike evergreen or palm, serve different functions in the summer and winter. Trees also lower city temperatures in the summer and change carbon dioxide into oxygen through photosynthesis.

5 Bring order to street

Trees should be laid out with regular geometries, repetition, consistent sizes, and alignment. On long, straight streets, trees that form canopies over the street limit the visual length of the street.

6 Visually soften streetscape

At some times of the day, the shadows are as beautiful as the trees.

7 Introduce the beauty of nature

Living plants contrast with the buildings and in many parts of the world introduce seasonal change, color, and fragrance.

Dover, V. and Massengale, J., "The Seven Roles of the Urban Street Tree," *Street Design The Secret to Great Cities and Towns* (Wiley, 2014).

PROMOTING ART AND CULTURE IN PUBLIC SPACES

Arts and culture not only reflect the spirit and soul of a place, facilitating a sense of belonging, but they are also an essential economic asset, attracting visitors and supporting businesses. Despite the existence of a vibrant community of local artists in the beaches and greater Jacksonville area, Neptune Beach lags behind its neighbors when it comes to fostering public art and expression. While the North Beaches ArtWalk hosted each month at the Beaches Town Center is a popular event, the city can look at more ways to incorporate art and creative placemaking when designing streets and public spaces throughout Neptune Beach.

During the design charrette week, a citywide input survey was circulated online. The survey received 253 online responses. When asked whether or not there is an opportunity to encourage more public art and cultural production (music venues, artist studios, maker spaces, festivals) in Neptune beach 70 percent of respondents said yes. Citizens were then asked if they had any ideas about how to incorporate more art into the city. Amazingly, over 128 people wrote in responses with their ideas. A small sample of their recommendations included:

- Murals (this was echoed by several people)
- A public piece of art at the roundabout on the eastern end of Atlantic Boulevard
- Murals on the sides of the highway and on the underpass at Atlantic & Florida Boulevard
- Sculptures, murals, and cool art/play structures in public parks
- Small, reasonably priced rentals for artists
- More art displays at the public library
- Year-round decorative lighting
- Public mosaics, more art galleries/co-ops

STRATEGIES TO PROMOTE & EXPAND ART

- Partner with local organizations, such as Jax is Rad, the Cultural Council of Greater Jacksonville, the North Beaches Art Walk Association, the Beaches Branch Library, and the BTC Agency to provide new programs that support public art and local artists, as well as to connect artists in the area with property owners looking to commission an art piece
- Establish a local arts commission or public art steering committee of local artists, community stakeholder, and residents to help select artists and curate public art around Neptune Beach
- Adopt a public art ordinance which requires a percentage of development budgets for projects of a certain size be used for public art
- Provide incentives for the redevelopment of large commercial properties, like the old Kmart site, to include a signature public or art piece
- Support the creation of murals
- Continue to support the anchor events and festivals that occur monthly annually at the BTC
- Subsidize permit fees for non-profit cultural and arts organization, as well as for local artists creating new studio spaces
- Create a temporary occupancy permit to allow for pop-up arts and cultural uses in vacant downtown storefronts and lots
- Invest in public art with projects such as:
  1. Painted utility boxes in public spaces
  2. Sculptures in roundabout intersections, potentially at Florida Blvd. & Penman Rd.
  3. Murals along the Atlantic Blvd. underpass
  4. Murals and pocket park behind the library
  5. Signature painted water tower

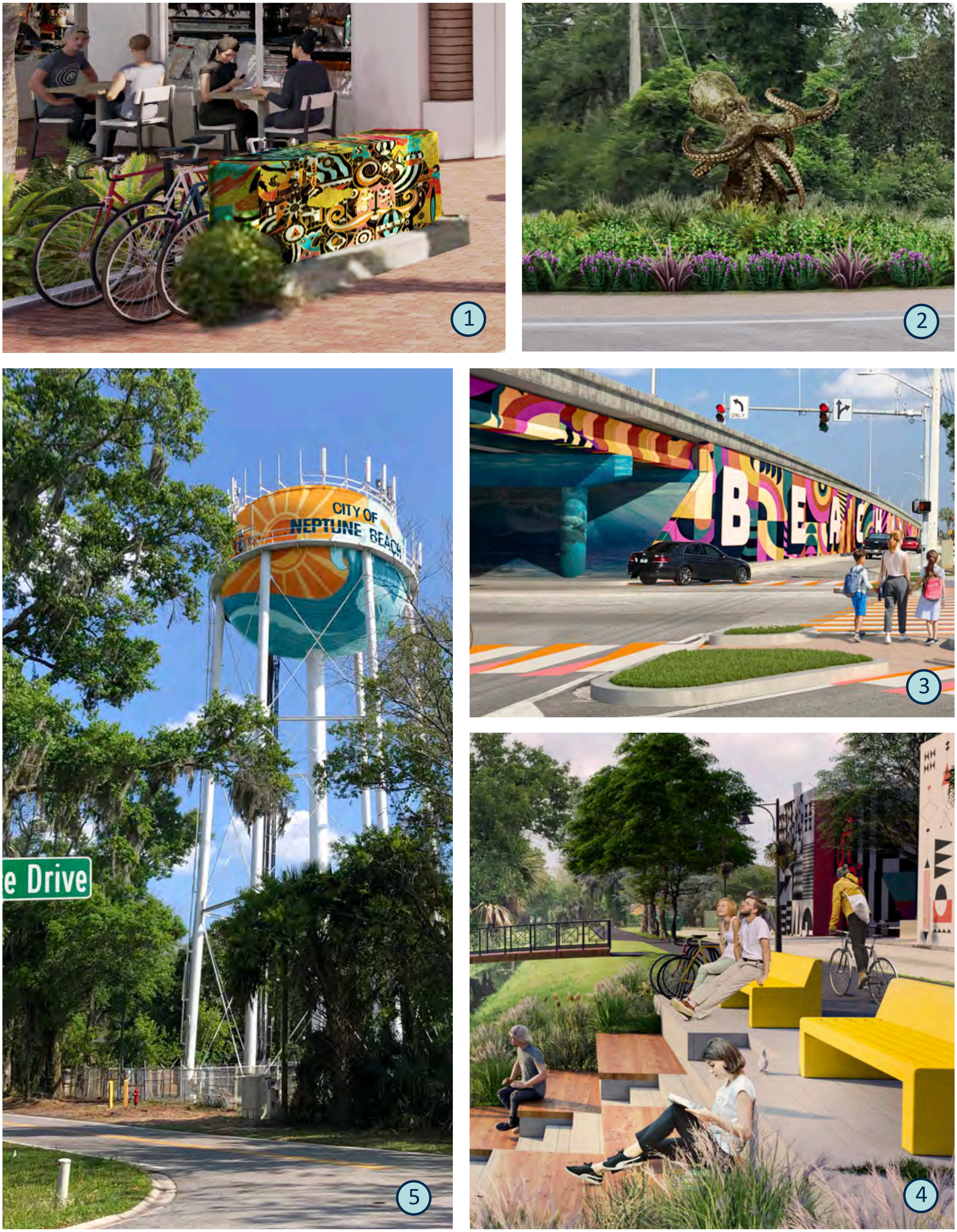


Figure 4.37: Sample Ideas for Public Art in Neptune Beach

~~IMPROVING BEACH ACCESS POINTS~~

There are 25 beach access points along the coast of Neptune Beach. Most access points located at the end of streets have at least 50′ in width of right-of-way. The access point at the end of Florida Boulevard has roughly 76′ of right-of-way, whereas access points at the end of Azalea, Palm, and Rose Place have less than 50′. While most access points have wooden walkovers over the dune, a couple have only small narrow sand paths that may be difficult for people with disabilities. Atlantic Boulevard and Seagate Avenue, on the other hand, have wide, flat sand paths to the beach.

Access points with dedicated parking spaces and bike racks are not equally spaced along the coast. A survey of each of these access points shows that there is a high concentration of beachside parking in the general vicinity of the intersections of:

- 1st Street & Lemon Street
- 1st Street & Florida Boulevard
- 1st Street and Seagate Avenue

Vehicular parking options in these areas are largely limited to handicap spaces though there are a few dedicates beach access parking space, as well as on-street parking throughout the neighborhood.

Bicycle parking is more abundant than vehicular parking along the Neptune Beach coast. For reference, of the 25 beach access points, 10 have bike racks. Most often, though, access points are equipped with a single 2-bike rack.

<u>Beach Access Parking Heatmap</u>

The heat map depicts the density of vehicular and bicycle parking spaces along the beach. The higher the density, the more parking is located near the beach access points. The heatmap values are calculated using the Kernel Density function in GIS.

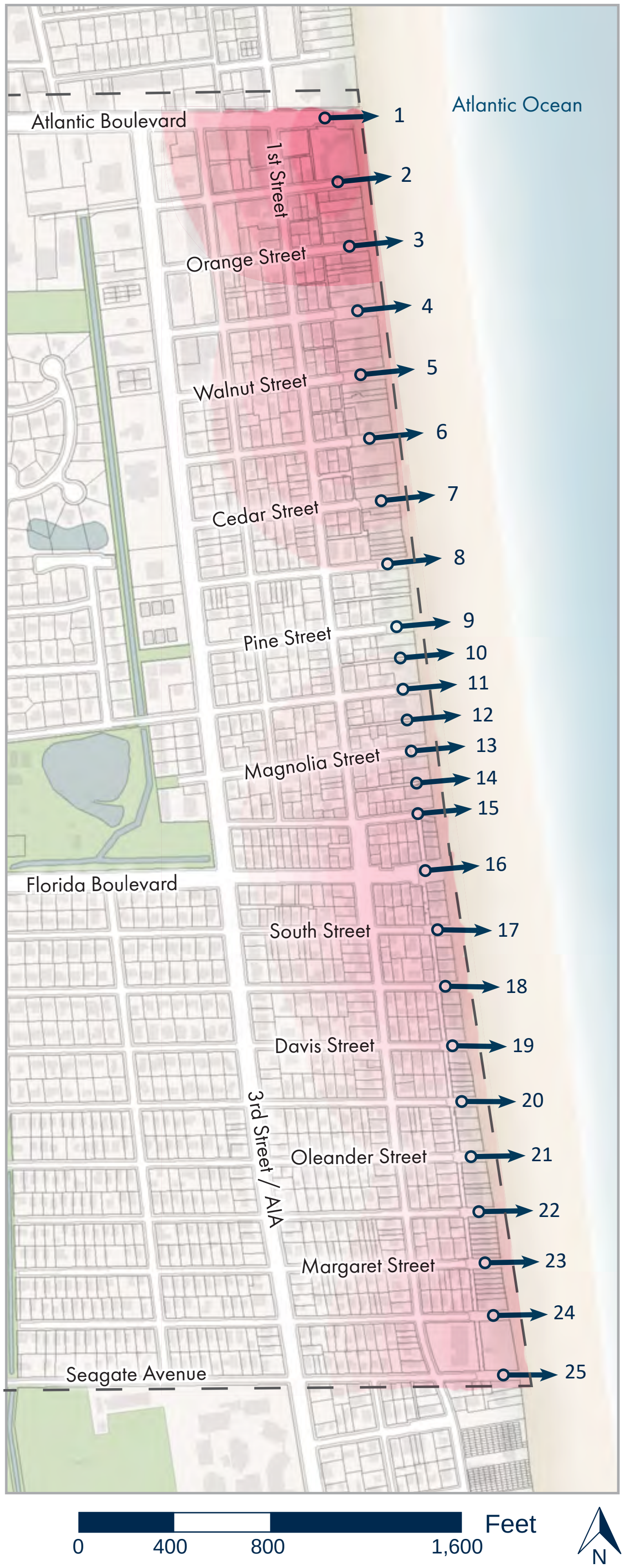
Figure 4.38: ~~Beach Access Point Proposed Improvements~~

~~Beach Access Improvements~~

~~With a minimum right-of-way width at most access beach points of 50′, there is plenty of space for improvements. The illustrations on the left show two possible configurations for updated beach access points. One with three parking spaces and another with five. If these were implemented (alternating between the two designs) at applicable beach access points, that would add roughly 50 additional parking spaces for beach goers. Key design elements include:~~

1. ~~Tufstone permeable grass pavers~~
2. ~~Concrete ADA parking spaces and 6′ wide pathway to the walkover~~
3. ~~Bike racks, recycling bins & trash cans~~
4. ~~Single bench and lamp post~~

Figure 4.39: Beach Access Points



SURVEY OF EXISTING BEACH ACCESS POINTS

	Access Street	Dune Walkover	Bike Spaces	Dedicated Car Spaces
1	Atlantic Blvd.	Flat Sand Path	-	15 (ADA-1)
2	Lemon St.	Yes	60	10 (ADA-4)
3	Orange St.	No	-	Limited*
4	Cherry St.	No	-	Limited*
5	Walnut St.	Yes	2	Limited*
6	Myrtle St.	Yes	2	Limited*
7	Cedar St.	Yes	-	Limited*
8	Oak St.	Yes	-	Limited*
9	Pine St.	Yes	-	Limited*
10	Azalea Pl.	No	-	Limited*
11	Bay St.	Yes	-	Limited*
12	Palm Pl.	No	-	Limited*
13	Magnolia St.	Yes	-	Limited*
14	Rose Pl.	No	-	Limited*
15	North St.	Yes	2	Limited*
16	Florida Blvd.	Yes	15	Limited*
17	South St.	Yes	6	Limited*
18	Bowles St.	Yes	-	Limited*
19	Davis St.	Yes	-	1 (ADA-1)
20	Lora St.	Yes	-	Limited*
21	Oleander St.	Yes	-	Limited*
22	Myra St.	Yes	-	Limited*
23	Margaret St.	Yes	-	Limited*
24	Hopkins St.	Yes	4	2 (ADA-2)
25	Seagate Ave.	Flat Sand Path	2	Limited*

* Many of the residential streets that lead to beach access points have limited and scattered public on-street spaces for beach goers

MAP LEGEND

Beach Access Point

Car/Bicycle Parking Density

Low

Medium

High

IMPROVING MARSH ACCESS

MARSH ECOLOGY

Marshes are a special type of wetland that are usually treeless and predominantly covered by grasses and herbaceous plants. The marshes in Neptune Beach are salt marshes. The water level of marshes is influenced by the fluctuating tidal waters. Plants like sawgrass and pickleweed can tolerate fluctuating tidal waters. The marshes serve important ecological functions: they can slow down the surge of a storm and absorb excess nutrients that could harm wildlife. Marshes are home to variety of wildlife species. Birds, fish and ducks rely on grassy marsh for nesting and food.

ENVIRONMENTAL CONSIDERATIONS FOR THE MARSH WALK TRAIL:

The proposed marsh trail can enhance accessibility and add new recreational and educational experiences. The trail shouldn't compromise the ecological health of the marsh. Minimizing the impact to the environment is one of the highest priorities for the marsh trail design. Here are several key considerations.

Helical Piling

Use low impact construction

The construction of the marsh walk trail should apply low impact methods with minimal disturbance. An elevated walkway can reduce the potential environmental impacts to nearby habitats and species. Elevating the marsh walk on pilings can reduce shading of species in the marsh. The construction period should also avoid peak growing, spawning, and migration seasons.

Meandering Path

Choosing a path that reduces disturbances

A survey should be done to assess and map out the ecologically sensitive areas. The path of the trail should avoid traversing the sensitive areas in the marsh. The trail can be designed in meandering manner to minimize impact. The staging, access and parking areas should be located outside of sensitive habitats.

Elevated Boardwalk

Use environment friendly materials

The boardwalk materials should be made of materials without harmful chemicals. Durable non-Pressure treated wood should be installed to prevent chemical pollution. US Army Corps of Engineers require there to be at least three quarters of an inch between the decking boards along the boardwalk; this allows for light penetration.

Figure 4.40: Environmental Considerations for a Marsh Walk Trail

Figure 4.41: Potential Marshwalk Site Plans

POTENTIAL MARSHWALK LOCATIONS AND SITE PLAN CONFIGURATIONS

The plans on the left show three possible configurations for new marshwalks on the Intracoastal. The plans show preliminary concepts for access and parking. The final designs and alignments of the boardwalk are subject to change based on future studies.

Seagate Ave Marsh Walk Proposal

Figure 4.42: Seagate Avenue Bridge Connection

Figure 4.43: Seagate Avenue- Existing Condition

SEAGATE AVENUE PROPOSED MARSHWALK CONNECTION

The proposed Seagate Avenue pedestrian bridge creates a convenient connection between neighborhoods. The bridge allows the walkers and bikers to pass over the marsh areas with minimal impact. The bridge offers another way to connect the residents with the unique ecological environment. There are also opportunities to integrate educational signage along the way.

FEATURES:

1. Educational signage
2. Pedestrian bridge connection
3. Wayfinding signage

KAYAK LAUNCH

Neptune Beach is surrounded by creeks and waterways. The unique water resources create great opportunities for kayaking. However, there are currently few places to access the water. A kayak launch facility was one of the most desirable items that residents mentioned during the public workshop process.

There are different types of kayak launches, from informal to more structured. The section below shows one possible configuration for a launch at the end of Shadow Lane and looks at a few different types of kayak launches that could fit into different site conditions throughout Neptune Beach.

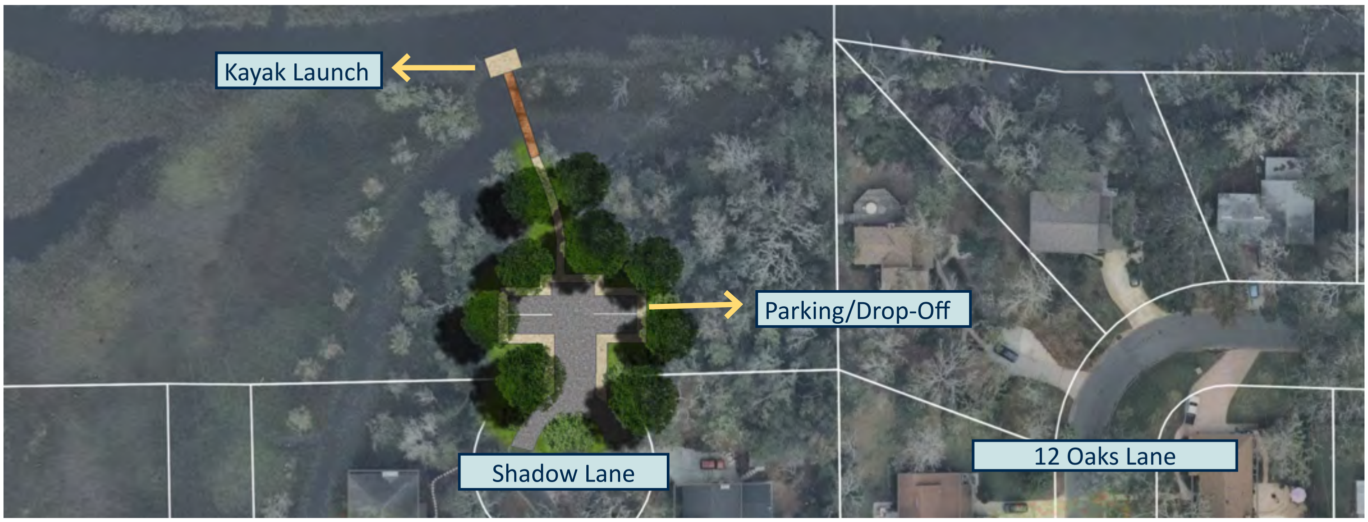


Figure 4.44: Possible Kayak Launch Site Plan at Shadow Lane

A Natural Surface Launch

Natural surface designs are the most cost effective and should be used whenever the site condition allows. Firm or sandy banks, level rocks and beaches often provide sufficient access. It works best when a path to the water can be designed with a gentle slope and low intensity of use.

Stairs Access Launch

If the proposed launch site cannot accommodate a low gradient ramp, stairs are an alternative solution for steep banks. Stairs have a higher construction cost than a natural surface. Applying on-site materials such as rocks and wood can potentially reduce the construction cost.

Dock and Concrete Ramp

Concrete provides a stable surface for launching with relatively low maintenance but with higher construction cost and environmental impact. Concrete ramps may be used as launches by themselves or in combinations with floating docks. It must be in stalled in dry conditions.

RECREATIONAL FACILITIES WITH LOW IMPACT

BLENDING IN WITH THE SURROUNDINGS

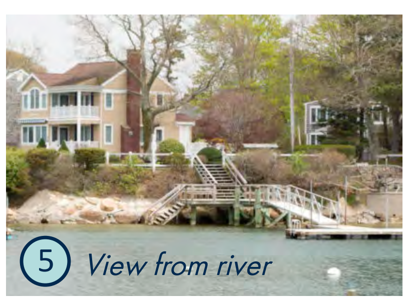
While in general the community has expressed a lot of excitement regarding having more opportunities to access the marsh and waterways in Neptune Beach, there are residents who are concerned about the impact that recreational amenities, like kayak launches and marsh walks, might have on quiet residential areas. How these facilities blend in with the surrounding comes down to adequate site design.

The marsh walks, kayak launches, and even the nature trails proposed in this Vision Plan are meant to serve the local community first and foremost. This means that keeping parking limited to two to six spaces and clearly indicating where parking is and is not permitted for non-residents is key. In the case of kayak launches, parking may also be time-limited serving more as a loading and unloading zone. The design of parking spaces and trails should also be low-impact, using materials such as gravel, compacted sand and dirt, or grass pavers to minimize the amount of asphalt and impervious surface area which often contributes to flooding and stormwater runoff.

Since these facilities are meant to serve the local community many people may choose to ride their bikes to reach them, meaning that adequate bike parking is also important. Other than a couple of low-impact parking spaces and bike racks, these facilities should be largely imperceptible. Landscaping and garden walls can also be used, when necessary, to help provide more privacy to adjacent homes.

The images on the left are all examples of local recreational amenities located in residential areas. These include:

1. Neighborhood dock; RiverLights waterfront community in Wilmington, NC
2. Neighborhood stair access kayak launch; Mote Ranch community in Sarasota, FL
3. Residential boat ramp; Sarasota, FL
4. Turfstone permeable trail parking area; Hawksbill Greenway in Luray, VA
5. Car pull-out and small parking area with stair access to neighborhood boat dock; Pocasset River in Bourne, MA



KEEPING PUBLIC SPACES AND TRAILS SAFE

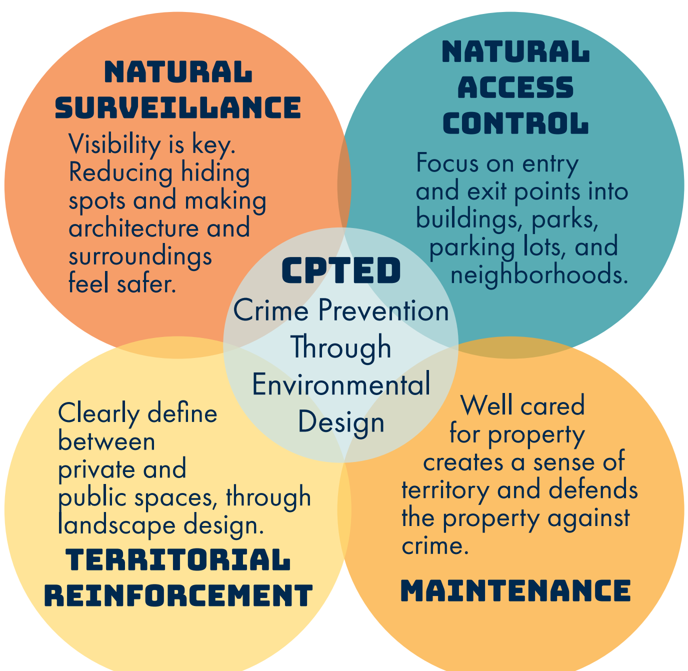
Explore Community Safety Initiatives

Public space safety improvements can be shaped by new guidelines, including updated and more inclusive Crime Prevention Through Environmental Design (CPTED) principles (which work by increasing the chances that a crime will be deterred by the presence of bystanders). Active design standards and land use regulations should support multiple uses at different times of the day (to play, exercise, relax, attend events, and connect with nature), and include facilities designed for use by people of many ages, abilities, and cultures. Community organizations/leaders can work with the City and the Neptune Beach Police Department (NBPD) to improve safety and strengthen community ties through the use of community policing, restorative justice methods, and CPTED strategies updated to reflect best practices for safety and inclusivity.

Partnerships between community groups and police should be explored. A community engagement process can identify appropriate programming details, which may include increased numbers of walking and community resource officers, relationships and employment pathways between Town Center businesses and nonprofits serving at-risk youth in the region and locally and strategies to reduce turnover among community resource officers to ensure adequate staffing and ongoing relationships between the police and community. Funding for additional police to accommodate more activity in the Beaches Town Center, as well as for non-police based responses, can be generated by accompanying increases to general fund revenues, and funding for new, expanded, or improved police facilities can be generated by a Capital Improvements Impact Fee.

Safety can be increased by conducting studies on problem crime areas and initiating community engagement and "eyes on the street" programs. By creating more active storefronts and ground floors, community members can work with NBPD to create safer streets.

CPTED ELEMENTS:



HOW TRAILS IMPACT THE COMMUNITY

Despite the conventional reasons to invest in trails and outdoor recreational amenities, namely to promote the health and wellbeing of the community, there are other benefits to implementing trails, including increased property value and community safety.

Several empirical studies on the impact of trails and greenways on local real estate have shown that these amenities can positively impact home values. Conservative estimates show that homes within 600 feet of a trail or greenway enjoy a 5% bump in value.[1]

Fears that trails can attract crime into residential are common in communities without them. The largest study regarding crime on trails was completed in the late 1990s and covered 7,000 miles of trails. This study and others like it have found no correlation between crime and trails. In fact, studies show that violent and minor crime rates are lower on trails than in other typical environments like streets, parking lots, and shopping malls. This is particularly true of trails in suburban and rural areas. The 1996 study found only four reported burglaries in homes adjacent to 7,000 miles of trails.[2]

1 https://ced.sog.unc.edu/the-value-of-greenways/
2 https://www.americantrails.org/images/documents/Safe-Communities.pdf

Figure 4.45: Jarboe Park Master Plan Design by Pittman Landscape Architecture, 2017 (Color illustration by Dover, Kohl & Partners)

NEW JARBOE PARK MASTER PLAN

In 2017, the City of Neptune Beach and the Ish Brandt Beautification Committee commissioned Pittman Landscape Architecture to lead a public process and master planning effort for Jarboe Park. Workshops were held that summer to help define what the community's greatest needs were and establish an initial design. Since then, designs have been finalized and Phase 1 of the project, which focuses on the park's western half, is moving forward with engineering and construction documents. Key aspects of the new design include more shade and seating, better connectivity across the canal with several new bridges, and more recreational amenities for adults and kids of all ages.

FEATURES:

1. Event Lawn
2. Lake Plaza and Pavilions
3. Canal Trail
4. Basketball Courts
5. Tennis and Pickle Ball Courts
6. Neptune House
7. Outdoor Learning Center & Community Garden
8. Playgrounds & Exercise Equipment

CANAL TRAIL IN JARBOE PARK

This rendering shows the canal trail in Jarboe Park. The landscape planting along the canal demonstrates the native plants. The planting provides more visual interest and a habitat for wildlife. The native planting can also serve educational purposes, connecting the residents with the local landscape and ecology. This rendering also reflects some of the most desirable items for Jarboe park's landscape upgrades. The residents said they wanted more shade trees and better connection to the community garden/butterfly garden during the charrette process.

Figure 4.46: Canal Trail in Jarboe Park

Figure 4.47: Canal Trail in Jarboe Park - Existing Condition

FEATURES:

1. Educational signage
2. Trail upgrade
3. Marsh plants along canal
4. Bridge connects to community garden & butterfly garden

THE USE OF NATIVE PLANTS

The residents all enjoy the recreational opportunities by the canal and green space. Selecting the right plants in the right place is a good start to protect and enhance the health and beauty of the canal landscape. The choice of plants determines the amount of maintenance and how long the plant will last.

Native plants are often a good fit for the Florida landscape. Native plants can create an attractive landscape that uses minimal water, fertilizer, and pesticides. A wide variety of species can work in this kind of landscape, from grasses, to ground cover, to shrubs and trees. There are plants that are accustomed to different environmental conditions, such as drought or inundation. Plants with fruits or berries Attract birds and other pollinators. Increase vertical layering can provide wildlife habitat.


Pickerelweed


Yellow Pond Lily


White Waterlily

Southern Cattail

Sawgrass

Maidencane

Threeawn Grass

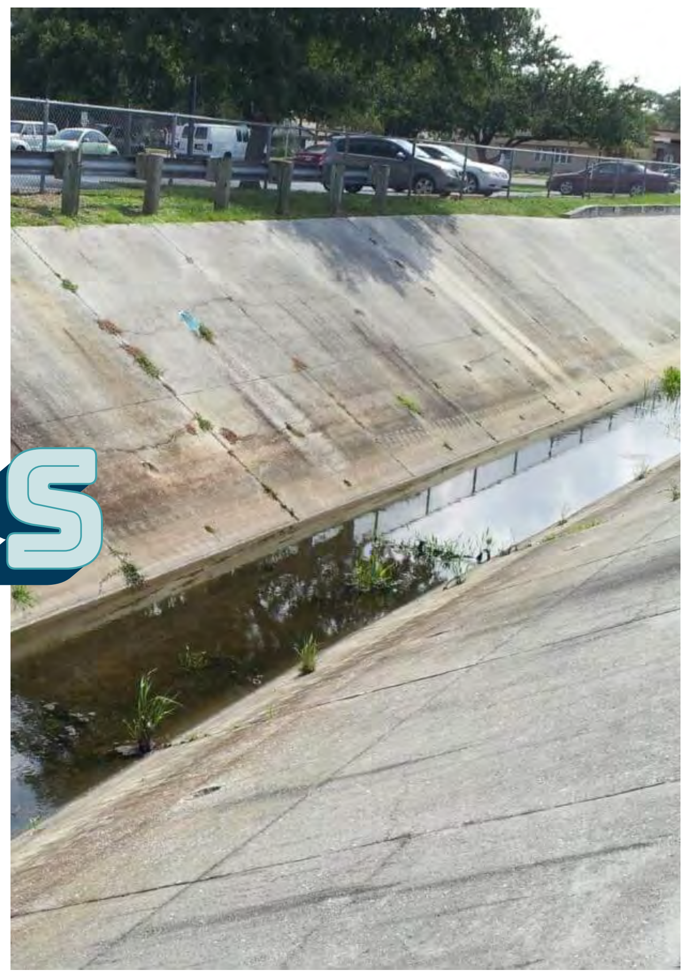
Figure 4.48: Jarboe Park Canal Trail - Planting Zones

NATURALIZED VS ENGINEERED CANAL

FROM UTILITY INTO AMENITY

Stormwater structures, usually consisting of concrete drains, canals, and retention ponds, are built to alleviate flooding and drain stormwater away from a building site. The traditional structure for stormwater management typically applies a centralized approach, and it is not designed to be aesthetically pleasing. In recent decades, green infrastructure began to play a more important role in water management. Green infrastructure refers to the strategic use of natural land network and open spaces to provide clean water, conserve ecosystem values and functions. It is often integrated with the traditional engineering structures.

The drainage canal system can be treated as an amenity rather a utility. The canal can be turned into a linear park with landscape upgrades. After the coronavirus pandemic, people are appreciating the value outdoor space even more. The ability to connect with nature and community is crucial for people's mental and physical health. Investments for parks are key to improve quality of life. A linear park along a naturalized canal can promote an active lifestyle and provide essential outdoor gathering space.



All over the world, cities are transforming their drainage systems into re-naturalized streams and bioswales. One of the most successful case studies is the Bishan Park redesign in Singapore. The Kallang River was a straight fenced concrete canal that clearly divides Bishan park from the community. The park is redesigned and upgraded under the city's ABC (Active, Beautiful and Clean waters) program. The project naturalized the concrete canal into a 2-mile meandering river with lush banks of wildflowers. This restoration of the river exceeded the targeted carrying capacity while costing 15% less than the redesigned concrete canal.

Figure 4.49: Bishan Park Redesign Before and After in Singapore

SAFE ROUTES TO SCHOOL PROGRAMS (SRTS)

In the U.S. 10-14% of car trips during morning rush hour are due to school travel.[1] SRTS programs promote walking and biking to school through infrastructure improvements, enforcement, safety education, and incentives to encourage walking and biking to school.

Improving Routes

The built environment can provide safer routes for students by design and construction. The guiding principles are in the figure below. School routes for students to walk or bike safely can be implemented by adding and/or designing:

- Pedestrian signals at busy intersections
- Safe bike lanes and sidewalks
- Enforcement from local police departments
- Improved crosswalks with better lighting
- Slow down traffic with street design

1 Safe Routes to School Programs Guide; saferoutesinfo.org

JTA's Safe Routes to School Program

As reported in a 2016 report by the Alliance for Biking and Walking, the City of Jacksonville is consistently ranked one of the top cities in the country in terms of pedestrian and bicycle fatalities. The unsafe conditions

FUNDING FOR SRTS PROGRAMS

FDOT, through its Safe Routes to School (SRTS) program. The SRTS Program is 100 percent funded (last year at $7 million) and is managed through FDOT on a cost-reimbursement basis. Applications are submitted to the local FDOT District Safe Routes to School Coordinator, reviewed for compliance with SRTS Guidelines, and awarded through a competitive process at the local FDOT level. The call for applications is usually issued in September and applications are due to FDOT annually in December. Jennifer Graham is the FDOT District 2 SRTS coordinator (904.360.5636).

The North Florida TPO also has a program, the School Safety Walks Program, which was funded at $450,000 from their Transportation Alternatives Fund last year.

GUIDING PRINCIPLES

SAFE INFRASTRUCTURE WITHIN SCHOOL ZONE AND ROUTES

MATCH ENGINEERING SOLUTIONS TO THE PROBLEM

IMPLEMENT LOW-COST SOLUTIONS FIRST

ACCESSIBILITY REQUIRED

ENCOURAGE SAFE CONNECTIONS

Figure 4.50: Guiding Principles for Applying Safe Routes to Schools

Photos of the new 8' multi-use path in Atlantic Beach; Source: *Action News Jax* and JTA (2019)

of many of the streets and sidewalks in the county have spurred the Jacksonville Transit Authority (JTA) to implement a Safe Routes to School Program.

With the help of State and Federal funding the JTA began working with local schools to implement safety programs and street improvements. Their first program began in Springfield with Andrew Robinson Elementary, meeting with parents and school leaders to identify issues and implement improvements.

In December of 2019, JTA completed an 8' wide multi-use path along Sherry Road in Atlantic Beach. The path stretched 1.4 miles from Ahern to 17th Street, benefiting the students who walk to Atlantic Beach Elementary. The nearly $700,000 project was funded by the Florida Department of Transportation. Additional schools in the County that will be receiving sidewalk improvements as a part of the Safe Routes to School program include Brentwood Elementary, Livingston Elementary, and Butler Middle School.

NEW SENIOR ACTIVITIES CENTER

Throughout this visioning process, residents of Neptune Beach have emphasized the importance of finding a permanent location for the Senior Activities Center. After years of moving around different locations, this is finally happening. In June 2020, Neptune Beach's City Council approved the construction of a 5,000 square foot building on the site of the original Senior Center location at 2004 Forest Avenue. In addition to successful crowdfunding initiatives and fundraisers, the City has obligated $400,000 for the project from the 1/2 cent tax monies. The total project cost is anticipated to be around $450,000.

The new Activity Center will be built as an affordable and charming modular building. It is currently being designed to withstand hurricane force winds and will be fully accessible to people with disabilities. Because completion is scheduled for January 2021 and the old Senior Center at 450 Atlantic Boulevard has already been vacated, the Neptune House in Jarboe Park is being used in the short-term to host some limited activities and programs.

Top: Example Building, Carolina Skiff Model from *Vangaurd Modulars*; Bottom: New Building Site

IN THE FUTURE NEPTUNE BEACH WILL:

provide safe and innovative transportation options to reduce car trips in town~~, while at the same time managing parking needs in a way that enhances local character.~~

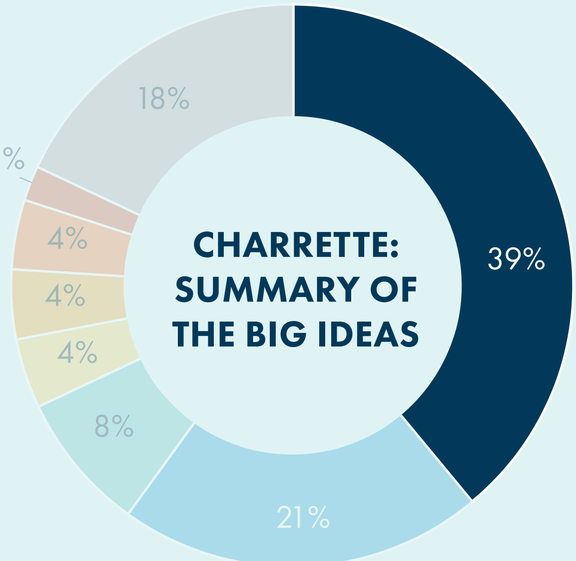
PART 3: OPTIMIZED MOBILITY & PARKING

While walking and biking are already widely used and celebrated modes of travel in Neptune Beach, there are several new mobility technologies that the city can prepare for that will not only reduce people's dependence on cars, but will also help the city to better manage parking and curbside space. This Chapter provides a vision and roadmap for integrating the community's desire to advance walking and biking, better manage auto travel and parking, and strategic integration of appropriate technologies.

PART 3: Optimized Mobility and Parking

KEY ISSUES TO ADDRESS	PROPOSED IMPROVEMENTS & POLICIES
• Need for a more continuous and complete network of safe places to walk and ride bicycles around town • Safer ways to cross busy streets on foot and by bicycle • Desire for expanded fixed-route or circulating shuttle or trolley system • Address concerns regarding higher speed mobility options, like shared scooters and mopeds; that if and when they come to Neptune Beach, will make it less safe to walk and bike in the City • Extended beach visitor parking occupies spaces otherwise needed for Beaches Town Center activities • Complaints of overflow beach and visitor parking into residential neighborhoods • Too many parked cars in front of individual homes, which block the sidewalks and crowd the streets, particularly east of 3rd Street	• Construct a low-stress network of trails, shared streets, mobility lanes, and multi-use paths that connect residents in all parts of town to parks, the beach, the Intracoastal, schools, and the Beaches Town Center (see Part 1: Beautiful Streets and Trails for more detail) • Implement intersection and street crossing improvements as outlined in Part 1: Beautiful Street and Trails • Plan for multimodal access for future destinations • Continue the paid parking pilot program~~, implement a residential parking permit program, and explore metered parking on parts of 1st Street for beach parking~~ • Adopt parking policies that reinvest into the Town Center • ~~Explore the feasibility of an adaptable public parking garage under several partnering scenarios~~ • Conduct a curbside management study to address ride hailing and pick-up and drop-off facilities, particularly as it applies to beach access • Promote and provide infrastructure upgrades for microtransit and shared mobility services (Beach Buggy) • Determine steps to fund and attract an automated shuttle service including initiating conversations with Jacksonville Transportation Authority (JTA) for automated shuttle feasibility studies • Adopt resolutions and regulations for new technology, with emphasis on safety for pedestrian and bicyclist • Adopt Transportation Demand Management regulations • Implement pop-ups and open streets programs • Explore scenarios for COVID-19 recovery/phases of change and use of quick build for economic activity

SUMMARY OF WHAT WE HEARD:



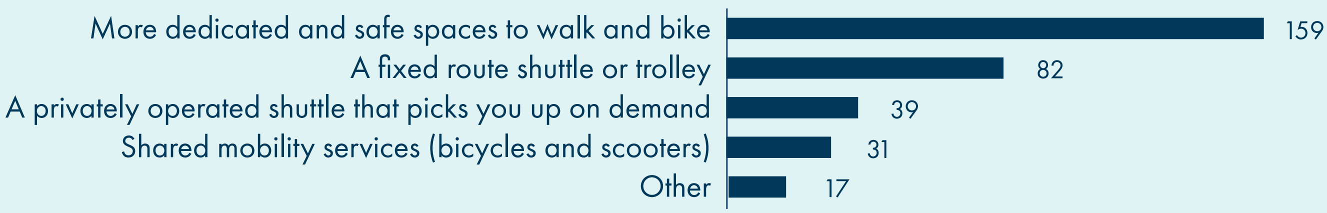
Streets, Trails, Transportation & Parking

39%

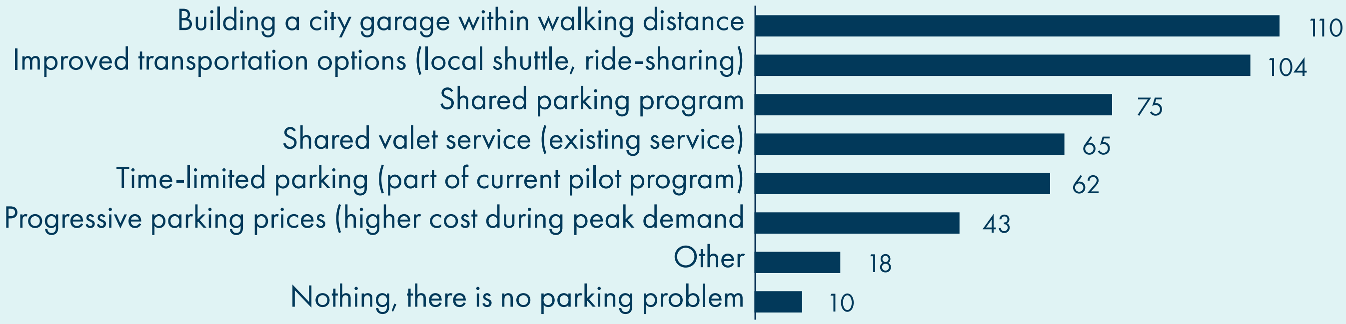
- "Safer crossings on 3rd Street, Penman Road, Florida Boulevard, Seagate Avenue and Cedar Street"
- "Highlight 1st Street"; "make it one-way with dedicated space for people walking & biking, limit traffic"
- "More bicycle parking, especially at all of the beach access points"
- "Consider a circulating trolley or shuttle system"
- "Coordinate parking with new trails and new transportation options"

Citywide Input Survey Results (April 2020)

WHAT FUTURE TRANSPORTATION SERVICE OF INFRASTRUCTURE WOULD YOU MOST LIKE TO SEE?



WHICH OF THE FOLLOWING ARE GOOD SOLUTIONS TO MANAGE PARKING IN THE TOWN CENTER?



Neighborhood Workshop & Survey Responses: Most Popular Types of New Mobility Options

Free On-Demand Shuttle

Autonomous Circulator

Bike Share & E-Bikes

Ride Hailing Services

Figure 4.51: Summary of What We Heard: Mobility & Parking

THE MOBILITY VISION

ADDRESSING THE IMMEDIATE AND FUTURE NEEDS OF NEPTUNE BEACH'S TRANSPORTATION NETWORK, THE MOBILITY VISION SETS THE STAGE.

Since the Vision Plan's Kickoff, residents, the business community, and local officials have convened on multiple occasions to take stock of current conditions and future directions. In the search for big ideas, the most extensive set of comments (41%) addressed streets, trails, transportation, and parking. Walking and biking emerged as a priority for transportation, which in turn is a powerful design driver.

Figure 4.52: Workshop Outcomes

WORKSHOP OUTCOMES

Together these topics converge to describe an interlinked mobility system that, going forward, also includes transportation technologies. These technologies can be as simple as the improved navigation within Google maps or as complex as automated vehicles and drone deliveries. While most trips in Neptune Beach take place by car, technology advances provide travelers an increasing range of convenient choices. If finding a parking space is cumbersome, a ridehailing app such as Uber or the Beach Buggy saves the hassle. E-bikeshare, a popular option in the neighborhood workshops, would help riders who benefit from the pedal-assist motors.

The immediate need is completing a mobility network that provides safe and connected facilities for bicyclists and pedestrians. Currently, there are many locations that lack bicycle and pedestrian facilities. Where sidewalks and bike lanes do exist, many lack the appropriate width, separation from vehicles, or shade.

In the near term, the team compared input from the community to the current roadway and bicycle plans to identify priority mobility improvements. Multiple agencies govern mobility and infrastructure, given the Jacksonville area's unique government structure. Each of these agencies oversees planning, policy-making, and funding for transit, automobiles, and active transportation. Although Neptune Beach is already bicycle, pedestrian, and golf cart friendly, most planning efforts seek targeted investments to help boost active transportation.

While walking and biking are among the simplest ways to travel, technology is quickly transforming almost every aspect of transportation. These technologies are a common sight in town: electric skateboards, e-bikes, on-demand shuttle service, and app-based parking. As technology companies continue to produce new types of electric vehicles of all sizes and speeds, managing traffic and safety may become a challenge. For this reason, cities are examining a shift from bike lanes to mobility lanes that accommodate electric, micromobility devices. Neptune Beach should prepare to monitor, and when needed, regulate micromobility, low-speed vehicles, autonomous vehicles and shuttles, and new types of delivery vehicles.

THIS CHAPTER IS ORGANIZED TO:

- Translate workshop outcomes into key recommendations by using stakeholder input to develop policies, projects, and programs.
- Describe what New Mobility means to Neptune Beach as the future of transportation evolves, and depict what they may look like, and where they may be applied.
- Explain how testing New Mobility projects with Quick Build format provides user input to create customized substantial infrastructure investment.
- Highlight parking solutions that involve integrating multiple modes of transportation and prepare Neptune Beach for the future.
- Taking the first steps, how Neptune Beach can use adaptable outreach that addresses COVID-19 concerns.
- Conclude with various funding source options at federal, state, regional, and local levels to get the projects and programs started.

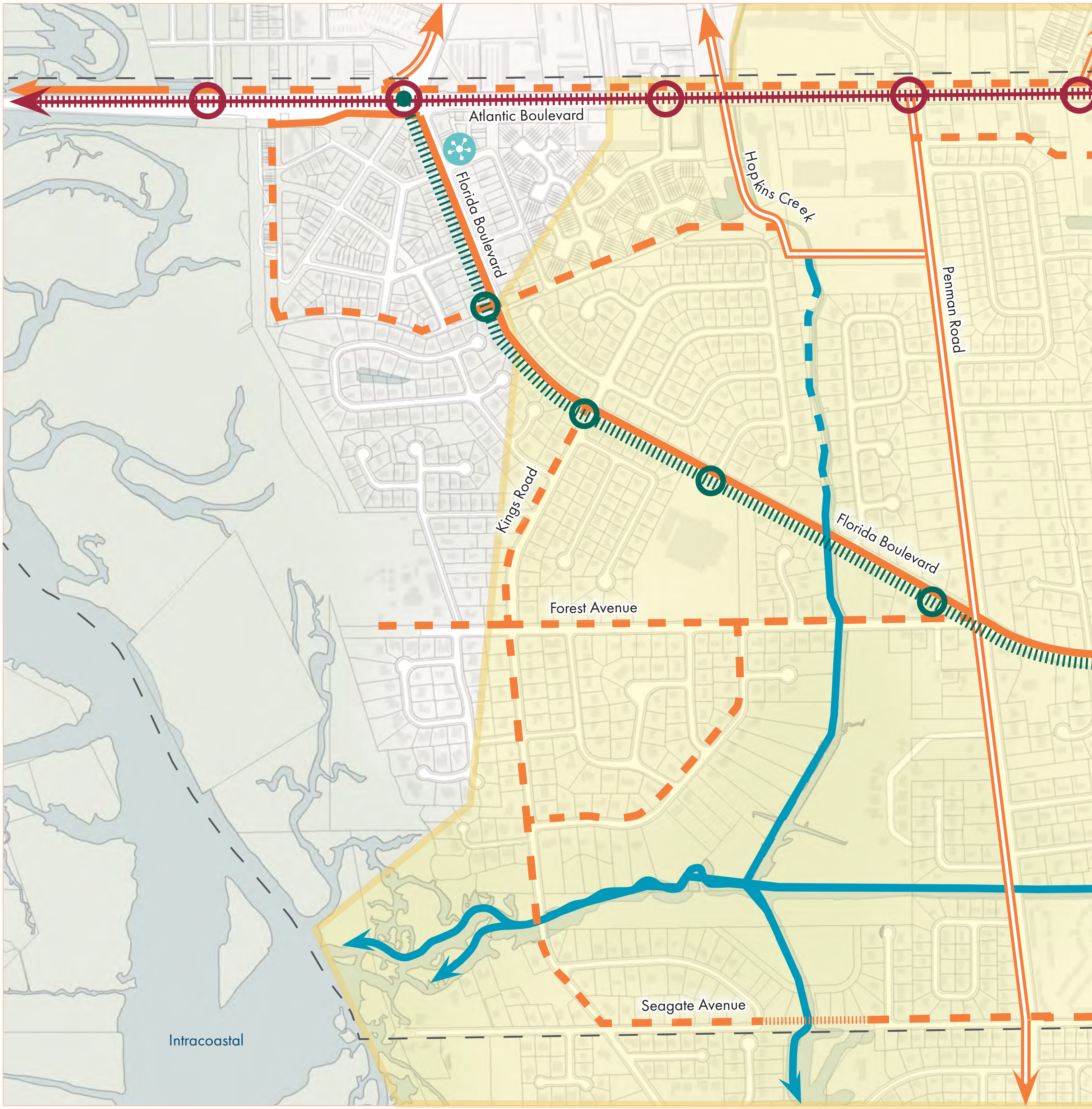
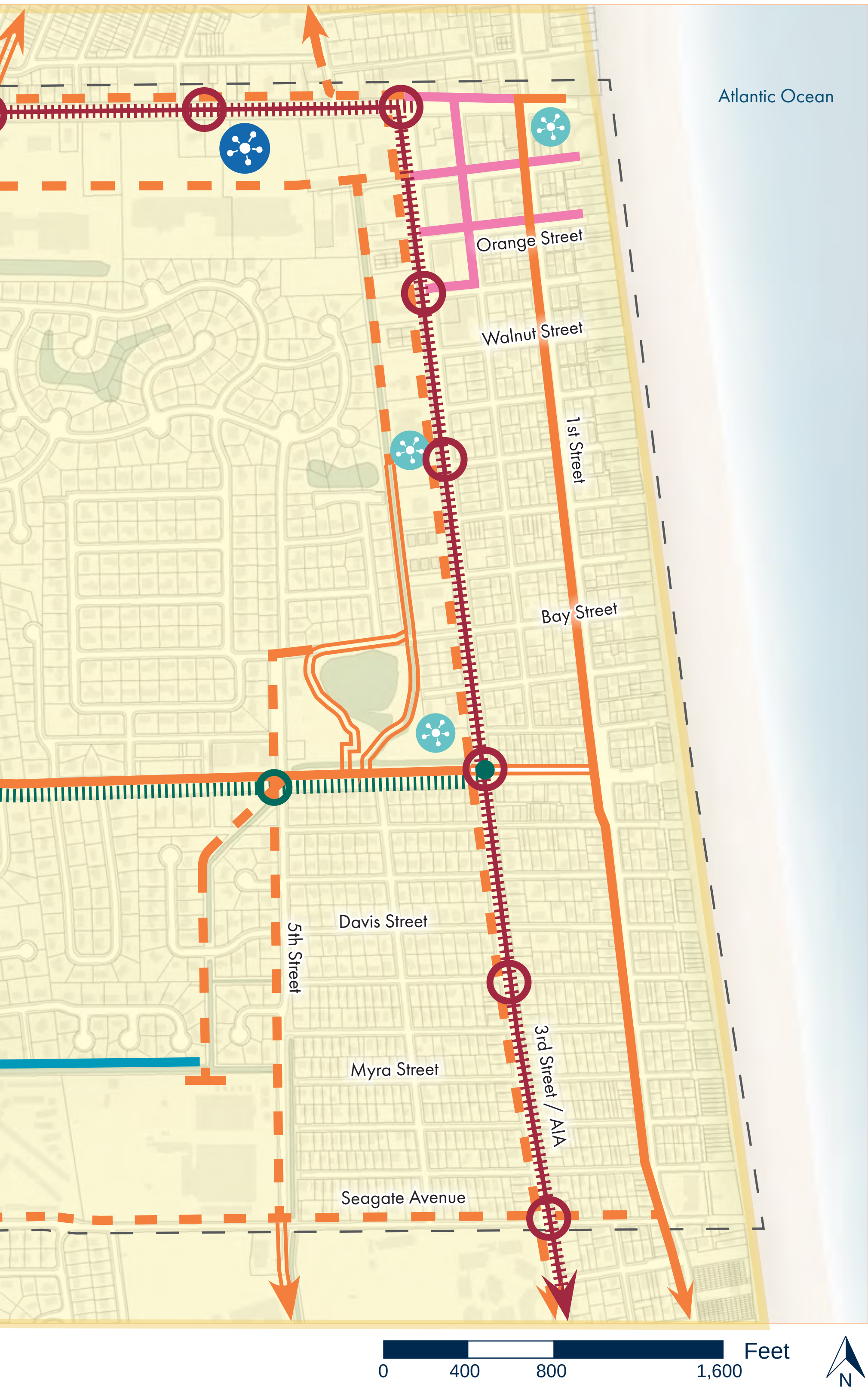


Figure 4.53: Existing and Future Mobility Networks



EXISTING & FUTURE MOBILITY

Key to implementing the vision in this section is creating an interconnected network for people traveling on many different modes, including biking, walking, and driving. This map shows the low-stress network of multi-use trails and bike lanes described in Section 01: Beautiful Streets & Trails. It also shows possible routes for a future intercity and local circulator/shuttle, including desirable stopping locations for people to hop on and off. New mobility hub locations have also been identified. A central mobility hub at 500 Atlantic could be housed in a new public garage, while smaller neighborhood hubs offer residents a convenient place to charge their cars or pickup and E-bike for the day.

MAP LEGEND

- Low-Stress Network for Pedestrians & Bicycles
- Pedestrian Priority Slow Streets
- Navigable Waterways (by kayak)
- JTA Bus Route (10 - Atlantic Line)
- Potential Intercity Fixed-Route Circulator or Shuttle
- Potential Local Fixed-Route Circulator or Shuttle
- Potential Circulator / Shuttle Stops
- Central Mobility Hub
- Neighborhood Mobility Hub
- Beach Buggy Free On-Demand Shuttle Service Area

Existing vs. Proposed

- Existing Facility
- Planned Facility
- Proposed Facility
- City Boundary

NEW MOBILITY CONCEPTS

Transportation planning in Florida has traditionally focused on automobile-centric policies and infrastructure design. Bicycle and pedestrian facilities are often an add-on to existing roadways. Coordination with land use and economic activity has been largely viewed through the lens of access management, parking, and loading. Recently, Florida has adopted a more holistic view of linking land use, transportation, and infrastructure design. The Florida Greenbook and Context classification system support integrated streets, building, and site design. The next iteration of guidance and policy is already unfolding to incorporate trends and technology into the mix. This chapter covers some of the new and expanded concepts for integrating land use, transportation, parking, and technology to help Neptune Beach become future-ready. At the end, this chapter also present information in response to COVID-19 recovery.

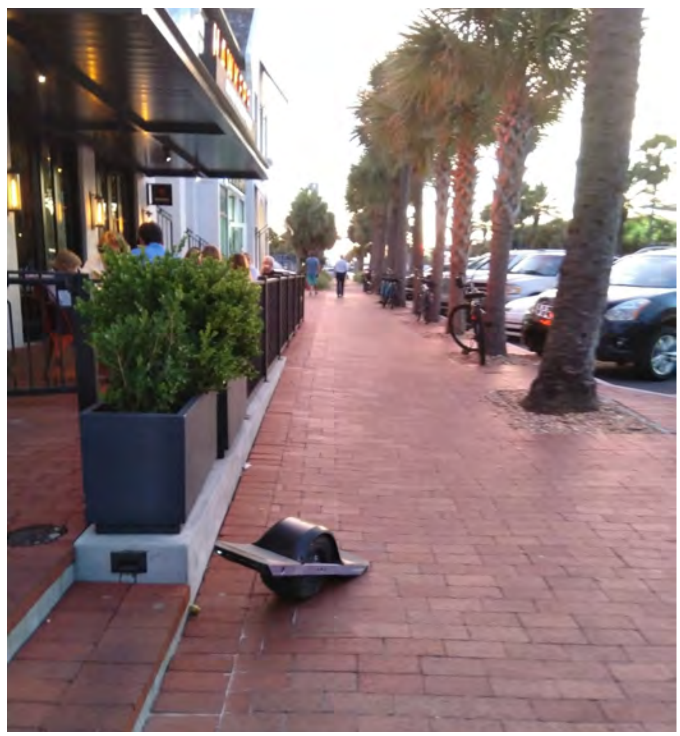
Implementing the mobility vision defined in this chapter will require coordination with partners at a local, county, regional, and state level. Several projects are planned or underway that will need local review and comment to make sure that the City's mobility vision is properly communicated and considered in them by partnering agencies, such as the City of Jacksonville, Duval County, The North Florida Transportation Planning Organization, the Jacksonville Transportation Authority, and the state. Adopting a set of mobility goals, objectives, and policies that guide the priorities of Neptune Beach to provide a safe, connected transportation network for all users gives the partners guidance on the needs of the community.

MOBILITY NETWORK

One of the keys to improving walking and biking is to create connected networks of safe and convenient routes that link destinations. For Neptune Beach, the multi-modal network also considers the growing number of low-speed electric vehicles, including electric bikes, golf carts, and on-demand shuttles.

In developing the network, we recommend setting network performance metrics. For Neptune Beach, the top goals include safety, completing network links, mode share for walking and biking recreation, school, and shopping), lessening congestion, and parking management. During the Comprehensive Plan update, the city should craft policies to identify critical measurement systems, begin collecting data, and further monitor the system at a multimodal level.

During workshops, residents described bicycling for recreation and exercise. In building the network, we can also better link shopping areas to replace car trips with cycling and walking.



Micromobility in Neptune Beach

MOBILITY LANES & AUTOMATED VEHICLES

During public meetings, residents noted preferences for multi-use paths, nature trails, and separated mobility lanes. Mobility lanes are an emerging concept acknowledging the growing number and type of small, electric skateboards, one-wheels, scooters, and bicycles vying for space alongside pedestrians, runners, and human-powered bicyclists.

The need to rethink sidewalk and bicycle infrastructure arose when rentable, dockless scooters gained notoriety for safety concerns and haphazard parking. While these shared scooter companies do not currently operate in Neptune Beach, residents use their own scooters to travel. Most safety concerns revolve around the fact that electric scooters and bicycles operate faster than human-powered versions. This speed differential poses not only safety concerns, but also can negatively impact other travelers' experiences.

Mobility lane designs accommodate this increasing mix of electric and human-powered vehicles. Mobility lane designs include separating new or existing bikeways, increasing bike lane widths, redesigning existing walk and bike infrastructure, adding new signage, and increasing rider education. There is a spectrum of separation methods, from continuous permanent curbs to flexi-posts to no separation.

In addition to bicycles, scooters, and skateboards, transportation technology companies are developing small autonomous delivery vehicles. Smaller delivery robots (also referred to as personal delivery devices, deliverybots, or ground drones) travel at 4 mph and are used to deliver food and beverages. Early pilot programs focused on college campuses, though

Local Resident Riding an Electric Skateboard on 1st Street

JTA's Concept for the Ultimate Urban Circulator with Dedicated Lanes and Sheltered Stops for Autonomous Vehicles


Figure 4.54: Delivery Robot

there have been recent pilots in cities (Washington DC) and expanded use to deliver medical supplies. From a timing standpoint, automated vehicle testing is likely to take years (if not decades), whereas automated delivery technologies are accelerating quickly and expected to appear soon.

In 2017, Florida enacted legislation to extend pedestrians' rights and duties with respect to personal delivery devices and mobile carriers. It stated that personal delivery devices and mobile carriers may operate provided they do not unreasonably interfere with pedestrians or traffic, and must yield the right-of-way to pedestrians on the sidewalk or in the crosswalk. Personal mobility devices are not allowed on highways but may cross a highway. Of note, there must be an operator who is actively controlling or monitoring the navigation and operation of the personal delivery device. This operator can be someone in the presence of the device or someone who is monitoring it remotely.

LIVING PREVIEWS AND QUICK BUILD

NEXT STEPS FOR THE CITY

During neighborhood workshops, residents were not supportive of shared e-scooter services, but did take an interest in shared electric bicycles. The city should prepare for the potential for shared use mobility companies, which increasingly offer both scooters and bicycles. While delivery robots are not operational in Neptune Beach, the city can take proactive steps to prioritize the safety of pedestrians and bicyclists. State law allows cities to pass their own delivery device resolutions, regulations, or safety requirements. As such, we recommend a resolution as a first step that encompasses mode priorities, pedestrian safety, complete streets policies, and delivery vehicles with a summary of permits and fees.

Increasingly, cities are using living previews (also referred to as demonstration projects or pop-ups) to let users and neighborhoods "try it before you buy it." This method also allows roadway engineers and public works officials to enhance the design based on user input and data. For communities hesitant to alter existing roadways, living previews present a temporary look at eventual redesign options.

Living previews are installed with low cost construction materials, plantings, and art supplies. They are short term installations that can last as little as a day or up to several weeks. While low cost, these demonstrations can be particularly effective when the public takes part in them.

Quick-build is a relatively new concept used to describe semi-permanent installations (1-5 years) that can be processed quickly at lower costs when compared to highly engineered travel ways. In some jurisdictions, quick build projects have helped officials decide whether more permanent reconstruction is warranted.

Quick Build installations use roadway grade paint, flexible traffic delineators, modular curb and lane equipment, and other street design elements that provide protection and separation while meeting durability requirements for roadway design.

The Florida Greenbook provides a design exception process if living previews or a quick build project fails to meet one the of the 13 controlling criteria for roadway projects. Design exceptions would need to be recommended by the Professional Engineer responsible for the design elements of the project and approved by the maintaining authority's designated representative with project oversight and compliance responsibilities.

Figure 4.55: Quick Build-1

In addition to the Florida Greenbook, signage and markings are governed by the Manual on Uniform Traffic Control Devices (MUTCD). Agencies can apply for experimental status for the inclusion of innovative treatments in projects. Several recent Interim Approvals (IAs) have lessened restrictions on the use of specific bicycle facility design treatments.

Several cities and agencies have adopted manuals for Quick Build that follow MUTCD's requirements, including the Palm Beach TPA and Miami Dade County.

ON-DEMAND SHUTTLES PROGRAM

NEXT STEPS FOR THE CITY

The city has been reviewing "low hanging fruit" for roadway improvements. As regional agencies revisit budgets for 2020, the time may be ripe to accelerate smaller, quick, and inexpensive installations for intersections, beach access, and neighborhood traffic calming.

(MICROTRANSIT)

Neptune Beach is home to Beach Buggy, an on-demand shuttle service that provides rides to destinations within the Jacksonville Beaches area. Beach Buggy is an example of a microtransit. Like ride hail companies (Uber, Lyft), travelers hail a ride through a mobile phone application. Travel can occur point-to-point or operate with designated pick up and drop off points. Routes can be fixed or flexible in picking and dropping off customers closer to their origin or destination. In general, microtransit vehicles carry passenger loads from 2 to 20 people.

Beach Buggy operates on a fixed route service Friday and Saturday evenings that replaced Neptune Beach's trolley in 2017. The company operates 8 to10 seat electric carts and 14-passenger vans. Rides are free, though tips are encouraged. The key source of revenue is advertising and sponsorships. Sponsor benefits include signage and listing their location as a suggested destination.

In addition to Beach Buggy, the Jacksonville Transit Authority (JTA)'s Ready Ride operates a flexible route transit service that services rides within a designated beaches zone covering Atlantic, Neptune and Jacksonville Beaches. Rides can be accessed via telephone. When summoning a ride, JTA requires booking at least two hours prior to pick up.

Given the success and experience of ridehailing, microtransit is an appealing part of new mobility with its larger vehicles. The ridehailing portion is known for its efficiency and is documented to reduce congestion. Other cities use the microtransit to reduce or spread out parking demand. Three on-demand shuttles operating simultaneously can replace 72 parked cars a day.

To facilitate microtransit services, the city can enhance signage and marketing, as well as creating pick-up and drop-off pull-off areas so that passenger loading is taken out of travel lanes.

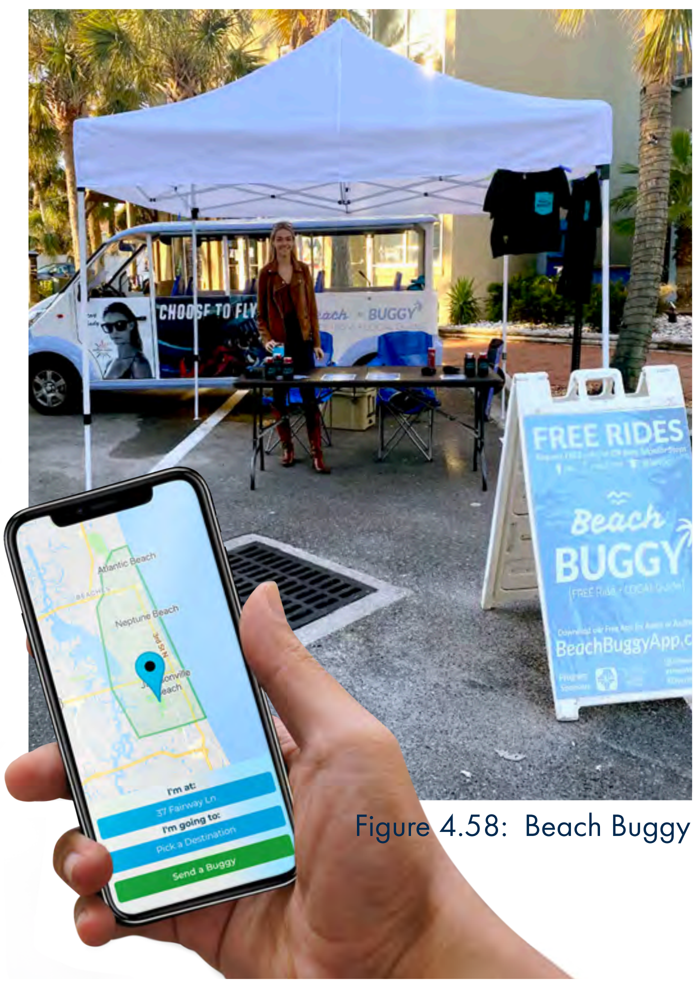


Figure 4.58: Beach Buggy

NEXT STEPS FOR THE CITY

Neptune Beach can partner with Beach Buggy to add public destinations to these services' stops, as well as adopting Transportation Demand Management regulations to assist with the funding for these drop-off and pick-up areas in public locations. This will provide residents and visitors a more comfortable space when waiting for rides. The city should also coordinate with the BTC Agency and JTA to develop an outreach plan to help people understand the service and its benefits.

MOBILITY HUBS

Mobility hubs are a new take on an old transportation planning concept. Grand Central Station in New York City is a classic example of a mobility hub. It connects people traveling on different modes of transportation with services, information, and amenities. Today new types of transportation options are changing what these hubs look like and where they are located.

The Existing & Future Mobility Networks Map identifies two types of mobility hubs: a central hub that could be incorporated into the redevelopment of the 500 Atlantic property along with a public garage, and a few neighborhood hubs along 3rd Street, at the primary beach access in the BTC, and at the Florida and Atlantic Boulevard neighborhood center.

Creating a central mobility hub at the 500 Atlantic site is the perfect opportunity to solve parking issues for years to come. Imagine if visitors could drop off their cars for a day at the beach or an evening at the Beaches Town Center at a parking garage lined with shops. From the garage or any other parking lot, visitors could then pick up a shared bicycle or scooter and ride along one of the multi-use paths or separated bicycle tracks proposed for Atlantic Boulevard and Lemon Street. Alternatively, they could choose to grab an Uber or Lyft at a dedicated pick-up location, rent a car through a service like Zipcar, walk, request a ride on the Beach Buggy, or even hop onto a trolley or autonomous circulator running up and down Atlantic Boulevard. If they need any information on getting around, wayfinding signs and information kiosks would point them where to go.

While a central mobility hub would be geared more towards visitors coming to the beach or to attend special events, neighborhood hubs would serve locals looking for a quick way to get around the city. These much smaller mobility hubs would take up no more than two on-street parking spaces. They could be placed at existing bus stops, Jarboe Park, the Library, or at future shuttle stops. Allowing people to hop off the bus or shuttle, or park and charge their electric cars, and grab a bicycle.

Ridesharing Pick-Up/Drop-Off Area in West Palm Beach


Large Mobility Hub in Hamburg, Germany


Neighborhood Mobility Hub in Minneapolis

IDEAL NEPTUNE BEACH MOBILITY HUB AMENITIES BY LOCATION TYPE

	Personal Mobility			Cars				Transit			Info		Active Uses			Ped. Access		Support		
	Bike Share & Scooter Share	Bike Parking	Bike Facilities	Ride Sharing / Pick-Up	Car Share	EV Charging Station	Parking Lot or Garage	Bus / Shuttle Layover Zone	Bus / Shuttle Shelter	Tour Buses (Local)	Wayfinding	Wi-Fi & Smartphone Connect	Retail & Dining	Public Spaces	Office Spaces	To the Mobility Hub	At the Mobility Hub	Waiting Area	Support Staff	Security & Safety Staff
Neighborhood	●	●	■	◆	◆	■	◆	■	■	◆	●	■	◆	◆	◆	●	■	◆	◆	◆
Central	●	●	■	●	■	●	●	●	●	◆	●	■	■	●	■	●	●	●	●	●

Key -
- ● Vital
- ■ Recommended
- ◆ Optional

Figure 4.59: Neptune Beach Mobility Hub Amenities by Type

~~EXISTING AND FUTURE PARKING~~

There are four main aspects of parking in Neptune Beach: commercial parking (particularly in the Beaches Town Center), beach parking, and on-street parking in neighborhoods. In the future, parking on the 500 Atlantic site and the possibility of a structured garage will also be a planning factor.

Beaches Town Center (or the Corner): The city launched a paid parking pilot in 2019 to inform parking pricing and management strategies. The program applies to on-street parking spaces in both Atlantic Beach and Neptune Beach. Due to COVID-19, however, the roll-out of the pilot, as well as enforcement, were postponed. In July, the City Manager released a Mobility Management Plan to transition from a pilot to an official parking program. On September 1, the city resumed paid parking and enforcement of time limits.

In addition to public on-street parking, there are a few private parking lots in the Beaches Town Center (BTC) that are available for free or with payment for local restaurant and shop patrons only. Some of these are also used for the BTC nightly valet service.

Other Commercial Parking: There are a number of private commercial parking lots in and around the Beaches Town Center and along 3rd Street. While some of these, especially those that serve restaurants, convenience stores, and retail shops, are fairly well-utilized, there are others that could be good candidates for a shared parking program. Parking lots for office buildings, banks, and libraries, for example are often empty on weekends, while church parking lots can sometimes be underutilized on weekdays and/or weeknights, as well as Saturdays.

Beach Parking: Local and regional beach goers typically use BTC, neighborhood streets east of 3rd street, and 3rd street to access the beach. There are a few dedicated public spaces at 4 of the 25 beach access point in Neptune Beach. Vehicular parking options in these areas are usually limited to handicap spaces. Bicycle parking, though, is more abundant than vehicular parking along the coast. Of the 25 beach access points, 10 have bike racks.

Parking in Neighborhoods: Crowded parking conditions exist east of 3rd Street, with acute problems east of 1st Street. There is a small permit parking program for spaces located on Cherry, Walnut, and 2nd Streets. Residents can register with the City for free parking on these streets.

~~**Garage:** Neptune Beach should explore the details of structured parking, including possible locations and flexible configurations, should the need for a garage arise in the future. Options include a municipal garage or a garage that is part of a public-private partnership on redevelopment sites.~~

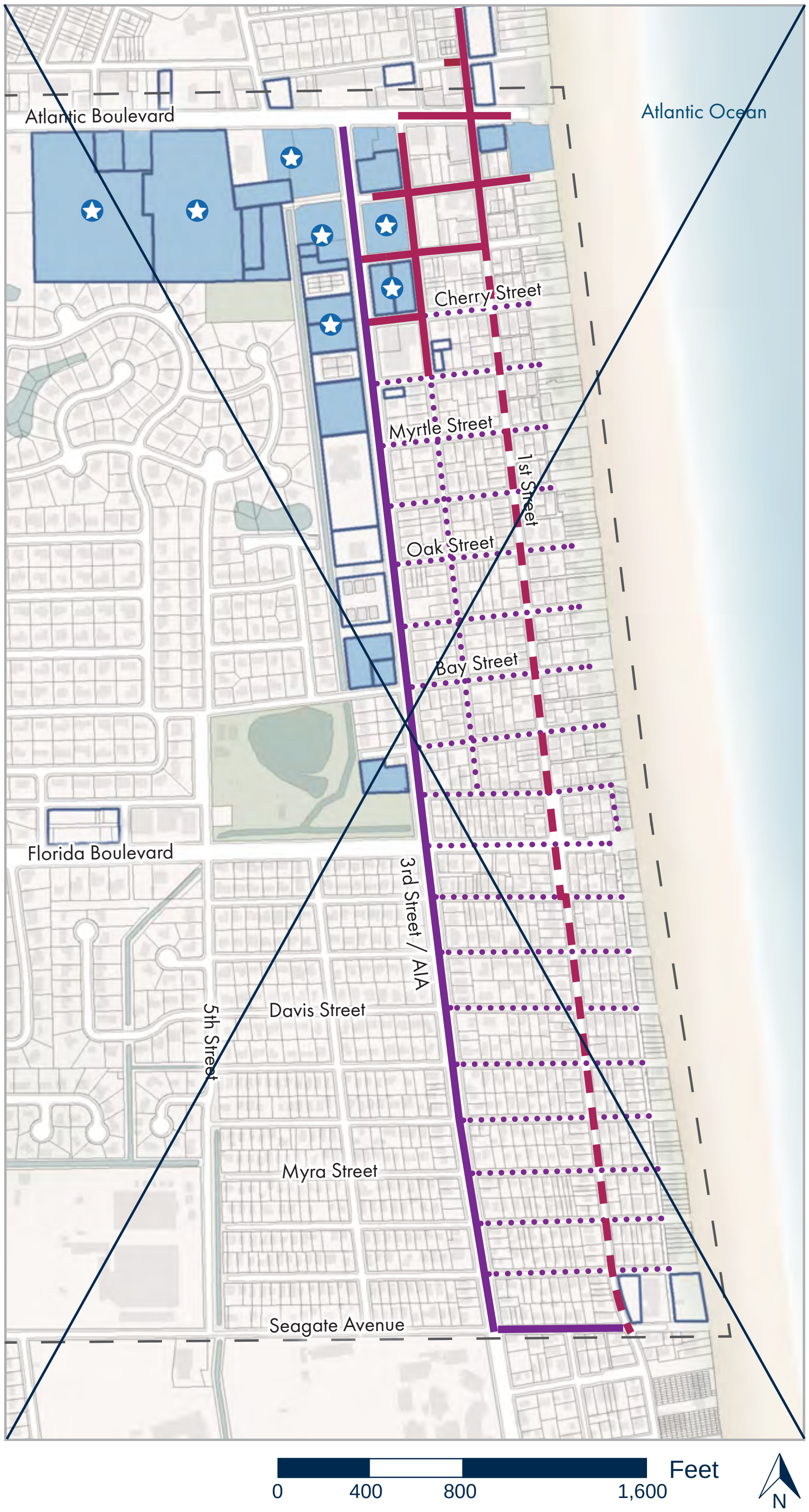
~~DISPERSED VS. CENTRALIZED PARKING~~

~~The benefits of centralized parking for beach goers and visitors is that people park once to get anywhere they need. Centralized parking is also easier to physically shade and it reduced impacts on residential neighborhoods. Land value for centralized parking, particularly west of 3rd Street, is also much cheaper than land near the beach.~~

~~The cost per square foot for vacant beach front lots is roughly $220, compared to $60 for non-beach front vacant lots east of 3rd Street and $30 for commercial lots within walking distance of the beach. The negatives of centralized parking are the high up-front capital costs and the large concentration of cars and people all heading to the same location.~~

~~On the other hand, the primary benefits of a dispersed parking solution is that it reduces the concentration of cars and people in one place and it creates multiple routes to get to the beach, decreasing overall congestion. The negatives of this approach are that the land costs for new parking areas near the beach are much higher (unless the city implements pocket parking areas within beach access point right-of-ways, as shown on page 120) and the impact to residential neighborhoods is more acute.~~

Figure 4.60: ~~Beaches Town Center & Beach Parking~~



~~EXISTING & FUTURE PARKING~~

~~This map shows where current public parking is located east of 3rd Street, including paid on-street parking spaces that serve the Beaches Town Center and residential streets that contain limited quantities of free on-street parking spaces. The map also shows where paid on-street parking can be expanded in the future (i.e. along 1st Street). It also identifies where future redevelopment could unlock opportunities for new public off-street parking, as well as highlighting existing private parking lots that could be good candidates for a shared parking program.~~

~~MAP LEGEND~~

~~Public On-Street Parking~~

- ~~Existing On-Street Paid Parking Spaces (236 Spaces)~~
- ~~Possible Future On-Street Paid Parking Spaces~~
- ~~Existing On-Street Free Parking Spaces~~
- ~~Streets with Limited On-Street Free Parking Spaces~~

~~Public Off-Street Parking Options~~

- ~~Potential Future Public Parking Site with Redevelopment~~
- ~~Potential Future Public Parking Garage Site with Redevelopment (Large enough to fit a parking garage with liner buildings)~~
- ~~Potential Candidate for Shared Parking Program (Existing underutilized private parking lots)~~

~~NEXT STEPS FOR THE CITY~~

~~Explore metered beach parking on certain blocks on 1st Street~~

~~Overnight parking is not allowed on 1st Street, which limits residential parking. Instead, certain blocks may be candidates for on-street metered parking.~~

~~Relocate parking on 1st Street from the west side to the east side~~

~~As suggested in the 2019 Urban Land Institute Report, relocate parking on 1st Street from the west side to the east side of the street, which has fewer driveways due to the orientation of homes to the side streets. This no-cost solution adds 24 parking spaces increasing parking from 131 to 155.~~

Provide Additional Bicycle Parking

Convenient bicycle parking is essential for boosting bike ridership. Additional parking in the Beaches Town Center, at the Marshes, and beach access points would help increase the access prioritized in the neighborhood workshops.

Beach Buggy

The company actively promotes its services as a parking solution. During peak hours, customers and employees of a sponsor's business receive priority pick up. They also work with event planners to shuttle participants from remote parking or home. As Beach Buggy expands service, they may be seeking additional parking and recharging needs. If operational regulations are developed for these types of services, signage review should be required.

~~PARKING DISTRICTS~~

~~For the Beaches Town Center (BTC), Neptune Beach is in the process of establishing a parking benefit district. These districts collect and spend funds within the same geographic area. Given the relationships between the BTC, beach parking and residential parking, the city may want to expand the boundary to include residential areas east of 3rd street.~~

~~This would create several benefits: a better overall parking management program, enforcement, and funding. The City's vendor, Passport, offers many services such as digital permits and curbside management that could provide a clear picture of parking demand and management options for the district.~~

~~One of the success factors for any parking program is pricing. Neptune Beach's paid parking pilot, which utilizes the Flowbird mobile parking platform, was initiated in part to discover pricing options, for example reduced meter fees for residents. Technology exists for dynamically priced parking, where prices rise as the number of open spaces falls. This type of pricing would require code adjustments to allow pricing changes in real time.~~

~~With the new License Plate Reader (LPR) technology the City has a suite of tools for managing parking, including spillover parking. Another tool for parking management is shared parking and off-site parking. The public parking lots in BTC are a form of shared parking among several businesses. As parking pressures rise, the need for sharing among businesses will grow both east and west of 3rd street. Sharing agreements tend to exist between a public and private entity, or between two private entities. The practice is not common, in part over liability and security concerns.~~

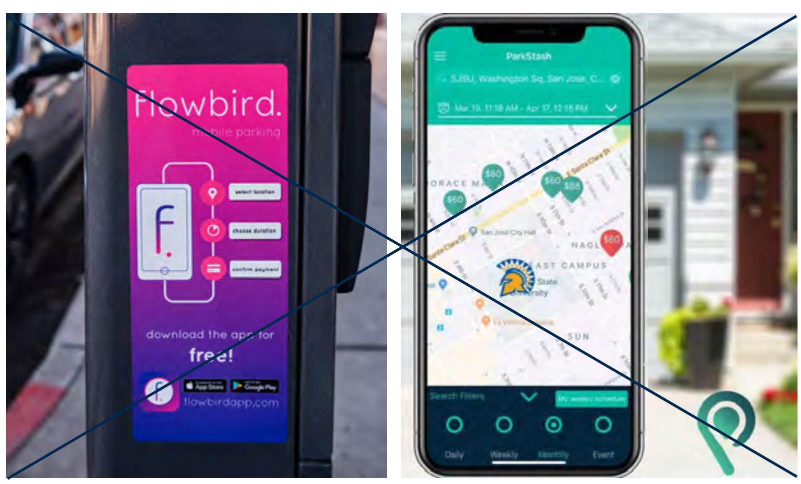


Figure 4.61: ~~Left: Flowbird Parking Kiosk currently in use in the Beaches Town Center; Right: ParkStash App, a new mobile platform which allows homeowners to rent parking spaces~~

~~The sharing economy recently expanded to parking. New apps such as Pavemint and ParkStash connect homeowners with parking to drivers seeking a space. While use of these apps by commercial entities is less common, the ease of listing, finding, and getting paid for parking spaces could easily be adopted by commercial tenants with excess parking.~~

~~For Neptune Beach, the main concerns would be residents who are uncomfortable with this new space rental scheme, and code enforcement since the City does not allow commercial activity on private property.~~

~~For commercial entities, parking would require a special exception, however, this new technology could reduce barriers to shared parking on underutilized parking lots by streamlining navigation, payment, and vehicle tracking all in one app. To date, the technology companies have not included insurance, which is one of the top concerns for commercial property owners and managers.~~

~~RESIDENTIAL PERMIT PARKING~~

~~To relieve parking problems east of 3rd Street, residents have expressed interest in establishing a residential permit parking system. Permit systems can help relieve on-street parking challenges in several situations:~~

- ~~To reduce the number of cars that come from outside the neighborhood in areas with parking problems~~
- ~~To solve safety problems related to on-street parking~~
- ~~To encourage home-owners to park in garages or carports instead of on the street~~

~~Permit parking is generally ineffective in areas where:~~

- ~~Numerous households have multiple registered cars at a single address~~
- ~~Non-residential parking is desired for economic activity and access benefits~~
- ~~Areas where traditional design features little or no on-site parking; a permit parking scheme may spur lawn parking and paving front yards.~~
- ~~The costs of the program exceed a locality's ability to maintain and enforce the program~~

~~In looking at a parking permit system, there are several steps to establish in setting up a program:~~

1. ~~Establish need and neighborhood consensus~~
2. ~~Create one or more zones~~
3. ~~Enforce restrictions (24-hour or time of day) per zone~~
4. ~~Registration, permit costs, types of permits, and decals or other identifying mechanisms, such as new license plate reader technology~~
5. ~~Provide street signage and enforcement~~

Figure 4.62: ~~St. Augustine Residential Parking~~

~~ST. AUGUSTINE CASE STUDY~~

~~St. Augustine's residential parking permit program is a good precedent for Neptune Beach's in terms of both context and need. Details of their program include:~~

~~Defining Need~~

~~In order to establish Controlled Parking Residential Area restrictions in a neighborhood, a residential block must have parking overspill from out-of-area vehicles meeting the follow criteria~~

- ~~At least four days/week and nine months/year~~
- ~~25% or more of those vehicles are not registered in the name of a person residing in the area~~
- ~~50% of on-street parking is utilized~~
- ~~Petition with 60% min. of households on each block~~

~~Features~~

~~Hours of Restriction: Hours of restriction should be determined on a block by block basis.~~

~~Zones: Zones are established based on need and neighborhood characteristics. A valid permit for one residential parking zone does not entitle the permit holder to park in any other such zone.~~

~~Number of Permits: A residence will receive two residential permits and 2 guest/service passes per household, per year. Additional visitor passes (good for 14 days) are also available with a limit of five per household per year.~~

~~Fees: Residential parking permits and guest/service passes are $30.00 each and temporary permits (max 14 days) are $10.00 each.~~

~~Decals: Permits shall be affixed to the left rear window or bumper of the vehicle or the vehicle's license plate may be registered with the City.~~

~~Other residential parking permit program elements can include the following:~~

~~Flex Permits~~

~~Arlington, VA issues both vehicle specific decal and a flex pass that can be used for a second car or for visitors. Arlington also institutes escalating fees for additional automobiles.~~

~~Variable price by Hours of Restriction~~

~~Tucson, AZ varies annual fees based on the hours of restriction. For weekend only restrictions, the permit costs $48 annually, while weekday and weekend is $72 per year. Note this reflects enforcement costs.~~

~~NEXT STEPS FOR THE CITY~~

~~First, determine the source of the problem to ensure a residential permit program is warranted and financially feasible. Consult peer cities (St. Augustine) to evaluate program elements and effectiveness. If a program is warranted, meet with neighborhoods to review program parameters, including needs assessment, drafting a petition, potential costs, and enforcement.~~

Mizner Park Townhomes Hide Parking Structure from the Street, Boca Raton, FL (Photo Credit: Google)

~~Escalating Permit Fees~~

~~Philadelphia's fee schedule charges higher charges for each additional vehicle.~~

~~STRUCTURED GARAGE~~

~~Many beach towns find the need to build additional parking to satisfy local commercial activity and tourism. During the neighborhood workshops and interviews, participants asked for more information on traditional structured parking, and trends that could affect the design and size of such a future facility. The ULI Technical Assistance Report argued against a garage, instead recommending the measures Neptune Beach has adopted with paid and better managed parking. In workshops and comments, residents expressed strong interest for a garage in the future, though there were also questions regarding feasibility and cost.~~

~~This section provides general information and is not intended to determine feasibility, final design, or financial details. In general, a city will either issue bonds for a municipal garage or enter into developer agreements where the project's tenants will occupy part of the garage, leaving space for public use.~~

~~In 2019, Cocoa Beach constructed a two-story (plus rooftop parking) 241 space garage. The $5.3 million facility was financed by the Florida Municipal Loan Council with funding from bonds, Tax Increment Financing (TIF), and tourist tax funds. The garage has beach facilities for the estimated 2.4 million beach~~

~~visitors from the area. The cost is $2.50 per hour, with a maximum charge of $15 per day. Cocoa Beach annual parking permits are honored for residents and non-residents. The garage is also used for employee parking. Business owners can buy up to eight reduced-price permits for employees to free up on-street spaces.~~

~~During the public workshops, numerous stakeholders expressed interest in the idea of adaptable garages. A parking structure's life often exceeds 50 years, potentially resulting in a parking surplus before the structure's useful life ends and before the city's financial obligations are met. Therefore, the city may want to consider a project goal for any new parking structure to be adaptable for a different future use.~~

~~It's important to anticipate changes including self-parking technologies in vehicles, automated garage navigation, and self-driving vehicles. Each of these point to a future where cars require less space for parking because space widths consider room needed to open doors as a driver and passengers exit the car. Self-parking technology is now expanding to mass markets. For models that are not equipped with this technology, robot valets can autonomously deliver a car to a designated parking spot. Several companies, including Reef Technologies in Miami, are specializing in bringing new uses to unused parking spaces such as off-site kitchens and micro logistics hubs.~~

~~During the Work in Progress presentation, we showed a range of variables related to adaptable garages:~~

~~**Floor Slope**: Traditional garage design features sloping floors that place parking spaces on ramps and allows for drainage. Sloping floors, however, make the conversion to living and work spaces difficult.~~

~~**Vertical Clearance**: Parking structures typically have a vertical clearance between floors of 7'-0" to 8'-2" and floor heights between 10'-6" and 11'-6". A design for first floor office or residential requires more clearance to account for higher ceilings, mechanical systems, and architectural treatment. Furthermore, leveling the floors reduces vertical clearances.~~

~~**Loads:** Buildings must support building code-mandated loads; the loads required for parking are less than finished, occupied uses such as office or residential. As such, adaptable garages need to be built for larger loads than initially needed for parking. These improvements add 10-15% to construction costs.~~

~~**Mobility Hub**: Hubs aggregate different travel options – walking, biking, transit, and micromobility – in one place. They provide an integrated suite of mobility services, amenities, and supporting technologies to connect people to their final destination. Hub designs include pick up and drop off areas for transit and ride share companies, bike racks, information kiosks, and shared use bikes and scooters..~~

~~Risk factors with adaptable garages include costs, which can be as high as $25,000 to $35,000 per space, and the future of financing. Bond rating agencies are reportedly associating structured parking with greater risk given the uncertainties related to automated technologies and future parking demands.~~

~~In Neptune Beach, risk factors including a height limit of 35', few publicly-owned sites that are suitable, and community resistance toward mixed-use redevelopment, limit the prospects of a public-private parking. There was more interest for a structure serving beach traffic west of 3rd Street, which could be served by a shuttle to the beach and BTC. Such as structure would be similar to the Cocoa Beach example.~~

~~NEXT STEPS FOR THE CITY~~

~~Neptune Beach can begin exploratory steps examining funding and financing for a garage structure. The preparation will differ depending on whether the site is wholly owned by the city or would be part of a public-private partnership (P3). If the site is publicly owned, the city should first determine the feasibility of a structure on identified lots considering the height limit, lot size, circulation patterns. To prepare for a P3 as part of a redevelopment project, the city will need to determine its role in the partnership. Many Florida municipalities also turn to the Florida Municipal Loan Council for financial assistance when planning and implementing parking garages.~~

PREPARING FOR AUTOMATED SHUTTLES

During the neighborhood workshops, residents and businesses were interested in automated shuttles, in particular the neighborhoods west of 3rd Street. Autonomous shuttles are operating in Florida on campuses and in public rights of way. Within the region, the Jacksonville Transit Authority (JTA) has issued a Request for Qualifications for an automated shuttle along Bay Street.

Automated shuttles currently are required to have an operator on-board. The vehicles are outfitted with various instruments and sensors such as LiDAR, cameras, and radar. Computers process the information and steer the vehicle accordingly. The vehicles build up a library of landmarks (e.g. signs and poles) over time which serves as navigational instructions. Computers also program in object detection for unexpected activities in the roadway and proper response.

Because most public operations would begin as pilot projects, the Dover Kohl team interviewed shuttle companies on what is needed to attract a pilot. According to Lake Nona-based beep, the first criteria is funding. In Florida, funding for pilot projects have included the U.S. Department of Transportation (Jacksonville) Florida Department of Transportation (Gainesville, Hillsborough), private developer funding (Babcock Ranch, Lake Nona), and automotive and technology consortia (Miami, the Villages).

A second prerequisite is building a safe operational design domain (ODD). ODD describes the operating conditions in which the automated vehicle is designed to properly operate and which the vehicle will need to "read" and adjust. Some of the elements include environmental conditions such as weather and visibility factors. The driving domain includes local rules, regulations, and the composition of traffic. The infrastructure domain includes roadway types, conditions, technologies, signage, and buildings.

Shuttle companies will also seek ways to reduce risk through planning and infrastructure. In some areas, cities or campuses install a physically separated travel lane. The shuttle then can "read" the barrier. If there are steering problems, the vehicle is contained which minimizes the risk of running into other travelers. Engineers can also use paint and roadway materials to guide shuttles, in particular for higher risk maneuvers such as merging and crossing intersections. Geofencing limits the areas within which a shuttle can travel.

Designing for customer satisfaction and acceptance is a third success factor. As with any transit service, the ability to reach useful destinations safely is paramount. Shuttles also pose an operational conundrum. The shuttles need to travel fast enough to match rider expectations on travel time, yet also factor caution into operations. As such, a shuttle can come to a halt when it detects (or assumes it detects) an activity or object to avoid. The faster the shuttle moves, the more jolting the stop. This sets up a second conundrum of operations in highly vibrant districts. Concentrated and varied activities become more difficult for a shuttle to process.

IMPLEMENTATION

Given Jacksonville's national leadership in testing and deploying automated shuttles, Neptune Beach should initiate conversations with the Jacksonville Transit Authority regarding how to prepare for, fund, and attract a Beaches shuttle pilot.

JTA's EZ10 Vehicle Test Track (Photo Credit: Bruce Lipsky, *Florida Times-Union*)

ADAPTABLE STREETS FOR PANDEMIC RECOVERY

Impacts from COVID-19 have rippled through almost every aspect of local governance, affecting budgets and revenue, schools, health, and mobility. Managing the virus is difficult given the novel nature of the virus, and how to develop successful programs to control infection and treatment.

While COVID-19 is largely a health issue, planning for a safe and phased recovery is a critical element to balance human health and economic activity. For recovery, planning largely comes into play for managing physical (or social) distancing. Some cities are even examining whether to make some open streets programs permanent given the wide range of benefits beyond immediate COVID-19 needs. This section looks at several strategies Neptune Beach can pursue with public health officials.

DISTANCING WHILE IN MOTION

The virus has upended how we think about safe, convenient, and efficient travel. While cities typically try to reduce the number of single occupancy vehicles, in the era of COVID-19, sharing rides by carpool or transit is a risk factor. That said, mobility managers are stepping up to identify multiple safe ways to travel.

Washington Avenue street dining in Miami Beach (Photo Credit: Al Diaz, *Miami Herald*)

In Neptune Beach, this includes cars, neighborhood electric vehicles (golf carts), micromobility (bicycles, electric scooters, and skateboards), package pick-up, and contactless delivery. Contactless delivery includes traditional delivery systems such as pizza delivery to a customer's doorstep instead of in-person hand-off. Technology companies are accelerating pilot programs

New York City's Summer Streets Program in 2019 (Photo Credit: NYCDOT)

for drone deliveries, mostly for medical supplies. These deliveries include air drones in rural areas and grocery delivery robots in suburban areas.

For shared-rides, transit agencies are limiting the number of customers on transit vehicles, while ridehail companies have suspended shared rides, increased cleaning, and instituted mask requirements for drivers.

In the first phases of stay-at-home orders, most states allowed travel outside of the home for exercise. Walking and bicycling climbed sharply. This in turn prompted cities to close streets to cars since auto traffic had almost come to a standstill while sidewalks proved inadequate to handle the increased numbers of pedestrians and bike riders.

With phased re-opening, cities looked again to streets as a way to spur economic activity while allowing needed distance. Neptune Beach is also looking at implementing these strategies.

Going forward, the future still holds various unknowns. There is the possibility of multiple waves of infection and subsequent stay-at-home requirements. There are no established timelines for vaccine development or treatments. For this reason, cities will need to adopt a new approach to design, operations, and community outreach. On the following page there are recommendations on how to accomplish this goal.

PARKING & COVID-19

The parking pilot is on-going and can be used to document economic recovery downtown. With re-opening, more people are venturing to the beach and restaurants, which at a certain point, prompts the need for management. Payment and enforcement provide the city with the data needed to properly manage parking and track economic activity.

STREETS & COVID-19

Even absent the impacts of COVID-19, the Vision Plan embraces the notion of shared and adaptable streets. The uncertainty associated with COVID-19 and recovery makes the case for flexibility even stronger.

There are several types of adaptable streets. In Florida, Dover, Kohl & Partners have developed shared streets in several downtowns as a model of adaptable and programmable streets. Instead of hard curbs, gutters, and roadbeds, street designers develop flexible and curbless streets using landscaping, pavers, and modular elements such as retractable bollards that allow different uses at different times. Florida cities are also adopting Quick Build techniques for street design. These short term (1-5 year) installations use paint and lower cost equipment such as planters and flexi-posts to gain mobility benefits at a fraction of time and cost.

Currently, cities are using pop-ups or "streateries," to help businesses recover. Installations can be as simple as signage and tables, or more elaborate and durable projects. For Neptune Beach, pop-up design needs to consider year-round factors such as warmer weather, summer storms, seasonal tourist fluctuations, and hurricane season. For funding, some cities are using CARES act funds for street conversions and pop-ups.

OUTREACH WHILE DISTANCING

Throughout the Vision and Comprehensive plan process, continuous outreach is essential. While there will be in-person, albeit limited, public meeting opportunities, Neptune Beach can look at continued use of digital tools and expanded outreach literally in and on the streets. Some of these "high impact/low contact" methods include:

Text polling, Source: Dudley Street Neighborhood Initiative.

QR Codes, Source: Creative Guerilla Marketing

Chalk Paint Stencils, Source: Team Better Block

Other options to limit contact while getting the word out include door hangers, outdoor story and input boards, and temporary signs.

POTENTIAL FUNDING SOURCES

This section presents a range of federal, state, and regional funding sources. Currently, there are three factors affecting funding for new mobility:

- Many new mobility projects are excluded from traditional walk, bike, and transit funding sources due to a variety of restrictions that limit the use of funds for non-motorized modes. Often, funding parameters have not been updated to include new technologies.
- Due to COVID-19's impacts on budgets, new funding sources and/or prioritization criteria could materialize that favor Quick Build projects.
- Also in response to COVID-19, there may be infrastructure-related stimulus funds from federal and state transportation agencies

General Fund

Neptune Beach and City of Jacksonville can fund improvements from their General Fund and administered by a Capital Improvements Program (CIP). This is the most accessible and flexible funding source available for local projects. However, since the General Fund is a city's primary source for operations and capital projects, competition is high and due to COVID-19, city revenues have fallen. In Jacksonville, the Mayor must submit a budget to Council by July 15. By law, the final budget must be approved by the full City Council prior to October 1 each year. Neptune Beach follows a similar process.

Enterprise Funds

Cities can establish enterprise funds for any municipal services which charge a fee and are most typically used for public utilities such as power, water, and sewer. The Beaches Town Center parking program is currently operating as an enterprise fund. Fees collected from the program are used to operate and maintain the Flowbird platform and enforce paid parking.

FAST Act Funds

This program has discretionary funds that are available through a grant process administered by the federal government through 2015 federal legislation that expires in 2020. Congress is currently developing new legislation to replace the FAST ACT.

Federal and state statutes require the preparation of a Transportation Improvement Program (TIP). In Neptune Beach, the North Florida TPO is responsible for developing the TIP. Each spring they update their list of road, transit, airport, seaport, bicycle, and pedestrian projects for the next five years. The 2021 TIP will include funding allotments for programs under 'Transportation Alternatives' and 'Local Initiatives', distributed from the Surface Transportation Block Grant program.

Community Development Block Grants

Neptune Beach participates in the Community Development Block Grant Program (CDBG) from the US Department of Housing and Urban Development (HUD) to support community investment. New mobility projects may be eligible to receive funds through this program. The key uses for this funding include the acquisition, rehabilitation, construction of, and improvements to public facilities. Utility upgrades and street improvements are eligible to utilize CDBG funds. More information about the CDBG program can be found at: https://www.hudexchange.info/resources/documents/Aboutthe-CDBG-Program.pdf

Florida Municipal Loan Council

The Florida League of Cities manages several funding options through the Florida Municipal Loan Council. The FMLC works with a team of professionals and advisers to provide greater market access and lower financing costs for its borrowers. The purpose of the Council is to enable participating governments to finance or refinance projects permitted by the Interlocal Act on a cooperative and cost-effective basis, to benefit from economies of scale and to maximize the benefits derived from the availability of money provided by the state for funding projects. For more information contact Rodney Walton at 850.701.3620 at the Florida League of Cities.

IN THE FUTURE NEPTUNE BEACH WILL:

~~see its auto-oriented commercial areas incrementally transformed into welcoming and walkable places with high quality mixed-use developments that connect seamlessly to the Beaches Town Center and surrounding neighborhoods.~~

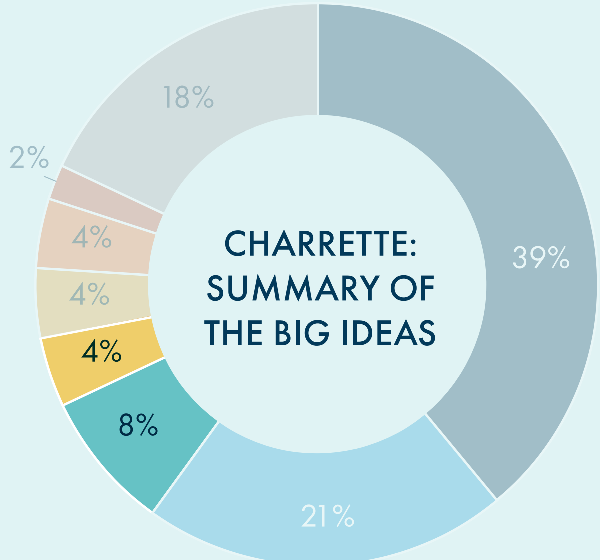
PART 4: THRIVING TOWN CENTER & CORRIDOR REDEVELOPMENT

While most areas of Neptune Beach are largely built out, there are still opportunities for redevelopment, particularly along the Atlantic Boulevard and 3rd Street commercial corridors. Throughout this visioning process, there was consensus among the community around not wanting more strip commercial centers and big box stores. Many residents also mentioned wanting to see the Beaches Town Center extend across 3rd Street/A1A. ~~While pedestrian and street-oriented development with plenty of open space is preferred, the question of whether or not to allow residential in these areas and what exactly these units should look like is still a topic of discussion. This chapter looks at different redevelopment scenarios and proposals that support more walkable, vibrant, and economically resilient mixed-use areas.~~

PART 4: *Thriving Town Center & Corridor Redevelopment*

KEY ISSUES TO ADDRESS	PROPOSED IMPROVEMENTS & POLICIES
• Uncertainty around the future of several large commercial properties that are struggling • The impact of the COVID-19 pandemic on commercial real-estate development and how that may play out in Neptune Beach's market specifically • Lack of vision for what the redevelopment of the 500 Atlantic site should be, instead of what it shouldn't be • Concerns that allowing multi-family residential in commercial redevelopment areas will create more traffic and negatively impact the surrounding areas • Concerns that extending the Beaches Town Center west into the 500 Atlantic site will attract too many visitors and add harmful competition to the existing businesses • Need to revitalize the existing commercial center on Florida and Atlantic Boulevard, including improving the streets and infrastructure there • Complaints about bad parking behavior and crowding in areas where there are existing duplexes, triplexes, and other multifamily homes	• Update the City's comprehensive plan and land development regulations to ensure that redevelopment is both feasible & consistent with the community's vision • Adopt a form-based code and architectural standards to ensure better outcomes and high-quality redevelopment • Revise and enforce parking standards to ensure that missing middle housing types do not lead to overcrowded parking areas in residential neighborhoods • Implement open space improvements on 1st Street and at the end of Atlantic Boulevard in the Beaches Town Center that provide the community with new places to gather and help support local businesses (see more in a Part 2: Welcoming Open Spaces & Active Recreation) • Extend Lemon Street west across 3rd Street/A1A and design it in such a way that it provides dedicated and comfortable spaces to walk and bike • Improve the Atlantic & 3rd Street intersection by reducing crosswalk distances and adding a pedestrian-activated traffic signal; in the long-term advocate for a redesign of the intersection that creates a new gateway plaza • ~~Consider permitting mixed-use redevelopment in large opportunity sites along Atlantic Boulevard, including the right kinds of residential uses that will enhance the character of Neptune Beach and add more households to support local businesses~~ • Encourage adaptive reuse and infill development in the Florida & Atlantic Boulevard commercial area, allowing for a more eclectic mix of uses including ~~live/work buildings,~~ micro manufacturing~~,~~ and public spaces. • Invest in street improvements along Florida near Atlantic Boulevard, and improve that intersection with public art on the underpass, landscaping, and better crosswalks

SUMMARY OF WHAT WE HEARD:



Local Businesses & Commercial Redevelopment

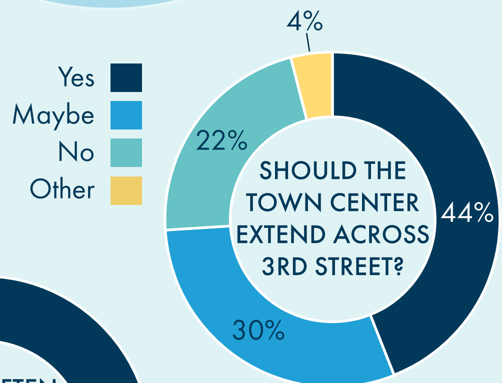
8%

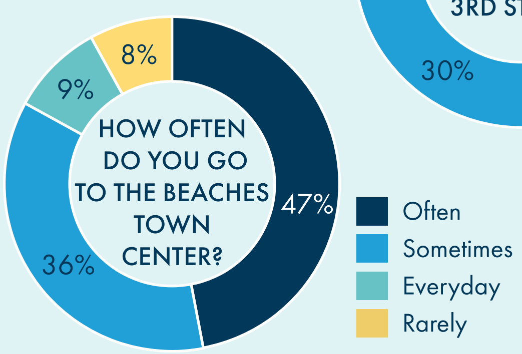
- "Redevelop Atlantic Blvd, add greenery and consider structured parking"
- "Make the Kmart Site part of the walkable Beaches Town Center"
- "Kmart: owner-occupied mixed-use, with greenspace and trails"

Town Center

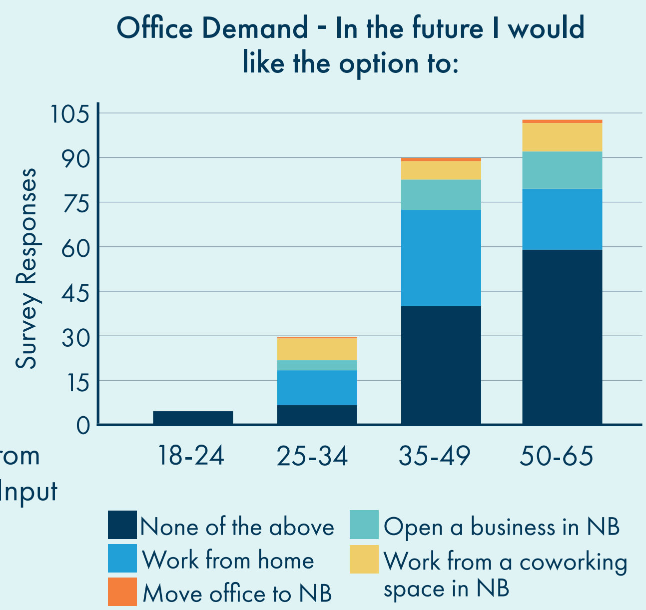
4%

- "Keep the charm!"
- "Consider pedestrian-only portion of the BTC"





Responses from the Citywide Input Survey



Neighborhood Workshop & Survey Responses: Most Popular Types of Commercial Buildings

Local Restaurant

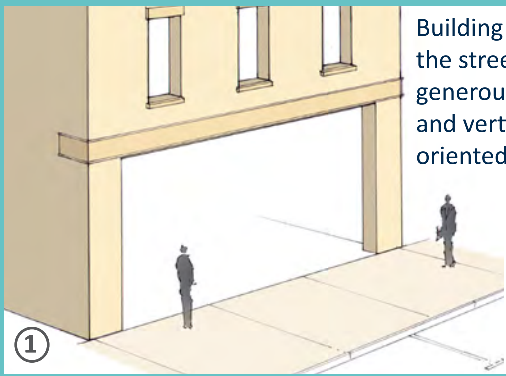
Neighborhood Coffee Shop

Corner Store

Neighborhood Center

Figure 4.63: Summary of What We Heard: Commercial Uses, Office, and Town Center

A Changing Retail Environment

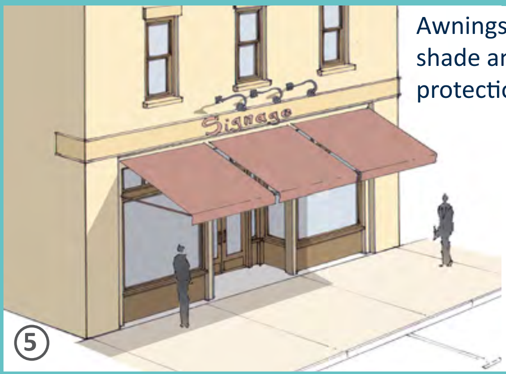


Building faces onto the street with a generous shopfront and vertically-oriented windows.

Columns sub-divide the shopfront and transoms help achieve well-proportioned shopfront windows.

Cased windows sit atop knee-height bulkheads.

Pedestrian-oriented entrance, signage and lighting



Awnings provide shade and rain protection.

A gallery provides a second floor terrace

Local Example: Ragtime Tavern

Local Example: Drift Boutique

A CHANGING RETAIL LANDSCAPE

With the rapid expansion of on-line shopping and the nation's over-supply of retail space, brick-and-mortar stores are facing big challenges. Those that are competing most successfully are those that can offer an experience not available on-line. Given the social aspects of eating out, restaurants are very good at pulling people out of their homes in spite of home delivery services. Small shops that provide personalized interaction with their customers offer a different experience than on-line outlets.

The Beaches Town Center already provides a good selection of boutique retail and restaurants for a community of the size of Neptune Beach and Atlantic Beach. There is a limit to how much more of this kind of commercial development the local market is able to support, though a more thorough market analysis would be necessary to determine how much more.

On the other side of the coin, big box stores, malls, and strip commercial centers are struggling across the country. Neptune Beach's vacant Kmart property on Atlantic Boulevard is not a unique phenomenon and it will unlikely be the last commercial center in the city to go dark. This, combined with the high level uncertainty regarding how soon commercial development will recover from the COVID-19 pandemic and how it might be impacted in the long-term, requires communities to carefully consider how they would like to see these kinds of properties revitalized.

ENCOURAGE LOCAL OWNERSHIP

One fact that has become apparent in studying the successful revitalization of main streets and commercial corridors, is that people want to visit and live in authentic places. We often choose independent establishments like breweries, barbers, bistros, and bike shops because of a connection we feel with the business owner or operator. We want to express our appreciation, get a glimpse of an expert doing what they are good at, hear their story, and be part of it.

A locally-owned business is more likely to express a unique vision and less likely to adopt whatever uniform aesthetic is currently in vogue. Unlike corporate chains, small businesses retain control. Local owners are also more likely to get involved and help solve urban problems at their doorstep. Organizations like the Beaches Town Center Agency and Jax Chamber Beaches Division reinforce local businesses' commitment to the city and to each other.

HOLD ON TO GATHERING SPOTS

While not unique to Neptune Beach, offerings like local coffee shops and ice cream parlors are authentic to all downtowns and help keep them economically competitive by attracting visitors and a younger urban customer base. Certain special establishments, however, keep bringing people back and also act as local gathering spots, such as BrewHound, Pete's Bar, and Southern Grounds. If they serve coffee they probably provide informal workspaces for the self-employed. If they serve beer they likely add to the town center's conviviality by sponsoring outdoor events.

BrewHound Dog Park and Bar

Together with public gathering spaces, like Jarboe Park and 1st Street, these anchor establishments provide opportunities for locals and visitors to interact. These are the City's third spaces; places that are neither home nor work, that make people feel welcome. Investing in more public and third spaces helps support local businesses and provides families with kids and teens more under-21 friendly activities and events.

ANATOMY OF A STOREFRONT

There is an economic advantage to creating unique environments. Atlantic Boulevard west of 2nd Street and parts of 3rd Street/A1A near the BTC will need new storefronts that welcome customers coming on foot or by bike. The diagrams to the left show the elements that help foster better building to street relationships.

BENEFITS OF COMPACT & WALKABLE NEIGHBORHOODS

Creating walkable communities provides numerous benefits to the community and its residents. These include:

1. HEALTH BENEFITS:

Communities that are walkable provide both physical and psychological benefits. An increasing number of studies have reported on the relationship of development patterns that are car-dependent and substance abuse. The Surgeon General of the United States has promoted walkable places in a policy called *Step Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities*.

2. STRONGER LOCAL ECONOMY:

Providing a place where many people can live within walking distance from work, shopping, and entertainment enables residents to easily patronize local establishments either during the workday or after returning home. Walkable places have the added benefit of being more resilient; during the Great Recession of 2008, property owners experienced fewer vacancies in denser, mixed-use, walkable locations than car-oriented, single-use areas.

3. LESS EXPENSIVE TO MAINTAIN AND MORE PROPERTY TAX REVENUE PER ACRE:

Compact developments support community fiscal health by reducing capital and operating costs of extending new infrastructure and municipal services and by bringing in more property tax revenue per acre than single-family suburban developments can.

4. REDUCTION IN CAR EXPENSES:

Decreasing dependence on the car enables residents to reduce the number of cars they own or even eliminate car ownership if they would like. According to the American Automobile Association (AAA), the average cost of owning a car in the United States was around $9,200 in 2019. Reducing the need for a car gives residents the ability to use more of their income on their home, in local businesses, or for future savings. A walkable area can also lead to a reduction in gas consumption and other car related expenses.

5. IMPROVED SAFETY & SECURITY:

Walkable places improve public safety by reducing traffic speeds. Slower car speeds give drivers more time to react to the environment around them and should an incident occur, the likelihood of a pedestrian fatality is dramatically reduced. They also increase security in public spaces by creating more "eyes on the street" and prompting natural surveillance

6. CONGESTION RELIEF:

When more people make use of a walkable and bikeable place to get to work, relax, go out, play, it reduces the number of cars on the road. Rather than every new resident driving to their destination, a walkable place can help absorb these new residents while bringing additional vitality to the area.

7. ENVIRONMENTAL SUSTAINABILITY:

Reduction in car use reduces carbon emissions improving air quality and reducing the impact on the environment. Other elements of walkable places such as parks and street trees reduce the heat island effect, clean the air, and absorb water runoff replenishing natural water sources. Compact infill development also helps protect the natural environment by confining growth to smaller areas, leaving more natural areas untouched and preserved.

8. HOUSING CHOICE

Compact neighborhoods support housing choice and affordability by leveraging a wider range of housing types and allowing for smaller, more naturally affordable homes.

ELEMENTS OF CAR-DEPENDENT PLACES:

1. Buildings are long with few entries facing the street and blank walls at head height.
2. Some buildings are located near the street.
3. Some sidewalks can accommodate multiple people with no room for outdoor dining.
4. Low number of trees are planted along the sidewalk. Trees do not provide shade.
5. Street design that is wide and encourages speeding.
6. Parking visible from the street.

Car-dependent residential neighborhood

Car-dependent commercial neighborhood

ELEMENTS OF WALKABLE PLACES:

7. Building front the sidewalk with multiple entries, windows, porches, and stoops.
8. Buildings are located close to the street.
9. Sidewalks that are wide enough to accommodate multiple people walking and outdoor dining.
10. Shade street trees between the sidewalk and traffic.
11. Street design that is narrow and slows car speeds.
12. Parking hidden from the street.

Walkable residential neighborhood

Walkable commercial neighborhood

Figure 4.64: Car-Dependent vs Walkable Elements

~~COMPACT WALKABLE NEIGHBORHOODS CASE STUDIES~~

~~One of the key ways to attract and support more commercial, dining, and retail offerings near the Beaches Town Center is to increase the number of people living there. Allowing a compact residential component in the redevelopment of large vacant commercial properties makes these projects more economically feasible, particularly given the likelihood of a protracted economic downturn[1]. In order to provide a good mix of housing options while still preserving the largely single-family character of Neptune Beach, there needs to be the right amount of density, or homes per acre, in the right place.~~

~~The following examples demonstrate how new compact and mixed-use developments provide new homes while blending in with the surroundings and without the need for big or tall buildings.~~

~~COURTYARDS OF DELRAY~~

~~Delray Beach, Florida~~

~~The design was intended to encourage neighborhood interaction and opens to the surrounding neighborhood. The site is surrounded by office and retail on all sides to create a mix of uses. The project consists of 32 townhomes facing three interior courtyards creating a series of shared green spaces and an interior pedestrian network through the site. In addition to increasing density, this project provided green space and connectivity within the neighborhood. The design typology—three-story units with rear garages in a courtyard configuration—has been widely copied throughout Florida by builders large and small.~~

~~Special Features:~~

- ~~Downtown housing~~
- ~~Infill development~~
- ~~Mid-income housing~~
- ~~New residential construction~~
- ~~Catalyst for downtown Delray redevelopment~~
- ~~First project for small development company~~

~~Details:~~

- ~~1.12 acres~~
- ~~32 three-story townhomes~~
- ~~Residential density: 28.5 homes per acre gross~~
- ~~The Courtyards of Delray is part of a larger effort by the city to revitalize its downtown, which has drawn in a lot more retail tenants as well as new, mixed-use development.~~

~~BELMONT DAIRY REDEVELOPMENT~~

~~Portland, Oregon~~

~~This project is a mixed-use, urban infill project which spurred reinvestment in the Sunnyside neighborhood and created a strong anchor for a changing neighborhood. Market-rate live/work lofts were built above the renovated commercial space in the existing industrial building, while affordable units were incorporated in new construction. The buildings are oriented to the street to create a pedestrian-oriented streetscape, while rowhouses feature a courtyard that serves as a private garden area for residents.~~

~~Special Features:~~

- ~~Urban infill~~
- ~~Historic preservation/adaptive reuse~~

1 Bachman, Dr. Daniel "United States Economic Forecast: 2nd Quarter 2020." Deloitte, June 15, 2020 https://www2.deloitte.com/us/en/insights/economy/us-economic-forecast/united-states-outlook-analysis.html

- ~~Affordable housing~~
- ~~Green development, using recycled materials~~
- ~~Interior courtyard~~
- ~~Mix of housing types~~

~~Details:~~

- ~~2.5 acres~~
- ~~66 subsidized apartments~~
- ~~19 market rate lofts~~
- ~~30 owner-occupied rowhouses~~
- ~~26,000 sf ground-level retail~~
- ~~Residential density: 54 homes per acre net~~

~~THE CROSSINGS~~

~~Mountain View, California~~

~~This 18 acre site is bounded by commercial space on two sides (including a supermarket), a rail line and expressway on a third side, and condominiums on the fourth side, with a local school nearby. The project leveraged the existing retail as an asset for a diverse mix of housing types. The housing types range from a density of 11 homes per acre to 70 homes per acre, compared to 7-10 home per acre in the rest of the city. All homes are within a 5-min walk to all services, with retail and offices concentrated near the transit station. Apartments are organized around common courtyards, and two small parks are centrally located.~~

~~Special Features:~~

- ~~Suburban reuse site~~
- ~~Mix of housing types~~
- ~~Walkable neighborhood~~

~~Details:~~

- ~~18 acres~~
- ~~102 single-family detached houses~~
- ~~129 rowhouses~~
- ~~128 condominiums~~
- ~~Residential density: 30 homes per acre net~~

~~TRAFFIC IMPACTS OF REDEVELOPMENT~~

~~Residents of Neptune Beach expressed concern about the impacts of redevelopment along existing commercial corridors. There are long-standing anxieties around permitting multifamily apartment buildings, especially rental apartments, while at the same time little desire for more suburban strip centers and strong support for more walkable and bikeable places. One concern mentioned often was how new development along Atlantic Boulevard would impact traffic. To help demonstrate, side-by-side, the potential transportation impacts of different redevelopment types, the planning team analyzed three different hypothetical scenarios using UrbanFootprint. For the purposed of the analysis, each scenario maxes out future redevelopment along Atlantic Boulevard according to these types:~~

1. ~~Infill of Vacant Parcels Following Existing Land Uses & Character (i.e. more big box & strip commercial centers)~~
2. ~~Walkable Commercial & Office Redevelopment (i.e. "Lifestyle Center")~~
3. ~~Traditional & Walkable Mixed-Use Redevelopment~~

~~WHAT IS URBANFOOTPRINT?~~

~~UrbanFootprint is a land use data and mapping platform that aggregates comprehensive existing parcel-level information, builds unique future land use alternatives using customizable building and place prototypes, and analyzes the impacts of specific land use scenarios across a wide range of metrics including, greenhouse gas emissions, water use, energy consumption, transportation, and risk and resilience.~~

~~Basic Assumptions~~

~~For the base scenario, existing conditions were carefully checked and revised against the most up-to-date property assessment data available for Duval County. The three new scenarios were created using custom building and place types that are consistent with Neptune Beach's 3-story height restrictions.~~

~~Understanding Traffic Impacts of Redevelopment~~

~~The reason why large commercial centers, including lifestyle centers like the St. Johns Town Center (represented by Scenario 2), perform worse in terms of transportation impacts than traditional and mixed-use developments (Scenario 3) has to do with trade areas. Any retail and commercial project requires a certain number of households within a certain walking and driving distance to support its businesses. This is known as the trade area.~~

~~Given the population of Neptune and Atlantic Beach and how much area there is for potential future redevelopment along Atlantic Boulevard, the trade area for a lifestyle center to be successful would have to be far larger than the local community. This type of development would have to draw on people from much farther away, who often have no other choice but to drive there, thus resulting in more car traffic.~~

~~A walkable and mixed-use neighborhood, on the other hand, typically includes a smaller component of retail and commercial uses compared to conventional lifestyle and super centers, while at the same time adding households within walking distance of shops that can help support those businesses.~~

~~PARCELS INCLUDED IN THE REDEVELOPMENT TRAFFIC ANALYSIS SCENARIOS~~

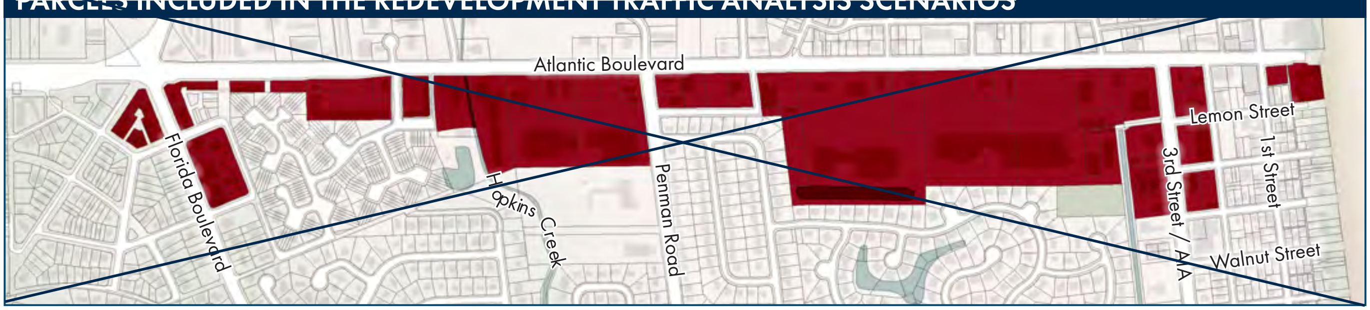
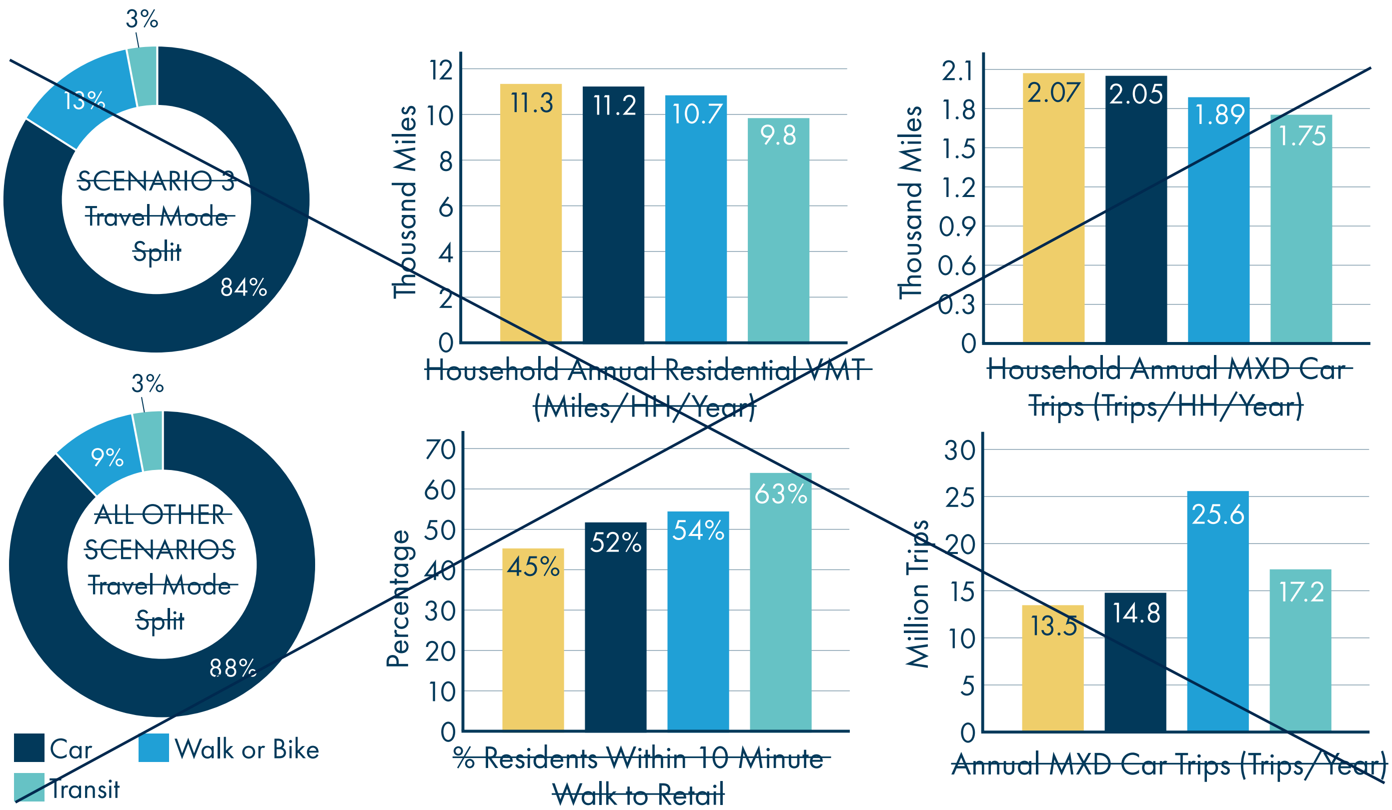


Figure 4.65: ~~Parcels Included in the Redevelopment Traffic Analysis Scenarios~~

~~TRANSPORTATION IMPACT RESULTS~~

~~When it comes to transportation impacts, Scenario 3, Traditional & Walkable Mixed-Use Redevelopment, improved the percentage of people living within a 10-minute walk to retail from 45% today, to 63%. It was also the only scenario to improve the overall mode split for Neptune Beach. Mode split means the number of people walking and biking versus driving or using transit. When looking at the EPA's mixed-use trip generation model (MXD) results, which account for internal trip capture, Scenario 3 also generated significantly less total annual trips than Scenario 2, Walkable Commercial & Office, and it also generated less vehicle miles traveled (VMT) and MXD car trips on a per household basis when compared to base conditions and Scenarios 1 and 2.~~



~~HOW TO UNDERSTAND TRAFFIC IMPACTS: VMT VS. MXD~~

~~Vehicle Miles Traveled (VMT) is a measure used in transportation planning for a variety of purposes. It indicates the amount of travel for all vehicles in a geographic region over a given period of time, typically one year. It is calculated by adding up all the miles driven by all cars on all the roadways in an area. Forecasting VMT typically depends on trip generation analysis, which estimates how much traffic a new development will create. This analysis has been standardized by the Institute of Transportation Engineers (ITE), and is used across the country.~~

~~One of the shortcomings of trip generation analysis and VMT forecasting is that they do not adequately account for the effects of compact and mixed-use developments. Research shows that neighborhoods that prioritize walkability and include a greater mix of uses generate fewer vehicle trips. To help communities better understand the impacts of new development, the US EPA partnered with ITE to create the Mixed-Use Trip Generation Model (MXD). This tool estimates the internal capture of trips within mixed-use developments, in addition to walking and transit uses for trips starting and ending in mixed-use neighborhoods. These models have been validated against actual traffic counts in mixed-use developments across the country.~~[1]

~~APPLYING VMT & MXD TO OUR SCENARIOS~~

~~UrbanFootprint uses a number of land use variables, demographic census data, and local transit characteristics as inputs in their transportation models to generate auto ownership, trip generation, trip distribution, and mode choice estimates. These are then translated to VMT, MXD trips, and greenhouse gas emission projections for each scenario.~~

1 "Mixed-Use Trip Generation Model", https://www.epa.gov/smartgrowth/mixed-use-trip-generation-model

~~500 & 572 ATLANTIC REDEVELOPMENT OPTIONS~~

~~The currently vacant 500 Atlantic property, previously home to a Kmart, is a testament to the changing nature of retail. This site has been the subject of much debate in Neptune Beach, and starting in 2018 the community rallied and organized to stop two Planned Unit Developments (PUD) requests that proposed a walkable district with shopping, boutique hotels, commercial space, and residential apartment buildings. The developers did receive a first phase development approval by right that removed all residential, which included a boutique hotel above retail. Due to the COVID-19 pandemic, those deals have since been abandoned. As the first major redevelopment site in Neptune Beach in decades, getting the vision right at this site is vital to the future of the City.~~

Figure 4.66: ~~500 Atlantic Existing Conditions Aerial~~

Figure 4.67: ~~500 Atlantic - Fulfillment Center Aerial Illustration~~

Figure 4.68: ~~500 Atlantic - Lifestyle Center Aerial Illustration~~

~~WHAT WERE THE OPTIONS CONSIDERED?~~

~~The challenge with redeveloping a site of this size, 18 acres including 436, 450, 500, 524, 560, and 572 Atlantic (the existing Town Center is less than 10 acres), is that in creating a walkable area of smaller blocks and streets, as opposed to a big box store with a very large surface parking lot in front of it, a lot more square feet of development is created. There is only so much retail, dining, office, and hospitality space that the market demand in a city the size of Neptune Beach can realistically absorb. Because many in the community are strongly opposed to the creation of apartment buildings, the team considered the following hypothetical and illustrative development options:~~

~~Option 1: Fulfillment Center (Eliminated)~~

~~Because of their size and proximity to large numbers of households, large failing malls and big box stores are being converted into fulfillment centers for the top online retailers to achieve their one- and two-hour delivery targets. While this is a viable alternative in many places, this type of use, with all the additional truck traffic it would generate, and given this specific property's close proximity to the heart of town, does not fit the community's vision and was eliminated.~~

~~Option 2: Lifestyle Center (Less Feasible)~~

~~Lifestyle centers are retail-led developments that offer shopping, entertainment, offices, and public open space. These pedestrian-friendly and more aesthetically pleasing alternatives to suburban malls and big box retail centers became popular in the early 2010s. While many of these have been more successful than their mall counterparts, because they are anchored by retail uses they are still vulnerable to rapid disruptions in shopping habits. To combat the overall decline in retail, the newest iterations of lifestyle centers include residential and hospitality components in denser more vertical designs. While this option, illustrated on the left, would not upset citizens who oppose apartments or residential in general, it also assumes that there is a viable market for 53,000 additional square feet of main street style retail, dining, and other commercial, as well as another 97,000 square for a big box anchor, both of which are unlikely in the near-term.~~

~~Option 3: Traditional Walkable Neighborhood (New Concept)~~

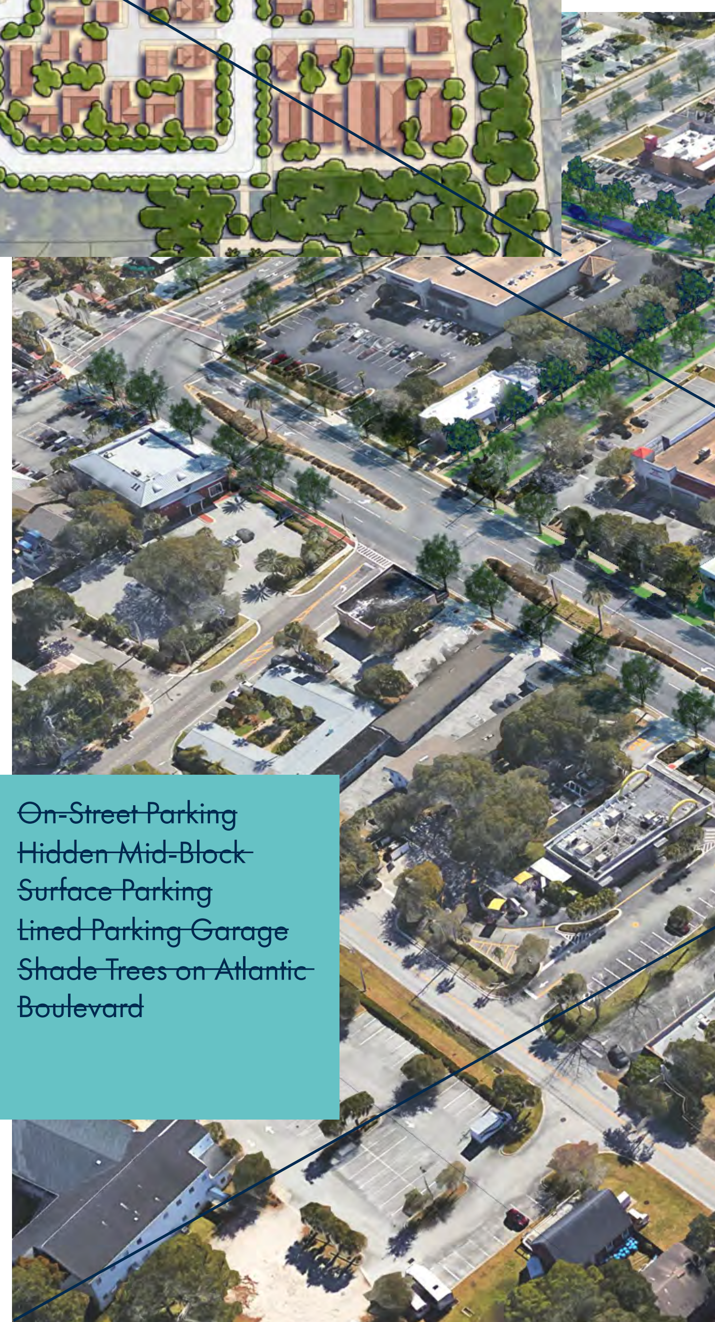
~~A concept that had not yet been considered for this property was to transform the site into a traditional neighborhood, including a more realistic amount of mixed-use and walkable retail and office closer to Atlantic Boulevard and traditional residential that includes compact single-family detached homes, bungalow courts, rowhouses, duplexes, a very select few multiplexes, and one small garden apartment building, which could also be an assisted living project. After receiving a mostly positive reception at the design charrette, this idea has been refined and illustrated on the following pages. The benefit of this redevelopment type is that it incorporates a needed residential component at a level of density that is much more economically feasible than suburban single-family, without including larger apartment buildings.~~

~~ILLUSTRATED DEVELOPMENT PROGRAMS FOR 500 & 572 ATLANTIC ALTERNATIVES~~

~~Redevelopment Option~~	~~Commercial~~	~~Office~~	~~Homes~~	~~Open Space~~	~~Parking Spaces~~
~~Existing Condition: Big Box~~	~~188,600 SF~~	~~0 SF~~	~~0~~	~~0 SF~~	~~740~~
~~Option 1: Fulfillment Center~~	~~0 SF~~	~~0 SF~~	~~0~~	~~0 SF~~	~~N/A~~
~~Option 2: Lifestyle Center~~	~~150,000 SF~~	~~16,500 SF~~	~~0~~	~~26,000 SF~~	~~730~~
~~Option 3: Traditional Mixed-Use~~	~~28,000 SF~~	~~24,000 SF~~	~~200~~	~~73,500 SF~~	~~540~~

Figure 4.69: ~~500 & 572 Atlantic - Redevelopment Concepts Development Program~~

Figure 4.70: ~~500 & 572 Atlantic Traditional Neighborhood Concept: Plan View Illustration~~



~~TRADITIONAL MIXED-USE NEIGHBORHOOD~~

~~This page shows the site plan and aerial view for the Traditional Mixed-Use and Walkable Neighborhood concept on the greater 500 & 572 Atlantic site. The top-right illustration keeps the old Lucky's property and parking lot intact, building out most of the project's retail, office, and rowhouses along a new central green. At the south end are a number of new compact single-family villas. The bottom-right illustration redevelops the remaining Lucky's property, adding three bungalow courts, duplexes that face onto a new pocket park, a few multiplexes, a small garden apartment building (or assisted living), and an 88-space parking garage.~~

~~FEATURES:~~

1. ~~Signature Central Green Open Space~~
2. ~~Wide Sidewalks With Outdoor Dining Space~~
3. ~~Two-Way Bicycle Track on Lemon Street~~
4. ~~New Pocket Park~~
5. ~~On-Street Parking~~
6. ~~Hidden Mid-Block Surface Parking~~
7. ~~Lined Parking Garage~~
8. ~~Shade Trees on Atlantic Boulevard~~

Figure 4.72: ~~Traditional Neighborhood Concept (Not Including 560 & 572): Aerial Illustration~~

	~~A) Rowhouse Homes~~	~~B) Compact Detached Villas~~	~~C) Bungalow Court Homes~~	~~D) Duplex Homes~~	~~E) Multiplex Homes~~	~~F) Garden Apartment Units~~
~~436, 450, 500 & 524 Atlantic~~	~~32~~	~~24~~	~~0~~	~~24~~	~~11~~	~~0~~
~~560 & 572 Atlantic~~	~~9~~	~~4~~	~~22~~	~~28~~	~~34~~	~~12~~
~~TOTAL~~	~~41~~	~~28~~	~~22~~	~~52~~	~~45~~	~~12~~

Figure 4.71: ~~500 & 572 Atlantic Traditional Neighborhood Concept - Aerial Illustration~~

~~500 Atlantic Commercial Redevelopment Options~~

Figure 4.73: ~~Traditional Neighborhood Plan: Street View 1 Looking South at Bungalow Court & Cycle Track~~

Figure 4.74: ~~Traditional Neighborhood Plan: Street View 2 Looking NE at Rowhouses & Retail/Dining~~

~~500 ATLANTIC TRADITIONAL NEIGHBORHOOD:~~

~~WHAT COULD IT LOOK AND FEEL LIKE ON THE GROUND?~~

Figure 4.75: ~~Traditional Neighborhood Plan: Street View 3 Looking SE at Pocket Park and Duplexes~~

Figure 4.76: ~~Traditional Neighborhood Plan: Street View 4 Looking East Across a Bungalow Court~~

~~WHAT IS MISSING MIDDLE HOUSING?~~

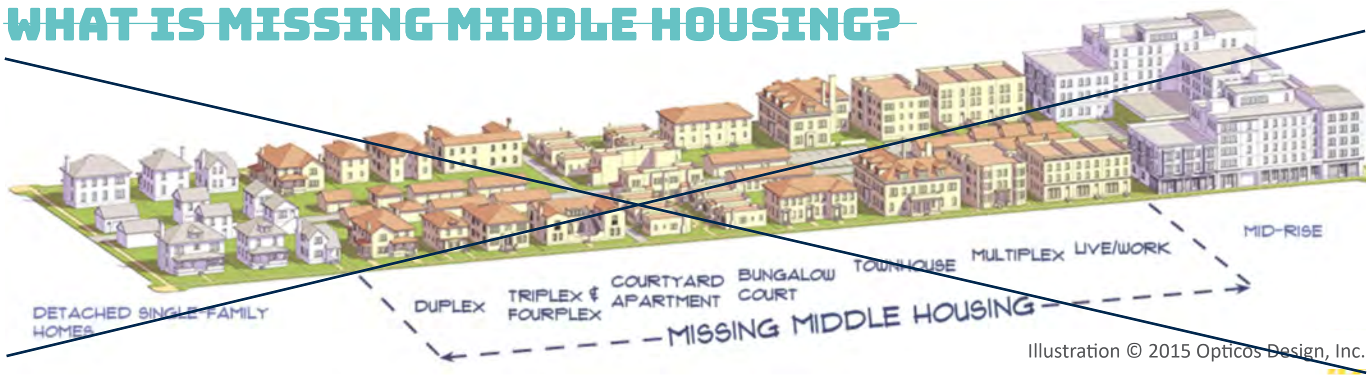


Illustration © 2015 Opticos Design, Inc.

~~There is a growing demand for alternative housing types and walkable neighborhoods throughout the United States. The term "Missing Middle" was conceived by Daniel Parolek of Opticos Design, Inc. to define a range of multi-unit or clustered housing types compatible in scale with single-family homes that help meet the growing demand for walkable urban living, often lacking in conventional suburban subdivisions. The following missing middle housing characteristics are excerpted from missingmiddlehousing.com:~~

~~**Walkable Context:** Missing Middle housing types are best located in a walkable context. Buyers and renters of these housing types are often trading square footage for proximity to services and amenities.~~

~~**Small-Footprint Buildings:** These housing types typically have small- to medium-sized footprints, similar to nearby single-family homes. This allows a range of Missing Middle types with varying densities to blend into a neighborhood.~~

~~**Lower Perceived Density:** Due to the small footprint of the buildings and the fact that they are usually mixed with a variety of other building types within the neighborhood, the perceived density of these types is usually quite low. But, the actual measured densities can meet established thresholds for supporting transit and neighborhood-serving main streets.~~

~~**Fewer Off-street Parking Spaces:** A balance must be sought between providing necessary car storage, and the adverse impacts on community design from too much parking. Since they are built in walkable neighborhoods with proximity to recreational and commercial amenities, Missing Middle housing does not typically provide more than one space per unit.~~

~~**Smaller, Well-Designed Units:** Most Missing Middle housing types have smaller unit sizes, which can help developers keep their costs down and attract a different market of buyers and renters, who do not have such options in many communities.~~

~~**Simple Construction:** Missing Middle housing types can be simply constructed, which makes them an attractive alternative for developers to achieve good densities without the added financing challenges and risk of more complex construction types. This can also increase affordability when units are sold or rented.~~

~~**Creates Community:** Missing Middle housing creates community through the integration of shared community spaces within the building type (for example, bungalow courts), or simply from being located within a vibrant neighborhood with places to eat and socialize.~~

~~**Marketable:** Because of the increasing demand from baby boomers and millennials, as well as shifting household demographics, the market is demanding more vibrant, sustainable, walkable places to live. Missing Middle housing types respond directly to this demand.~~

~~EXISTING & NEW HOUSING TYPES~~

~~Community Top Picks~~

~~Future housing in Neptune Beach should prioritize infill locations, capitalizing on existing infrastructure to reduce suburban sprawl, and offer smaller, more naturally affordable homes that also bring in more property tax revenue per acre than traditional suburban subdivisions. While Neptune Beach has a fair amount of missing middle housing, particularly east of 3rd Street/A1A, recent changes to Neptune Beach's land development regulations, including a moratorium on lot subdivisions, make it difficult for new duplexes to get built, while previous changes to the R-4 zoning, which applies east of 3rd Street, have rendered many of the existing duplexes, triplexes, and quadruplexes nonconforming. Accessory dwelling units, including granny flats and garage apartments, are also not permitted as long-term rental homes. The images below represent existing and new housing types that may be appropriate in certain and restricted areas of Neptune Beach. Each of these housing types were used to model the 500 Atlantic Traditional Neighborhood proposal on the previous pages.~~

~~**Rowhouse**: These are small to medium-sized structures, typically consisting of two to eight attached single-family homes placed side by side. Homes are typically accessed by car through a rear alley.~~

~~Above: Baldwin Park Townhomes, 2007 in Orlando FL~~

~~**Duplex:** These are small to medium -sized structure that consists of two attached homes, with both entries facing the street.~~

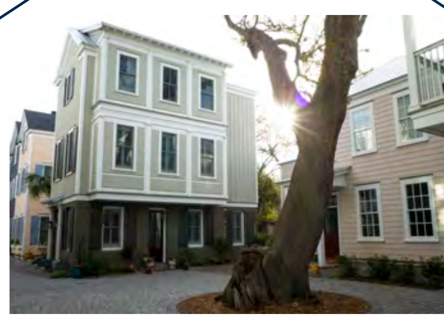
~~Above: Historic Duplex Renovation, 2019 in Cape Charles, VA~~

~~**Multiplex**: A medium-sized structure that typically consists of four to six attached homes. A common configuration of this type is two units per floor with one shared entry.~~

~~Above: Pomona Apartments (Quadruplex), 1923 in Fullerton, CA~~

~~**Bungalow Court:** Bungalow/cottage courts consist of a series of small detached or semi-detached homes facing a shared court rather than private yards. The court is typically oriented perpendicular to the main street front.~~

~~Above: Don Carlos Court (7 Bungalows), 1927 in Pasadena, CA~~



~~**Compact Villas:** Compact villas are a type of development that arranges small footprint and typically taller homes in a compact form with an alley or shared court access. These developments feature both attached and detached home variations.~~

~~Above: Earl's Court (24 homes), 2013 in Mount Pleasant, SC~~

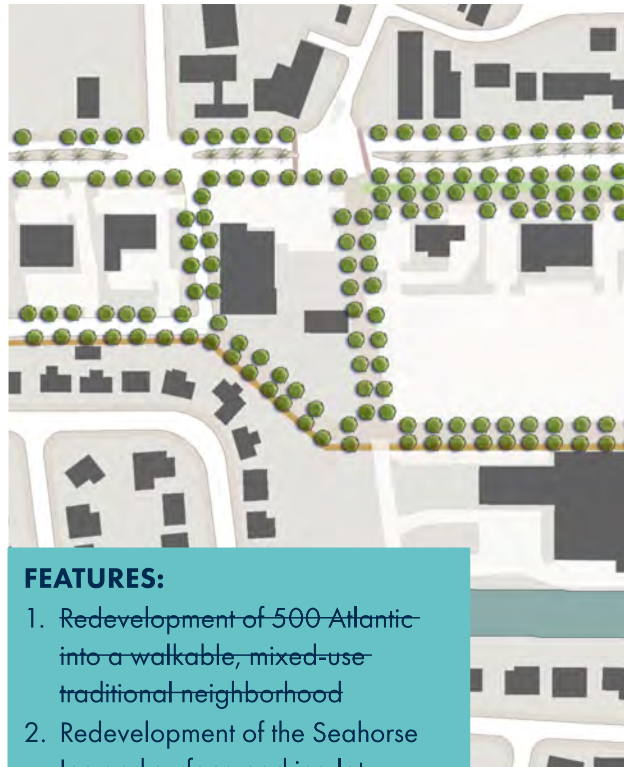
~~**Small Scale Apartments**~~

~~A medium structure that consists of 5 to 12 side by side or stacked apartments, usually with one shared entry. Buildings sometimes wrap around a small court.~~

~~Above: Sorrento Court (13 apartments), 1930 in Portland, OR~~

EXTENDING THE BTC WEST WITH NEW WALKABLE STREETS

~~Throughout the public visioning process, when the community was asked about what should happen to the 500 Atlantic property, many responded that they would like to see the Beaches Town Center extend west across 3rd Street/A1A. Not all were in agreement, however, with some expressing concerns that an expanded town center could attract more visitors and create harmful competition for the existing businesses. Those concerns could be addressed by redeveloping 500 Atlantic with a residential component, as illustrated previously in this section. Those new households would serve as patrons to both new and existing businesses and help keep the Beaches Town Center as a place primarily for locals.~~



FEATURES:

1. ~~Redevelopment of 500 Atlantic into a walkable, mixed-use traditional neighborhood~~
2. Redevelopment of the Seahorse Inn and surface parking lot
3. Extension of Lemon St to the west
4. ~~New lined parking garage~~
5. New signature public plaza
6. Redesign of 1st Street from Atlantic to Orange Street as a shared street
7. Intersection redesign for Atlantic and 3rd Street with public plaza and redevelopment on the Walgreens & Starbucks sites
8. Canal Trail to Jarboe Park

DESIGNS FOR CROSSING 3RD ST/A1A SAFELY

Some residents also expressed concerns about how to safely cross 3rd Street/A1A if the Beaches Town Center were to extend across it. To address this, the pedestrian and bicycle networks across 3rd Street must be greatly improved. The first step in stitching together the east and west sides of 3rd Street is to extend Lemon Street through the 500 Atlantic property and eventually all the way to Penman Road. In the event that Atlantic Boulevard cannot be redesigned to incorporate separated bicycle facilities, Lemon Street could act as a great citywide connector.

The next key step is to create a new pedestrian crossing at Lemon Street and improve the existing crosswalks on Atlantic Boulevard. While the Lemon Street crossing would need a pedestrian-activated traffic signal (also known as a HAWK crossing), the Atlantic crossing would require a more significant redesign and level of investment.

Four options were explored for this intersection (detail on pages 99-101). Two of these options are shown on the right. The first is possible second-phase to the FDOT's current proposal. This option is a good short- to mid-term improvement. Like the FDOT design it removes the dedicated left-turn lane to the Shoppes of Northshore and it adds a new pedestrian-activated traffic signal for cars in the free flowing right-turn lane on Atlantic Boulevard trying to turn south onto 3rd Street. This design also removes one of the west-bound left turn lanes on 3rd Street, which reduces the east/west crosswalk length.

The second option for the Atlantic and 3rd Street intersection is what has been illustrated in the plan on the top right. This transformative design reimagines the intersection by adding a pedestrian plaza in the center. Achieving this vision would require the redevelopment of the adjacent properties, including purchasing a public easement on a portion of the Walgreens property. Functionally, this intersection works very similar to the first proposal, with the main differences being that the diverter island at the center is expanded into a new public space and that cars going west on Atlantic Boulevard from the BTC cannot make a left turn onto 3rd Street. Another transformative redesign for this intersection that has potential is a single-lane roundabout (see page 101).

Figure 4.77: Beaches Town Center Expansion & Redevelopment Illustrative Plan

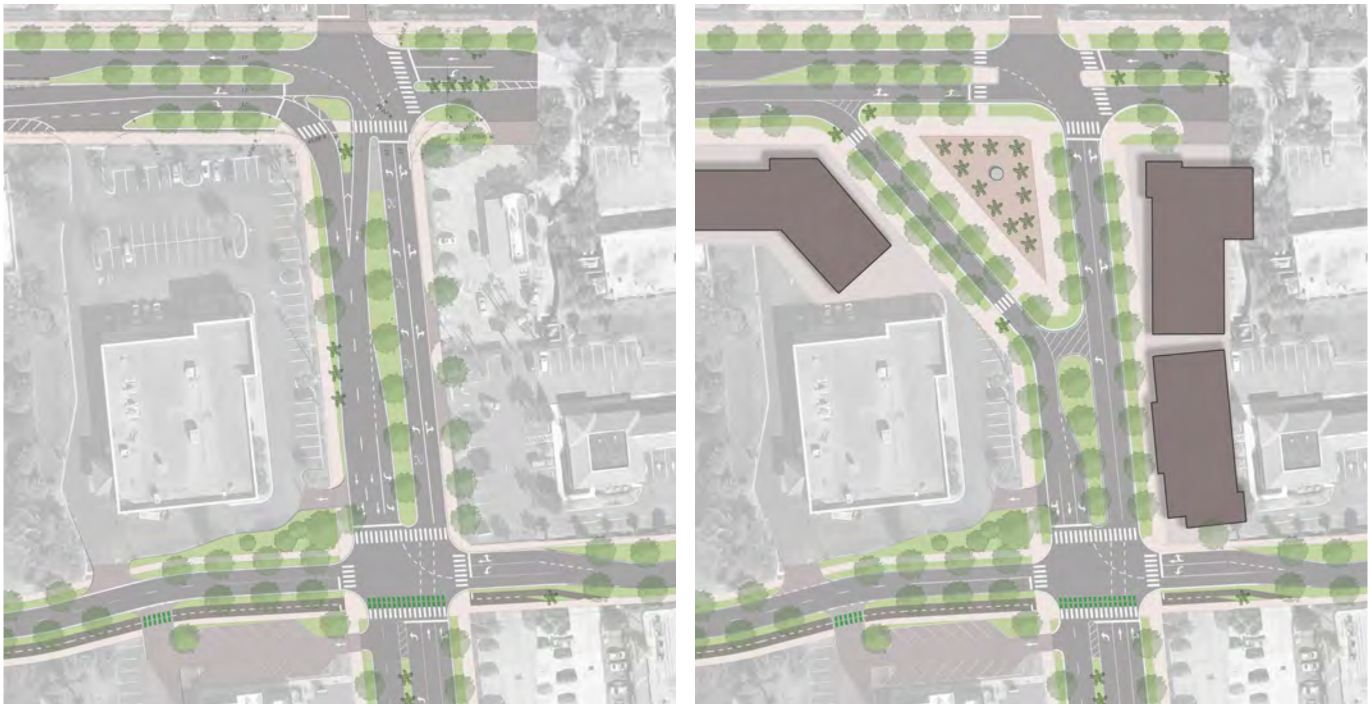


Figure 4.78: Short-Term & Long-Term Options for Atlantic Boulevard and 3rd Street Intersection Improvements

BREWHOUND NEIGHBORHOOD

A WALKABLE NEIGHBORHOOD DESTINATION

The BrewHound Neighborhood Center is located at the intersection of Florida and Atlantic Boulevard. Anchored by the beloved BrewHound Dog Park & Bar, this area has the potential to become a quirky ~~mixed-use~~ neighborhood center that gives Neptune Beach residents, especially those living west of Penman Road, a new place to grab coffee, shop, and gather with friends, all within close walking distance.

Improving the network of streets and sidewalks, including completing the East Coast Greenway widening project on Florida Boulevard, paving Poinciana Road, and planting shade trees throughout, will make the area more walkable and inviting. The creative reuse of existing buildings and the construction of small ~~mixed-use~~ infill buildings closer to the street will freshen up this run-down commercial area, increasing property values, and bringing in more business to existing establishments.

Building off some the existing warehouse, storage, and light industrial businesses, this area should encourage artisan and maker spaces, as well as permitting micro-manufacturing (e.g. digital fabrication, coffee roasting, brewery) ~~and permit more affordable live/work buildings~~ for local artists and entrepreneurs. ~~While the buildings along Florida should remain primarily commercial, mixed-use buildings along Kings Circle South and rowhouses along Poinciana Road provide a good transition between this neighborhood center and the surrounding residential areas.~~

Figure 4.79: Plan Before

Figure 4.80: Plan After

Figure 4.81: Existing conditions

FEATURES:

1. Existing buildings and businesses
2. BrewHound Dog Park & Bar
3. Plazas and spaces for outdoor dining
4. East Coast Greenway
5. Shade trees
6. Infill restaurants and shops
7. New Sidewalks on King Circle
8. New streets and lanes
9. On-street parking
10. ~~Mixed-use buildings~~
11. ~~Live/Work buildings~~
12. ~~Rowhouses~~

Figure 4.82: Walkable BrewHound

NEW GATEWAY AT FLORIDA & ATLANTIC BOULEVARD

The intersection of Florida and Atlantic Boulevard is one of the primary entryways into Neptune Beach. Today this underpass gateway is a sea of concrete, anchored on the corner by an auto air conditioning repair building which is in need of some repair. In addition to the aesthetics, the intersection is incredibly difficult to navigate on foot and by bicycle. This illustration shows how this intersection can be transformed into a vibrant gateway into the city. A signature mural on the underpass is an easy way to brighten this area and help freshen up this tired commercial area. Painted crosswalks and pavers help call attention to people crossing and slow down cars.

Figure 4.83: Florida and Atlantic Boulevard - Proposed Intersection Improvements

Figure 4.84: Atlantic and Florida Boulevard - Existing Condition

FEATURES:

1. Underpass murals
2. Painted high visibility crosswalk
3. Landscaped pedestrian islands
4. Longer and slightly wider median with palm trees along Florida Boulevard
5. Shade trees
6. New infill commercial building

IN THE FUTURE NEPTUNE BEACH WILL:

continue to protect the natural environments that make it so special, while adapting infrastructure, regulations, and procedures to better address changing social, economic, and climate-related realities.

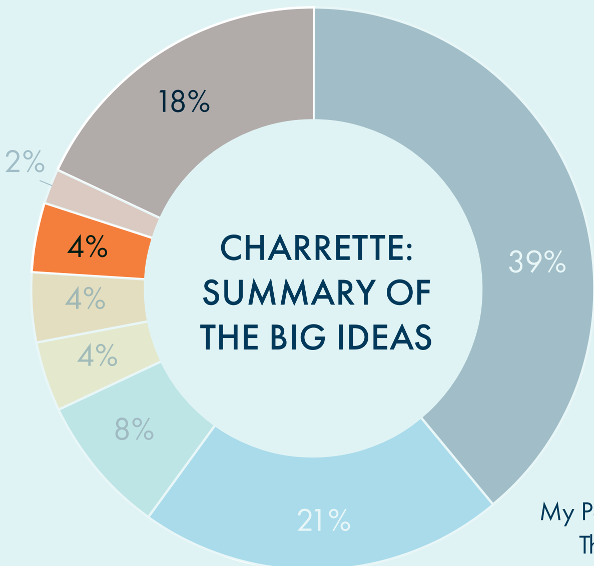
PART 5: A SUSTAINABLE & RESILIENT CITY

No plan for the future in a coastal city like Neptune Beach would be complete without addressing the importance of environmental protection, sustainability, and climate resilience. When asked what their number one "happy place" in Neptune Beach is, 134 out of 244 survey respondents said the beach or the ocean were their absolute favorite places to be. Keeping the Intracoastal Waterway and beach healthy and pristine are as important as preparing and adapting to threats including increased storm events and sea level rise.

PART 5: *A Sustainable and Resilient City*

KEY ISSUES TO ADDRESS	PROPOSED IMPROVEMENTS & POLICIES
• Flooding problems along 1st Street, 2nd Street, Oak Street, and Magnolia Street, as well as in homes that are near or on the Intracoastal Waterway and Hopkins Creek • Raw sewage floods on Florida Boulevard near 7th Street • Lack of oversight from the city regarding new or retrofitted homes that are inadvertently diverting stormwater onto neighboring properties • Concerns about the cost of adaptation measures for individual homeowners • Lack of a power backup for the City's lift station during a storm event • Need more pervious surface areas, street trees, community gardens, and bioswales • Concerns regarding marsh erosion, particularly along Hopkins Creek, which residents believe to be a possible result of dredging	• Support the ongoing and planned stormwater improvement projects, minimizing the impact on existing ecosystems and vegetation as much as possible • Incorporate low impact design principles into street design, parks, and infrastructure improvement projects • Review and update, as necessary, the City's current requirements for permeable surface areas in a new project or renovation • Protect the City's existing tree canopy and implement a street tree program that will encourage homeowners to plant more shade trees by committing to maintain the trees once planted • Utilize native plant species when designing streets, parks, and public spaces • Work with local nonprofit groups to implement a number of health and sustainability initiatives, including composting programs, water testing, rain barrel programs, single-use plastics bans for city buildings, and beach cleanups, to name a few • Revise residential site design standards and improve enforcement to ensure that new construction properly manages stormwater on site and reduces runoff into neighboring properties • Commission and adopt a thorough vulnerability assessment and climate adaptation plan • Distribute resources and educate residents regarding grants, assistance, and insurance incentives to help fund climate adaptation measures on their properties

SUMMARY OF WHAT WE HEARD:



Stormwater & Resilience

4%

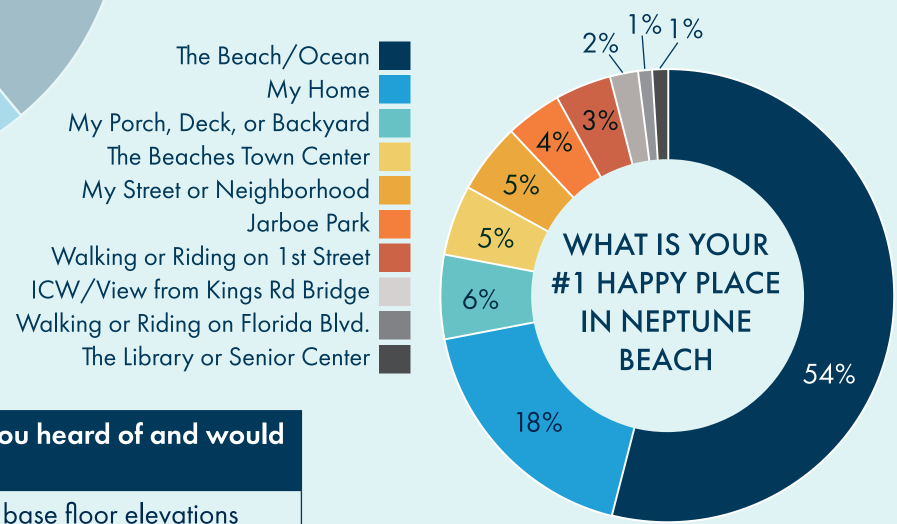
- "Address stormwater & flooding issues"
- "Increase permeability and add more green space"

Other

18%

- "Infrastructure, infrastructure, infrastructure!"
- "Resilient, durable, and quality design of buildings, streets, and public spaces"

Responses from the Online Neighborhood Preference Survey and Citywide Input Survey



What adaptation strategies have you heard of and would like to learn more about?
Retrofitting buildings to achieve higher base floor elevations
Better flooding control during hurricanes
Improved street drainage and stormwater drains
Temporary marsh flooding barricades
Repair sewer system
Sewer backflow prevention during storms
Replace the Kings Road Bridge with marshland
Keep the beach dunes well maintained, regularly clear out drainage facilities, stop laying down non pervious pavers and parking lots, and enforce building code violations that force stormwater onto other properties
Maintain existing infrastructure (clean out ditches, make sure pipes and outflows are working properly, make sure residents are not modifying or filling in stormwater routes/flows)
Hiring an advance civil engineer would go a long way

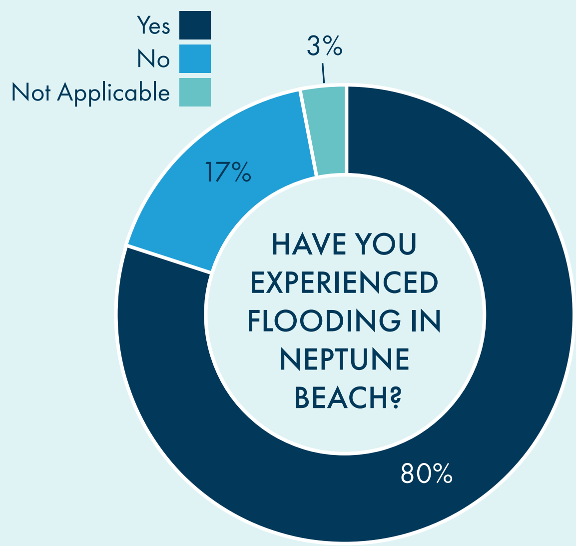


Figure 4.85: Summary of What We Heard: Sustainability & Resilience

Planned Stormwater Improvements

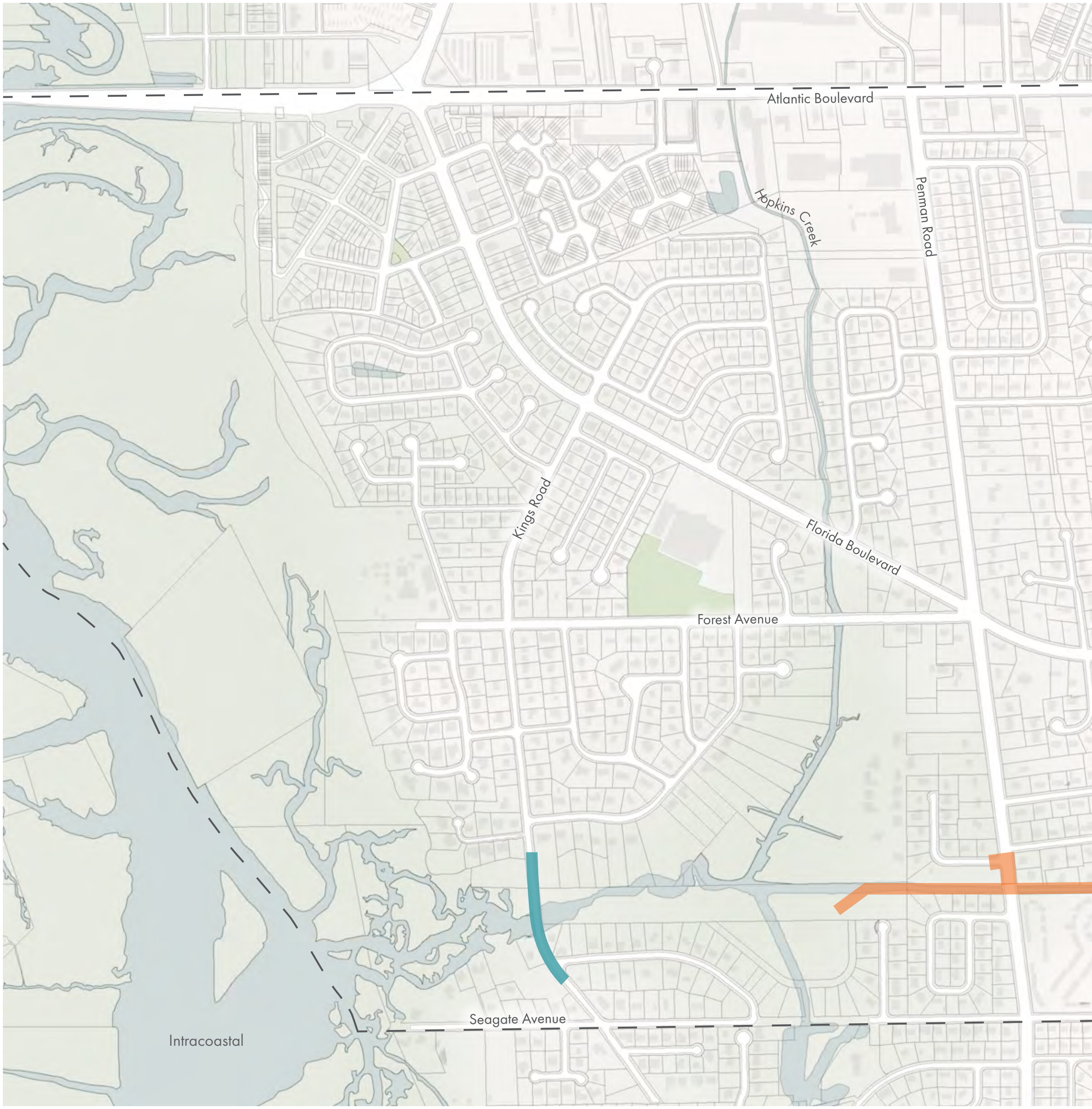
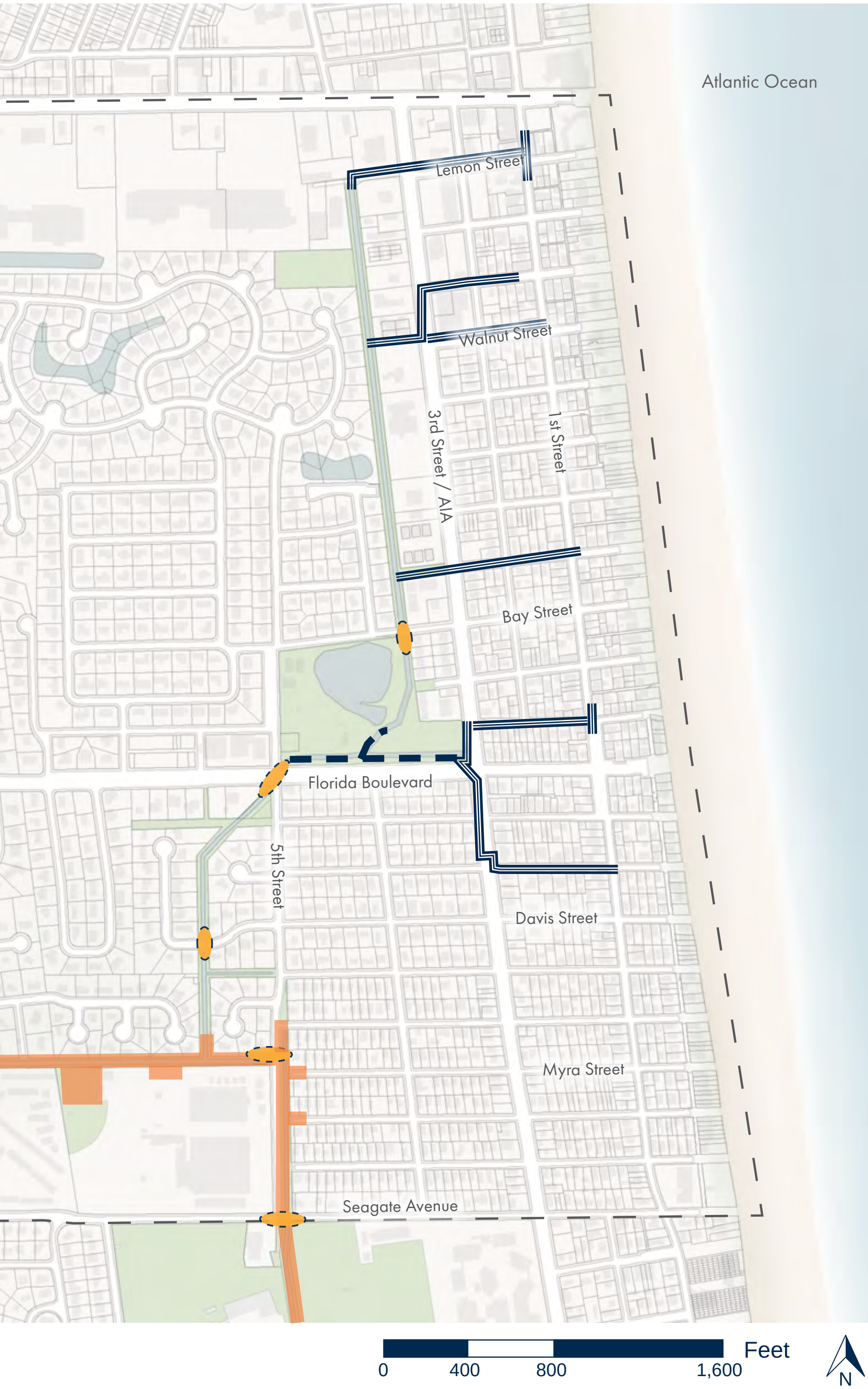


Figure 2.1: Proposed Stormwater Improvements - FDOT and Parsons Transportation Group



PLANNED STORMWATER IMPROVEMENTS

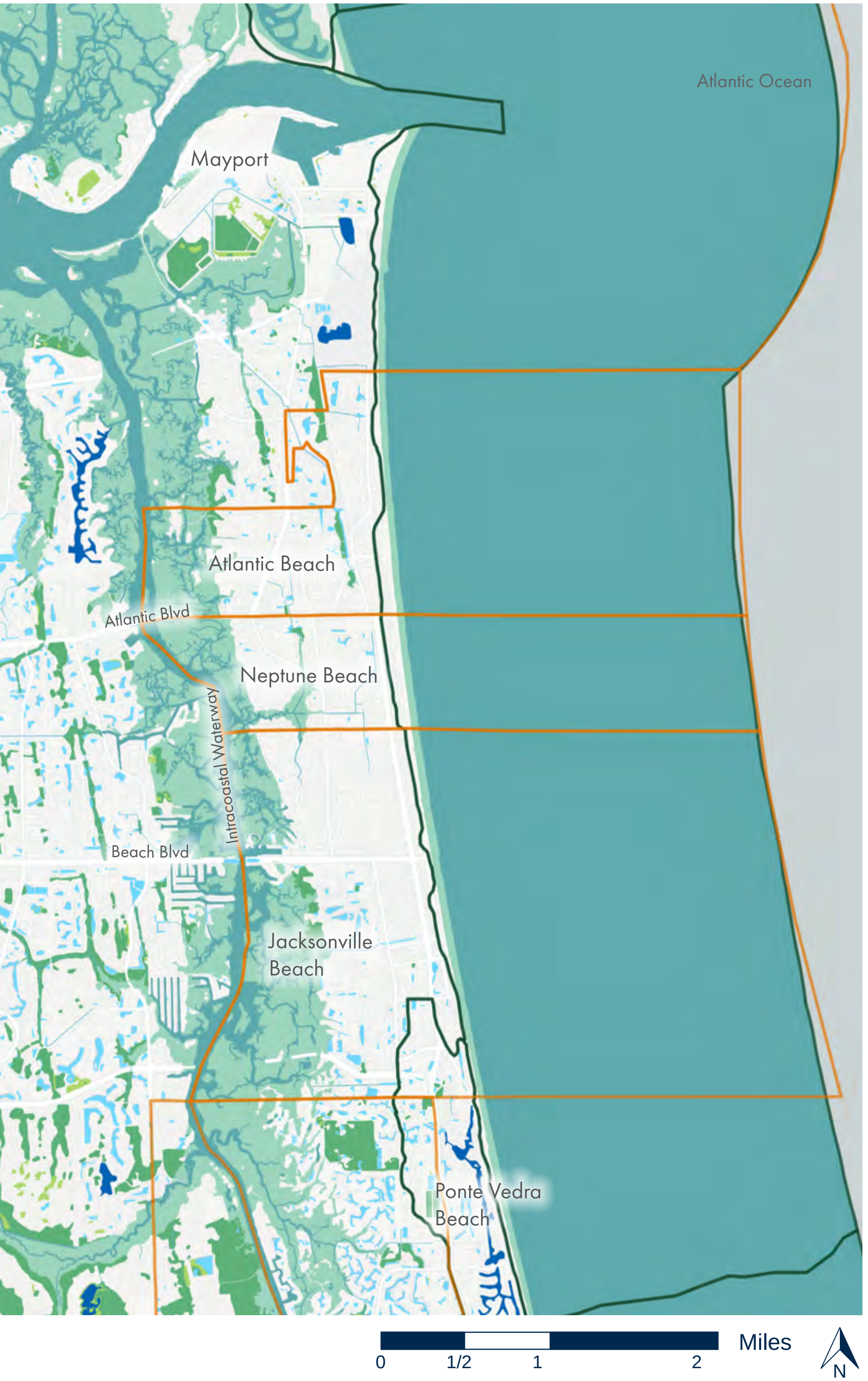
The City and FDOT are working with Parsons Transportation Group to plan improvements to stormwater management through various projects. Replacement of the lateral pipes will connect to existing drainage features to reduce flooding on 1st Street. New culverts and channel dredging will improve the profile and width of existing channel to maximize the flow of stormwater

The orange and aqua areas are FDOT projects that will replace bridges and improve drainage on channels by increasing water flow.

MAP LEGEND

- Channel Dredging
- Replace Bridge
- Replace Culvert
- Construction zone for Channels
- Replace Laterals
- Building Footprints
- Existing Parks & Green Spaces
- City Boundary

Figure 2.2: Existing Regional Ecosystem and Waterways



REGIONAL ECOSYSTEMS

Neptune Beach benefits from a great ecosystem that is home to rich wildlife and provides a beautiful landscape. To the west, it is bordered by the Intracoastal Waterway with its wetlands and to the east the Atlantic Ocean provides a beach for the locals and visitors.

The Intracoastal is a waterway that connects to the St. Johns River that runs through Jacksonville and Mayport. On a bigger scale the 3,000 mile Intracoastal Waterway connects from Boston, MA to the tip of Florida through a series of natural inlets, saltwater rivers, bays, sounds, and some artificial canals.

MAP LEGEND

- Estuarine & Marine Deepwater
- Estuarine & Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested
- Freshwater Pond
- Lake
- Riverine
- Watersheds
- City Boundaries

SUSTAINABLE STREET INFRASTRUCTURE

Neptune Beach is a coastal community and faces many issues with flooding from storms, heavy rain events, and future sea level rise. Designing and building sustainably will ensure the longevity of public investments and reduce maintenance of infrastructure.

SOIL CELLS are built under the sidewalk surface to help root growth which promotes healthy street trees and reduces sidewalk maintenance requirements. Soil cells also increase stormwater retention and reduce soil compaction over time.

PERVIOUS PAVERS allow stormwater runoff to infiltrate, reducing flooding and brown water runoff into major water bodies. Pervious pavers can be used in sidewalks, street furniture zones, dining areas, entire roads, parking lanes, or gutter strips. It also adds design aesthetic and character to streets.

BIOSWALES are shallow landscaped areas that capture, treat, and infiltrate stormwater runoff. The bioswales treat and drain the first flush of stormwater that is often the most polluted in any storm event; they also slow runoff velocity and clean water by recharging the underlying groundwater table. Bioswales can be designed in medians, bulb outs, between roadways and sidewalks, and other public spaces.

Figure 4.87: Pervious pavers with tree wells

Figure 4.86: Tree wells with Soil Cells

Figure 4.88: Bioswale filters stormwater

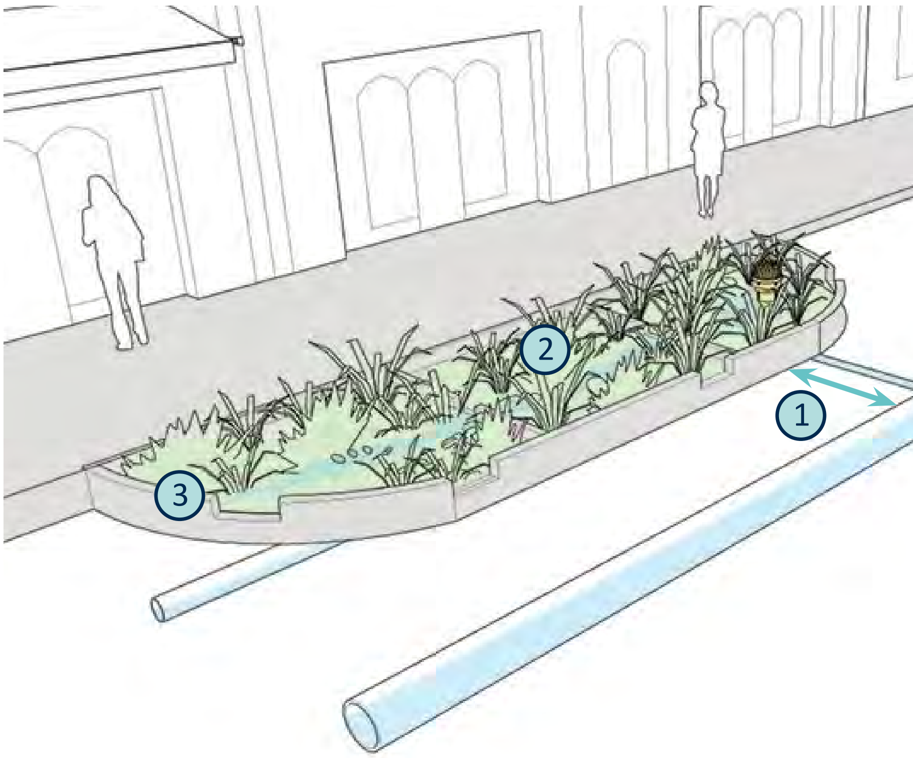


Figure 4.89: Bioswale bulb-out. Image courtesy of National Association of City Transportation Officials (NACTO)

FEATURES:

1. Construct a deep curb to connect the swale to a parallel utility line below the roadbed.
2. Bioswales should be composed of diverse, native vegetation.
3. Curb cuts should be at least 18 inches wide and spaced from 3–15 feet apart.
4. Raise the overflow/bypass drain system approximately 6 inches above the soil surface.
5. Discourage pedestrian trampling.
6. Maintain a 5-foot minimum clearance from the groundwater table.
7. Bioswales require appropriate media composition for soil construction.

Urban Street Design Guide, NACTO, October 2013

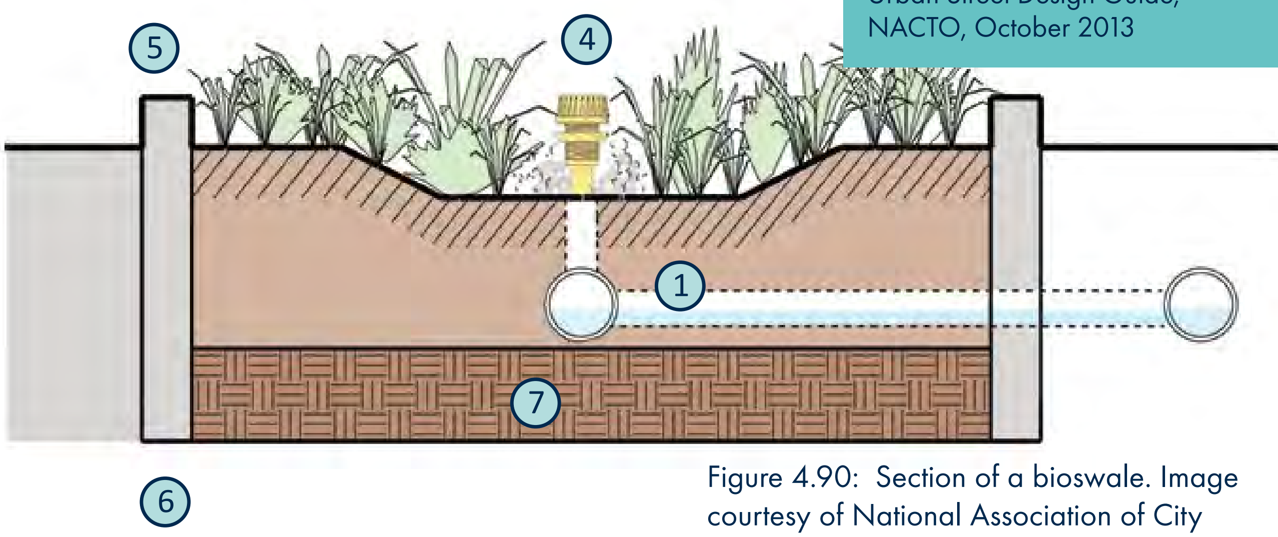


Figure 4.90: Section of a bioswale. Image courtesy of National Association of City Transportation Officials (NACTO)

LOW IMPACT DESIGN (LID) TOOLKIT

INTRODUCTION TO LID

Low Impact Development (LID) is a more sustainable approach to stormwater management that utilizes landscape to reduce runoff and retain stormwater on site that would otherwise contribute to nuisance flooding and infrastructure costs. The goal of LID is to restore the stormwater flow pattern on a site to a state that is similar to the predevelopment condition. Many LID practices are just creative applications of conventional Best Management Practices (BMP). Common LID practices include dry retention, filtration, and wet detention devices.

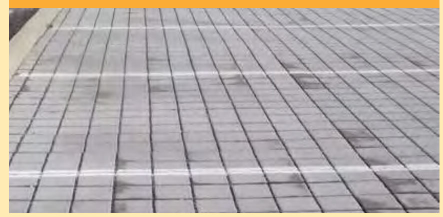
REFERENCE

The EPA has published several guides to LID that describe the methods that have been developed and implemented throughout the US. There are also numerous research documents and studies from professional organizations, academic projects, and nonprofit groups, such as the Watershed Management Group. The list presented here is not meant to be all-inclusive, but to show the most typical devices applied in low impact development.

SOURCE: ORIGIN OF RUNOFF

PARKING

HARDSCAPE



METHOD: WATER MANAGEMENT

FILTER

INFILTRATE

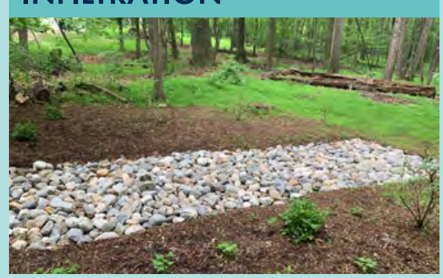
TOOLS: MANAGEMENT DEVICES

GREEN STREET

VEGETATED SWALE

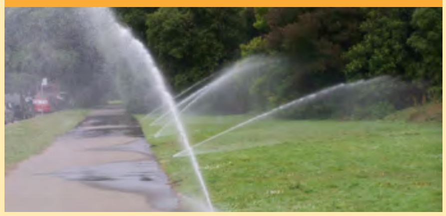
TREE PLANTING

INFILTRATION



STRUCTURE RUNOFF

LANDSCAPE AREA



ALTERNATE RESOURCE

EVAPOTRANSPIRATION

CONVEY

STORE/REUSE

BIORETENTION

PERMEABLE PAVING

CONSTUCTRED WETLAND

GREEN ROOF

RAIN HARVESTING

APPROPRIATE DESIGN

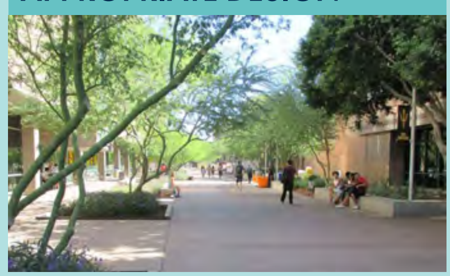
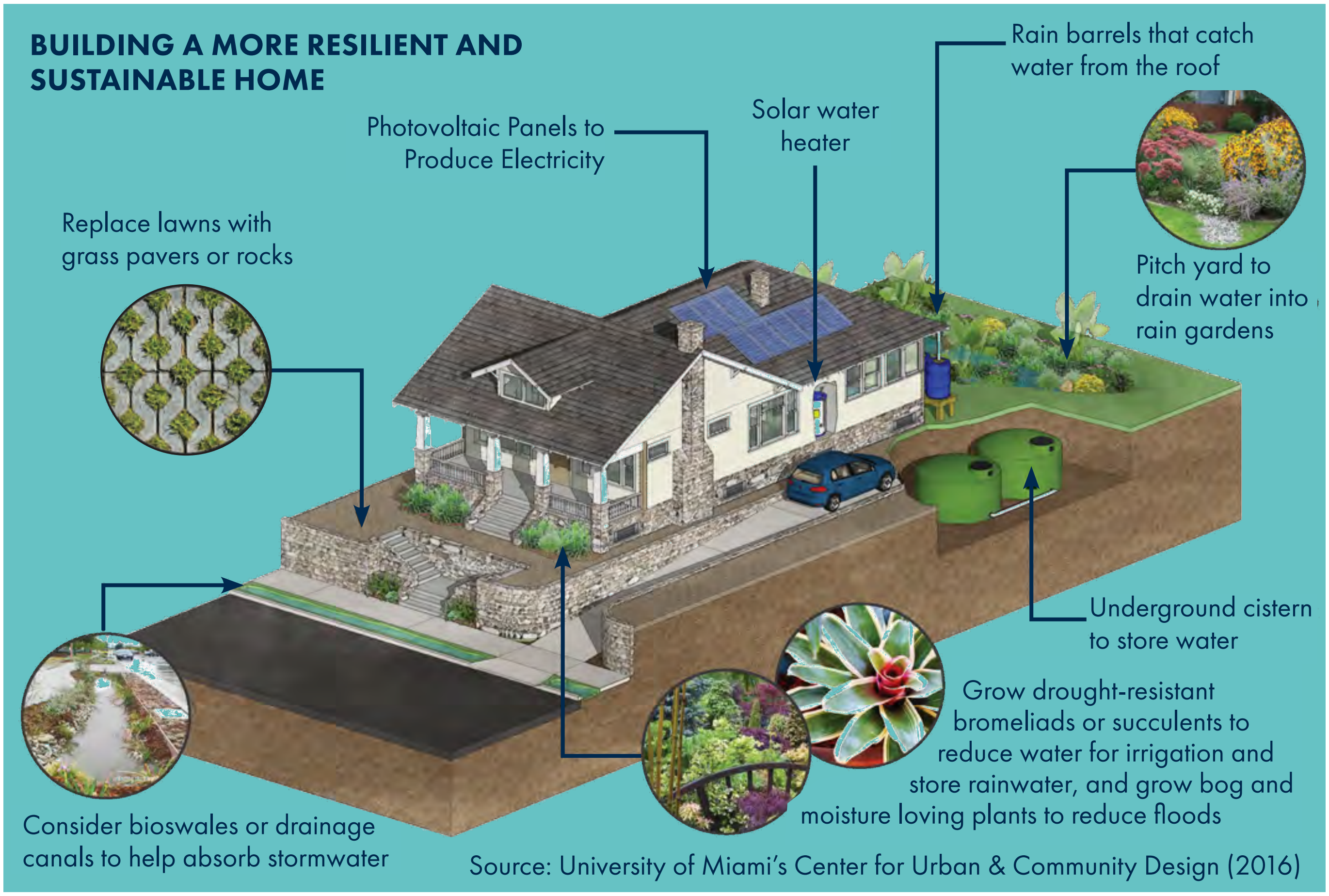


Figure 4.91: Low Impact Design Toolkit

Figure 4.92: Building A More Sustainable & Resilient Home



Source: University of Miami's Center for Urban & Community Design (2016)

OCEAN FRIENDLY PROGRAMS: SURFRIDER FOUNDATION

Surfrider Foundation is dedicated to the protection and enjoyment of the world's ocean, waves, and beaches through a powerful grassroots activist network.

OCEAN FRIENDLY GARDENS

- Focuses on the principles of CPR: Conservation, Permeability, and Retention.
- Presentations to many area schools

OCEAN FRIENDLY RESTAURANTS

- Reduce water/food waste and single use plastics
- City rebate/promotion for every annual certification
- Increase sustainability and sustainable food sources

Source: Surfrider Foundation (April 2020)

RISE ABOVE PLASTICS

- Reduce impacts of plastics in the marine environment.
- Increase community & commercial education.

BLUE WATER TASK FORCE

- Currently, there is no water testing from November to March
- Task force is active in Broward County, Miami, Palm Beach, and Sebastian's Inlet
- Provides critical water quality information

BEACH CLEANUPS

- Reduce litter, protect our ocean and raise awareness about litter and plastic pollution.
- Increase community engagement/awareness

FLORIDA FRIENDLY LANDSCAPING

WHAT ARE FLORIDA FRIENDLY LANDSCAPES

In 2009 the Florida Legislature updated a law to encourage "Florida Friendly" landscaping in communities governed by homeowner associations. Florida Friendly landscapes are designed to protect Florida's natural resources by conserving water, reducing waste and pollution, creating wildlife habitat, and preventing erosion. Any landscape can be Florida Friendly if it abides by the nine Florida Friendly Landscaping principles as the statute states.

The Section 373.185 stated:

> "(3)(a) The Legislature finds that the use of Florida-friendly landscaping and other water use and pollution prevention measures to conserve or protect the state's water resources serves a compelling public interest and that the participation of homeowners' associations and local governments are essential to the state's efforts in water conservation and water quality protection and restoration."

NINE PRINCIPLES OF FLORIDA FRIENDLY LANDSCAPES

1 RIGHT PLANT RIGHT PLACE

Select plants suited for a specific location. Plants in the right place will thrive on minimal amounts of water, fertilizer, and pesticides.

2 WATER EFFICIENTLY

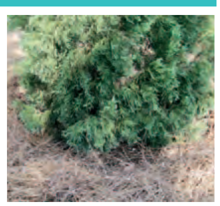
Irrigate only when your lawn and landscape show wilt signs. Water during cooler times of day, and check your irrigation system regularly for leaks and clogs.

3 FERTILIZE APPROPRIATELY

Apply fertilizers with at least 30% slow-release nitrogen at the right times and in the right amounts to prevent leaching and runoff into ground and surface waters.

4 MULCH

Maintain a 2-3" layer of mulch on landscape beds to retain soil moisture, prevent erosion, and suppress weed germination.

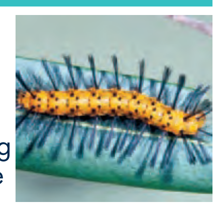


5 ATTRACT WILDLIFE

Choose plants with fruits or berries to attract birds and other pollinators. Leave snags and increase vertical layering to provide wildlife habitat.

6 MANAGE PESTS RESPONSIBLY

Practice Integrated Pest Management (IPM) for a healthy, sustainable approach to keeping your landscape safe from pest insects.

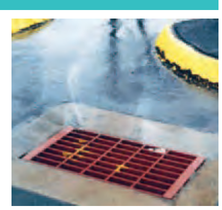


7 RECYCLE

Return valuable nutrients to the soil and reduce waste disposal by composting grass clippings, raked leaves, and pruned tree and plant parts.

8 REDUCE STORM RUNOFF

Use features like earth shaping and rain gardens to keep rainwater on your landscape, rather than letting it run off into storm drains, carrying fertilizers, pesticides, soil, and other debris.



9 PROTECT THE WATERFRONT

Protect the water body you live on. Designate a 10' maintenance-free zone between the shoreline and your landscape without fertilizer & pesticides.

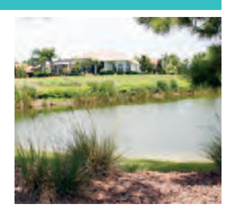


Figure 4.93: Florida Friendly Landscapes

Source: *The Florida Yards and Neighborhood Handbook* https://ffl.ifas.ufl.edu/materials/FYN_Handbook_2015_web.pdf

Sea Level Rise Map

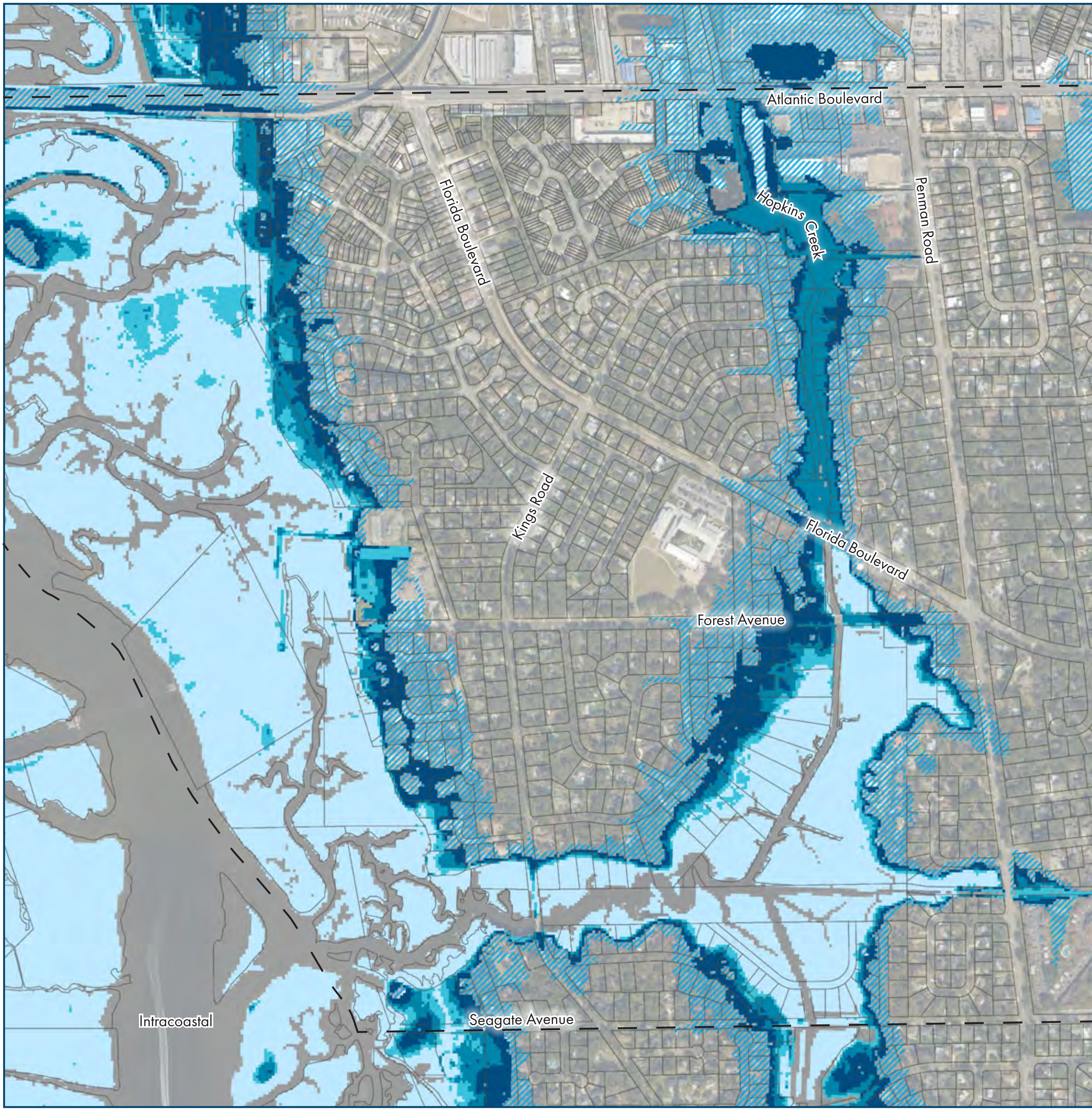
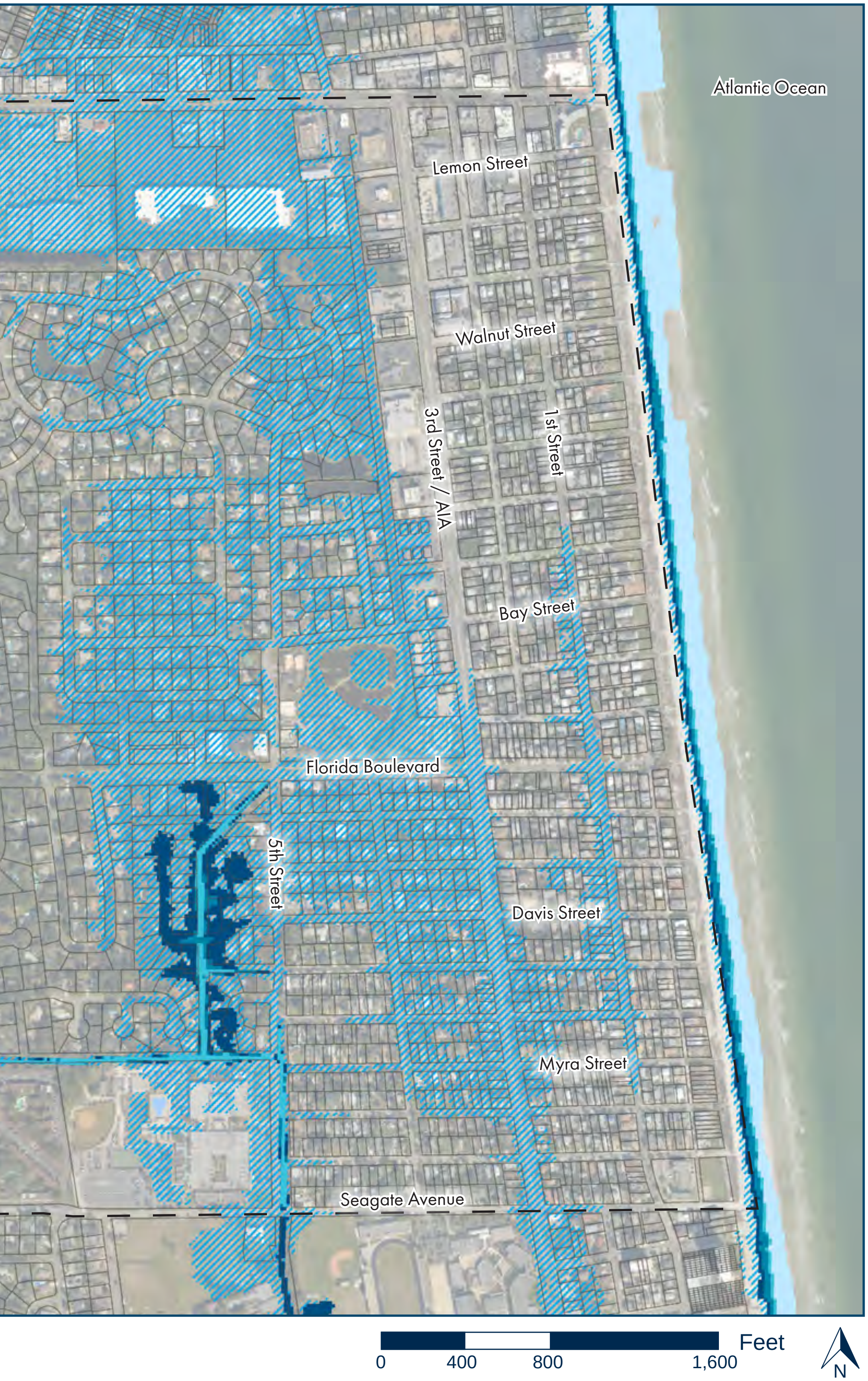


Figure 2.3: Sea Level Rise (Moderate Scenario) Map



SEA LEVEL RISE MAP

This map shows sea level rise data from the National Oceanographic & Atmospheric Administration (NOAA). In particular, this model illustrates how different sea level rise projections would inundate the City of Neptune Beach given its existing topography and its natural systems of waterways and stormwater drainage. More specifically, this map shows NOAA's 'intermediate high' sea level rise scenario projections, which represent a mid-range forecast of how severe sea level rise will be in the coming decades. For comparison sake, the 'high' scenario for 2100 was included as a worst case scenario.

In Neptune Beach, the most vulnerable areas are those along the Intracoastal, Hopkins Creek, and the drainage canals along Fletcher High School and parallel to 5th Street.

MAP LEGEND

NOAA Intermediate Projections

- Inundation 2040
- Inundation 2060
- Inundation 2080
- Inundation 2100

NOAA High Projections

- Inundation 2100
- City Boundary

EFFORTS TO ADDRESS CLIMATE VULNERABILITY

WHAT IS RESILIENCE?

In the broadest sense of the word, "resilience" is the ability that someone or someplace has to bounce back. While this applies to many topics in the community development field, climate resilience refers specifically to the ability of a community to respond quickly and effectively to shocks and stresses caused by a changing climate, including sea level rise and extreme weather. Creating a more resilient community is in many ways an exercise in understanding and managing risk. This requires a thorough understanding of the threats posed by a changing climate and the vulnerability of the built environment in responding to those threats.

Because coastal adaptation to climate change is not an isolated challenge, cities and regions have to work together to ensure a more resilient future for all. The City of Jacksonville and the Beaches communities have already been taking steps to address the impacts of climate change on a local level. Efforts have included:

Mayors Sea Level Rise Symposium in 2019. On June 19, 2019 the three beaches mayors hosted a special symposium at Fletcher Auditorium to discuss sea level rise vulnerability in the area and to speak with and learn from representatives from Satellite Beach and St. Augustine, two other communities that have begun working to improve resilience in their city

Creation of the City of Jacksonville's Adaptation Action Area Working Group (AAA) in 2019. As a result of their work throughout 2019, this state-mandated working group had three of its 40+ recommendations approved by Council in January 2020, including a measure to expand their area of focus to include interconnected coastal and riverine ecosystems, hire or appoint a Chief Resilience Officer (CRO), and fund a thorough vulnerability assessment.

Creation of the City of Jacksonville's Storm Resiliency & Infrastructure Development Review Committee (SRAIDR) in 2019. This technical advisory board was established to evaluate and provide recommendations for the preservation of wetlands and the implementation of various drainage and stormwater improvements that would contribute to the resilience of the St. Johns River and Northeast Florida.

City of Atlantic Beach Sea Level Rise Projection Review and Coastal Vulnerability Assessment (2019). The City of Atlantic Beach is the first in Duval County to commission and adopt a coastal vulnerability assessment. As part of the accepted recommendations of their AAA working group, the City of Jacksonville should be following in their footsteps soon with an in-depth vulnerability study of their own.

Creation of the City of Jacksonville's Special Committee on Resiliency in 2020. This special committee, comprised of City Council members, aims to build off the key findings of the two earlier technical advisory groups mentioned in order to find effective policy solutions and infrastructure upgrades necessary to ensure a more resilient Duval County.

Creation of the Resiliency and Climate Change Coalition in 2020. Though still in its infancy, this coalition, which supports the efforts of Jacksonville's Special Committee on Resiliency, has two immediate goals: improving community engagement throughout all of Jacksonville's communities, including the Beaches and advocating for the City of Jacksonville to hire a Chief Resilience Officer (Jacksonville is one of only three major communities in the State without a CRO).

WHAT MORE CAN NEPTUNE BEACH DO?

- Commission a coastal vulnerability assessment and adaptation plan
- Continue to support Duval County's stormwater infrastructure projects in the City
- Continue to coordinate resilience efforts with the City of Jacksonville and the Beaches
- Conduct community outreach and education to better inform citizens of the risks of climate change and what they can do to better protect and prepare their own properties

Figure 4.94: Coastal Risk for Neptune Beach

COASTAL RISKS FOR NEPTUNE BEACH

IMPACT OF 4' INCREASE IN WATER LEVELS FROM SEA LEVEL RISE AND/OR COASTAL FLOODING:

What's at risk at and below 4 feet?

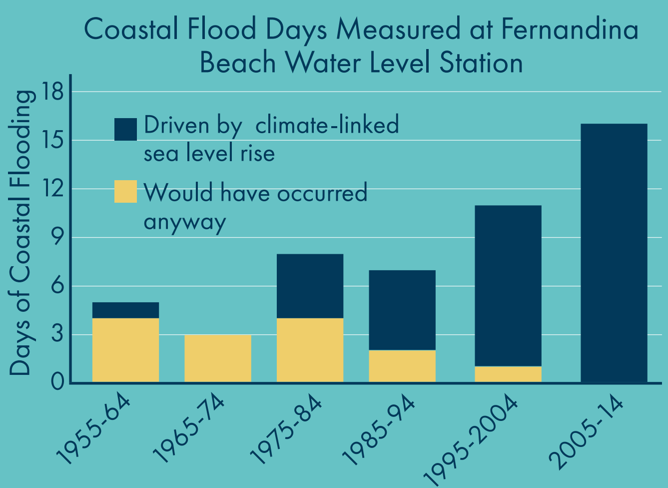
- Miles of road: 1 mile
- Local roads: 1 mile
- Population: 320
- Homes: 140
- Property value: $61 million

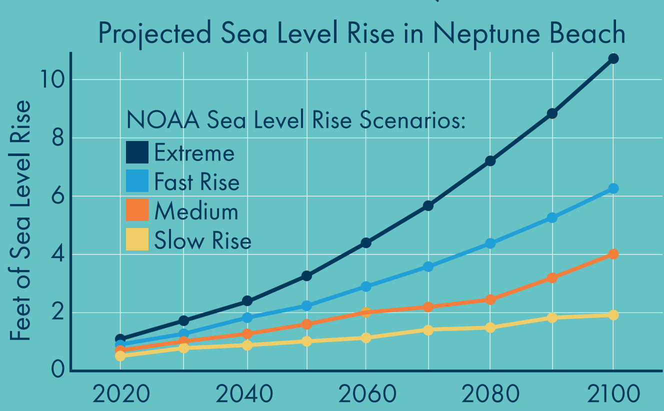
4 Feet in Historical Context:

- Highest observed area flood: 6.9 feet in 1898
- Statistical 1-in-100 year flood height: 3.1 feet

Unnatural Coastal Floods

Since 1950, a tide station at Fernandina Beach has recorded 54 days exceeding local National Weather Service flood thresholds. Without climate-change-driven sea level rise, the count would be 12. This station is 25 miles from Neptune Beach.





Rising Seas - More Floods

- Neptune Beach, FL has already experienced about 10 inches of sea level rise over the last 116 years of records. Climate change is projected to drive much more rise over this century.
- This raises the starting point for storm surges and high tides, making coastal floods more severe and more frequent.

When could a 4-foot flood happen?

- Likelihood by 2030: 3% - 22%
- Likelihood by 2050: 16% - 99%
- Likelihood by 2100: 99% - 100%

The ranges shown derive from the intermediate low vs. intermediate high global sea level scenarios from a 2017 NOAA technical report for use in the U.S. National Climate Assessment, which point to projected local rises of 1.9 vs. 6.3 feet by 2100.

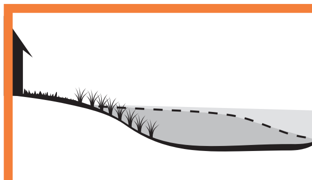
Flooding on 1st Street after a heavy rainstorm in October 2019 (Photo Credit: Neptune Beach PD)

Source: Coastal Risk for Neptune Beach, FL. *Climate Central*, 6/22/2020

ADAPTATION & RESILIENT INFRASTRUCTURE TOOLKIT

STRATEGIES TO MITIGATE IMPACTS AND ADAPT TO SEA LEVEL RISE AND FLOODING

There are a number of tools to help Neptune Beach better prepare for more severe and frequent storm events and increased sea levels. To help reduce the severity of storm surges and treat stormwater runoff, the city can invest in its natural ecosystems, including beach dunes and wetlands, as well as raising critical infrastructure and building finish floor elevations. To protect against sea level rise and storm surge, property owners can also consider other options such as fortifying sea walls and floodproofing areas that sit below the base flood elevation. Improving site design in private properties and public spaces with bioretention basins, bioswales, and stormwater planters will also reduce the amount of pervious surfaces that create harmful stormwater runoff and pollution.



EXPAND FLOODPLAINS

EXPAND FLOODPLAINS

Development often hugs the coastline, infringing upon the riparian buffer/edge. Development along the coastal bank replaces a natural healthy riparian edge with manicured lawns, roads, and docks. Healing the riparian edge in balance with reasonable human uses and access to the water will expand floodplains by recreating a natural living shoreline.

REFORESTATION

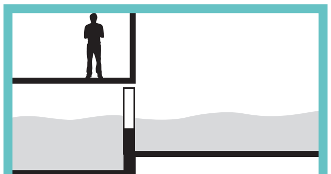
REFORESTATION

Transforming forests into pavement results in more runoff, higher pollutant loads, and erosive concentrated flows. The surface parking lots along Atlantic Boulevard are prime examples of highly impervious surface areas with tremendous opportunity for tree canopy cover improvements - also adding to land value and public health.

DRY FLOODPROOFING

DRY FLOODPROOFING

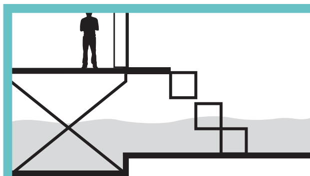
Watertight structures using external coating or internal membranes can prevent flood-waters from entering. On-going maintenance is required and dry floodproofing may not always be the most aesthetically pleasing. As a first step, flood shields for windows and doors may protect vulnerable openings.



WET FLOODPROOFING

WET FLOODPROOFING

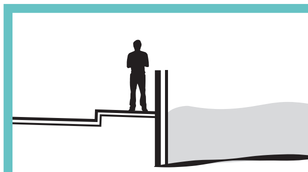
Building modifications such as breakaway walls designed to break free when subjected to flood forces can safely allow floodwater to enter and leave the lower level. Elevating utilities above the base flood elevation is critical. Often requires repair costs by the owner after flood events.



RAISE FINISH FLOOR

RAISE FINISH FLOOR ELEVATION

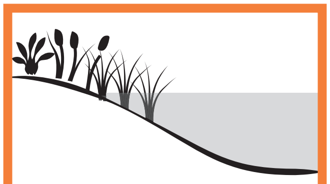
The most common form of adaptation is to elevate the entire first floor elevation above the base flood elevation. This can be accomplished on piles or earth fill. This technique can create accessibility issues depending on the site's surroundings, and can sometimes be difficult to retrofit into historic neighborhoods.



FORTIFY EDGES

FORTIFY EDGES

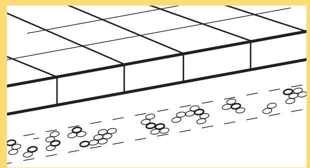
Seawalls, bulkheads, berms, and levees are common techniques to repel flood waters at the edges of sites or neighborhoods. An important role for the hard edge is to dissipate the velocity of flood forces from a direct storm surge. Over time, scouring from constant wave energy can undermine the structural integrity of the structure from underneath. Requires periodic inspections to ensure stability.



RESTORE WETLANDS

RESTORE WETLANDS

Wetlands are extremely productive living ecosystems, and also attenuate wave velocity, provide water quality treatment, and act as a natural buffer between the built environment and water resources. Restoring degraded wetland systems by enforcing and regulating buffer protection zones is critical to sustaining a healthy relationship with water.



POROUS PAVEMENT

POROUS PAVEMENT

A range of free-draining alternatives to typical impervious bituminous pavement and concrete are available, such as pervious concrete, porous asphalt, pervious pavers, and structured grass. Proper design of the system base and review of the existing sub-base for infiltration capacity is required.

REVERT PAVEMENT

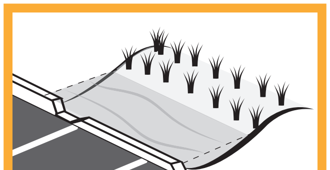
REVERT PAVEMENT TO GREEN SPACE

Often the simplest and most cost-effective green infrastructure retrofit, "grey to green" interventions replace extraneous pavement with planted landscape, including tree planting if possible.

CREATE WETLANDS

CONSTRUCTED WETLANDS

Constructed wetlands mimic natural wetland function. Systems are designed for water at all times, either in saturated soil or as standing water. They are often designed with engineered soils and can include small islands and pools. Typically they are constructed as part of larger projects or systems.



BIOSWALE

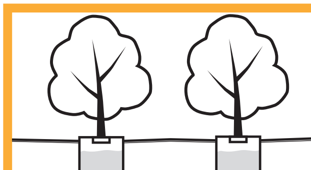
BIOSWALES

Bioswales are linear landscape elements designed to convey runoff. Typically bioswales are vegetated and provide water quality treatment. Bioswales designed with pretreatment facilities will perform higher filtering function and will require less maintenance over time.

BIORETENTION BASIN

BIORETENTION BASINS

Bioretention basins are depressions in the landscape designed to collect and filter stormwater. A more highly engineered rain garden, bioretention basins typically have pretreatment forebays, perforated pipe under drains, and special soils that help filter and enhance infiltration.



TREE FILTER PIT

TREE FILTER PITS

Tree filter pits use stormwater runoff for irrigation. Primarily a water quality practice, runoff enters the systems from a deep sump inlet structure as a form of pretreatment. Stormwater is stored in the gravel reservoir below ground which allows the tree roots to soak up runoff.

STORMWATER PLANTERS

STORMWATER PLANTERS

Raised planters are ideal stormwater solutions for projects with space constraints adjacent to buildings. Roof runoff is diverted via downspouts into above-ground planters where microbes in the soil and around plant roots help to filter runoff before overflowing into the storm system.

Figure 4.95: Adaptation & Resilient Infrastructure Toolkit

Source: Horsley Witten Group (2019)

Chapter 05:

ACTION STEPS AND IMPLEMENTATION

TOP 6 IMPLEMENTATION PRIORITIES

The Implementation & Ongoing Engagement chapter identifies key action items to help the City of Neptune Beach and its partners reach the goals and objectives set forth in this Vision Plan. While each action item described will help the City achieve desirable outcomes, the team understands that the City faces challenging financial, staffing, and political constraints and has, in response, created a list of top six priority items. The goal of this list is to help focus the energy and resources of city staff, elected officials, and community groups on the few policies, programs, and capital improvements that will yield the most significant outcomes.

1. Carry out improvements to Neptune Beach's streets, focusing on constructing dedicated places for people to walk and bike, and supplement these improvements with off-street trails that make it safe and easy for all people of all ages and abilities to get around.

Key Actions:

- Adopt a new Context Classification Map for State roads and local streets;
- Construct a low-stress network of trails, shared streets, mobility lanes, and multi-use paths as shown in Figure 4.8 of this Vision Plan;
- Work with the City of Jacksonville to transform Penman Road into a complete street and implement a bicycle and pedestrian friendly design for the five-points intersection;
- As part of upcoming stormwater projects, complete above ground improvements on 1st and 3rd Streets that include multi-use paths, separated bicycle, or mobility lanes;
- Work with FDOT to implement improvements along Atlantic Boulevard including widening the sidewalks and/or incorporating a two-way cycle track on one side; and
- Extend Lemon Street west across 3rd Street/A1A and design it in such a way that it provides dedicated and comfortable spaces to walk and bike.

2. Prioritize the safety of people walking, biking, and driving by implementing key intersection, crossing, and traffic calming improvements.

Key Actions:

- Implement intersection safety improvements, including high visibility crosswalks, signage, and pedestrian activated signals that are outlined in Figure 4.8 of this Vision Plan;
- Improve the Atlantic & 3rd Street intersection by slowing down cars, reducing crosswalk distances, adding a pedestrian-activated traffic signal, and planting shade trees;
- Invest in street improvements along Florida near Atlantic Boulevard, and improve that intersection with public art in the underpass, landscaping, and better crosswalk;
- Invest in neighborhood traffic calming projects; and
- Prioritize improvements along school routes and implement a safe routes to school program.

3. Upgrade the city's stormwater management infrastructure and improve overall resilience.

Key Actions:

- Construct all planned stormwater improvement projects, minimizing the impact on existing ecosystems and vegetation;
- Adopt low impact design principles for the design and construction of streets, parks, and infrastructure improvements;
- Review the City's current requirements for permeable surface area and site design and improve enforcement to ensure that new construction properly manages stormwater;
- Work with Jacksonville Beach to bury the power lines along Seagate Avenue and identify other areas where undergrounding power lines will improve community resilience; and
- Commission and adopt a citywide vulnerability assessment and climate adaptation plan.

4. Invest in new and improved parks and open spaces, as well as adding street trees and landscaping, to improve the overall beauty, comfort, and vibrancy of Neptune Beach.

Key Actions:

- Transform 1st Street from Atlantic Boulevard to Orange Street into a shared street that can be easily closed down and used for public events;
- Transform the final segment of Atlantic from 1st Street to the beach into a public plaza;
- Complete the planned improvements designed for Jarboe Park; and
- Protect the City's existing tree canopy, implement a street tree program, and plant street trees throughout the city to provide shade and reduce air pollution and stormwater runoff.

5. Manage parking demand and supply in such a way that preserves community character.

Key Actions:

- ~~Adopt parking policies that reinvest into the Town Center;~~
- Conduct a curbside management study to address ride hailing and pick-up and drop-off facilities, particularly as it applies to beach access;
- Continue the paid parking pilot program~~, implement a residential parking permit program, develop a shared parking program;~~
- Revise and enforce parking standards to ensure that missing middle housing types do not lead to overcrowded parking areas in residential neighborhoods; and
- ~~Explore the feasibility of an adaptable public parking garage and centralized mobility hub taking into consideration several partnering scenarios~~

6. Update the City's Comprehensive Plan and Land Development Regulations to better ensure high quality, predictable, and feasible redevelopment.

Key Actions:

- Update the City's comprehensive plan and land development regulations to ensure that redevelopment is ~~both feasible when considering market constraints and demands and~~ consistent with the community's overall vision;
- ~~Consider permitting mixed-use redevelopment in large opportunity sites along Atlantic Boulevard, including the right kinds of residential uses that will enhance the character of Neptune Beach and add households to support more local businesses;~~
- Adopt a form-based code and architectural standards to ensure better outcomes and high-quality redevelopment; and
- Encourage adaptive reuse and infill development in the Florida & Atlantic Boulevard commercial area, allowing for a more eclectic mix of uses and a shared parking program.

IMPLEMENTING THE COMMUNITY'S VISION

The goal of the Neptune Beach Community Vision Pan is to identify key issues and threats facing the city now and in the future and to establish a common vision for how the city should prepare, evolve, and respond to these impacts. In order to implement the recommendations presented in the previous chapter of this plan, the city and its partner agencies and organizations will have to undertake a number of follow-up actions. These actions can be organized into the following categories:

COMPREHENSIVE PLAN CHANGES

The State of Florida mandates that local governments maintain and update, as necessary, a comprehensive plan, which serves as the blueprint for future land uses, housing policies, transportation infrastructure, conservation, and cultural and recreational amenities. The purpose of this document is to identify new growth and infrastructure demands to support the physical and economic development of the community. Phase 2 of the Neptune Beach Community Vision Plan process is dedicated to updating Neptune Beach's Comprehensive Plan from 2012, so that it complies with the most up to date state requirements and reflects the recommendations and goals of this vision plan.

ZONING AND LAND DEVELOPMENT REGULATION CHANGES

Equally important to updating the comprehensive plan is updating Neptune Beach's Unified Land Development Regulations, found in Chapter 27 of its Code of Ordinances. While a comprehensive plan sets high level goals, objectives, and policies, as well as broad growth management caps, such as maximum permitted residential density, zoning and land development regulations (LDRs) provide very specific and legally binding standards for the built environment, including requirements for new development, street design, and parking. It is through clear and thoughtful LDRs that a city can ensure high quality development that enhances the community. Phase 3 of the Neptune Beach Community Vision Plan process involves updating the LDRs to implement the community vision established through this plan.

NEW CITY PROGRAMS

There are several recommendations in this Vision Plan, that point to the creation of new city programs. This could include, for example, creating a shared parking or safe routes to school program. In some cases these programs may be easily implemented by city staff or through strategic partnerships between the city and community, and in other cases it might require expanding staff capacity at the City.

ADDITIONAL PLANNING STUDIES

Though this plan does provide a fair amount of detail regarding possible capital improvements and new city policies and programs, it still presents a more high level vision for the future of the city. In addition to proposed infrastructure projects, which would all require more detailed analyses and designs before construction, there are other recommendations in this Vision Plan that would also necessitate additional feasibility and planning studies to determine whether or not they are worth pursuing.

CAPITAL IMPROVEMENT PROJECTS

Many of the key recommendations illustrated throughout this Vision Plan, including street designs and new public spaces, can be characterized as capital improvements projects. These types of projects are defined as any major improvement to city facilities and infrastructure. The process for planning and budgeting for these types of improvements is described in more detail later in this chapter. While a summary of key capital improvements has also been included, a full list of current and proposed city projects can be found in Appendix A.

COMPREHENSIVE PLAN & LDR CHANGES

PLAN GOAL	KEY ACTIONS	MEASUREMENT
Safe, Beautiful Streets & Trails	Work with FDOT to adopt a new Context Classification Map for state roads and create a local classification of street types to guide improvements on city roads, prioritizing safety for all users and context over level of service (LOS).	No. of annual traffic collisions by type
Welcoming Open Spaces & Active Recreation	Adopt Crime Prevention through Environmental Design (CPTED) standards for the design of streets, parks, and public spaces.	No. of annual reported crimes in Neptune Beach
Optimized Mobility & Parking	~~Adopt parking policies that reinvest into the Town Center.~~	% of revenue from paid parking and citations used in BTC
Optimized Mobility & Parking	Adopt resolutions and regulations for autonomous vehicles and new mobility technologies, with emphasis on safety for pedestrians and bicyclists.	Vision Zero (No. of Collisions)
Optimized Mobility & Parking	Adopt transportation demand management (TDM) and curbside management policies.	Ridership data, parking occupancy
Thriving Town Center & Corridor Redevelopment	Update the City's comprehensive plan and land development regulations to ensure that redevelopment is ~~both feasible when considering market constraints and demands and~~ consistent with the community's vision. ~~Consider permitting mixed-use redevelopment in large opportunity sites along Atlantic Boulevard, including the right kinds of residential uses that will enhance the character of Neptune Beach and add households to support local businesses.~~	No. of approved commercial/mixed-use building permits
Thriving Town Center & Corridor Redevelopment	Adopt a form-based code and architectural standards to ensure better outcomes and high-quality redevelopment.	N/A
Thriving Town Center & Corridor Redevelopment	Revise and enforce parking standards to ensure that missing middle housing types do not lead to overcrowded parking areas in residential neighborhoods.	No. of annual residential parking code violations
Thriving Town Center & Corridor Redevelopment	Encourage adaptive reuse and infill development in the Florida & Atlantic Boulevard commercial area, allowing for a more eclectic mix of uses including live/work buildings, micro manufacturing, and public spaces.	No. of approved commercial/mixed-use building permits
A Sustainable & Resilient City	Adopt low impact design principles for the design and construction of streets, parks, and infrastructure improvements, including provisions for the use of native plants that help filter stormwater and for the prioritization of natural edge stormwater canals over conventionally engineered, hard edge channels.	Stormwater flow, water quality, FEMA Community Rating Score (CRS)
A Sustainable & Resilient City	Review and update, as necessary, the City's current requirements for permeable surface areas in a new project or renovation in order to reduce heat island effect and stormwater runoff.	Same as above
A Sustainable & Resilient City	Revise residential site design standards and improve enforcement to ensure that new construction properly manages stormwater on site and reduces runoff into neighboring properties.	No. of annual site design code violations

NEW CITY PROGRAMS

PLAN GOAL	KEY ACTIONS	MEASUREMENT
Safe, Beautiful Streets & Trails	Prioritize capital improvements along school routes and work with the JTA and FDOT to implement a Safe Routes to School program.	Survey of student's modal choices
Welcoming Open Spaces & Active Recreation	Invest in public art and establish a public art steering committee to help curate pieces throughout the city.	No. of public art pieces produced
Welcoming Open Spaces & Active Recreation	Find a permanent location for the Senior Activities Center and help support its community programs and senior services.	No. of Senior Center programs offered
Optimized Mobility & Parking	Continue the paid parking pilot program~~, implement a residential parking permit program, and develop a shared parking program.~~.	Parking occupancy, Revenue per space
Optimized Mobility & Parking	Promote and provide infrastructure upgrades for microtransit and shared mobility services (e.g. Beach Buggy).	Ridership data
Optimized Mobility & Parking	Explore scenarios for COVID-19 phased recovery and the use of quick build projects to encourage economic activity, including tactical street improvements and open street programs.	No. of quick build/ tactical projects implemented
A Sustainable & Resilient City	Protect the City's existing tree canopy and implement a street tree program that will encourage homeowners to plant more shade trees by committing to maintain the trees once planted.	No. of new street trees (net)
A Sustainable & Resilient City	Work with local nonprofit groups to implement a number of health and sustainability initiatives, including composting programs, water testing, rain barrel programs, single-use plastics bans for city buildings, and beach cleanups, to name a few.	N/A
A Sustainable & Resilient City	Distribute resources and educate residents regarding grants, assistance, and insurance incentives to help fund climate adaptation measures on their properties.	N/A

MEASURING SUCCESS - A QUANTITATE APPROACH

More and more, cities across the country are looking to quantify performance and measure the impacts of specific policies, program, and capital projects. First, they must select measurable indicators that can be tracked over time which positively or negatively reflect the desired outcome of a particular action or objective. Consistently tracking metrics, though, requires sufficient staff and IT capacity. To that end, the City of Neptune Beach is implementing a new centralized software, Tyler Tech, to be used across all departments. Tyler Tech's flagship platform for local governments, Incode, will help manage everything from financial reporting to payroll, utility billing, permitting, and code enforcement. They offer additional solutions, including MyCivic and Socrata, that facilitate community engagement and analyze data to optimize performance management. The roll-out of Tyler Tech in Neptune Beach will make it easier for residents to access city services and information and make it possible to begin tracking key performance indicators.

ADDITIONAL PLANNING STUDIES

PLAN GOAL	KEY ACTIONS	MEASUREMENT
Safe, Beautiful Streets & Trails	Work with FDOT to implement improvements along Atlantic Boulevard and study the possibility of widening the sidewalks and/or incorporating a two-way cycle track on one side of the road.	Miles of trails, sidewalks, and bicycle paths
Optimized Mobility & Parking	Conduct a curbside management study to address ride hailing and pick-up and drop-off facilities, particularly as it applies to beach access.	N/A
Optimized Mobility & Parking	~~Explore the feasibility of an adaptable public parking garage and centralized mobility hub taking into consideration several partnering scenarios.~~	N/A
Optimized Mobility & Parking	Determine steps to fund and attract an autonomous or driver-operated shuttle service including initiating conversations with Jacksonville Transportation Authority (JTA) for automated shuttle feasibility studies.	N/A
A Sustainable & Resilient City	Commission and adopt a citywide vulnerability assessment and climate adaptation plan.	N/A

KEY PERFORMANCE INDICATORS (KPI)

Below is sampling of some KPIs that other communities use to measure success include:

- Attendance at festivals/events
- Number of public art pieces
- Parks & recreation satisfaction
- Number of recreational programs & attendance
- Number of building permits issued
- Number of inspections performed
- Percentage of plans approved after first review
- Total value of commercial and mixed-use projects built
- Number of code violations
- Landfill diversion rate
- Tons of community-recycled composted materials
- GHG emissions per capita
- Water usage per capita
- Water quality
- Number of new trees planted in public spaces
- FEMA Community Rating Score (CRS)
- Number of water line breaks
- Number of major network outages
- Percentage of street lights in service
- Miles of municipal sidewalk and streets repaired
- Housing opportunity index
- Percentage of households spending more than 30% of income on housing
- Number of HUD eligible first-time home buyers
- Number of traffic collisions
- Number of foot and bike patrol hours
- Number of violent and non-violent crimes
- Response time for fires
- Response time for emergency medical service calls
- Transit ridership
- Alternative mobility ridership (available through private operators)
- Mode split
- Percentage of students walking to school
- Average commute time
- Miles of multi-use trails and bicycle paths
- Parking revenue per space
- Parking occupancy rate
- Annual average daily traffic (AADT)
- Travel time index

LEVERAGE CAPITAL IMPROVEMENT PLANNING

A Capital Improvement Plan (CIP) is a blueprint that lists all city related projects that involve capital, equipment purchases, and studies that are in coordination with any construction and scheduling that may affect financial planning for the future of the city. The city of Neptune Beach is in the process of establishing a more formal CIP process that will be updated annually.

Components of a CIP:

- Capital Budget: the upcoming year's spending plan for capital items
- Capital Program: a plan for how capital moneys will be spent in five to ten years beyond the capital budget

A CIP offers many benefits to a city by prioritizing spending of capital budget based on a clear strategy and the identification of long-term goals and objectives. The plan also links investments and fiscal capacity to projects in vision plans and comprehensive plans and can keep the public informed on future infrastructure investments and the status of construction projects.

Features of a CIP[1]:

- List of the capital projects, equipment, and relevant major studies
- Ranking of projects
- Financing plan
- Timetable for the construction or completion of the project
- Project justification
- Classification, itemization and explanation for the project expenditures

Steps to Develop a CIP:

- Organizing the Capital Improvement Plan (CIP)
- Identify Projects and Funding Options
- Prepare and Recommend a Capital Plan and Budget
- Adoption of the Capital Budget

FUNDAMENTALS FOR A STRONG CIP

1. **Understanding what to include in a CIP.** A plan should include the upcoming year's spending plan and a capital program for the next five to ten years
2. **Planning thoughtfully.** Designate a lead department and create a CIP development process
3. **Inventory properties and assets.** Document through a formal inventory all physical assets and deferred maintenance
4. **Defining capital vs ordinary maintenance expenditures.** Spell out a definition of what makes a capital project important
5. **Aligning capital planning across the organization.** Prioritize collaboration among departments and strengthen links between the annual budgets and long-term infrastructure plans
6. **Utilizing technology.** Technology can facilitate effective stakeholder feedback and provide visualizations to clarify impacts
7. **Using project management and performance indicators.** Establish specific processes for project monitoring along with legal and fiduciary requirements and stakeholder information needs
8. **Considering financing options.** Determine how to finance projects whether to use debt issuance, pay-as-you-go, or public-private partnerships
9. **Adhering to a debt management strategy.** Create a debt management policy to keep financial planning on the right track
10. **Ensuring the CIP is dynamic.** Update and review the CIP as community needs and priorities change over time

1 https://opengov.com/article/capital-improvement-plans-101

CAPITAL IMPROVEMENT PROJECTS

A detailed list of current and proposed capital improvement projects can be found in Appendix A

PLAN GOAL	KEY ACTIONS	MEASUREMENT
Safe, Beautiful Streets & Trails	Implement intersection safety improvements, including high visibility crosswalks, signage, and pedestrian activated signals that are outlined in Figure 4.8 - Recommended Bicycle & Pedestrian Improvements Map.	No. of traffic collisions, average traffic speed
Safe, Beautiful Streets & Trails	Construct a low-stress network of trails, shared streets, mobility lanes, and multi-use paths as shown in Figure 4.8 - Recommended Bicycle & Pedestrian Improvements Map in order to connect residents in all parts of town to parks, the beach, the intracoastal, schools, and the Beaches Town Center.	Miles of trails, sidewalks, and bicycle paths
Safe, Beautiful Streets & Trails	Work with the City of Jacksonville to transform Penman Road into a complete street with dedicated paths for pedestrians and cyclists and more frequent crossing areas.	Miles of trails, sidewalks, and bicycle paths
Safe, Beautiful Streets & Trails	Work with the City of Jacksonville to prioritize and construct a bicycle and pedestrian friendly design for the five-point intersection of Florida and Penman Road.	No. of traffic collisions, avg. traffic speed
Safe, Beautiful Streets & Trails	As part of the upcoming stormwater construction projects, consider above ground improvements on 1st and 3rd Streets that include multi-use paths and/or separated bicycle and mobility lanes.	Miles of trails, sidewalks, and bicycle paths
Safe, Beautiful Streets & Trails	Work with FDOT to implement improvements along Atlantic Boulevard and study the possibility of widening the sidewalks and/or incorporating a two-way cycle track on one side of the road.	Miles of trails, sidewalks, and bicycle paths
Safe, Beautiful Streets & Trails / Thriving Town Center & Corridor Redevelopment	Extend Lemon Street west across 3rd Street/A1A and design it in such a way that it provides dedicated and comfortable spaces to walk and bike.	Miles of trails, sidewalks, and bicycle paths
Safe, Beautiful Streets & Trails / Thriving Town Center & Corridor Redevelopment	Improve the Atlantic & 3rd Street intersection by slowing down cars, reducing crosswalk distances, adding a pedestrian-activated traffic signal, and planting shade trees; in the long-term advocate for a more significant redesign of the intersection (e.g. plaza or roundabout) that reduces the overall number of lanes and creates a more inviting gateway into the Beaches Town Center.	No. of traffic collisions, average traffic speed
Safe, Beautiful Streets & Trails / Thriving Town Center & Corridor Redevelopment	Invest in street improvements along Florida Boulevard near Atlantic Boulevard, and improve that intersection with public art in the underpass, landscaping, and better crosswalks.	No. of traffic collisions, average traffic speed
Safe, Beautiful Streets & Trails	Work with FDOT to study and implement intersection improvements to facilitate access between Brant Boulevard and Atlantic Boulevard.	Travel time index
Safe, Beautiful Streets & Trails	Create a trail along the canal running from Lemon Street to the Library and Jarboe Park and study how this might also eventually continue all the way to Fletcher High.	Miles of trails, sidewalks, and bicycle paths

CAPITAL IMPROVEMENT PROJECTS

A detailed list of current and proposed capital improvement projects can be found in Appendix A

PLAN GOAL	KEY ACTIONS	MEASUREMENT
Safe, Beautiful Streets & Trails	Build a bicycle and pedestrian marsh walk to connect Seagate Avenue over Hopkins Creek.	Miles of trails, sidewalks, and bicycle paths
Safe, Beautiful Streets & Trails	Prioritize capital improvements along school routes and work with the JTA and FDOT to implement a Safe Routes to School program.	% of students walking to school
Safe, Beautiful Streets & Trails	Invest in neighborhood traffic calming projects.	Average traffic speed
Welcoming Open Spaces & Active Recreation	Invest in recreational amenities along the Intracoastal, including kayak launches, marsh walks, and a pedestrian and bicycle bridge across Hopkins Creek that connects the two sections of Seagate Avenue.	Water quality
Welcoming Open Spaces & Active Recreation	Transform 1st Street from Atlantic Boulevard to Orange Street into a shared plaza street that can be easily closed down and used for public events.	No. of events & attendance
Welcoming Open Spaces & Active Recreation	Transform the final segment of Atlantic Boulevard from 1st Street to the beach into a car-free public plaza and encourage infill development along the edges of the surface parking lot on that corner.	No. of events & attendance
Welcoming Open Spaces & Active Recreation	Invest in public art and establish a public art steering committee to help curate pieces throughout the city.	No. of public art pieces
Welcoming Open Spaces & Active Recreation	Plant street trees throughout the city to provide shade, reduce air pollution, and reduce stormwater runoff.	No. of trees in public spaces
Welcoming Open Spaces & Active Recreation	Construct a new Senior Activities Center and help support its community programs and senior services.	No. of programs & attendance
Welcoming Open Spaces & Active Recreation	Construct beach access improvements, including the addition of bicycle parking, ADA ramps, and ADA accessible parking spaces wherever possible.	N/A
Optimized Mobility & Parking	Promote and provide infrastructure upgrades for microtransit and shared mobility services (e.g. Beach Buggy).	Ridership (provided by operators)
Optimized Mobility & Parking	Explore potential funding sources for land acquisition that can be reserved for a future public parking garage, provided one is ever needed.	N/A
A Sustainable & Resilient City	Construct all planned stormwater improvement projects, minimizing the impact on existing ecosystems and vegetation and prioritizing low impact design principles over conventionally engineered, hard edge canals.	Stormwater flow, water quality (outfall & infall)
A Sustainable & Resilient City	Work with Jacksonville Beach to bury the power utility lines along Seagate Avenue and identify any other areas where undergrounding power lines will help facilitate street improvement projects and improve community resilience during and following major storm events.	No. of power outages

EXPLORE DIFFERENT FUNDING MECHANISMS

While many of the capital projects in this plan will be implemented by some combination of FDOT, City of Jacksonville, and Neptune Beach CIP funds, as well as federal and state grants, there are a few other funding mechanisms that can help carry out improvements in predefined areas of the city. The most relevant of these for Neptune Beach are Community Redevelopment Agencies and Business Improvement Districts.

COMMUNITY REDEVELOPMENT AGENCY (CRA)

A Community Redevelopment Agency, or CRA, is a public entity that operates separately from the main governing body (even when it is the same group of people), which focus on funding and implementing improvements within a designated redevelopment area. In this area any future increases in property values are set aside to support economic development projects within that district. The CRA has certain powers that the city or county alone may not have, such as establishing tax increment financing and leveraging local public funds with private dollars to support redevelopment.

To establish a CRA the city must submit a Finding of Necessity demonstrating that the area in question meets at least two of the 16 characteristics of "blight" and at least one of the three characteristics of "slums". The commercial center and surrounding neighborhood at Florida & Atlantic Boulevard is the area most likely to qualify for a CRA. The following are the few characteristics from the overall list that may apply:

- Predominance of defective or inadequate street layout, parking facilities, roadways, bridges, or public transportation facilities;
- Unsanitary or unsafe conditions;
- Deterioration of site or other improvements
- The existence of conditions that endanger life or property by fire or other causes

Once a Finding of Necessity is adopted and a CRA boundary defined, the next step is to develop a Community Redevelopment Plan with overall goals and specific projects that address the unique needs of the area. Finally, a Redevelopment Trust Fund must be established to enable the CRA to direct the increases in property taxes back into the area.

BUSINESS IMPROVEMENT DISTRICT (BID)

A Business Improvement District, or BID, is a public/private partnership in which property and business owners elect to make a collective contribution for the maintenance, development, and promotion of their legally defined area, beyond what is already provided by the city. The types of services and improvements that BIDs fund include anything from public safety officers, to special events, holiday decor, landscaping, promotional materials, and street improvements.

A Neptune Beach BID would duplicate some of the efforts of the BTC Agency and Merchants Association, however, unlike those nonprofit and volunteer based organizations that rely heavily on fundraising and donations, a BID has a steady and reliable source of funding, A BID is also backed by legislation that requires all property owners to pay assessments, though the amount that different types of properties and businesses pay can vary.

GRANTS TO LOOK OUT FOR:

- Florida DEO Community Planning Technical Assistance Grants
- FEMA Hazard Mitigation Grant Program
- Flood Mitigation Assistance (FMA) Grant
- Building Resilient Infrastructure & Communities (BRIC) Program
- Recreational Trails Program (RTP) Grants
- Transportation Alternatives Program (TAP)
- Shared-Use Nonmotorized (SUN) Trail Program
- Doppelt Family Trail Development Fund
- Land & Water Conservation Fund (LWCF) Grants
- Florida Recreation & Development Assistance Program (FRDAP) Grants
- Coastal Partnership Initiative (CPI) Grant
- Florida Communities Trust (FCT) Grants
- Florida Highway Beautification Grant Program
- National Urban and Community Forestry Matching Grant Program

ESTABLISH STRONG COMMUNITY PARTNERS

The responsibility to implement any community vision plan cannot lie solely with the local governing body. To successfully fulfill the objectives and project laid out in this plan Neptune Beach will have to leverage a number of inter-agency contacts and community partners. Creating these strategic partnership will help the city to establish and maintain ongoing city programs and help to fund and construct key capital improvement projects.

Key Implementation Partners that the City can work with include the following agencies and organizations:

- Beaches Town Center Agency
- Beaches Town Center Merchants Association
- JAX Chamber Beaches Division
- Beaches Branch Library
- City of Jacksonville/Duval County
- City of Atlantic Beach
- City of Jacksonville Beach
- FDOT, District 2 Office
- North Florida TPO
- Jacksonville Transit Authority (JTA)
- St. Johns River Water Management District
- Duval County Public School Board
    - Fletcher High School
    - Fletcher Middle School
    - Neptune Beach Elementary
- San Pablo Elementary
- Beaches Boys & Girls Club of Northeast Florida
- Neptune Strong
- Beaches Go Green
- Surfrider Foundation
- Beaches Watch
- Beaches Sea Turtle Patrol
- Native Plant Society
- River Keepers
- Florida Stormwater Association
- Duval County Audobon Society
- Art Battle
- Jax is Rad

KEEP THE COMMUNITY INVOLVED IN THE LONG TERM

AFTER THE VISION PLAN IS ADOPTED, CAN I STILL PARTICIPATE IN CITYWIDE PLANNING AND DECISION-MAKING?

In order to foster public trust the City of Neptune Beach, like most cities in Florida, operates in compliance with governmental transparency standards, providing several opportunities for the public to attend meetings and provide comments. Ways to stay involved in the civic process are outlined below.

Participate in the Next Phase of the Process: Comprehensive Plan & Land Development Regulation Update

Starting in November 2020 and throughout 2021 the City of Neptune Beach, with Dover, Kohl & Partners, will be updating its Comprehensive Plan and Land Development Regulations. Additional public meetings and workshops will be scheduled as a part of this process, so be sure to check the City and Neptune Beach Vision Plan website often to stay up to date.

www.neptunebeachvisionplan.com

Attend & Speak On Record at Council Meetings

City Council meetings are open to the public. Residents can view the Agendas prior to each Council Meeting and choose whether or not to attend and speak. Those who wish can speak on record for up to three minutes for each agenda item. Time is also provided at the end for public comment on non-agenda items.

The Council meets regularly every first and third Monday of the month at 6:00 PM in the City Hall Council Chambers, though meetings are now also being broadcast virtually for those who want to participate from home.

Attend Community Development Board Meetings

The Community Development Board (CDB) makes recommendations to City Council with regard to the development of the city, specifically to amending, extending, or adding to the City's Comprehensive Plan and adopting and amending zoning ordinances. They meet every second Wednesday of the month at 6:00 PM in the City Hall Council Chambers.

Attend the Council Subcommittee Meetings

In addition to City Council and CDB meetings, Neptune Beach has a number of subcommittees, each chaired by a City Council member, that are dedicated to reviewing and discussing issues related to specific topics. These committees include:

- Transportation & Public Safety Committee
- Strategic Planning & Visioning Committee
- Land Use & Parks Committee
- Finance/Board/Charter Review Committee

Check the City's website to see when upcoming committee meetings are scheduled.

Meet & Talk With City Staff

The City is always available to hear from the community. Feel free to schedule a meeting, write an email, or call staff with any question or concern.

Request the Creation of Advisory Boards

There are many city's that establish volunteer run advisory boards to help advise elected officials and city staff on specific issues important to the community. Typically, board members are nominated and then formally selected by City Council. Examples of advisory boards that Neptune Beach can establish include:

- Sustainability & Resilience Advisory Board
- Code Enforcement Board
- Historic Preservation Advisory Board
- Utility Advisory Board

Appendix: A

PROJECT LIST


Photo Credit: Harriett Pruett

CAPITAL IMPROVEMENT PROJECT LIST

Appendix A contains a comprehensive list of planned capital improvement projects, as well as the conceptual and proposed projects laid out in the Vision Plan. The goal of creating a centralized list of needed and desirable capital improvement projects is to help the City as it begins to formalize it's yearly Capital Improvements Plan (CIP) process. Creating a project list like this one also makes it easier to track the status of project from early conceptual phases through construction. The following matrix organizes capital improvement by the five main plan categories and goals. Each project is also is accompanied with key additional information, provided that information is able at this point in time.

Priority: Identifies project as low, medium, or high priority based on community input and planned construction budgets at the local and regional agency level

Project Name: Short description of the project

Responsible Party: Lists the lead agencies responsible for implementing the project

Potential Partners: Describes any potential partner agencies, city departments, private stakeholders, or organizations that can help implement the project

Project Phase: Identifies what general phase of implementation the project is in:

Conceptual: The project is still in the earliest phases of conception without any definite design, scope, or rigorous analysis

Proposed: The project has been identified by the responsible parties as something worth implementing and passed initial feasibility checks

Planned: The project has funding allocated for it and design and/or construction drawing are being prepared

Construction: The project is being built

Time Frame: Describes the anticipated schedule for completion for each project. If the project already has a scheduled year for completion, it has been noted in the table; if not, more general time frames have been identified as follows:

Short-Term: 1 – 3 years

Mid-Tem: 4 – 9 years

Long-Term: 10+ years

Estimated (Est.) Cost: The estimated cost for implementing an activity, defined by:

$$$$ >$500,000

$$$ $250,000 – $500,000

$$ $100,000 – 250,000

$ < $100,000

Funding Source: Describes the possible funding sources and mechanisms for each project (operating funds, impact fees, grants, etc.)

CATEGORY	PRIORITY	PROJECT NAME	RESPONSIBLE PARTY
Parks, Recreational Amenities & Open Spaces	High	Senior Activity Center	CONB
Parks, Recreational Amenities & Open Spaces	High	Jarboe Park Improvements - Phase 1A	CONB
Parks, Recreational Amenities & Open Spaces	High	Jarboe Park Improvements - Phase 1B	CONB
Parks, Recreational Amenities & Open Spaces	High	Jarboe Park Improvements - Phase 1C	CONB
Parks, Recreational Amenities & Open Spaces	High	Jarboe Park Improvements - Phase 2	CONB
Parks, Recreational Amenities & Open Spaces	High	Jarboe Park Improvements - Phase 3	CONB
Parks, Recreational Amenities & Open Spaces	Low	Seagate Avenue Marsh View Pocket Park Improvements	CONB
Parks, Recreational Amenities & Open Spaces	Low	Seagate Avenue & Nightfall Pocket Park & Kayak Launch	CONB
Parks, Recreational Amenities & Open Spaces	Low	Shadow Lane Kayak Launch	CONB
Parks, Recreational Amenities & Open Spaces	Low	Penman Road & Hopkins Creek Bridge Kayak Launch	FDOT, CONB
Parks, Recreational Amenities & Open Spaces	Low	Fletcher Kayak Launch	CONB
Parks, Recreational Amenities & Open Spaces	Low	North Hopkins Creek Kayak Launch	CONB
Parks, Recreational Amenities & Open Spaces	Low	Marshwalk Trail (Marsh Point Rd.)	CONB, COJ
Parks, Recreational Amenities & Open Spaces	Low	Marshwalk Trail (Forest Ave.)	CONB
Parks, Recreational Amenities & Open Spaces	Medium	Marshwalk Trail (Seagate Ave. Connection)	CONB, COJB
Parks, Recreational Amenities & Open Spaces	Medium	1st Street Woonerf (Atlantic Blvd. to Orange St.)	CONB
Parks, Recreational Amenities & Open Spaces	Low	Atlantic Plaza (1st St. to the beach)	CONB, COJ, COAB
Parks, Recreational Amenities & Open Spaces	Medium	Florida Boulevard Beach Access Improvements	CONB
Parks, Recreational Amenities & Open Spaces	Low	Lifeguard House Beach Access & Bathroom Facilities	CONB
Parks, Recreational Amenities & Open Spaces	Medium	Additional Beach Access Improvements (Car & Bicycle Parking)	CONB

POTENTIAL PARTNERS	PROJECT PHASE	TIME FRAME	POTENTIAL FUNDING SOURCES	COST ESTIMATE
	Proposed	2021	Gas Tax, Crowdfunding Donations	$450,000
	Planned	2020-2021	Grants, Better Jax Tax, Private Donations, COJ Tree Mitigation Funds	$1,379,008
	Planned	2022	Grants, Better Jax Tax, Private Donations	$280,000
	Planned	2023	Grants, Better Jax Tax, Private Donations	$272,000
	Proposed	2024	Grants, Better Jax Tax, Private Donations	$600,000
	Proposed	2025	Grants, Better Jax Tax, Private Donations	$100,000
	Conceptual	Mid- to Long-Term	Grants, General Fund	$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$
Duncan Fletcher High School	Conceptual	Mid- to Long-Term	Grants, General Fund	$
Christ United Methodist Church, The Church of Jesus Christ of Latter-day Saints	Conceptual	Long-Term	Grants, General Fund	$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$$$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$$$
	Conceptual	Mid-Term	Grants, General Fund	$$$
Beaches Town Center	Conceptual	Mid- to Long-Term	General Fund, TIF (Potentially), BID	$$$$
Beaches Town Center	Conceptual	Long-Term	General Fund, TIF (Potentially), BID	$$$$
	Conceptual	Mid-Term	Grants, General Fund	$-$$
COJ, COAB	Conceptual	Long-Term	Grants, General Fund	$$
	Conceptual	Mid-Term	Grants, General Fund	$-$$ Per Access Point

CATEGORY	PRIORITY	PROJECT NAME	RESPONSIBLE PARTY
Street Improvements, Biking & Walking Trails	Medium	Canal Nature Trail I (Bay St. to Cedar St.)	CONB
Street Improvements, Biking & Walking Trails	Medium	Canal Nature Trail II (Cedar St. to Lemon St.)	CONB
Street Improvements, Biking & Walking Trails	Low	Canal Nature Trail III (Florida Blvd. to Fletcher High)	CONB
Street Improvements, Biking & Walking Trails	Medium	Hopkins Creek Greenway Nature Trail	CONB
Street Improvements, Biking & Walking Trails	Medium	Oakhurst Nature Trail	CONB
Street Improvements, Biking & Walking Trails	Low	Bartolome Nature Trail	CONB
Street Improvements, Biking & Walking Trails	Medium	Kings Road Shared Street (Seagate Ave. to Forest Ave.)	CONB
Street Improvements, Biking & Walking Trails	Medium	Indian Woods Drive Shared Street (Kings Rd. to Forest Ave.)	CONB
Street Improvements, Biking & Walking Trails	Medium	Acacia Shared Street	CONB
Street Improvements, Biking & Walking Trails	Medium	Seagate Avenue Shared Street (Kings Rd. to Penman Rd.)	CONB, COJB
Street Improvements, Biking & Walking Trails	High	Seagate Avenue Multi-Use Path (Penman Rd to 3rd St.)	CONB, COJB
Street Improvements, Biking & Walking Trails	Medium	Florida Boulevard Multi-Use Path (3rd St. to 1st St.)	CONB
Street Improvements, Biking & Walking Trails	Medium	5th Street Multi-Use Path (Seagate Ave. to Bay St.)	CONB
Street Improvements, Biking & Walking Trails	High	Penman Road Complete Street Redesign	COJ
Street Improvements, Biking & Walking Trails	High	3rd Street Shared Street Redesign	FDOT
Street Improvements, Biking & Walking Trails	Medium	Lemon Street Extension & Separated Bike Lanes	CONB, FDOT
Street Improvements, Biking & Walking Trails	High	1st Street Shared Street Redesign (Orange St. to Seagate Ave.)	CONB
Street Improvements, Biking & Walking Trails	Medium	Atlantic Boulevard Complete Street Redesign	FDOT
Intersection, Crossing & Safety Improvements	High	3rd Street & Atlantic Intersection Improvements - Phase 1	FDOT
Intersection, Crossing & Safety Improvements	High	3rd Street & Atlantic Intersection Improvements - Phase 2	FDOT

POTENTIAL PARTNERS	PROJECT PHASE	TIME FRAME	POTENTIAL FUNDING SOURCES	COST ESTIMATE
Beaches Branch Library	Planned	2023	General Fund, RTP Grant	$500,000
Private Developers	Proposed	2025	General Fund, RTP Grant, Developer Contributions	$500,000
Duncan Fletcher High School	Conceptual	Long-Term	General Fund, RTP Grant	$$$
Christ United Methodist Church, The Church of Jesus Christ of Latter-day Saints	Proposed	Mid- to Long-Term	Grants, General Fund	$$$
Summer Sands	Conceptual	Mid-Term	Grants, General Fund	$$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$$
JTA	Conceptual	Mid-Term	JTA Safe Routes to School, Grants, General Fund	$$$
JTA	Conceptual	Mid- to Long-Term	JTA Safe Routes to School, Grants, General Fund	$$$
	Conceptual	Mid- to Long-Term	Grants, General Fund	$$$
JTA	Conceptual	Mid-Term	JTA Safe Routes to School, COJB, Grants, General Fund	$$$
JTA	Conceptual	Mid-Term	JTA Safe Routes to School, COJB, Grants, General Fund	$$$
FDOT, JTA, COJ, ECG	Proposed	Mid-Term	Grants, FDOT, General Fund	$$$
JTA	Conceptual	Mid-Term	JTA Safe Routes to School, Grants, General Fund	$$$
CONB, COJB	Proposed	Short-Term	COJ	Design: $500,000 Construction: $20,000,000
CONB, COJB	Conceptual	2023-2025	FDOT, Grants	$$$$
Private Developers	Proposed	Mid-Term	General Fund, Grants, FDOT, Developer Contributions	$$$$
	Conceptual	2022-2023	Grants, General Fund	$$$$
CONB, COAB	Conceptual	Mid- to Long-Term	FDOT, Grants	$$$$
CONB	Planned	2021	FDOT	$1,400,000
CONB	Proposed	2022-2023	FDOT	$$$

CATEGORY	PRIORITY	PROJECT NAME	RESPONSIBLE PARTY
Intersection, Crossing & Safety Improvements	Low	3rd Street & Atlantic Intersection Improvements - Phase 3	FDOT
Intersection, Crossing & Safety Improvements	Low	3rd Street & Walnut Street Crossing (HAWK Signal)	FDOT
Intersection, Crossing & Safety Improvements	High	3rd Street & Cedar Street Crossing Improvements	FDOT
Intersection, Crossing & Safety Improvements	High	3rd Street & Bay Street Crossing (HAWK Signal)	FDOT
Intersection, Crossing & Safety Improvements	High	3rd Street & Florida Boulevard Crossing Improvements	FDOT
Intersection, Crossing & Safety Improvements	Medium	3rd Street & Davis Street Crossing	FDOT
Intersection, Crossing & Safety Improvements	Medium	3rd Street & Myra Street Crossing	FDOT
Intersection, Crossing & Safety Improvements	High	3rd Street & Seagate Avenue Crossing Improvements	FDOT
Intersection, Crossing & Safety Improvements	High	5-Points Intersection Improvements (Penman Rd. & Florida Blvd.)	COJ
Intersection, Crossing & Safety Improvements	High	Florida & Atlantic Boulevard Intersection Improvements	FDOT
Intersection, Crossing & Safety Improvements	Medium	Florida Boulevard & Oakhurst Drive Crossing	CONB
Intersection, Crossing & Safety Improvements	Low	Florida Boulevard & Kings Circle Crossing	CONB
Intersection, Crossing & Safety Improvements	High	Florida Boulevard & Kings Road Crossing	CONB
Intersection, Crossing & Safety Improvements	High	Florida Boulevard & Windward Lane Crossing	CONB
Intersection, Crossing & Safety Improvements	High	Forest Marsh Drive & Forest Avenue Crossing	CONB
Intersection, Crossing & Safety Improvements	High	Florida Boulevard & 5th Street Crossing	CONB
Intersection, Crossing & Safety Improvements	High	Penman Road & Oceanwood Drive S Crossing	COJ
Intersection, Crossing & Safety Improvements	High	Penman Road & Seagate Avenue Crossing	COJ

POTENTIAL PARTNERS	PROJECT PHASE	TIME FRAME	POTENTIAL FUNDING SOURCES	COST ESTIMATE
CONB	Conceptual	Long-Term	FDOT, Grants, General Fund	$$$$
CONB	Proposed	2022	FDOT	$$
CONB, Beaches Branch Library	Conceptual	Short-Term	FDOT, Grants, General Fund	$
CONB	Planned	2021	FDOT	$$
CONB	Conceptual	Short-Term	FDOT, Grants, General Fund	$
CONB	Conceptual	Mid Term	FDOT, Grants, General Fund	$$
CONB	Conceptual	Mid- to Long-Term	FDOT, Grants, General Fund	$$
CONB, COJB, JTA	Conceptual	Short-Term	FDOT, JTA Safe Routes to School, Grants, General Fund	$
CONB	Planned	Short-Term	COJ	Built into the Penman Road Complete Streets Budget
CONB, COAB, ECG, JTA	Proposed	2022	FDOT, Grants, General Fund	$$$
ECG	Conceptual	Mid-Term	Grants, General Fund	$
ECG, BrewHound	Conceptual	Mid- to Long-Term	Grants, General Fund	$
ECG	Conceptual	Short-Term	Grants, General Fund	$
ECG, Neptune Beach Elementary, JTA	Conceptual	Short-Term	JTA Safe Routes to School, Grants, General Fund	$
JTA, Neptune Beach Elementary	Conceptual	Short-Term	JTA Safe Routes to School, Grants, General Fund	$
ECG	Conceptual	Short-Term	Grants, General Fund	$
CONB	Conceptual	Short-Term	COJ	Built into the Penman Road Complete Streets Budget
CONB, COJB, JTA	Conceptual	Short-Term	COJ	Built into the Penman Road Complete Streets Budget

CATEGORY	PRIORITY	PROJECT NAME	RESPONSIBLE PARTY
Intersection, Crossing & Safety Improvements	High	Seagate Avenue & 5th Street Crossing	CONB, COJB
Intersection, Crossing & Safety Improvements	High	Seagate Avenue & 4th Street Crossing	CONB, COJB
Intersection, Crossing & Safety Improvements	Medium	Atlantic Boulevard & Sylvan Drive Crossing	FDOT
Intersection, Crossing & Safety Improvements	High	Atlantic Boulevard & Penman Road Crossing	FDOT
Stormwater Infrastructure & Utilities	High	Florida Boulevard Culvert Design & Construction	CONB, COJ
Stormwater Infrastructure & Utilities	High	Davis Culvert	CONB
Stormwater Infrastructure & Utilities	High	Bay Street Culvert	CONB
Stormwater Infrastructure & Utilities	High	Forest Street Culvert	CONB, COJ
Stormwater Infrastructure & Utilities	High	Stormwater Laterals (Lemon St., Walnut/Cherry St., Pine St., Florida Blvd. N, and Florida Blvd. S)	CONB, FDOT
Stormwater Infrastructure & Utilities	High	Wastewater Treatment Plant	CONB
Stormwater Infrastructure & Utilities	High	Septic Tank Conversions	CONB
Stormwater Infrastructure & Utilities	High	Waterline Rehab: Bay, Pine, and Oak Street	CONB
Stormwater Infrastructure & Utilities	High	Waterline Rehab: 600 blk Davis Street	CONB
Stormwater Infrastructure & Utilities	High	Waterline Rehab: 600 blk Oleander Street	CONB
Stormwater Infrastructure & Utilities	High	Waterline Rehab: Neptune Grove East & West	CONB
Stormwater Infrastructure & Utilities	High	Waterline Rehab: Hagler Drive	CONB
Stormwater Infrastructure & Utilities	Medium	Forcemain Upgrade	CONB
Stormwater Infrastructure & Utilities	High	Sewer Line Improvements: Bay, Pine, and Oak Street	CONB
Stormwater Infrastructure & Utilities	High	Sewer Line Improvements: Strand Street & Florida Boulevard	CONB
Stormwater Infrastructure & Utilities	High	Sewer Line Improvements: 600 blk Davis Street	CONB

POTENTIAL PARTNERS	PROJECT PHASE	TIME FRAME	POTENTIAL FUNDING SOURCES	COST ESTIMATE
JTA, Duncan Fletcher High School	Conceptual	Short-Term	JTA Safe Routes to School, COJB, Grants, General Fund	$
JTA, Duncan Fletcher High School	Conceptual	Short-Term	JTA Safe Routes to School, COJB, Grants, General Fund	$
CONB, COAB	Conceptual	Mid- to Long-Term	FDOT	$$
COJ, CONB, COAB	Conceptual	Mid-Term	FDOT	$$$
	Construction	2021	Stormwater Fee, Better Jax Tax, Grants	$950,000
	Planned	2023	Stormwater Fee, Grants	$750,000
	Planned	2022	Stormwater Fee, Grants	$750,000
	Planned	2025	Stormwater Fee, Grants	$750,000
	Planned	2024	Stormwater Fee	$13,076,709
	Planned	2021-2022	Grants, General Fund, Loans	$6,100,000
	Planned	2024	General Fund, Clean Water State Revolving Fund	$1,500,000
	Planned	2021	General Fund	$250,000
	Planned	2022	General Fund	$250,000
	Planned	2023	General Fund	$250,000
	Planned	2024	General Fund	$250,000
	Planned	2025	General Fund	$250,000
	Planned	2025	General Fund, Clean Water State Revolving Fund	$877,500
	Planned	2021	General Fund	$350,000
	Planned	2023	General Fund, Clean Water State Revolving Fund	$725,000
	Planned	2022	General Fund	$350,000

CATEGORY	PRIORITY	PROJECT NAME	RESPONSIBLE PARTY
Stormwater Infrastructure & Utilities	High	Sewer Line Improvements: 600 blk Oleander Street	CONB
Stormwater Infrastructure & Utilities	High	Sewer Line Improvements: Neptune Grove East & West	CONB
Stormwater Infrastructure & Utilities	Medium	Lift Station Rehabilitation	CONB
Stormwater Infrastructure & Utilities	Medium	Relocation of Bal Harbour Lift Station	CONB
Stormwater Infrastructure & Utilities	Medium	Relocation of Gravity Sewer in Oceanwood Development	CONB
Stormwater Infrastructure & Utilities	Medium	Force Main Re-routing for Leeward Landing Lift Station	CONB
Stormwater Infrastructure & Utilities	Medium	Gravity Sewer Line Across 3rd Street	CONB, FDOT
Stormwater Infrastructure & Utilities	Medium	Remediate Gravity Sewer Conflict with Storm Sewer on Forest Avenue	CONB
Stormwater Infrastructure & Utilities	Medium	Under Grounding Power Lines on Seagate Avenue	CONB, COJB
Stormwater Infrastructure & Utilities	Medium	Hopkins Creek Restoration	CONB

POTENTIAL PARTNERS	PROJECT PHASE	TIME FRAME	POTENTIAL FUNDING SOURCES	COST ESTIMATE
	Planned	2024	General Fund	$350,000
	Planned	2025	General Fund	$350,000
	Proposed	Mid- to Long-Term	General Fund, Clean Water State Revolving Fund	$2,357,500
	Proposed	Mid- to Long-Term	General Fund, Clean Water State Revolving Fund	$391,800
	Proposed	Mid- to Long-Term	General Fund, Clean Water State Revolving Fund	$1,517,600
	Proposed	Mid- to Long-Term	General Fund, Clean Water State Revolving Fund	$73,600
	Proposed	Mid- to Long-Term	General Fund, Clean Water State Revolving Fund	$34,000
	Proposed	Mid- to Long-Term	General Fund, Clean Water State Revolving Fund	$1,382,100
	Conceptual	Mid-Term	Grants, General Fund, COJB	$$$$
	Proposed	2021-2024	Grants, General Fund	$1,000,000

Appendix: B

COMMENTS SUMMARY

August 13, 2020
To: City of Neptune Beach, Strategic Planning Committee
Through: Kristina Wright, Community Development Director
From: Dover, Kohl & Partners

Memo: Summary of Written Public Comments on the Neptune Beach Draft Community Vision Plan

INTRODUCTION

The following memo is a summary of public comments received for the Draft Neptune Beach Community Vision Plan. Comments were accepted between July 1, 2020 and July 31, 2020 (though a few mail-in responses received beyond that period have also been included). Comments include responses to an online and mail-in survey circulated through the project website and email list, and mailed to all Neptune Beach residents, as well as general input forms submitted through the project website or emailed directly to the City Staff and/or Dover, Kohl & Partners. The goal of this document is to summarize the comments received and identify the recommendations that will require revisions in order to discuss next steps with the Strategic Planning Commission. An appendix with the complete list of public comments received throughout the public comment period has been attached to the end of this memo—names and emails have been removed from comments to maintain confidentiality.

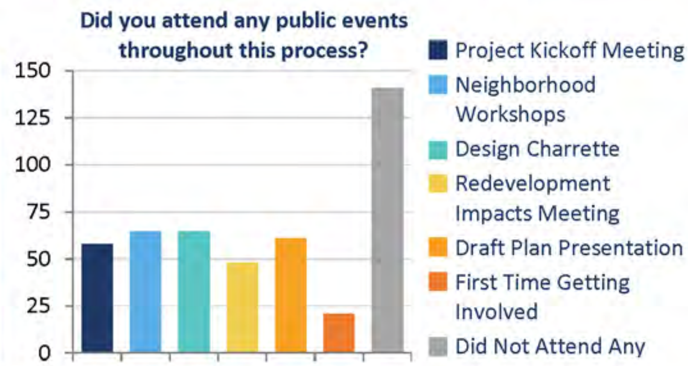
The comments and responses have been organized by survey questions and plan topics. In some cases, comments refer to actions that will be determined or further detailed during plan implementation and as a part of follow-up actions, such as the comprehensive plan and zoning updates. In other cases, community input will be incorporated as revisions, additions, and clarifications to produce the Final Draft Vision Plan.

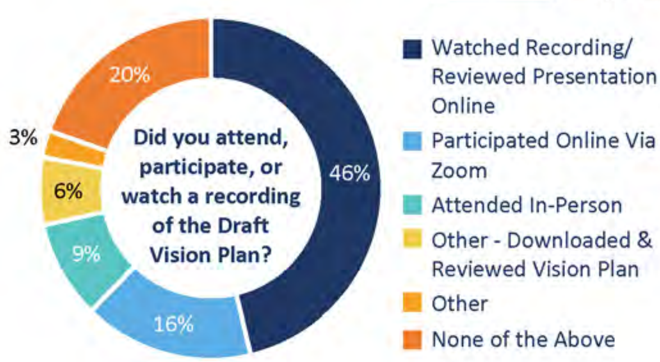
SUMMARY STATISTIC FOR WRITTEN COMMENTS RECEIVED

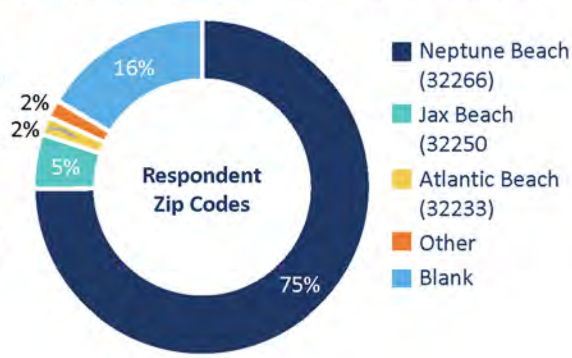
To date, the planning team received 287 written pieces of public input on the Neptune Beach Draft Community Vision Plan. The majority of responses (262) were received via the online or mail-in Draft Plan Survey.

Number of Comments Received by Source

Source	Number
Online Draft Plan Survey Responses	176
Mail-In Draft Plan Survey Responses	86
Online Redevelopment Impacts Meeting Survey Responses	10
Email/Letter	15
Total	**287**







SUMMARY OF COMMENTS RECEIVED

1. WHAT IDEAS ARE YOU MOST EXCITED ABOUT?

Summary of Comments:

When asked about the ideas that excited them, most people who submitted input cited recommendations for new walking and biking paths and street improvements. More specifically, people mentioned the redesign options for Penman, Atlantic, 3rd, and 1st Street, the overall improvement of street infrastructure, and the creation of a more complete network of sidewalks and bikeways. A few specifically mentioned the canal trail connecting 500 Atlantic to Jarboe Park and the Seagate Avenue marsh walk connection. Other popular ideas included the roundabout at the five-point intersection of Florida Boulevard, Penman Road, and Forest Avenue, and the addition of new street trees and landscaping along streets and in public spaces. Many people also expressed excitement about the new open spaces and improvements illustrated for the Beaches Town Center, the options for new kayak launches and marsh walks, and the recommendations for improved street crossings and overall safety. While not as universally popular as the street design recommendations, several people did also respond positively to the mixed-use redevelopment options shown at 500 Atlantic, the improvements and infill development shown for the Florida and Atlantic Boulevard commercial area, the planned Jarboe Park improvements, the need for commercial redevelopment more broadly, and multimodal transportation options.

Below is a list that summarizes the number of times an idea was mentioned, organized by overall topic:

Category	Count	Category	Count
Walking & Biking Paths	91	Commercial Redevelopment	11
Street Improvements	54	Multimodal Transportation	10
5-Point Intersection Roundabout	38	Infrastructure (Stormwater)	9
Street Trees & Landscaping	30	Greenspace	9
BTC Open Space & Improvements	25	Parking Solutions	8
Marsh Access	23	Preservation of Community Character	7
Street Crossings & Safety	23	Senior Center*	6
500 Atlantic Mixed-Use Redevelopment	18	All	6
Florida & Atlantic Infill Dev. Improvements	13	Sustainability & Resilience Strategies	5
Jarboe Park Improvements	11	None	5

* *Ideas for a new Senior Center were not elaborated in the Draft Vision Plan, but given input, will be included as a part of the next round of revisions*

2. WHAT IDEAS DO YOU THINK SHOULD BE PRIORITIZED?

Summary of Comments:

Similar to the previous question, when asked to prioritize the recommendations shown in the Draft Vision Plan, many respondents mentioned the implementation of street improvements and more walking and biking paths, though for this question street crossings and safety improvements were nearly as popular. Ideas for the five-point intersection roundabout and street trees/landscaping were still popular for prioritization, while other ideas, including infrastructure (especially stormwater infrastructure) and parking solutions, also rose to the top. Several people also mentioned prioritizing the redevelopment of 500 Atlantic, the implementation of new open spaces and improvements in the Beaches Town Center and Jarboe Park, the update of the zoning and land development code to ensure development that the community wants, and the implementation of sustainability and resilience strategies.

Below is a list that summarizes the number of times an idea was mentioned, organized by overall topic:

Category	Count	Category	Count
Street Improvements	59	Jarboe Park Improvements	12
Walking & Biking Paths	58	Zoning & Code Updates	11
Street Crossings & Safety	45	Sustainability & Resilience Strategies	10
5-Point Intersection Roundabout	31	Quality Redevelopment	9
Infrastructure (Stormwater)	28	Florida & Atlantic Infill Dev. Improvements	9
Street Trees & Landscaping	21	Marsh Access	8
BTC Open Space & Improvements	20	Senior Center	8
Parking Solutions	19	Maintaining Low Density	5
500 Atlantic Redevelopment	19	None	4

3. WHAT DO YOU THINK OF THE STREET DESIGNS SHOWN FOR 1ST STREET, ATLANTIC BOULEVARD, 3RD STREET/A1A, AND PENMAN ROAD? ARE THERE SPECIFIC OPTIONS THAT YOU PREFER OVER OTHERS?

Summary of Comments:

Overall, people responded positively to the street designs included in the Draft Vision Plan. Providing dedicated paths for biking and walking and planting more shade trees were identified as general priorities, though a few respondents expressed opposition to shade trees on 1st Street, reasons for which included blocking views of the beach and making street maintenance difficult. Among those who mentioned specific preferences, most preferred Option B (one-way street with dedicated cycle track) for 1st Street, followed by Option A (shared street with shade trees) then Option C (yield street). Some people suggested new options for 1st Street, including parking on one side only, removing shade trees, and limiting car traffic altogether. Overall response to the design for 3rd Street was positive. A couple of people suggested keeping parking on the east side north of Cherry Street and a few others mentioned eliminating on-street parking on 3rd Street altogether. Among those who mentioned Atlantic Boulevard, Option B (two-way cycle track) was the clear preference over Option A (on-street parking on one side). Several people did mention that project cost and the preferences of adjacent residents should be considered before making a selection and moving on to implementation.

Overall response to the designs for Penman Road were also positive. Among those who specified which option they preferred, the two-way bicycle and walking path on one side of the street was preferred to the complete reconstruction option. There was also split feedback regarding the roundabout at the Penman Road, Florida Boulevard, and Forest Avenue intersection; while more people who mentioned this intersection preferred Option 1 (single-lane roundabout), many still preferred Option 2 (improved signalized intersection).

Below is a list that summarizes the street design responses and preferences expressed:

Category	Count	Category	Count
Like Them All	42	1st Street: Option A	10
3rd Street: Positive Response	13	1st Street: Option B	29
3rd Street: Proposed Revisions	3	1st Street: Option C	7
Atlantic Blvd: Option A	2	1st Street: New Option	8
Atlantic Blvd: Option B	26	1st Street: No Shade Trees	6
Penman Road: Multi-Use Trail One Side	15	Dedicated Walking/Biking Paths	17

Penman Road: Complete Reconstruction	6	Street/Shade Trees	12
Penman Road: Positive Response	9	Slower Speeds	7
5-Point Intersection: Roundabout	35	Don't Like/Need Any of Them	5
5-Point Intersection: Improved Signalized Intersection	29		

4. DO YOU AGREE WITH THE RECOMMENDATIONS AND OVERALL NETWORK SHOWN IN THE BICYCLE AND PEDESTRIAN IMPROVEMENTS MAP?

Summary of Comments:

The majority of respondents agree with the recommendations and overall network shown in the bicycle and pedestrian improvements map. Among those who expressed reservations, some suggested specific revisions to the proposed bicycle network and crossing improvements and a few others mentioned that their support would depend on the cost and feasibility of individual projects. Some respondents specifically referenced the proposed canal trail connecting 500 Atlantic to Jarboe Park. Among them the response was split between those who support the idea and those who do not. Those who opposed the canal trail expressed concerns about the privacy and security of nearby residents.

Below is a list that summarizes the responses to this question:

Category	Count	Category	Count
Yes	138	Maybe/Not Sure	5
Mostly Yes	32	Canal Trail Positive Response	6
Some Yes & Some No	10	Canal Trail Negative Response	5
No	10	Think They Are Low Priority	5

5. WHAT DO YOU THINK ABOUT THE IDEAS FOR NEW OPEN SPACES IN THE BEACHES TOWN CENTER, NEW MARSH WALKS, AND KAYAK LAUNCHES?

Summary of Comments:

There was strong support for the ideas presented for new open spaces in the Beaches Town Center, as well as new marsh walks and kayak launches. While most respondents liked these ideas, there were a few who opposed them or recommended revisions. Among those that expressed opposition to the marsh walks and kayak launches, comments included parking and traffic concerns for residential neighborhoods, privacy of adjacent homes, and/or the feeling that these amenities would be underutilized. A couple of respondents also expressed concerns about the impact that these facilities could have on the marsh ecosystem. They want to see the marsh preserved and protected as much as possible. Among those that suggested revisions to the open spaces imagined for the Beaches Town Center, comments included maintaining car access from Atlantic Boulevard to the hotels and ensuring that any lost parking could be accommodated elsewhere.

Below is a list that summarizes the responses to this question:

Category	Count	Category	Count
Like Them All	107	Kayak Launch/Marsh Access Positive Responses	33
Don't Like Any	9	Kayak Launch/Marsh Access Negative Responses	17
BTC Open Spaces Positive Response	29	Kayak Launch/Marsh Access Proposed Revisions	7
BTC Open Spaces Negative Response	2	I Have Parking & Traffic Concerns	19
BTC Open Spaces Proposed Revisions	12	Okay, But Low-Priority	12

6. **WHAT IDEAS FROM THE MOBILITY AND PARKING SECTION LOOK THE MOST PROMISING TO YOU FOR NEPTUNE BEACH? IS THERE ADDITIONAL INFORMATION ABOUT NEW MODES OF TRANSPORTATION AND PARKING TECHNOLOGY THAT YOU WOULD LIKE TO SEE INCLUDED?**

Summary of Comments:

Overall, the ideas in the mobility and parking section that received the most widespread support were improving pedestrian access and adding more bicycle amenities, including safe and dedicated bike lanes and more bike parking. The idea of a mobility hub near the Beaches Town Center, where people can park their cars and take another form of transportation, including walking, biking, ridesharing, or a private shuttle service like Beach Buggy, was also popular. A couple of respondents opposed the idea of smaller mobility hubs in residential areas. There were a few who expressed support for shared mobility services like shared electric bicycles and scooters, so long as there were dedicated places to park and pick-up, though most did not mention it in their priorities or preferred recommendations. While several people like the idea of a trolley, shuttle, or circulator, there were others who responded that it is not necessary for a community of this size. A privately operated service, on the other hand, like Beach Buggy, seems to be more widely supported.

Many people reiterated the challenges around parking that were heard throughout this process in their comments. While many support the idea of a parking garage close to, but not in, the Beaches Town Center, several also oppose it. Some believe that with other improved mobility options and bicycle amenities, a public surface lot would suffice. A few also expressed fears of inducing demand with the construction of a large public garage. Several people also responded negatively to paid parking in the Beaches Town Center, though most of that opposition was for residents having to pay; paid parking for visitors was okay. A small number of people did support paid parking for all. There were also a few mentions for better and more handicap parking spaces, golf cart access and parking, and improvements to the existing bus stop.

Below is a list that summarizes the transportation/parking responses and preferences expressed:

Category	Count	Category	Count
Parking Garage	25	Bicycle Facilities & Parking	20
No Parking Garage	12	Improved Pedestrian Access	11
Paid Parking	6	Mobility Hub	14
No Paid Parking (At Least for Residents)	12	No Mobility Hub	3
Golf Cart Access/Parking	7	Bikeshare	6
More Accessible Parking	3	Shared Mobility (eBikes, Scooters, etc.)	3
Residential Parking Permit	3	No Shared Mobility (eBikes, Scooters, etc.)	2
Trolley/Shuttle/Circulator	11	Ridesharing Services	3
No Trolley/Shuttle/Circulator	5	Bus Stop Improvements	2
Privately Operated Shuttle (Beach Buggy)	10		

7. **WHAT DO YOU THINK OF THE REDEVELOPMENT VISION AND STREET IMPROVEMENTS SHOWN FOR THE ATLANTIC BOULEVARD COMMERCIAL CORRIDOR AND THE BREWHOUND NEIGHBORHOOD CENTER ON FLORIDA BOULEVARD?**

Summary of Comments:

The street improvements shown on Atlantic Boulevard received support from most people who submitted input. In terms of the Traditional Walkable Neighborhood redevelopment concept shown on the combined 436-572 Atlantic Boulevard parcels (includes the former Kmart & Lucky's), there was no overwhelming consensus. While more people who submitted comments liked the concept rather than disliked it, it is clear that there is still opposition from some in Neptune Beach to adding any kind of residential in this area, not just apartment buildings. Several respondents suggested revisions to the proposals that would win their support. Overall these revisions mentioned adding more commercial than what was illustrated in the Draft Plan's Option 3 for 500-527 Atlantic and reducing the overall number of homes shown and/or confining residential to the southern edge of the properties. On the other hand, a few also recommended including a hotel and some apartments over shops. The property owners of 500 Atlantic also provided written input. They stated that the amount of residential shown on the 500 Atlantic property only (91 units), was too low to be financially viable given the land value, though they do support the idea of breaking down the scale of development into smaller buildings.

Responses also revealed that there has been some misunderstanding of what was proposed for the Kmart & Lucky's area versus what was described in the scenario analysis for the entire Atlantic Boulevard corridor. It should be clarified that the redevelopment scenario analysis, which showed a 30% increase in population for Scenario 3, was a purely hypothetical scenario that would take well beyond the 20-30 year planning horizon of this vision plan to fulfill, and even then would perhaps never be achieved. The goal of the scenario analysis was to compare the transportation and environmental impacts of three hypothetical future buildouts of the corridor: Scenario 1, which infills vacant lots with more big box and strip center commercial (consistent with the existing character), Scenario 2, which replaces existing development with walkable commercial development, and Scenario 3, which replaces existing development with walkable mixed-use development (including residential). The commercial and retail-led Scenario 2 was explored because concerns over the traffic impacts of new development were expressed at the Neighborhood Workshops and Design Charrette in February and April; the analysis revealed that the development of commercial and retail-focused projects, like what exists in the St. John's Town Center, would create *more* traffic than a mixed-use neighborhood with residential.

When it comes to the recommendations and improvements shown for the area around Florida and Atlantic Boulevard, also referred to as the "BrewHound Neighborhood Center" in the plan, the response was overwhelmingly positive. The majority of respondents liked the street and intersection improvements, public art, and infill development shown. A few did express concerns regarding some of the existing businesses located there and potential parking problems that might arise from new development.

Below is list that summarizes the kind of responses received regarding redevelopment ideas:

Category	Count	Category	Count
500-527 Atlantic Positive Input	87	Florida & Atlantic Center Positive Input	112
500-527 Atlantic Negative Input	49	Florida & Atlantic Center Negative Input	12
500-527 Atlantic Suggested Revisions	21	Florida & Atlantic Center Suggested Revisions	4
Indifferent/Low Priority	7	Not Sure	4

8. ARE THERE ANY OTHER ISSUES OR CONCERNS THAT YOU WANT THE TEAM TO ADDRESS?

Summary of Comments:

Several people reiterated points made in response to previous questions, especially regarding the redevelopment options shown for the old Kmart and Lucky's site. Others raised additional concerns that they would like to see better addressed in the final draft of the plan. These included comments requesting that the plan address the relocation of the Senior Center, comments suggesting revisions to the Future Character Areas Map, comments regarding better beach access and dune health, comments looking for more information on resilience, sustainability, and infrastructure upgrades (including burying utility lines), comments regarding housing costs and the need to preserve existing duplexes and triplexes, and comments requesting improvements be shown for the Summer Sands entrance on Brant and Atlantic Boulevard, among other site-site specific requests and recommended changes.

A few respondents also raised concerns about code enforcement and zoning changes, both of which will be looked at in more detail and addressed in the next two phases of work, the Comprehensive Plan Update and Land Development Code Update. There were also several mentions about implementation, maintenance, and feasibility of plan recommendations. An implementation strategy will be included in the final draft as a guide to help staff and leadership to prioritize and plan for capital improvements and adopt policy changes. The costs and benefits of individual infrastructure and capital improvements would still have to be addressed and considered on a case by case basis as the city moves forward with plan implementation. Many respondents also answered no to this question or wrote that they are happy and excited about the draft report.

9. DO YOU HAVE ANY ADDITIONAL IDEAS FOR IMPROVING NEPTUNE BEACH THAT YOU FEEL SHOULD BE INCORPORATED INTO THIS VISION PLAN?

Summary of Comments:

Overall, responses to this question were similar to the previous question. There were some new comments to add more and improve existing green space, since Jarboe and Ish Brandt are the only parks in the City, a few comments regarding the need for historic preservation and protection, and a couple of comments requesting a pedestrian bridge over 3rd Street/A1A. There were also several comments similar to the last question regarding the need for improvements to infrastructure to support any kind of new development.

NEXT STEPS & REVISIONS TO DISCUSS

REVISIONS TO BE MADE

- Address beach access
- Address dune health and marsh health
- Address privacy and security concerns regarding public amenities in residential areas, consider including some case studies and design precedents for reference
- Expand & clarify parking solutions; incorporate any preliminary findings from the TPO parking study
- Address relocation of new senior center
- Show an option for 1st Street with parking on one side only and look into the existing barricades along 1st
- Show options to improve entryway and access to Summer Sands
- Clarify that Option 3 for 500 Atlantic does not increase population by 30%, consider revising or removing the commercial corridor redevelopment scenario analysis to reduce confusion
- Revise Opportunity Sites Map and clarify methodology
- Future Character Areas Map Revisions - based on input
- Create implementation chapter and define priority actions based on input and establish a timetable

AREAS WITHOUT CONSENSUS FOR DISCUSSION

- 500 Atlantic – Do we show any new options based on the input we received?
- 5 Points Intersection & Street Designs Alternatives – Should we pick preferred options or keep them all in?

AMILY-FRIENDLY, GRO
HARMING, ECLECTIC, F
MALL, FARMERS MARK
IKE-FRIENDLY, VIBRA
RESERVATION, LIBRA
EACHES TOWN CENTER,
PEN, FAMILY, RESIDEN
UAINT, SENIOR CENTE
LETCHER HIGH, ART WA
REEN,PENMAN ROAD, A
EAUTIFUL, COOL, FIRS
NTRACOASTAL WATERW
UTHENTIC, LOCAL, NE

Prepared for:

City of Neptune Beach, Florida

Prepared by:

Thomas J. Gyorog, P.E.

FL PE No. 46612

Parsons Transportation Group, Inc.

1300 Riverplace Blvd., Suite 200

Jacksonville, FL 32207

Thomas J. Gyorog, State of Florida, Professional Engineer, License No. 46612

____

This item has been digitally signed and sealed by Thomas J. Gyorog on the date indicated here. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PROJECT LOCATION

The project location is in Duval County in the City of Neptune Beach, Florida (CONB). The project is bounded on the west by the existing outfall channel, on the south by Seagate Ave, on the north by Atlantic Blvd, and on the east by the beach front.

The project involves 6 storm sewer systems identified by the outfall street name. Listed from south to north they are Oleander St, Florida Blvd (South), Florida Blvd (North), Pine St, Walnut St, and Lemon St. All systems discharge to an outfall channel to the west of SR A1A.

1.2 PROBLEM, PURPOSE AND OBJECTIVE

The project objective is to develop preliminary storm sewer improvements to address the flooding issues east of 3rd Street. Parts of the City of Neptune Beach (CONB), particularly areas east of 3rd Street (SR A1A), flood during intense and mild rainfall events. The residents and city officials have been frustrated by the poor performance of the existing storm sewer system for years. The issue is exacerbated by the fact that the area is heavily used by pedestrians and bicyclists. The following photos illustrate the existing flooding that persists after minor rain events.

1st St Looking North at Magnolia St

2nd St Looking South at Cherry St

2nd St Looking East at Myrtle St

The purpose of this report is to document recommended storm sewer improvements to obtain support and approval from other agencies and officials. This report includes the supporting calculations and drainage maps. After approval, the recommended improvements could be advanced into final design and permitting.

1.3 BACKGROUND AND JUSTIFICATION

This project proposes to design a more efficient storm sewer collection system to alleviate flooding. The result of the improvements will be higher runoff rates entering the outfall channel downstream of the storm sewer discharge points. The project is justified based on improvements that have been or will be implemented downstream to ensure that properties will not be harmed by the flow increases.

The FDOT's drainage improvement project for 3rd St (SR A1A) between Beach Blvd and Seagate Ave is a drainage infrastructure project that addresses flood conditions in the City of Jacksonville Beach (COJB). This project is downstream of the CONB storm sewer improvements and additional capacity was built into the project for CONB discharge increases. The FDOT project is about 99% complete at the time of this writing. It is expected to reduce the flood stages in the COJB and along the outfall channel to Kings Rd bridge. The baseline water surface elevations for all future drainage improvements should use the pre-development condition from the FDOT project as the comparison.

The FDOT improvements include several thousand feet of channel rehabilitation, four culvert replacements (15th Ave, 18th Ave, Seagate Ave, 5th St), replacement of Kings Road bridge, and some dredging downstream of Penman Road. In the hydrology and hydraulic (H&H) study a surface water model was developed in ICPR3 (Streamline Technologies) and a channel hydraulic model was developed in HEC-RAS 5.0 (Army Corps of Engineers Institute for Water Resources Hydrologic Engineering Center). Only the main CONB channels and major culverts were included in FDOT's ICPR model to assess the impact of the FDOT project on the CONB. Although not completely containing all the CONB drainage infrastructure, the evaluation suggested that some of the laterals along 3rd St are undersized and the culvert crossings on Forrest Blvd, Davis Street, and Florida Blvd are likely to overtop during extreme storm events. The evaluation of the FDOT's improvements anticipates drainage infrastructure improvements within the CONB by including future discharge increases.

The CONB is planning for the replacement of the existing channel culvert under Florida Blvd. The proposed culvert is a double 7' x 6' which has considerably more flow capacity than the existing 4' x 6' arched barrel culvert. Upstream stages are reduced considerably with the new culvert. For example, the 50-year storm headwater is reduced by about 2 feet. It is likely that this new culvert will need to be in place to ensure that properties are not flooded by the increased flows from the storm sewer improvements of this report. Additional hydraulic modeling will need to be performed for the outfall channel to demonstrate to permit agencies that no significant downstream impact will result from these improvements.

With both the FDOT's project and the proposed Florida Culvert in place, downstream properties will likely be protected from flood stage increases. This will need to be demonstrated through additional channel modeling.

2 DESIGN

2.1 APPROACH

The design approach was to prepare preliminary storm sewer designs to address the flooding issues. Models of the existing storm sewer systems were developed for an earlier task order to identify problem areas. For this task order, existing and proposed storm sewer models were prepared to determine the extent of the improvements needed to alleviate flooding conditions.

The storm sewer models were prepared using GEOPAK Drainage software. For the existing models, storm sewer piping, elevations and inverts were gathered using GIS data: field survey data and storm sewer maps were provided by the CONB. The field survey was gathered along 1st St and partially along 2nd St and lateral streets. Survey is based on North American Vertical Datum of 1988 (NAVD 88). Drainage maps were developed for the existing and proposed conditions as shown in APPENDIX A - EXISTING AND PROPOSED DRAINAGE MAPS. The results of the models were exported to a storm sewer tabulation form. See APPENDIX B - STORM SEWER TABULATIONS for results. The approach follows the procedures from the FDOT Drainage Manual, January 2020 and the FDOT Drainage Design Guide, January 2020.

Table 1 Drainage Design Criteria

Criteria	Value Used	Source
Design Storm Frequency	3-year	FDOT Drainage Manual, Table 3.1
Design Tailwater	3-year outfall channel for free-flowing ditches	FDOT Drainage Manual, Section 3.4
Sea Level Rise	Factored into outfall channel tailwater	FDOT Drainage Manual, Section 3.4.1
Time of Concentration	10-minute minimum	FDOT Drainage Manual, Section 3.5.1
Pipe Slopes	Physical slope to produce 2.5 fps and no greater than 15 fps when storm drain is flowing full. For pressure systems use minimum physical slope of 0.1%.	FDOT Drainage Manual, Section 3.6.1 FDOT Drainage Design Guide, Table 6.4-1
Hydraulic Gradient	Include minor losses. Keep the HGL below structure top.	FDOT Drainage Manual, Section 3.6.2
Outlet Velocity	Use 6 fps max with Rubble Rip-Rap (Ditch Lining) protection for velocity over 4 fps	FDOT Drainage Manual, Section 3.6.3 FDOT Drainage Manual, Table 2.5
Manning's Roughness Coefficients	n = 0.012 for concrete pipes and concrete box culverts	FDOT Drainage Manual, Section 3.6.4
Pipe Size	Minimum 15"	CONB Criteria
Pipe Length without Maintenance Access	≤ 18" use 300 feet 24" to 36" use 400 feet 42" or larger and box culverts use 500 feet	FDOT Drainage Manual, Section 3.10.1
Curb Inlet	Use City of Jacksonville (COJ) style inlet referred to as Type 9 in the storm sewer tabulation	CONB preference per COJ Plate D-2-1 & D-202
Manholes	Use Type 8 top in storm tabulation	FDOT Index 425-001 & 425-010
Ditch Bottom Inlets	Use Type F in storm tabulation	FDOT Index 425-053

2.2 DRAINAGE AREA

The drainage maps depict the estimated drainage areas that contribute runoff to each inlet. Large areas shown on both the existing and proposed drainage maps are a result of the wide spacing of inlets in each of the systems. For this reason, a reduced area storm sewer tabulation was performed as a check. The reduced area is based on the area that would contribute during a 10-minute time of concentration. A runoff flow velocity of 0.5 fps was assumed to establish the reduced area boundary. See the FDOT Drainage Design Guide, Section 6.2.2.1 for more information. Two different storm sewer tabulations were evaluated and compared, one using the reduced areas based on the 10-minute time of concentration and the second one using the total areas with full time of concentration. When comparing the resultant flows, the total area approach produced higher flows despite having lower intensities. Therefore, only the total area storm sewer tabulations were included in this report.

2.3 TIME OF CONCENTRATION

A runoff flow velocity of 0.5 fps was assumed to establish the time of concentration. This velocity is an estimated velocity for overland and small channel flow that would occur within the predominately urban area.

2.4 RUNOFF COEFFICIENT

The drainage areas have a uniform land-use in an urban setting. For consistency, 75% of the area is assumed to be impervious with a "C" factor of 0.95 and the remaining 25% is assumed to be pervious with a "C" factor of 0.30. This yields a composite "C" factor of 0.76 used in the storm sewer tabulations.

2.5 ADVERSE PIPE SLOPE ADJUSTMENTS

It was discovered that many of the existing pipes have an adverse pipe slope. The GEOPAK Drainage software requires a positive slope throughout the pipe network in order to model the system successfully. Adjustments had to be introduced to adjust the pipe slopes and therefore remove the adverse conditions. The effect of this adjustment is a successful storm sewer tabulation run with a less conservative hydraulic gradient line (HGL) result. See the notes column on the storm sewer tabulations for slope adjustment locations. Despite making the necessary adjustments in each of the GEOPAK models, none of the existing storm sewer systems presented HGL clearance to the structure top making it safe to say that all six existing systems failed.

2.6 PIPE SLOPES

Proposed pipe slopes satisfy the minimum slopes as listed in the FDOT Drainage Design Guide, Table 6.4-1. Many of the pipes flow under pressure, meaning that the HGL is above the pipe throughout its length. This is due to the tailwater elevation being above the crown of the pipe. A minimum 0.10% pipe slope was used for these locations per page 6-35 of the FDOT Drainage Design Guide.

2.7 TAILWATER CONDITIONS

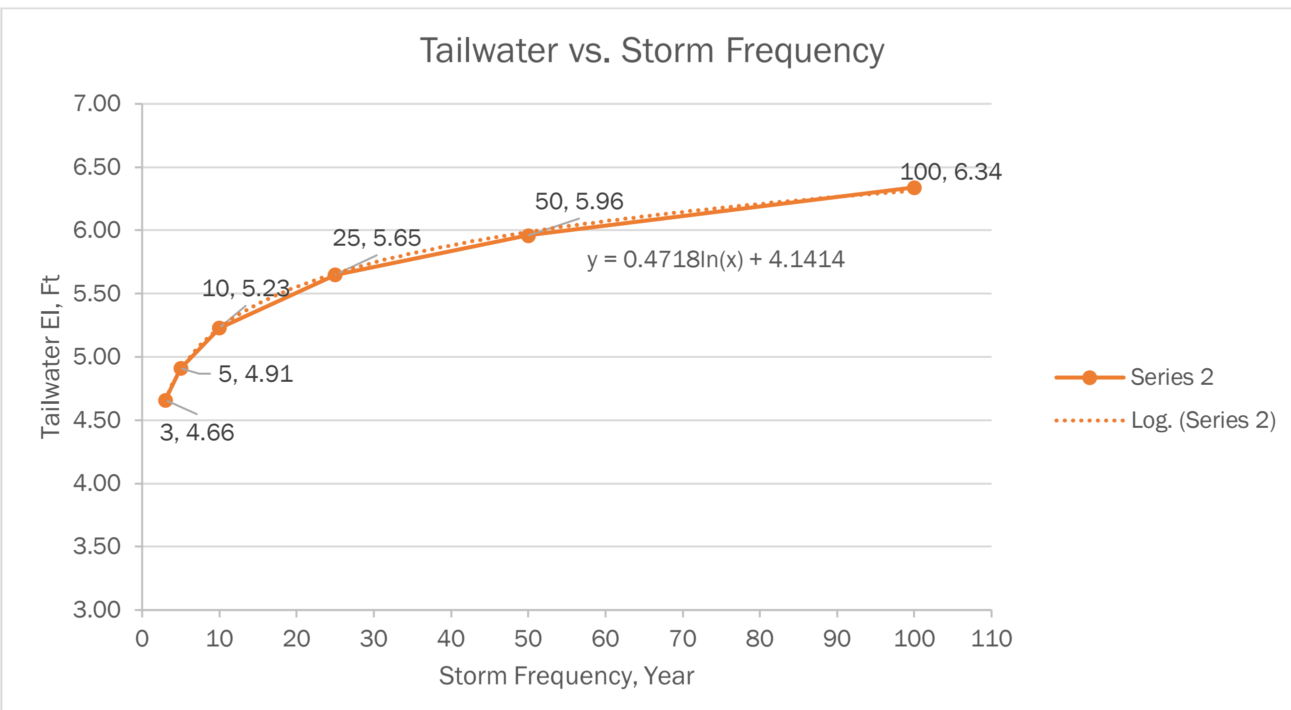
The models use a tailwater condition derived from a regional Interconnected Pond Routing (ICPR) model based on NAVD 88. The model was used to develop flows for the FDOT SR A1A project and then modified to include additional areas of Neptune Beach to develop preliminary storm sewer sizes. The proposed double 7' x 6' Florida Blvd culvert replacement was included in the model as an existing condition. This culvert has a significant effect on lowering the upstream water surface elevations and hence the tailwater conditions on the storm sewer systems. The ICPR model was run for the 3-year storm event and water surface elevations extracted at the storm sewer outfall locations, see Table 1 below for the tailwater used for each system. The model considers sea level rise above the mean high tide as a boundary condition.

Table 2 Storm Sewer System Tailwater Elevations (Ft)

Storm Sewer System Outfall	Tailwater Elevation (Ft)
Lemon St	5.45
Walnut St	5.44
Pine St	5.40
Florida Blvd (North)	5.10
Florida Blvd (South)	5.10
Oleander St	4.66

For the Oleander St. system, the 3-year tailwater was calculated from the channel profile results found in the Bridge Hydraulic Report for the 5th St Bridge near Fletcher High School. Various storm frequency stages at the nearest cross section to the outfall were used to create a best fit trend line in Excel, see Figure 1 below. This was extrapolated to derive the 3-year tailwater elevation of 4.66 ft.

Figure 1 Tailwater vs. Storm Frequency



The ICPR model will need to be updated once again before final design and permitting to develop the final tailwater condition for the storm sewer systems. The final tailwater conditions will be at a slightly higher elevation and some pipes may need to be increased to compensate.

2.8 PROPOSED STORM WATER COLLECTION IMPROVEMENTS

Field survey was gathered along 1st St and several lateral streets to identify the low points along the roadway. Proposed inlets were placed at any low point where an existing inlet was not present. The drainage maps depict the proposed systems and drainage areas. In some cases, additional manholes or inlets were added along side streets to provide a maintenance access manhole or collect runoff at low areas. In cases where the inlet was located outside the limits of field survey, LIDAR and GIS data were used to establish the manhole or inlet elevation.

2.9 PIPE AND CULVERT SIZE

Pipe sizes were selected to reduce the HGL slope. For the larger box culverts, constructability issues can become more challenging. Therefore, higher velocities were accepted to keep the culvert size smaller. However, the outlet velocity was kept below 6 fps to allow rubble rip-rap protection to function properly. Generally, the largest pipe used is a 48" before transitioning to 3' high box culverts. This provides more clearance above the conduit for utilities and provides more flow capacity. The Oleander St system required a larger box culvert (9'x5') due to heavy flow. Clearance will be at a minimum above the culvert.

2.10 PIPE CONDITION

The model assumes that pipes are free of obstructions and sediment which can adversely affect the performance of the pipe.

2.11 ATLANTIC BLVD PUMP STATION

The pump station located on the south side of Atlantic Blvd near 1ST St is proposed to be removed from service. Flows from the pump station were designed with a peak of 2.5 cfs. The areas contributing to the pump station currently produce about 20 cfs for the design condition. A proposed gravity storm sewer will replace the existing pump system as part of the Lemon St. outfall. The original pipe run east of the pump station is sloped toward the beach presumably as it originally discharged in that direction. The proposed system replaces the adverse sloped pipe and connects to the same manhole location as the existing force main. Proposed structure S-102E has an HGL clearance of 0.12 ft for the design storm and is the weakest link in the system. Larger storm events will back up on the ground surface.

3 CONCLUSIONS

3.1 MODEL RESULTS

The storm sewer tabulations for the existing systems show a very poor performance. The HGL clearance rises well above the inlet elevation at multiple locations in all six systems. Cases shown in the storm sewer tabulation where the HGL reaches unrealistic heights are an indication that the systems are undersized for the design flows. Some of the worst cases are a result of having pipes as small as 6" in diameter that get overwhelmed by the flow. The existing conditions result validates the flooding experienced by the community's residents.

The storm sewer tabulations for the proposed systems show a very good performance and an evident improvement to the existing systems. The main indication of that is that the HGL is kept below the structure top, per design criteria. This was accomplished by replacing many of the existing pipes with bigger pipes and setting positive pipe slopes that allow a proper flow throughout the system. To review the results, refer to APPENDIX B - STORM SEWER TABULATIONS and the column labeled HGL clearance (ft) on the storm sewer tabulations. The existing tabulation is followed by the proposed tabulation for easier comparison. To identify a particular drainage structure location refer to APPENDIX A - EXISTING AND PROPOSED DRAINAGE MAPS for the drainage maps and structure number.

3.2 COST ESTIMATE

A preliminary cost estimate for the storm sewer improvements was done for each of the six systems. These estimates include but are not limited to pay items such as pipe, manholes, inlets, pavement, sidewalk, utility coordination, final design and construction inspection. A 20% factor for unknowns is included. See Table 3 below for the estimated total cost for each system and the total for all systems combined. See APPENDIX C - PRELIMINARY COST ESTIMATES for the complete break down of these total costs.

Table 3 System Cost Estimates

Storm Sewer System	Total Cost
Lemon St.	$1,855,912
Walnut St.	$2,022,060
Pine St.	$1,269,086
Florida Blvd. (North)	$2,389,465
Florida Blvd. (South)	$990,540
Oleander St.	$5,294,398
Total Cost	$13,821,462

3.3 LIMITATIONS

The proposed storm sewer layouts are based on available information that does not include detailed existing utility information. It can be expected that significant utility relocations will be required to construct the storm sewer improvements. A large proportion of the affected utilities will be along SR A1A and 1st St.

The drainage map plans generated for this report are considered preliminary. For this preliminary design to be ready for construction, a more complete design is required that would include survey of roadways and utilities, utility coordination, outfall channel modeling and final plans and specifications.

Downstream channel modeling will be required to demonstrate that the project does not increase water surface elevations downstream of the discharge points. This will require updating the ICPR model to generate water surface profiles.

It is assumed that the Florida Blvd Culvert will need to be replaced to implement these storm sewer improvements.

The 3-year design storm event was used. Although this is a typical storm event used to design local drainage systems, it does not ensure that flooding will not occur due to larger storm events.

3.4 SUMMARY

The CONB hired Parsons to evaluate the existing systems and propose improvements to address the ongoing flooding concerns. According to the preliminary design shown on the storm sewer tabulations and drainage maps, the existing storm sewers are undersized and therefore inadequate to handle the design flow events. This preliminary design was prepared to show the benefits that could be derived from improved storm sewer systems and to garner support from FDOT and other agencies to address the flooding issues. Any improvements done along SR A1A will require FDOT's involvement through the drainage connection permit process. The proposed storm sewer systems are recommended for advancing to final design once project support has been arranged.

APPENDIX A

EXISTING AND PROPOSED DRAINAGE MAPS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
1

p001545D 12/2/2020 8:30:33 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD01.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
3

p001545D 12/2/2020 8:30:56 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD03.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
4

p001545D 12/2/2020 8:31:07 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD04.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
5

263

p001545D 12/2/2020 8:31:17 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD05.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
6

264

p001545D 12/2/2020 8:31:29 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD06.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

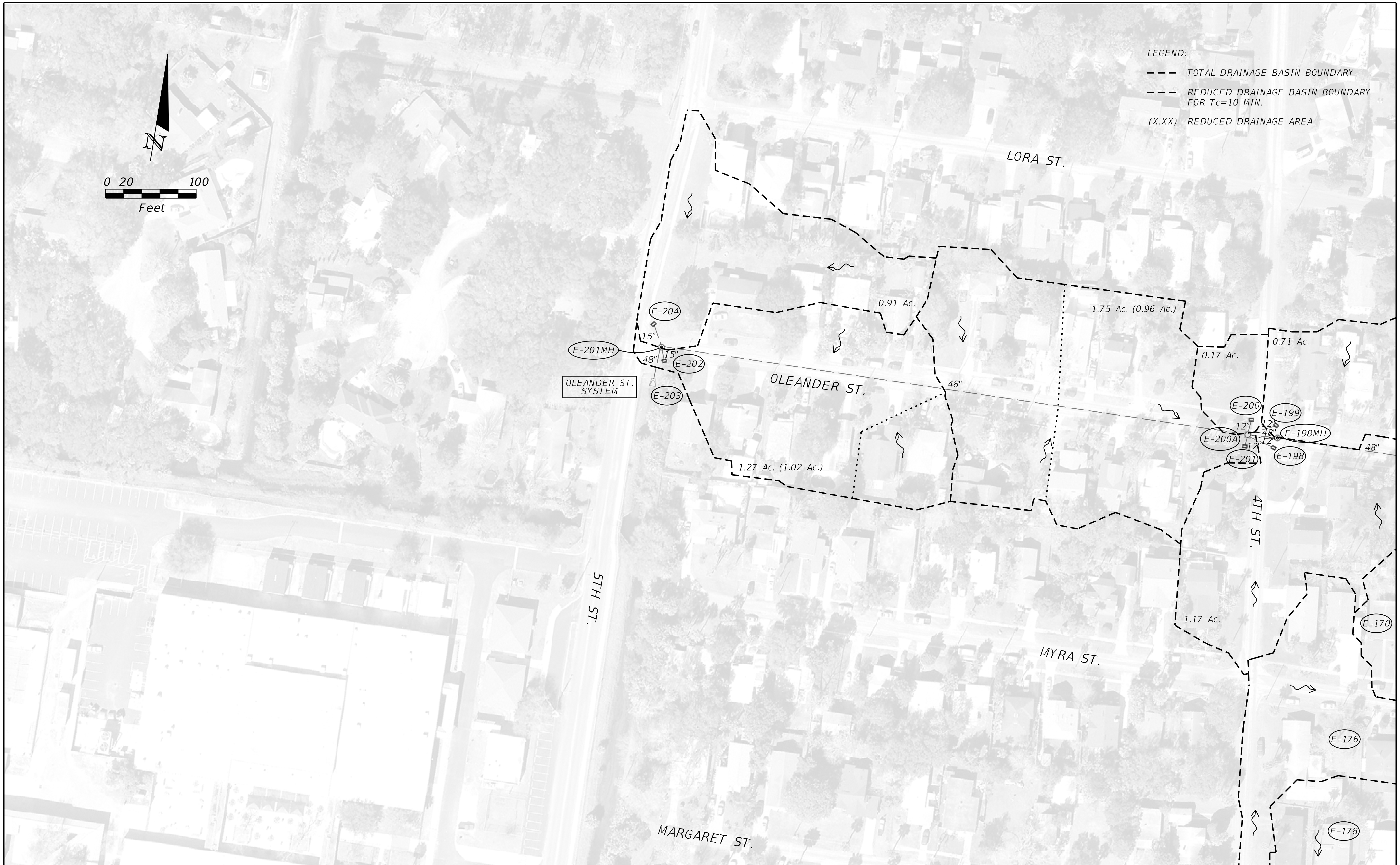
CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
265
7

p001545D 12/2/2020 8:31:40 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD07.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

EXISTING DRAINAGE MAP

SHEET NO.
266
8

p001545D 12/2/2020 8:31:51 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD08.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO.
1

p001545D 12/2/2020 8:32:02 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD01.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO. 2

p001545D 12/2/2020 8:32:11 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD02.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO.
3

p001545D 12/2/2020 8:32:20 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD03.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO.
270
4

p001545D 12/2/2020 8:32:28 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD04.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO.
5

p001545D 12/2/2020 8:32:37 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD05.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO. 6

p001545D 12/2/2020 8:32:45 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD06.dgn

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

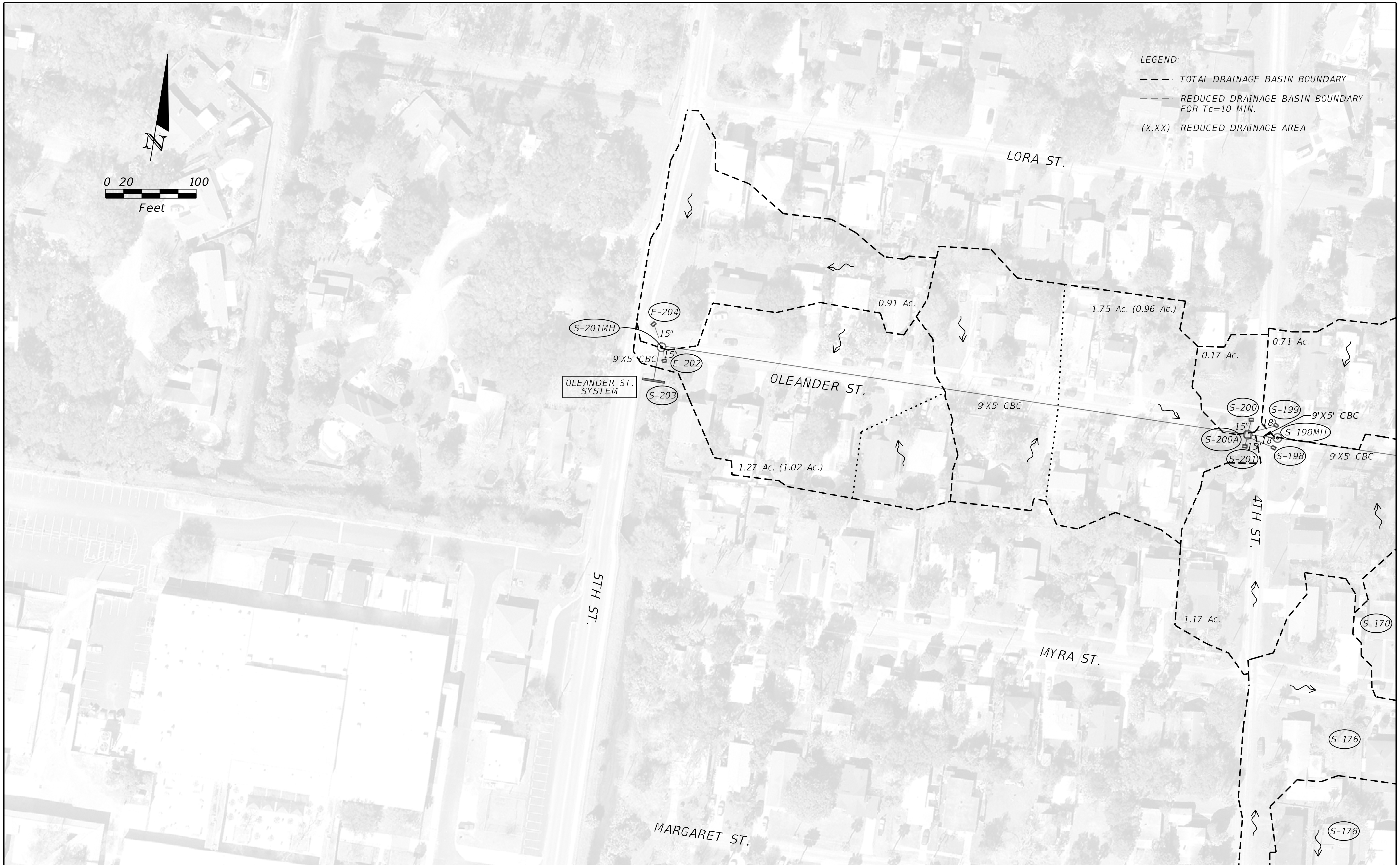
THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO.
273 7



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

THOMAS J GYOROG, P.E.
P.E. NO.: 46612
PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD. SUITE 200
JACKSONVILLE, FL. 32207
CERTIFICATE OF AUTHORIZATION: 1838

CITY OF NEPTUNE BEACH
DEPARTMENT OF PUBLIC WORKS

ROAD	COUNTY	FINANCIAL PROJECT ID
N/A	DUVAL	N/A

PROPOSED DRAINAGE MAP

SHEET NO. 8

274

p001545D 12/2/2020 8:33:02 AM P:\648931 CNB GEC\Task Orders\T06\roadway\DRMPRD08.dgn

APPENDIX B

STORM SEWER TABULATIONS

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 **County:** Duval **Network:** Lemon (Existing) **Sheet:** 1 of 2
Description: System 1 **Organization:** PARSONS **State Road:** A1A **Prepared by:** MM **Date:** 11/30/2020
Checked by: TJG **Date:**

NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 5.45

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-80			0.760	0.807	0.613										29.60	29.34	0.27			0.253%	3.09		
E-80MH	Type 1 CI	40.67	0.760	0.807	0.613	10.00	0.22	6.18	0.613	0.000	3.79	0.15	9.51	-20.09	4.94	4.93	0.01	1	15	0.02%	0.85	1.04	L-80: Upstream invert adjusted due to adverse slope
															3.69	3.68	0.01			0.19%			
E-81			0.760	0.719	0.546										29.47	29.34	0.13			8.189%	2.39		
E-80MH	Type 4 CI	25.15	0.760	0.719	0.546	14.00	0.18	5.38	0.546	0.000	2.94	0.09	9.90	-19.57	7.22	5.16	2.06	1	15	8.19%	16.37	20.08	L-81: Upstream invert adjusted due to adverse slope
															5.97	3.91	2.06			0.19%			
E-82			0.760	0.653	0.497										142.74	29.34	113.41			36.221%	36.92		
E-80MH	Type F DBI	230.50	0.760	11.010	8.368	15.70	0.10	5.12	8.368	0.000	45.31	16.80	9.28	-133.46	6.87	5.95	0.92	1	15	0.40%	3.62	4.44	
															5.62	4.70	0.92			0.19%			
E-83			0.760	1.382	1.050										155.49	142.74	12.75			10.598%	22.55		
E-82	Type F DBI	44.67	0.760	9.598	7.295	15.66	0.03	5.12	7.295	0.000	39.85	7.27	9.41	-146.08	6.15	6.05	0.10	1	18	0.22%	3.05	5.40	
															4.65	4.55	0.10			0.15%			
E-84			0.760	1.152	0.875										156.71	155.49	1.22			6.830%	6.88		
E-83	Type F DBI	24.54	0.760	1.152	0.875	10.00	0.06	6.18	0.875	0.000	5.41	0.74	9.54	-147.18	7.72	6.04	1.68	1	12	6.83%	12.88	10.11	
															6.72	5.04	1.68			0.26%			
E-89			0.760	1.336	1.015										176.78	155.49	21.29			6.092%	17.10		
E-83	Type F DBI	297.45	0.760	7.065	5.369	15.38	0.29	5.16	5.369	0.000	30.21	0.32	9.47	-167.32	6.80	6.06	0.74	1	18	0.25%	3.22	5.69	
															5.30	4.56	0.74			0.15%			
E-90			0.760	0.002	0.002										178.19	176.78	1.41			4.173%	14.15		
E-89	Type 9 CI	25.51	0.760	5.729	4.354	15.33	0.03	5.17	4.354	0.000	25.01	0.18	9.76	-168.43	7.49	6.94	0.55	1	18	2.16%	9.48	16.75	
															5.99	5.44	0.55			0.15%			
E-91			0.760	0.720	0.547										187.11	178.19	8.92			4.170%	14.15		
E-90	Type F DBI	19.86	0.760	5.726	4.352	15.33	0.02	5.17	4.352	0.000	25.00	7.96	9.40	-177.71	7.52	7.51	0.01	1	18	0.05%	1.45	2.56	L-91: Upstream invert adjusted due to adverse slope
															6.02	6.01	0.01			0.15%			
E-92			0.760	0.782	0.594										192.34	187.11	5.23			4.229%	12.62		
E-91	Type F DBI	102.97	0.760	3.925	2.983	15.20	0.14	5.19	2.983	0.000	15.48	0.19	9.55	-182.79	7.47	7.28	0.19	1	15	0.18%	2.46	3.01	
															6.22	6.03	0.19			0.19%			
E-93			0.760	1.672	1.271										196.35	192.34	4.01			2.743%	10.16		
E-92	Type F DBI	123.19	0.760	3.143	2.389	15.00	0.20	5.22	2.389	0.000	12.47	0.10	9.76	-186.59	8.27	7.50	0.77	1	15	0.63%	4.52	5.55	
															7.02	6.25	0.77			0.19%			
E-94			0.760	0.137	0.104										202.32	200.67	1.64			2.714%	8.71		
E-94MH	Type F DBI	50.10	0.760	1.471	1.118	10.25	0.10	6.12	1.118	0.000	6.84	0.07	10.21	-192.11	8.51	8.44	0.07	1	12	0.14%	1.84	1.45	
															7.51	7.44	0.07			0.26%			
E-95			0.760	0.524	0.399										205.83	202.32	3.52			2.261%	7.95		
E-94	Type F DBI	81.99	0.760	1.334	1.014	10.08	0.17	6.16	1.014	0.000	6.24	1.37	10.46	-195.38	8.65	8.39	0.25	1	12	0.31%	2.74	2.15	
															7.65	7.39	0.25			0.26%			
E-96			0.760	0.810	0.615										206.44	205.83	0.61			0.838%	4.84		
E-95	Type F DBI	25.17	0.760	0.810	0.615	10.00	0.09	6.18	0.615	0.000	3.80	0.36	9.27	-197.17	8.61	8.60	0.01	1	12	0.04%	0.98	0.77	L-96: Upstream invert adjusted due to adverse slope
															7.61	7.60	0.01			0.26%			
E-97			0.760	1.338	1.017										26.34	24.77	1.56			0.696%	5.12		
E-99	Type F DBI	143.64	0.760	1.338	1.017	10.00	0.47	6.18	1.017	0.000	6.28	0.41	9.64	-16.69	8.44	8.43	0.01	1	15	0.01%	0.43	0.52	L-97: Upstream invert adjusted due to adverse slope
															7.19	7.18	0.01			0.19%			
E-98			0.760	1.550	1.178										23.18	16.38	6.80			1.608%	8.78		
E-79	Type 4 CI	307.63	0.760	3.395	2.580	10.69	0.58	6.02	2.580	0.000	15.52	1.07	10.45	-12.73	4.95	4.25	0.70	1	18	0.23%	3.08	5.44	
															3.45	2.75	0.70			0.15%			
E-99			0.760	0.508	0.386										24.77	23.18	1.60			1.278%	6.93		
E-98	Type 4 CI	97.91	0.760	1.845	1.402	10.46	0.24	6.07	1.402	0.000	8.51	0.15	10.38	-14.39	4.94	4.75	0.19	1	15	0.20%	2.55	3.12	
															3.69	3.50	0.19			0.19%			
E-74A			0.760	1.640	1.246										9.78	9.69	0.10			3.994%	2.07		
E-74MH	Type F DBI	44.34	0.760	1.640	1.246	15.00	0.36	5.22	1.246	0.000	6.51	0.07	11.37	1.59	5.90	4.13	1.77	1	24	3.99%	15.63	49.10	
															3.90	2.13	1.77			0.10%			
E-74B			0.760	0.962	0.731										5.76	5.67	0.09			5.225%	2.16		
E-75MH	Type F DBI	13.58	0.760	0.962	0.731	15.00	0.10	5.22	0.731	0.000	3.81	0.07	9.54	3.78	4.44	3.73	0.71	1	18	5.23%	14.76	26.09	
															2.94	2.23	0.71			0.15%			
E-74MH					0.000										9.69	5.67	4.02			2.135%	14.23		
E-75MH	Type 8 MH	54.41			0.000	16.21	0.06	5.04	13.354	0.000	69.85	2.67	9.48	-0.21	4.61	3.90	0.71	1	30	1.30%	10.37	50.89	
															2.11	1.40	0.71			0.08%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | County: Duval | Network: Lemon (Existing) | Sheet: 1 of 2
Description: System 1 | Organization: PARSONS | State Road: A1A | Prepared by: MM | Date: 11/30/2020
Checked by: TJG | Date:

STRUCTURE NO. UPPER LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS ZONE: Zone 4 FREQUENCY (yrs): 3.00 Year MANNINGS n: 0.012 TAILWATER EL. (ft): 5.45
E-75MH E-74O	Type 8 MH	21.32			0.000 0.000	16.27	0.03	5.03	14.084	0.000	73.41	0.00	7.70	2.03	5.67 4.36 1.36	5.45 4.35 1.35	0.22 0.01 0.01	1	36	0.892% 0.05% 0.06%	10.39 2.22	15.69	
E-79 E-79A	Type 1 CI	12.25	0.760 0.760	1.440 3.395	1.094 2.580	11.25	0.02	5.89	2.580	0.000	15.20	0.07	9.64	-6.74	16.38 4.25 2.75	16.09 4.21 2.71	0.29 0.04 0.04	1	18	1.542% 0.34% 0.15%	8.60 3.78	6.68	
E-80MH E-79A	Type 8 MH	84.04			0.000 0.000	15.80	0.13	5.10	9.527	0.000	51.10	12.14	9.59	-19.74	29.34 5.38 2.88	16.09 5.20 2.70	13.25 0.18 0.18	1	30	1.143% 0.21% 0.08%	10.41 4.20	20.62	
E-79A E-74MH	Junction	221.98			0.000 0.000	15.93	0.28	5.08	12.107	0.000	64.03	1.79	9.64	-6.45	16.09 5.20 2.70	9.69 4.49 1.99	6.40 0.71 0.71	1	30	1.795% 0.32% 0.08%	13.04 5.13	25.20	
E-82A E-82	Type F DBI	170.21	0.760 0.760	0.758 0.758	0.576 0.576	10.00	0.63	6.18	0.576	0.000	3.56	0.32	11.37	-133.14	144.51 7.94 6.94	142.74 5.78 4.78	1.77 2.16 2.16	1	12	1.263% 1.27% 0.26%	4.53 5.55	4.36	
E-91A E-91	Type F DBI	108.85	0.760 0.760	1.081 1.081	0.822 0.822	10.00	0.29	6.18	0.822	2.500	7.57	0.59	9.65	-179.33	188.98 8.28 7.03	187.11 8.06 6.81	1.87 0.22 0.22	1	15	1.012% 0.20% 0.19%	6.17 2.57	3.15	
E-94MH E-93	Type 8 MH	88.14			0.000 0.000	10.25	0.17	6.12	1.118	0.000	6.84	1.56	10.51	-190.17	200.67 8.60 7.60	196.35 8.59 7.59	4.32 0.01 0.01	1	12	2.714% 0.01% 0.26%	8.71 0.52	0.41	L-94A: Upstream invert adjusted due to adverse slope

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 **County:** Duval **Network:** Lemon (Proposed) **Sheet:** 1 of 2
Description: System 1 **Organization:** PARSONS **State Road:** A1A **Prepared by:** MM **Date:** 11/30/2020
Checked by: TJG

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.45

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-79			0.760	1.444	1.097										6.16	6.00	0.16			0.845%	6.74		
S-79A	Type 1 CI	12.25	0.760	5.335	4.054	15.00	0.03	5.22	4.054	0.000	21.16	0.07	9.69	3.53	5.89	5.78	0.10	1	24	0.85%	7.21	22.64	
															3.89	3.78	0.10			0.10%			
S-80			0.760	0.807	0.613										6.34	6.22	0.12			0.174%	2.14		
S-80MH	Type 1 CI	40.67	0.760	0.807	0.613	10.00	0.32	6.18	0.613	0.000	3.79	0.07	9.51	3.17	5.25	5.18	0.07	1	18	0.17%	2.66	4.70	
															3.75	3.68	0.07			0.15%			
E-81			0.760	0.719	0.546										7.00	4.26	2.74			10.905%	10.45		
S-80MH	Type 4 CI	25.16	0.760	0.719	0.546	14.00	0.04	5.38	0.546	0.000	2.94	0.28	9.90	2.90	7.22	5.16	2.06	1	15	8.19%	16.36	20.08	L-81: Existing 15" RCP
															5.97	3.91	2.06			0.19%			
S-82			0.760	0.653	0.497										6.55	6.22	0.33			0.143%	4.69		
S-80MH	Type F DBI	230.51	0.760	15.983	12.147	17.67	0.82	4.85	12.147	0.000	58.91	0.00	9.28	2.73	6.15	5.80	0.35	1	48	0.15%	4.81	60.45	
															2.15	1.80	0.35			0.04%			
S-83			0.760	1.382	1.050										6.85	6.55	0.30			0.243%	5.60		
S-82	Type F DBI	44.67	0.760	14.571	11.074	17.55	0.13	4.86	11.074	0.000	53.87	0.19	9.41	2.56	5.75	5.65	0.11	1	42	0.24%	5.56	53.49	
															2.25	2.15	0.11			0.05%			
S-84			0.760	1.152	0.876										7.03	6.85	0.17			0.247%	2.84		
S-83	Type F DBI	24.54	0.760	1.152	0.876	12.00	0.14	5.74	0.876	0.000	5.02	0.13	9.54	2.51	6.60	6.54	0.06	1	18	0.25%	3.23	5.71	
															5.10	5.04	0.06			0.15%			
S-89			0.760	1.337	1.016										7.38	6.85	0.53			0.174%	4.74		
S-83	Type F DBI	297.45	0.760	12.037	9.148	16.63	1.05	4.98	9.148	0.000	45.61	0.01	9.47	2.08	6.29	5.75	0.54	1	42	0.18%	4.82	46.35	
															2.79	2.25	0.54			0.05%			
S-90			0.760	0.002	0.002										7.43	7.38	0.05			0.139%	4.23		
S-89	Type 9 CI	25.51	0.760	10.700	8.132	16.47	0.10	5.01	8.132	0.000	40.71	0.01	9.76	2.33	6.33	6.29	0.04	1	42	0.14%	4.27	41.06	
															2.83	2.79	0.04			0.05%			
S-91			0.760	0.720	0.547										7.69	7.43	0.26			0.139%	4.23		
S-90	Type F DBI	19.86	0.760	10.698	8.131	16.47	0.08	5.01	8.131	0.000	40.71	0.23	9.40	1.72	6.35	6.33	0.03	1	42	0.13%	4.11	39.54	
															2.85	2.83	0.03			0.05%			
S-92			0.760	0.783	0.595										8.04	7.69	0.35			0.346%	4.44		
S-91	Type F DBI	102.93	0.760	3.618	2.749	15.98	0.39	5.08	2.749	0.000	13.95	0.02	9.55	1.51	6.31	5.96	0.35	1	24	0.34%	4.56	14.33	
															4.31	3.96	0.35			0.10%			
S-93			0.760	1.672	1.271										8.29	8.04	0.26			0.237%	3.53		
S-92	Type F DBI	123.23	0.760	2.835	2.154	15.50	0.58	5.14	2.154	0.000	11.08	0.00	9.76	1.47	6.59	6.31	0.28	1	24	0.23%	3.75	11.78	
															4.59	4.31	0.28			0.10%			
S-94			0.760	0.137	0.104										8.70	8.58	0.12			0.235%	3.02		
S-94MH	Type F DBI	50.07	0.760	1.163	0.884	10.59	0.28	6.04	0.884	0.000	5.33	0.00	10.21	1.51	6.92	6.80	0.12	1	18	0.24%	3.16	5.59	
															5.42	5.30	0.12			0.15%			
S-95			0.760	0.524	0.398										8.94	8.70	0.24			0.204%	2.71		
S-94	Type F DBI	82.39	0.760	1.025	0.779	10.18	0.51	6.13	0.779	0.000	4.78	0.09	10.46	1.52	7.09	6.92	0.17	1	18	0.20%	2.89	5.11	
															5.59	5.42	0.17			0.15%			
S-96			0.760	0.501	0.381										8.98	8.94	0.04			0.142%	1.33		
S-95	Type F DBI	26.12	0.760	0.501	0.381	10.00	0.33	6.18	0.381	0.000	2.35	0.03	9.27	0.29	7.13	7.09	0.04	1	18	0.15%	2.49	4.41	
															5.63	5.59	0.04			0.15%			
S-97			0.760	1.303	0.991										8.97	8.07	0.90			0.597%	4.72		
S-99	Type F DBI	142.83	0.760	1.834	1.394	10.82	0.50	5.99	1.394	0.000	8.35	0.13	9.64	0.68	7.93	7.08	0.86	1	18	0.60%	5.00	8.84	
															6.43	5.58	0.86			0.15%			
S-98			0.760	1.549	1.177										7.83	6.16	1.67			0.479%	5.22		
S-79	Type 4 CI	307.63	0.760	3.891	2.957	13.00	0.98	5.55	2.957	0.000	16.41	0.29	10.45	2.62	7.36	5.89	1.48	1	24	0.48%	5.42	17.03	
															5.36	3.89	1.48			0.10%			
S-99			0.760	0.508	0.386										8.07	7.83	0.24			0.212%	3.34		
S-98	Type 4 CI	97.91	0.760	2.342	1.780	11.24	0.49	5.90	1.780	0.000	10.49	0.06	10.38	2.31	7.58	7.36	0.22	1	24	0.22%	3.67	11.52	
															5.58	5.36	0.22			0.10%			
E-74A			0.760	1.640	1.246										5.88	5.79	0.09			0.209%	2.01		
S-74MH	Type F DBI	44.38	0.760	1.640	1.246	16.00	0.37	5.07	1.246	0.000	6.32	0.06	11.37	5.49	5.90	4.13	1.77	1	24	3.99%	15.62	49.07	L-74A: Existing 24" RCP
															3.90	2.13	1.77			0.10%			
E-74B			0.760	1.492	1.134										5.89	5.68	0.21			5.232%	3.30		
S-75MH	Type F DBI	13.57	0.760	1.492	1.134	15.50	0.07	5.14	1.134	0.000	5.83	0.17	9.54	3.65	4.44	3.73	0.71	1	18	5.23%	14.77	26.10	L-74B: Existing 18" RCP
															2.94	2.23	0.71			0.15%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1

County: Duval
Organization: PARSONS

Network: Lemon (Proposed)
State Road: A1A

Sheet: 2 of 2
Prepared by: MM
Checked by: TJG
Date: 11/30/2020

NOTES AND REMARKS:
ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.45

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.): COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (INCREMENTAL / CUMULATIVE)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-74MH S-75MH	Type 8 MH	54.39	 	 	0.000 0.000	19.39	0.22	4.64	18.607	0.000	86.43	0.05	9.48	3.69	5.79 4.44 1.44	5.68 4.38 1.38	0.11 0.06 0.06	1	7x3 CBC	0.106% 0.11% 0.04%	4.12 4.25	89.34	
S-75MH S-74O	Type 8 MH	21.98	 	 	0.000 0.000	19.57	0.08	4.62	19.741	0.000	91.30	0.21	7.70	2.02	5.68 4.38 1.38	5.45 4.35 1.35	0.23 0.03 0.03	1	7x3 CBC	0.118% 0.12% 0.04%	4.35 4.44	93.31	
S-79A S-74MH	Junction	221.98	 	 	0.000 0.000	18.63	0.95	4.73	17.361	0.000	82.16	0.00	9.69	3.69	6.00 4.66 1.66	5.79 4.44 1.44	0.21 0.22 0.22	1	7x3 CBC	0.096% 0.10% 0.04%	3.91 4.06	85.19	
E-82A S-82	Type F DBI	170.21	0.760 0.760	0.758 0.758	0.576 0.576	10.00	0.63	6.18	0.576	0.000	3.56	0.32	11.37	2.95	8.42 7.94 6.94	6.55 5.78 4.78	1.87 2.16 2.16	1	12	1.263% 1.27% 0.26%	4.53 5.55	4.36	L-82A: Existing 12" RCP
S-80MH S-79A	Type 8 MH	84.06	 	 	0.000 0.000	18.39	0.28	4.76	13.306	0.000	63.36	0.08	9.59	3.37	6.22 5.80 1.80	6.00 5.66 1.66	0.22 0.14 0.14	1	48	0.165% 0.17% 0.04%	5.04 5.12	64.36	
S-91A S-91	Type F DBI	109.06	0.760 0.760	1.244 6.361	0.945 4.834	16.04	0.71	5.07	4.834	0.000	24.49	0.00	9.65	1.91	7.74 6.47 2.97	7.69 6.35 2.85	0.06 0.12 0.12	1	42	0.120% 0.11% 0.05%	2.55 3.77	36.25	
S-94MH S-93	Type 8 MH	88.14	 	 	0.000 0.000	10.59	0.49	6.04	0.884	0.000	5.33	0.10	10.51	1.92	8.58 6.80 5.30	8.29 6.59 5.09	0.29 0.21 0.21	1	18	0.235% 0.24% 0.15%	3.02 3.17	5.60	
S-97A S-97	Type F DBI	128.84	0.760 0.760	0.531 0.531	0.403 0.403	10.00	1.52	6.18	0.403	0.000	2.49	0.03	10.09	1.03	9.06 8.13 6.63	8.97 7.93 6.43	0.09 0.19 0.19	1	18	0.160% 0.15% 0.15%	1.41 2.50	4.42	
S-102A S-102MH	Type F DBI	98.62	0.760 0.760	0.768 0.768	0.584 0.584	10.00	0.81	6.18	0.584	0.000	3.61	0.06	9.49	1.35	8.14 5.76 4.26	7.97 5.61 4.11	0.16 0.15 0.15	1	18	0.141% 0.15% 0.15%	2.04 2.50	4.42	
S-102B S-102MH	Type F DBI	97.79	0.760 0.760	0.484 4.348	0.368 3.305	14.65	0.46	5.27	3.305	0.000	17.42	0.01	9.03	0.90	8.13 5.80 3.30	7.97 5.67 3.17	0.16 0.14 0.14	1	30	0.133% 0.14% 0.08%	3.55 3.40	16.68	
S-102C S-102B	Type F DBI	25.64	0.760 0.760	1.064 1.064	0.809 0.809	14.50	0.18	5.30	0.809	0.000	4.28	0.09	8.77	0.51	8.26 5.51 4.01	8.13 5.48 3.98	0.13 0.04 0.04	1	18	0.141% 0.15% 0.15%	2.42 2.50	4.42	
S-102D S-102B	Type F DBI	73.87	0.760 0.760	1.320 2.800	1.003 2.128	10.75	0.30	6.00	2.128	0.000	12.77	0.03	8.90	0.54	8.36 5.48 3.48	8.13 5.30 3.30	0.23 0.18 0.18	1	24	0.235% 0.24% 0.10%	4.06 3.83	12.03	
S-102E S-102D	Type F DBI	122.40	0.760 0.760	1.480 1.480	1.125 1.125	10.00	0.92	6.18	1.125	0.000	6.95	0.08	8.65	0.12	8.53 5.60 3.60	8.36 5.48 3.48	0.18 0.12 0.12	1	24	0.093% 0.10% 0.10%	2.21 2.47	7.76	
S-102MH S-91A	Type 8 MH	196.07	 	 	0.000 0.000	15.10	1.14	5.20	3.889	0.000	20.23	0.07	10.75	2.78	7.97 6.17 3.17	7.74 5.97 2.97	0.23 0.20 0.20	1	36	0.091% 0.10% 0.06%	2.86 3.24	22.91	

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | **County: Duval** | **Network: Walnut (Existing)** | **Sheet: 1 of 1**

Description: System 1 | **Organization: PARSONS** | **State Road: A1A** | **Prepared by: MM** | **Date: 11/30/2020**

Checked by: TJG | **Date:**

NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 5.44

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.) (INCREMENTAL / CUMULATIVE)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-101	Type F DBI	342.41	0.760	2.922	2.221	14.00	0.09	5.38	2.221	0.000	11.94	57.49	9.27	-1414.59	1423.85	44.66	1379.19	1	6	333.579%	60.82	0.03	L-101: Upstream invert adjusted due to adverse slope
E-105			0.760	2.922	2.221										7.47	7.46	0.01			0.00%	0.18		
															6.97	6.96	0.01			0.65%			
E-104	Type F DBI	23.21	0.760	0.861	0.654	10.00	0.12	6.18	0.654	0.000	4.04	0.17	9.65	-35.26	44.91	44.66	0.25	1	15	1.110%	3.29	7.38	
E-105			0.760	0.861	0.654										8.82	8.56	0.26			1.11%	6.02		
															7.57	7.31	0.26			0.19%			
E-105	Type F DBI	160.59	0.760	0.804	0.611	14.09	0.25	5.36	3.485	0.000	18.69	7.07	9.65	-35.01	44.66	33.26	11.40	1	18	2.332%	10.58	1.10	L-105: Upstream invert adjusted due to adverse slope
E-106			0.760	4.586	3.485										9.05	9.04	0.02			0.01%	0.62		
															7.55	7.54	0.01			0.15%			
E-106	Type 2 CI	93.63	0.760	0.546	0.415	14.34	0.13	5.32	3.900	0.000	20.76	0.19	10.77	-22.49	33.26	29.95	3.30	1	18	2.876%	11.75	7.36	
E-107			0.760	5.132	3.900										9.04	8.65	0.39			0.42%	4.17		
															7.54	7.15	0.39			0.15%			
E-107	Type 1 CI	302.52	0.760	0.560	0.425	14.47	0.38	5.30	3.900	0.000	23.31	3.58	11.08	-18.88	29.95	13.68	16.27	1	18	3.625%	13.19	5.21	
E-108MH			0.760	5.132	3.900										8.42	7.79	0.63			0.21%	2.95		
															6.92	6.29	0.63			0.15%			
E-108MH	Type 8 MH	235.02			0.000	39.70	0.31	3.19	18.536	0.000	61.83	2.94	11.36	-2.32	13.68	6.19	7.49	1	30	1.673%	12.60	39.32	
E-109A					0.000										6.53	4.70	1.83			0.78%	8.01		
															4.03	2.20	1.83			0.08%			
E-114MH	Type 8 MH	14.89			0.000	10.00	0.17	6.18	0.286	0.000	1.77	0.01	11.53	-2.95	14.48	14.46	0.02	1	15	15.575%	1.44	27.70	
E-109MH					0.000										9.07	6.75	2.32			15.58%	22.57		
															7.82	5.50	2.32			0.19%			
E-110	Type 9 CI	250.52	0.760	3.400	2.584	39.39	0.22	3.21	14.108	0.000	45.27	5.17	10.50	-26.55	37.05	14.46	22.59	1	21	6.010%	18.82	8.83	
E-109MH			0.760	18.563	14.108										7.41	6.75	0.66			0.26%	3.67		
															5.66	5.00	0.66			0.12%			
E-111	Type 9 CI	23.19	0.760	0.770	0.585	10.00	0.08	6.18	0.585	0.000	3.61	0.33	10.49	-27.09	37.58	37.05	0.53	1	12	7.893%	4.60	10.87	
E-110			0.760	0.770	0.585										9.11	7.28	1.83			7.89%	13.84		
															8.11	6.28	1.83			0.26%			
E-112	Type 9 CI	22.93	0.760	1.387	1.054	15.00	0.05	5.22	1.054	0.000	5.50	0.76	9.09	-43.93	53.02	51.80	1.23	1	12	1.756%	7.00	2.57	
E-113			0.760	1.387	1.054										7.79	7.69	0.10			0.44%	3.27		
															6.79	6.69	0.10			0.26%			
E-113	Type 9 CI	348.71	0.760	5.160	3.922	39.00	0.40	3.23	10.939	0.000	35.30	0.00	9.23	-42.56	51.80	37.05	14.75	1	21	3.655%	14.68	7.32	
E-110			0.760	14.393	10.939										7.95	7.32	0.63			0.18%	3.04		
															6.20	5.57	0.63			0.12%			
E-114	Type 9 CI	58.25	0.760	4.036	3.067	29.00	0.03	3.80	5.963	0.000	22.66	18.27	9.29	-80.86	90.14	51.80	38.35	1	12	29.790%	28.85	1.46	
E-113			0.760	7.846	5.963										8.27	8.18	0.08			0.14%	1.86		
															7.27	7.18	0.08			0.26%			
E-115	Type 9 CI	22.62	0.760	3.810	2.896	23.00	0.02	4.28	2.896	0.000	12.39	3.87	9.20	-87.14	96.34	90.14	6.19	1	12	8.901%	15.77	2.17	
E-114			0.760	3.810	2.896										8.27	8.20	0.07			0.31%	2.76		
															7.27	7.20	0.07			0.26%			
E-108	Type 1 CI	48.46	0.760	0.318	0.241	10.00	0.96	6.18	0.241	0.000	1.49	0.01	11.76	-1.94	13.70	13.68	0.02	1	18	0.567%	0.84	8.52	
E-108MH			0.760	0.318	0.241										9.96	9.69	0.27			0.56%	4.82		
															8.46	8.19	0.27			0.15%			
E-109	Type 1 CI	12.98	0.760	0.376	0.286	10.00	0.15	6.18	0.286	0.000	1.77	0.03	11.84	-2.68	14.52	14.48	0.04	1	15	1.082%	1.44	7.28	
E-114MH			0.760	0.376	0.286										9.34	9.20	0.14			1.08%	5.93		
															8.09	7.95	0.14			0.19%			
E-109A	Type F DBI	31.36	0.760	0.654	0.497	40.01	0.04	3.18	18.536	0.000	61.57	0.15	10.61	4.42	6.19	5.44	0.75	1	30	1.659%	12.54	32.81	
E-108A			0.760	24.389	18.536										4.68	4.51	0.17			0.54%	6.68		
															2.18	2.01	0.17			0.08%			
E-109MH	Type 8 MH	72.69			0.000	39.60	0.13	3.20	14.394	0.000	46.04	0.00	11.53	-2.93	14.46	13.68	0.78	1	30	1.362%	9.38	51.95	
E-108MH					0.000										7.50	6.51	0.99			1.36%	10.58		
															5.00	4.01	0.99			0.08%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | County: Duval | Network: Walnut (Proposed) | Sheet: 1 of 2
Description: System 1 | Organization: PARSONS | State Road: A1A | Prepared by: MM | Date: 12/01/2020
Checked by: TJG | Date:

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.44

STRUCTURE NO. (UPPER / LOWER)	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) (RISE / SPAN)	SLOPE (%) (HYD. GRAD. / PHYSICAL / MIN. PHYSICAL)	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-100	Type 9 CI	31.21	0.760	0.881	0.670	14.00	0.26	5.38	0.670	0.000	3.60	0.06	9.68	0.65	9.03	8.94	0.10	1	18	0.205%	2.04	5.09	
S-101MH			0.760	0.881	0.670										6.32	6.26	0.06			0.20%	2.88		
															4.82	4.76	0.06			0.15%			
S-101	Type F DBI	341.28	0.760	1.000	0.760	14.49	1.52	5.30	3.475	0.000	18.41	0.01	9.27	0.50	8.77	8.17	0.59	1	30	0.148%	3.75	15.44	
S-105			0.760	4.573	3.475										6.52	6.11	0.41			0.12%	3.15		
															4.02	3.61	0.41			0.08%			
S-103	Type F DBI	141.92	0.760	0.517	0.393	10.00	1.20	6.18	0.393	0.000	2.43	0.06	9.76	0.95	8.81	8.58	0.23	1	15	0.189%	1.98	3.06	
S-104MH			0.760	0.517	0.393										6.56	6.29	0.27			0.19%	2.49		
															5.31	5.04	0.27			0.19%			
S-104	Type F DBI	22.85	0.760	0.728	0.554	11.36	0.11	5.87	1.072	0.000	6.29	0.13	9.65	1.27	8.38	8.17	0.20	1	18	0.354%	3.56	6.79	
S-105			0.760	1.411	1.072										6.14	6.06	0.08			0.35%	3.84		
															4.64	4.56	0.08			0.15%			
S-105	Type F DBI	160.61	0.760	0.691	0.526	15.97	0.51	5.08	5.073	0.000	25.76	0.27	9.65	1.48	8.17	7.37	0.81	1	30	0.290%	5.25	23.16	
S-106			0.760	6.675	5.073										6.11	5.67	0.43			0.27%	4.72		
															3.61	3.17	0.43			0.08%			
S-106	Type 2 CI	93.63	0.760	0.546	0.415	16.46	0.28	5.01	5.488	0.000	27.48	0.08	10.77	3.40	7.37	6.92	0.44	1	30	0.331%	5.60	25.22	
S-107			0.760	7.221	5.488										5.67	5.37	0.30			0.32%	5.14		
															3.17	2.87	0.30			0.08%			
S-107	Type 1 CI	302.52	0.760	0.560	0.425	16.74	1.21	4.97	5.913	0.000	29.39	0.20	11.07	4.15	6.92	6.23	0.70	1	36	0.143%	4.16	27.11	
S-108MH			0.760	7.781	5.913										5.87	5.45	0.42			0.14%	3.84		
															2.87	2.45	0.42			0.06%			
E-108	Type 1 CI	48.46	0.760	0.318	0.241	10.00	0.23	6.18	0.241	0.000	1.49	0.16	11.76	2.68	9.08	8.62	0.46	1	18	0.946%	3.57	8.42	L-108: Existing 18" RCP
S-108MH			0.760	0.318	0.241										9.96	9.69	0.26			0.54%	4.77		
															8.46	8.19	0.26			0.15%			
E-109	Type 1 CI	12.21	0.760	0.376	0.286	10.00	0.04	6.18	0.286	0.000	1.77	0.20	11.84	2.99	8.85	8.39	0.46	1	15	3.764%	4.64	7.49	L-109: Existing 15" RCP
S-114MH			0.760	0.376	0.286										9.34	9.20	0.14			1.14%	6.10		
															8.09	7.95	0.14			0.19%			
S-110	Type 9 CI	250.33	0.760	0.855	0.650	23.67	0.97	4.22	12.371	0.000	52.18	0.15	10.41	3.73	6.68	6.29	0.39	1	48	0.155%	4.29	54.02	
S-109MH			0.760	16.278	12.371										6.87	6.57	0.30			0.12%	4.30		
															2.87	2.57	0.30			0.04%			
S-111	Type 9 CI	23.02	0.760	0.235	0.179	10.70	0.11	6.01	1.049	0.000	6.30	0.15	10.34	3.44	6.90	6.68	0.22	1	18	0.341%	3.57	6.68	
S-110			0.760	1.380	1.049										6.50	6.42	0.08			0.34%	3.78		
															5.00	4.92	0.08			0.15%			
E-112	Type 9 CI	22.93	0.760	0.882	0.670	10.00	0.07	6.18	0.670	0.000	4.14	0.43	9.05	0.49	8.56	7.59	0.97	1	12	4.213%	5.56	2.57	L-112: Existing 12" RCP
S-113			0.760	0.882	0.670										7.79	7.69	0.10			0.44%	3.27		
															6.79	6.69	0.10			0.26%			
S-113	Type 9 CI	349.02	0.760	1.707	1.297	20.21	1.36	4.55	4.626	0.000	21.07	0.13	9.12	1.53	7.59	6.68	0.91	1	30	0.240%	4.29	21.83	
S-110			0.760	6.087	4.626										6.80	5.96	0.84			0.24%	4.45		
															4.30	3.46	0.84			0.08%			
S-114	Type 9 CI	58.25	0.760	2.075	1.577	20.00	0.25	4.58	2.658	0.000	12.17	0.17	9.20	1.29	7.90	7.59	0.31	1	24	0.263%	3.87	12.53	
S-113			0.760	3.498	2.658										6.45	6.30	0.15			0.26%	3.99		
															4.45	4.30	0.15			0.10%			
S-115	Type 9 CI	22.62	0.760	1.423	1.081	16.00	0.12	5.07	1.081	0.000	5.49	0.15	9.03	0.93	8.11	7.90	0.20	1	18	0.269%	3.10	5.82	
S-114			0.760	1.423	1.081										6.01	5.95	0.06			0.26%	3.29		
															4.51	4.45	0.06			0.15%			
S-100A	Type 9 CI	30.49	0.760	1.510	1.148	10.00	0.13	6.18	1.148	0.000	7.09	0.25	9.74	0.19	9.55	9.18	0.37	1	18	0.335%	4.01	4.43	
S-101A			0.760	1.510	1.148										6.36	6.31	0.05			0.15%	2.51		
															4.86	4.81	0.05			0.15%			
S-101A	Type 9 CI	40.18	0.760	1.000	0.760	10.12	0.18	6.15	1.908	0.000	11.73	0.15	9.65	0.47	9.18	8.94	0.24	1	24	0.198%	3.73	8.84	
S-101MH			0.760	2.510	1.908										6.31	6.26	0.05			0.13%	2.81		
															4.31	4.26	0.05			0.10%			
S-101B	Type F DBI	101.29	0.760	0.182	0.138	10.00	2.43	6.18	0.138	0.000	0.85	0.01	9.23	0.27	8.96	8.94	0.02	1	15	0.180%	0.70	3.05	
S-101MH			0.760	0.182	0.138										6.45	6.26	0.19			0.19%	2.49		
															5.20	5.01	0.19			0.19%			
S-101MH	Type 8 MH	94.30			0.000	14.16	0.53	5.35	2.715	0.000	14.53	0.07	9.89	0.95	8.94	8.77	0.17	1	30	0.254%	2.96	22.71	
S-101					0.000										6.76	6.52	0.24			0.26%	4.63		
															4.26	4.02	0.24			0.08%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1

County: Duval
Organization: PARSONS

Network: Walnut (Proposed)
State Road: A1A

Sheet: 2 of 2
Prepared by: MM **Date:** 12/01/2020
Checked by: TJG **Date:**

NOTES AND REMARKS
ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.44

STRUCTURE NO. (UPPER / LOWER)	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-104A			0.760	0.166	0.126										8.60	8.58	0.02			0.189%	0.63		
S-104MH	Type F DBI	113.40	0.760	0.166	0.126	10.00	2.98	6.18	0.126	0.000	0.78	0.01	10.07	1.47	6.51	6.29	0.22	1	15	0.19%	2.49	3.06	
															5.26	5.04	0.22			0.19%			
S-104MH					0.000										8.58	8.38	0.20			0.195%	2.52		
S-104	Type 8 MH	76.76			0.000	10.91	0.51	5.97	0.519	0.000	3.09	0.05	10.09	1.51	6.29	6.14	0.15	1	15	0.20%	2.56	3.14	
															5.04	4.89	0.15			0.19%			
S-105A			0.760	0.640	0.486										7.23	6.90	0.33			0.213%	2.45		
S-111	Type F DBI	125.59	0.760	0.640	0.486	10.00	0.86	6.18	0.486	0.000	3.00	0.09	10.22	2.99	6.77	6.50	0.28	1	15	0.22%	2.68	3.29	
															5.52	5.25	0.28			0.19%			
S-108MH					0.000										6.23	5.53	0.70			0.185%	5.16		
S-109A	Type 8 MH	235.02			0.000	24.83	0.76	4.12	18.812	0.000	77.46	0.26	11.36	5.14	5.50	5.08	0.42	1	5x3 CBC	0.18%	5.05	75.69	
															2.50	2.08	0.42			0.04%			
S-109MH					0.000										6.29	6.23	0.06			0.094%	3.49		
S-108MH	Type 8 MH	72.86			0.000	24.55	0.35	4.14	12.657	0.000	52.42	0.00	11.70	5.41	5.57	5.50	0.07	1	5x3 CBC	0.10%	3.76	56.47	
															2.57	2.50	0.07			0.04%			
S-109A			0.760	0.654	0.497										5.53	5.44	0.09			0.172%	5.23		
S-108A	Type F DBI	31.36	0.760	25.407	19.310	25.46	0.10	4.06	19.310	0.000	78.50	0.02	10.61	5.09	5.08	5.02	0.06	1	5x3 CBC	0.18%	5.05	75.69	
															2.08	2.02	0.06			0.04%			
S-110A			0.760	0.554	0.421										7.18	7.12	0.07			0.146%	1.47		
S-110MH	Type F DBI	60.14	0.760	0.554	0.421	10.00	0.68	6.18	0.421	0.000	2.60	0.03	10.32	3.13	5.84	5.75	0.09	1	18	0.15%	2.50	4.41	
															4.34	4.25	0.09			0.15%			
S-110B			0.760	1.708	1.298										7.73	7.12	0.61			0.393%	3.83		
S-110MH	Type 9 CI	108.05	0.760	1.708	1.298	15.00	0.47	5.22	1.298	0.000	6.77	0.23	10.59	2.86	6.68	6.25	0.43	1	18	0.40%	4.08	7.21	
															5.18	4.75	0.43			0.15%			
S-110C			0.760	1.359	1.033										8.39	7.70	0.70			0.226%	3.59		
S-111A	Type F DBI	321.91	0.760	3.320	2.523	21.00	1.49	4.47	2.523	0.000	11.28	0.01	9.28	0.89	6.17	5.43	0.74	1	24	0.23%	3.75	11.78	
															4.17	3.43	0.74			0.10%			
S-110D			0.760	1.961	1.490										8.51	8.39	0.11			0.104%	2.34		
S-110C	Type F DBI	29.78	0.760	1.961	1.490	17.00	0.21	4.94	1.490	0.000	7.36	0.09	9.47	0.96	6.20	6.17	0.03	1	24	0.10%	2.48	7.80	
															4.20	4.17	0.03			0.10%			
S-110MH					0.000										7.12	6.98	0.14			0.141%	3.56		
S-112A	Type 8 MH	42.63			0.000	22.53	0.20	4.32	5.828	0.000	25.19	0.09	10.48	3.36	6.25	6.19	0.06	1	36	0.14%	3.84	27.11	
															3.25	3.19	0.06			0.06%			
S-111A			0.760	1.218	0.926										7.70	7.34	0.36			0.399%	4.77		
S-111B	Type 9 CI	26.69	0.760	4.538	3.449	22.27	0.09	4.35	3.449	0.000	14.99	0.26	9.97	2.27	5.43	5.32	0.11	1	24	0.40%	4.95	15.56	
															3.43	3.32	0.11			0.10%			
S-111B			0.760	0.868	0.660										7.34	7.12	0.22			0.160%	3.63		
S-110MH	Type 9 CI	44.38	0.760	5.406	4.109	22.35	0.20	4.34	4.109	0.000	17.83	0.15	9.86	2.52	5.82	5.75	0.08	1	30	0.17%	3.74	18.37	
															3.32	3.25	0.08			0.08%			
S-111C			0.760	0.505	0.384										7.00	6.90	0.10			0.204%	1.93		
S-111	Type 9 CI	35.04	0.760	0.505	0.384	10.00	0.30	6.18	0.384	0.000	2.37	0.06	10.40	3.40	6.57	6.50	0.07	1	15	0.20%	2.56	3.14	
															5.32	5.25	0.07			0.19%			
S-112A			0.760	0.288	0.219										6.98	6.74	0.24			0.139%	3.68		
S-113MH	Type F DBI	172.55	0.760	7.957	6.047	22.69	0.78	4.31	6.047	0.000	26.04	0.01	10.33	3.35	6.19	5.95	0.24	1	36	0.14%	3.84	27.13	
															3.19	2.95	0.24			0.06%			
S-113MH					0.000										6.74	6.68	0.06			0.102%	2.71		
S-110	Type 8 MH	74.28			0.000	22.69	0.46	4.31	6.047	0.000	26.04	0.02	10.47	3.73	6.45	6.37	0.07	1	42	0.10%	3.59	34.50	
															2.95	2.87	0.07			0.05%			
S-114MH					0.000										8.58	8.45	0.13			0.840%	3.59		
S-109MH	Type 8 MH	15.94			0.000	10.00	0.07	6.18	0.286	0.000	1.77	0.02	11.53	2.95	9.20	9.17	0.03	1	15	0.20%	2.56	3.14	
															7.95	7.92	0.03			0.19%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 **County:** Duval **Network:** Pine (Existing) **Sheet:** 1 of 1
Description: System 1 **Organization:** PARSONS **State Road:** A1A **Prepared by:** MM **Date:** 11/30/2020
Checked by: TJG **Date:**

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 5.40
E-116	Type 1 CI	93.72	0.760	0.420	0.320	12.00	1.05	5.74	0.320	0.000	1.83	0.03	12.09	0.05	12.04	11.94	0.10	1	15	0.277%	1.49	3.70	
E-118MH			0.760	0.420	0.320										9.74	9.48	0.26			0.28%	3.01		
															8.49	8.23	0.26			0.19%			
E-117	Type 4 CI	31.37	0.760	0.689	0.524	12.00	0.21	5.74	0.524	0.000	3.01	0.09	12.14	0.05	12.09	11.94	0.15	1	15	0.955%	2.45	6.86	
E-118MH			0.760	0.689	0.524										9.85	9.55	0.30			0.96%	5.59		
															8.60	8.30	0.30			0.19%			
E-118MH	Type 8 MH	314.66			0.000	12.52	1.95	5.64	0.843	0.000	4.75	0.68	11.85	-0.08	11.94	10.70	1.23	1	18	0.221%	2.69	5.42	
E-119					0.000										9.49	8.78	0.71			0.23%	3.07		
															7.99	7.28	0.71			0.15%			
E-119	Type F DBI	313.52	0.760	0.494	0.375	14.05	1.01	5.37	1.702	0.000	9.14	0.97	10.62	-0.08	10.70	7.71	2.99	1	18	0.557%	5.17	7.31	
E-121			0.760	2.240	1.702										8.83	7.54	1.29			0.41%	4.14		
															7.33	6.04	1.29			0.15%			
E-120	Type 1 CI	95.58	0.760	0.637	0.484	10.00	0.65	6.18	0.484	0.000	2.99	0.09	11.49	0.52	10.97	10.70	0.27	1	15	0.373%	2.44	4.31	
E-119			0.760	0.637	0.484										9.04	8.68	0.36			0.38%	3.52		
															7.79	7.43	0.36			0.19%			
E-121A	Type F DBI	201.29	0.760	0.044	0.033	37.83	0.88	3.28	14.548	0.000	47.78	0.18	8.51	2.71	5.80	5.43	0.37	1	48	0.081%	3.80	37.13	
E-122			0.760	19.142	14.548										4.94	4.83	0.11			0.06%	2.95		
															0.94	0.83	0.11			0.04%			
E-122	Type F DBI	19.51	0.760	0.232	0.176	37.83	0.08	3.28	14.724	0.000	48.36	0.01	6.92	1.48	5.43	5.40	0.03	1	48	0.083%	3.85	41.79	L-122: Upstream invert adjusted due to adverse slope
E-122A			0.760	19.374	14.724										4.83	4.82	0.01			0.07%	3.33		
															0.83	0.82	0.01			0.04%			
E-123MH	Type 8 MH	85.59			0.000	37.63	0.17	3.29	12.549	0.000	41.33	0.00	10.63	2.18	8.45	7.71	0.74	1	30	0.748%	8.42	32.31	
E-121					0.000										5.58	5.13	0.45			0.53%	6.58		
															3.08	2.63	0.45			0.08%			
E-124	Type 1 CI	18.11	0.760	0.767	0.583	10.00	0.10	6.18	0.583	0.000	3.60	0.13	10.86	2.23	8.63	8.45	0.18	1	15	1.879%	2.93	9.61	
E-123MH			0.760	0.767	0.583										8.46	8.12	0.34			1.88%	7.83		
															7.21	6.87	0.34			0.19%			
E-125	Type 9 CI	589.11	0.760	6.552	4.980	37.00	0.65	3.32	11.966	0.000	39.80	4.98	8.48	-29.91	38.39	8.45	29.93	1	22	3.660%	15.13	9.38	
E-123MH			0.760	15.745	11.966										7.17	5.79	1.38			0.23%	3.57		
															5.34	3.96	1.38			0.11%			
E-126	Type 9 CI	23.53	0.760	2.514	1.911	18.00	0.03	4.81	1.911	0.000	9.19	2.13	8.45	-33.39	41.84	38.39	3.46	1	12	4.896%	11.70	3.60	
E-125			0.760	2.514	1.911										6.72	6.52	0.20			0.87%	4.59		
															5.72	5.52	0.20			0.26%			
E-127	Type 9 CI	22.76	0.760	2.209	1.679	20.00	0.04	4.58	1.679	0.000	7.68	1.49	8.38	-60.95	69.33	66.94	2.39	1	12	3.426%	9.78	0.85	L-127: Upstream invert adjusted due to adverse slope
E-128			0.760	2.209	1.679										7.34	7.33	0.01			0.05%	1.08		
															6.34	6.33	0.01			0.26%			
E-128	Type 9 CI	57.97	0.760	4.470	3.397	29.00	0.04	3.80	5.076	0.000	19.29	14.07	8.46	-58.48	66.94	38.39	28.55	1	12	21.587%	24.56	2.65	
E-125			0.760	6.679	5.076										7.31	7.04	0.27			0.47%	3.37		
															6.31	6.04	0.27			0.26%			
E-121	Type 4 CI	16.41	0.760	0.346	0.263	37.80	0.03	3.28	14.514	0.000	47.69	1.72	10.63	2.91	7.71	5.80	1.91	1	30	0.995%	9.72	11.48	L-121: Upstream invert adjusted due to adverse slope
E-121A			0.760	19.098	14.514										5.14	5.13	0.01			0.07%	2.34		
															2.64	2.63	0.01			0.08%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 **County:** Duval **Network:** Pine (Proposed) **Sheet:** 1 of 2

Description: System 1 **Organization:** PARSONS **State Road:** A1A **Prepared by:** MM **Date:** 11/30/2020

Checked by: TJG **Date:**

NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 5.40

STRUCTURE NO. UPPER	STRUCTURE NO. LOWER	TYPE OF STRUCTURE	LENGTH (ft)	INCREMENTAL COMPOSITE C VALUE	INCREMENTAL AREA	INCREMENTAL SUB-TOTAL (C*A)	CUMULATIVE COMPOSITE C VALUE	CUMULATIVE AREA	CUMULATIVE SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT UPPER END ELEVATION (ft)	HYDRAULIC GRADIENT LOWER END ELEVATION (ft)	HYDRAULIC GRADIENT FALL (ft)	CROWN UPPER END ELEVATION (ft)	CROWN LOWER END ELEVATION (ft)	CROWN FALL (ft)	FLOWLINE UPPER END ELEVATION (ft)	FLOWLINE LOWER END ELEVATION (ft)	FLOWLINE FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD.	SLOPE (%) PHYSICAL	SLOPE (%) MIN. PHYSICAL	ACTUAL VELOCITY (fps)	PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-116	E-118MH	Type 1 CI	93.72	0.760	0.420	0.320	0.760	0.420	0.320	12.00	1.05	5.74	0.320	0.000	1.83	0.03	12.09	1.69	10.40	10.30	0.10	9.74	9.48	0.25	8.49	8.23	0.25	1	15	0.277%	0.27%	0.19%	1.49	2.98	3.65	L-116: Existing 15" RCP
E-117	E-118MH	Type 4 CI	31.37	0.760	0.689	0.524	0.760	0.689	0.524	12.00	0.21	5.74	0.524	0.000	3.01	0.09	12.14	1.69	10.45	10.30	0.15	9.85	9.55	0.30	8.60	8.30	0.30	1	15	0.942%	0.94%	0.19%	2.45	5.55	6.82	L-117: Existing 15" RCP
E-118MH	E-119	Type 8 MH	314.69			0.000			0.000	12.52	1.95	5.64	0.843	0.000	4.75	0.05	11.85	1.55	10.30	9.70	0.60	9.49	8.78	0.71	7.99	7.28	0.71	1	18	0.221%	0.23%	0.15%	2.69	3.08	5.44	L-118: Existing 15" RCP
E-119	S-121	Type F DBI	313.44	0.760	0.494	0.376	0.760	2.240	1.703	14.05	0.84	5.37	1.703	0.000	9.14	0.35	10.62	0.92	9.70	7.21	2.49	8.83	7.54	1.29	7.33	6.04	1.29	1	18	0.794%	0.41%	0.15%	6.18	4.14	7.32	L-119: Existing 15" RCP
E-120	E-119	Type 1 CI	92.22	0.760	0.637	0.484	0.760	0.637	0.484	10.00	0.63	6.18	0.484	0.000	2.99	0.09	11.49	1.53	9.96	9.70	0.26	9.04	8.68	0.36	7.79	7.43	0.36	1	15	0.387%	0.39%	0.19%	2.44	3.57	4.38	L-120: Existing 15" RCP
S-121A	E-122	Type F DBI	201.64	0.760	0.044	0.033	0.760	18.481	14.046	24.90	0.87	4.11	14.046	0.000	57.75	0.01	8.51	2.86	5.65	5.42	0.23	4.04	3.84	0.20	1.04	0.84	0.20	1	5x3 CBC	0.093%	0.10%	0.04%	3.85	3.76	56.47	
E-122	S-122A	Type F DBI	19.14	0.760	0.232	0.176	0.760	18.713	14.222	24.90	0.08	4.11	14.222	0.000	58.48	0.00	6.92	1.49	5.42	5.40	0.02	3.84	3.82	0.02	0.84	0.82	0.02	1	5x3 CBC	0.096%	0.10%	0.04%	3.90	3.76	56.42	
S-123MH	S-121	Type 8 MH	85.69			0.000			0.000	24.59	0.28	4.14	12.047	0.000	49.84	0.07	10.63	4.71	5.92	5.67	0.25	4.73	4.55	0.18	1.23	1.05	0.18	1	42	0.208%	0.21%	0.05%	5.18	5.21	50.08	
E-124	S-123MH	Type 1 CI	17.89	0.760	0.767	0.583	0.760	0.767	0.583	10.00	0.05	6.18	0.583	0.000	3.60	0.32	10.86	2.47	8.39	7.45	0.94	8.46	8.12	0.34	7.21	6.87	0.34	1	15	5.240%	1.90%	0.19%	6.48	7.87	9.66	L-124: Existing 15" RCP
S-125	S-116C	Type 9 CI	299.23	0.760	0.610	0.464	0.760	14.291	10.861	22.84	1.03	4.29	10.861	0.000	46.62	0.13	8.40	1.23	7.17	6.50	0.68	5.88	5.31	0.57	2.38	1.81	0.57	1	42	0.182%	0.19%	0.05%	4.85	4.95	47.66	
S-126	S-125	Type 9 CI	23.37	0.760	1.443	1.097	0.760	1.443	1.097	12.00	0.11	5.74	1.097	0.000	6.29	0.20	8.45	1.01	7.44	7.17	0.27	5.96	5.88	0.08	4.46	4.38	0.08	1	18	0.354%	0.35%	0.15%	3.56	3.82	6.75	
S-127	S-128	Type 9 CI	22.76	0.760	0.630	0.479	0.760	0.630	0.479	10.00	0.23	6.18	0.479	0.000	2.96	0.04	8.43	0.46	7.97	7.91	0.06	6.18	6.15	0.03	4.68	4.65	0.03	1	18	0.149%	0.15%	0.15%	1.67	2.50	4.41	
S-128	S-117A	Type 9 CI	38.15	0.760	1.865	1.417	0.760	2.495	1.896	19.00	0.13	4.69	1.896	0.000	8.89	0.36	8.51	0.60	7.91	7.31	0.60	6.15	5.91	0.24	4.65	4.41	0.24	1	18	0.629%	0.62%	0.15%	5.03	5.09	8.99	
S-116A	S-116B	Type F DBI	31.61	0.760	2.154	1.637	0.760	2.154	1.637	17.00	0.12	4.94	1.637	0.000	8.08	0.32	10.18	1.00	9.18	8.69	0.48	6.84	6.67	0.17	5.34	5.17	0.17	1	18	0.560%	0.55%	0.15%	4.57	4.79	8.46	
S-116B	S-117MH	Type F DBI	327.57	0.760	0.726	0.552	0.760	2.880	2.189	17.10	1.59	4.92	2.189	0.000	10.77	0.02	10.13	1.44	8.69	8.04	0.65	6.67	5.98	0.69	4.67	3.98	0.69	1	24	0.206%	0.21%	0.10%	3.43	3.58	11.26	
S-116C	S-123MH	Type F DBI	289.67	0.760	0.793	0.603	0.760	15.084	11.464	23.75	0.96	4.21	11.464	0.000	48.27	0.01	10.49	3.99	6.50	5.92	0.58	5.31	4.73	0.58	1.81	1.23	0.58	1	42	0.195%	0.20%	0.05%	5.02	5.08	48.86	
S-117A	S-125	Type 8 MH	20.06			0.000			0.000	22.77	0.08	4.30	9.301	0.000	39.98	0.11	8.87	1.55	7.31	7.17	0.14	5.91	5.88	0.03	2.41	2.38	0.03	1	42	0.134%	0.14%	0.05%	4.16	4.24	40.83	
S-117MH	S-120E	Type 8 MH	75.66			0.000			0.000	18.45	0.30	4.75	6.153	0.000	29.25	0.17	9.19	1.14	8.04	7.75	0.29	5.98	5.85	0.14	2.98	2.85	0.14	1	36	0.190%	0.18%	0.06%	4.14	4.35	30.72	
S-117C	S-120MH	Type 9 CI	244.63	0.760	0.756	0.575	0.760	0.756	0.575	11.50	2.15	5.84	0.575	0.000	3.36	0.06	9.47	0.74	8.73	8.47	0.27	4.96	4.59	0.37	3.46	3.09	0.37	1	18	0.155%	0.15%	0.15%	1.90	2.50	4.42	

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1

County: Duval
Organization: PARSONS

Network: Pine (Proposed)
State Road: A1A

Sheet: 2 of 2
Prepared by: MM
Checked by: TJG

Date: 11/30/2020
Date:

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
																							ZONE: Zone 4
																							FREQUENCY (yrs): 3.00 Year
																							MANNINGS n: 0.012
																							TAILWATER EL. (ft): 5.40
S-120C	Type 9 CI	17.08	0.760	1.370	1.041	16.20	0.08	5.04	3.599	0.000	18.15	0.12	8.89	0.71	8.19	8.04	0.15	1	30	0.178%	3.70	18.98	
S-117MH			0.760	4.735	3.599										5.51	5.48	0.03			0.18%	3.87		
															3.01	2.98	0.03			0.08%			
S-120D	Type 9 CI	23.98	0.760	2.609	1.983	16.00	0.12	5.07	1.983	0.000	10.06	0.16	9.13	0.47	8.67	8.47	0.20	1	24	0.195%	3.20	10.76	
S-120MH			0.760	2.609	1.983										5.25	5.20	0.05			0.19%	3.43		
															3.25	3.20	0.05			0.10%			
S-120E	Type 9 CI	230.31	0.760	1.181	0.898	22.00	0.88	4.37	7.050	0.000	30.83	0.02	8.80	1.05	7.75	7.31	0.44	1	36	0.181%	4.36	31.60	
S-117A			0.760	9.277	7.050										5.85	5.41	0.44			0.19%	4.47		
															2.85	2.41	0.44			0.06%			
S-120MH	Type 8 MH	26.39			0.000	16.10	0.11	5.06	2.557	0.000	12.93	0.20	9.20	0.73	8.47	8.19	0.28	1	24	0.278%	4.12	13.00	
S-120C					0.000										5.09	5.01	0.07			0.28%	4.14		
															3.09	3.01	0.07			0.10%			
S-121	Type 1 CI	16.41	0.760	0.346	0.263	24.84	0.07	4.12	14.013	0.000	57.69	0.00	10.63	4.96	5.67	5.65	0.02	1	5x3 CBC	0.093%	3.85	56.42	
S-121A			0.760	18.438	14.013										4.05	4.04	0.02			0.10%	3.76		
															1.05	1.04	0.02			0.04%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6　　County: Duval　　Network: Florida North (Existing)　　Sheet: 1 of 2
Description: System 1　　Organization: PARSONS　　State Road: A1A　　Prepared by: MM　　Date: 11/30/2020
Checked by: TJG　　Date:

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
																							ZONE: Zone 4 FREQUENCY (yrs): 3.00 Year MANNINGS n: 0.012 TAILWATER EL. (ft): 5.10
E-129	Type 4 CI	315.08	0.760	0.373	0.283	12.38	1.61	5.66	1.018	0.000	5.77	0.22	9.99	-16.01	26.00	24.98	1.03	1	18	0.382%	3.26	7.13	
E-131			0.760	1.340	1.018										7.32	6.09	1.23			0.39%	4.03		
															5.82	4.59	1.23			0.15%			
E-130	Type 4 CI	89.89	0.760	0.967	0.735	12.00	0.44	5.74	0.735	0.000	4.22	0.18	9.92	-16.59	26.51	26.00	0.51	1	15	0.362%	3.44	4.19	
E-129			0.760	0.967	0.735										7.58	7.26	0.32			0.36%	3.41		
															6.33	6.01	0.32			0.19%			
E-131	Type 1 CI	232.23	0.760	0.386	0.293	13.57	0.55	5.45	2.277	0.000	12.41	1.41	9.17	-15.80	24.98	20.81	4.17	1	18	1.028%	7.02	3.74	
E-133			0.760	2.996	2.277										5.03	4.78	0.25			0.11%	2.12		
															3.53	3.28	0.25			0.15%			
E-132	Type 1 CI	91.40	0.760	1.270	0.966	11.00	0.47	5.95	0.966	0.000	5.74	0.16	9.38	-16.00	25.37	24.98	0.40	1	18	1.095%	3.25	11.94	
E-131			0.760	1.270	0.966										7.04	6.04	1.00			1.09%	6.75		
															5.54	4.54	1.00			0.15%			
E-133	Type 4 CI	33.68	0.760	0.469	0.356	14.10	0.07	5.36	2.633	0.000	14.12	0.09	8.66	-12.15	20.81	20.19	0.61	1	18	1.330%	7.99	10.40	
E-134MH			0.760	3.465	2.633										4.81	4.53	0.28			0.83%	5.89		
															3.31	3.03	0.28			0.15%			
E-134MH	Type 8 MH	213.68			0.000	47.50	0.37	2.87	16.667	0.000	47.84	3.96	8.56	-11.63	20.19	13.76	6.43	1	30	1.002%	9.75	38.43	
E-145MH					0.000										6.15	4.56	1.59			0.74%	7.83		
															3.65	2.06	1.59			0.08%			
E-135MH	Type 8 MH	68.37			0.000	47.41	0.14	2.87	14.034	0.000	40.33	0.00	8.61	-12.15	20.76	20.19	0.56	1	30	1.469%	8.22	53.91	
E-134MH					0.000										6.50	5.50	1.00			1.46%	10.98		
															4.00	3.00	1.00			0.08%			
E-136	Type 1 CI	20.99	0.760	0.786	0.598	10.00	0.12	6.18	0.598	0.000	3.69	0.14	8.83	-12.13	20.96	20.76	0.20	1	15	4.578%	3.01	15.01	
E-135MH			0.760	0.786	0.598										6.21	5.25	0.96			4.57%	12.23		
															4.96	4.00	0.96			0.19%			
E-137	Type F DBI	242.84	0.760	1.200	0.912	47.28	0.13	2.88	13.436	0.000	38.67	0.88	9.09	-86.71	95.80	20.76	75.04	1	15	26.392%	31.51	4.22	
E-135MH			0.760	17.679	13.436										6.13	5.25	0.88			0.36%	3.44		
															4.88	4.00	0.88			0.19%			
E-138	Type F DBI	40.74	0.760	0.619	0.471	47.26	0.02	2.88	12.524	0.000	36.06	0.77	9.07	-98.31	107.39	95.80	11.59	1	15	22.944%	29.38	3.30	
E-137			0.760	16.479	12.524										6.27	6.18	0.09			0.22%	2.69		
															5.02	4.93	0.09			0.19%			
E-139	Type 9 CI	88.63	0.760	7.810	5.936	47.00	0.07	2.89	9.272	0.000	26.79	9.88	7.57	-226.52	234.09	211.23	22.86	1	15	12.661%	21.83	3.57	
E-141MH			0.760	12.200	9.272										6.79	6.56	0.23			0.26%	2.91		
															5.54	5.31	0.23			0.19%			
E-140	Type 9 CI	29.84	0.760	4.390	3.336	23.00	0.03	4.28	3.336	0.000	14.27	5.13	7.77	-235.54	243.30	234.09	9.21	1	12	11.817%	18.17	0.53	L-140: Upstream invert adjusted due to adverse slope
E-139			0.760	4.390	3.336										6.55	6.54	0.01			0.02%	0.68		
															5.55	5.54	0.01			0.26%			
E-141MH	Type 8 MH	340.01			0.000	47.07	0.20	2.89	12.054	0.000	34.79	19.81	8.14	-203.09	211.23	107.39	103.85	1	15	21.360%	28.35	2.05	
E-138					0.000										6.56	6.27	0.29			0.09%	1.67		
															5.31	5.02	0.29			0.19%			
E-142	Type 9 CI	80.06	0.760	2.120	1.611	20.00	0.13	4.58	2.782	0.000	12.73	2.25	7.73	-208.41	216.13	211.23	4.90	1	15	2.861%	10.38	4.07	
E-141MH			0.760	3.660	2.782										6.80	6.53	0.27			0.34%	3.32		
															5.55	5.28	0.27			0.19%			
E-143	Type 9 CI	31.47	0.760	1.540	1.170	15.00	0.07	5.22	1.170	0.000	6.11	0.94	7.73	-210.13	217.86	216.13	1.73	1	12	2.165%	7.78	0.69	L-143: Upstream invert adjusted due to adverse slope
E-142			0.760	1.540	1.170										6.64	6.63	0.01			0.03%	0.88		
															5.64	5.63	0.01			0.26%			
E-144	Type 4 CI	43.73	0.760	0.600	0.456	11.00	0.33	5.95	0.456	0.000	2.71	0.08	8.00	-5.90	13.90	13.76	0.14	1	15	0.174%	2.21	3.00	
E-145MH			0.760	0.600	0.456										5.57	5.49	0.08			0.18%	2.45		
															4.32	4.24	0.08			0.19%			
E-145MH	Type 8 MH	63.42			0.000	47.86	0.09	2.86	20.920	0.000	59.77	7.51	7.92	-5.85	13.76	5.10	8.66	1	30	1.564%	12.18	37.94	
E-145A					0.000										4.51	4.05	0.46			0.73%	7.73		
															2.01	1.55	0.46			0.08%			
E-146	Type 1 CI	90.00	0.760	0.800	0.608	15.17	0.13	5.19	3.797	0.000	19.72	1.68	8.02	-10.13	18.14	13.76	4.38	1	18	2.596%	11.16	1.20	L-146: Upstream invert adjusted due to adverse slope
E-145MH			0.760	4.997	3.797										4.65	4.64	0.01			0.01%	0.68		
															3.15	3.14	0.01			0.15%			
E-147MH	Type 8 MH	61.20			0.000	15.09	0.08	5.20	3.189	0.000	16.60	3.71	7.85	-17.45	25.30	18.14	7.16	1	15	4.863%	13.53	5.59	
E-146					0.000										4.66	4.27	0.39			0.64%	4.56		
															3.41	3.02	0.39			0.19%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6 **County:** Duval **Network:** Florida North (Existing) **Sheet:** 2 of 2
Description: System 1 **Organization:** PARSONS **State Road:** A1A **Prepared by:** MM **Date:** 11/30/2020
Checked by: TJG **Date:**

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.10

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-148	Type 5 CI	24.04	0.760	1.290	0.980	15.00	0.10	5.22	0.980	0.000	5.12	0.27	7.60	-18.10	25.70	25.30	0.40	1	15	0.462%	4.17	1.43	L-148: Upstream invert adjusted due to adverse slope
E-147MH			0.760	1.290	0.980										4.74	4.73	0.01			0.04%	1.17		
															3.49	3.48	0.01			0.19%			
E-149	Type 6 CI	31.56	0.760	0.865	0.657	12.31	0.05	5.68	2.209	0.000	12.54	4.07	7.85	-22.53	30.38	25.30	5.08	1	15	2.776%	10.22	1.25	L-149: Upstream invert adjusted due to adverse slope
E-147MH			0.760	2.907	2.209										5.79	5.78	0.01			0.03%	1.02		
															4.54	4.53	0.01			0.19%			
E-150	Type 5 CI	49.77	0.760	1.003	0.762	10.00	0.22	6.18	0.762	0.000	4.71	0.23	8.44	-22.40	30.84	30.38	0.45	1	15	0.502%	3.84	4.97	
E-149			0.760	1.003	0.762										6.08	5.83	0.25			0.50%	4.05		
															4.83	4.58	0.25			0.19%			
E-150A	Type 6 CI	566.34	0.760	1.039	0.790	10.00	2.37	6.18	0.790	0.000	4.88	0.25	7.70	-25.68	33.38	30.38	3.00	1	15	0.420%	3.97	0.42	
E-149			0.760	1.039	0.790										5.82	5.80	0.02			0.00%	0.34		
															4.57	4.55	0.02			0.19%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 **County:** Duval **Network:** Florida North (Proposed) **Sheet:** 1 of 3
Description: System 1 **Organization:** PARSONS **State Road:** A1A **Prepared by:** MM **Date:** 11/30/2020
Checked by: TJG **Date:**

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 5.10
E-129			0.760	0.373	0.283										7.94	6.87	1.07			0.395%	3.51		
S-131	Type 4 CI	315.08	0.760	1.340	1.018	10.39	1.50	6.08	1.018	0.000	6.19	0.13	9.99	2.05	7.32	6.09	1.23	1	18	0.39%	4.03	7.13	L-129: Existing 18" RCP
															5.82	4.59	1.23			0.15%			
E-130			0.760	0.967	0.735										8.53	7.94	0.59			0.364%	3.70		
E-129	Type 4 CI	89.89	0.760	0.967	0.735	10.00	0.41	6.18	0.735	0.000	4.54	0.21	9.92	1.39	7.58	7.26	0.32	1	15	0.36%	3.41	4.19	L-130: Existing 15" RCP
															6.33	6.01	0.32			0.19%			
S-131			0.760	0.386	0.293										6.87	6.02	0.85			0.313%	4.23		
S-133	Type 1 CI	232.23	0.760	2.996	2.277	11.55	0.92	5.83	2.277	0.000	13.28	0.16	9.17	2.30	6.02	5.28	0.74	1	24	0.32%	4.42	13.90	
															4.02	3.28	0.74			0.10%			
E-132			0.760	1.270	0.965										7.30	6.87	0.43			1.081%	3.37		
S-131	Type 1 CI	91.40	0.760	1.270	0.965	10.00	0.45	6.18	0.965	0.000	5.96	0.18	9.38	2.08	7.04	6.04	0.99	1	18	1.09%	6.73	11.89	L-132: Existing 18" RCP
															5.54	4.54	0.99			0.15%			
S-133			0.760	0.469	0.356										6.02	5.95	0.07			0.131%	3.04		
S-134MH	Type 4 CI	33.68	0.760	3.465	2.633	12.33	0.18	5.68	2.633	0.000	14.95	0.03	8.66	2.64	5.57	5.53	0.04	1	30	0.13%	3.27	16.06	
															3.07	3.03	0.04			0.08%			
S-136			0.760	0.786	0.598										6.13	6.04	0.09			0.148%	2.09		
S-135MH	Type 1 CI	20.99	0.760	0.786	0.598	10.00	0.17	6.18	0.598	0.000	3.69	0.07	8.83	2.70	4.12	4.09	0.03	1	18	0.15%	2.50	4.42	
															2.62	2.59	0.03			0.15%			
S-137			0.760	1.200	0.912										6.44	6.04	0.40			0.159%	4.95		
S-135MH	Type F DBI	242.87	0.760	19.531	14.843	23.98	0.82	4.19	14.843	0.000	62.19	0.01	9.09	2.65	5.48	5.09	0.39	1	48	0.16%	4.97	62.41	
															1.48	1.09	0.39			0.04%			
S-138			0.760	0.619	0.471										6.74	6.71	0.03			0.098%	2.97		
S-132MH	Type F DBI	22.03	0.760	6.574	4.996	23.81	0.12	4.20	4.996	0.000	21.01	0.01	9.07	2.34	4.53	4.51	0.02	1	36	0.10%	3.24	22.90	
															1.53	1.51	0.02			0.06%			
S-139			0.760	1.016	0.772										7.13	7.05	0.07			0.099%	1.85		
S-141MH	Type 9 CI	88.72	0.760	2.299	1.747	15.19	0.80	5.19	1.747	0.000	9.07	0.04	7.59	0.46	4.46	4.37	0.09	1	30	0.10%	2.87	14.11	
															1.96	1.87	0.09			0.08%			
S-140			0.760	1.283	0.975										7.18	7.13	0.05			0.102%	1.62		
S-139	Type 9 CI	29.84	0.760	1.283	0.975	15.00	0.31	5.22	0.975	0.000	5.09	0.04	7.57	0.39	3.99	3.96	0.03	1	24	0.10%	2.48	7.79	
															1.99	1.96	0.03			0.10%			
S-141MH					0.000										7.05	6.74	0.32			0.104%	2.78		
S-138	Type 8 MH	339.80			0.000	22.28	2.04	4.34	4.526	0.000	19.66	0.07	7.97	0.92	4.87	4.53	0.34	1	36	0.10%	3.24	22.92	
															1.87	1.53	0.34			0.06%			
S-142			0.760	2.121	1.612										7.42	7.05	0.36			0.284%	3.87		
S-141MH	Type 9 CI	80.06	0.760	3.656	2.779	22.00	0.35	4.37	2.779	0.000	12.15	0.17	7.68	0.26	4.09	3.87	0.22	1	24	0.28%	4.14	13.00	
															2.09	1.87	0.22			0.10%			
S-143			0.760	1.535	1.167										7.64	7.42	0.22			0.267%	3.10		
S-142	Type 9 CI	31.47	0.760	1.535	1.167	19.00	0.17	4.69	1.167	0.000	5.47	0.15	8.11	0.47	3.67	3.59	0.08	1	18	0.26%	3.30	5.82	
															2.17	2.09	0.08			0.15%			
E-144			0.760	0.600	0.456										5.70	5.55	0.15			0.187%	2.30		
S-145MH	Type 4 CI	43.73	0.760	0.600	0.456	10.00	0.32	6.18	0.456	0.000	2.82	0.08	8.00	2.30	5.57	5.49	0.08	1	15	0.18%	2.45	3.00	L-144: Existing 15" RCP
															4.32	4.24	0.08			0.19%			
S-146			0.760	0.798	0.606										5.93	5.55	0.39			0.230%	4.35		
S-145MH	Type 1 CI	90.06	0.760	6.803	5.170	24.70	0.35	4.13	5.170	0.000	21.34	0.18	8.02	2.08	3.36	3.15	0.21	1	30	0.23%	4.35	21.37	
															0.86	0.65	0.21			0.08%			
S-148			0.760	1.292	0.982										6.41	6.23	0.18			0.175%	2.90		
S-147MH	Type 5 CI	24.05	0.760	1.292	0.982	15.00	0.14	5.22	0.982	0.000	5.12	0.13	7.60	1.19	3.44	3.40	0.04	1	18	0.17%	2.70	4.77	
															1.94	1.90	0.04			0.15%			
S-149			0.760	0.870	0.661										6.33	6.23	0.10			0.130%	3.04		
S-147MH	Type 6 CI	31.56	0.760	4.713	3.582	24.33	0.17	4.16	3.582	0.000	14.90	0.07	7.85	1.52	3.51	3.47	0.04	1	30	0.13%	3.27	16.06	
															1.01	0.97	0.04			0.08%			
E-150			0.760	1.003	0.762										6.79	6.33	0.45			0.483%	3.84		
S-149	Type 5 CI	49.77	0.760	1.003	0.762	10.00	0.22	6.18	0.762	0.000	4.71	0.23	8.44	1.65	6.08	5.83	0.24	1	15	0.49%	4.00	4.90	L-150: Existing 15" RCP
															4.83	4.58	0.24			0.19%			
S-126B			0.760	1.579	1.200										7.53	7.38	0.15			0.091%	2.19		
S-131MH	Type 9 CI	91.21	0.760	1.579	1.200	12.00	0.69	5.74	1.200	0.000	6.89	0.07	8.10	0.57	4.51	4.42	0.09	1	24	0.10%	2.47	7.76	
															2.51	2.42	0.09			0.10%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1

County: Duval
Organization: PARSONS

Network: Florida North (Proposed)
State Road: A1A

Sheet: 2 of 3
Prepared by: MM
Checked by: TJG

Date: 11/30/2020
Date:

NOTES AND REMARKS:
ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.10

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.) (INCREMENTAL / CUMULATIVE)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE)	LOWER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-130B			0.760	1.548	1.176										7.67	7.52	0.15			0.100%	2.08		
S-132B	Type 9 CI	114.07	0.760	1.548	1.176	13.00	0.91	5.55	1.176	0.000	6.53	0.07	7.80	0.13	5.25	5.14	0.11	1	24	0.10%	2.47	7.77	
															3.25	3.14	0.11			0.10%			
S-131A			0.760	1.275	0.969										7.41	7.35	0.06			0.107%	1.66		
S-131B	Type 9 CI	37.27	0.760	1.275	0.969	14.00	0.37	5.38	0.969	0.000	5.21	0.04	7.87	0.46	4.44	4.40	0.04	1	24	0.10%	2.47	7.77	
															2.44	2.40	0.04			0.10%			
S-131B			0.760	0.610	0.464										7.35	7.19	0.16			0.103%	1.97		
S-133D	Type 9 CI	311.66	0.760	3.464	2.633	14.23	2.63	5.34	2.633	0.000	14.06	0.04	7.84	0.49	4.79	4.48	0.31	1	29" x 45"	0.10%	3.15	22.47	
															2.37	2.06	0.31			0.06%			
S-131MH					0.000										7.38	7.35	0.03			0.093%	1.38		
S-131B	Type 8 MH	44.81			0.000	12.57	0.54	5.63	1.200	0.000	6.76	0.02	8.27	0.88	4.92	4.87	0.04	1	30	0.10%	2.88	14.12	
															2.42	2.37	0.04			0.08%			
S-132A			0.760	1.471	1.118										7.39	7.01	0.37			0.098%	2.98		
S-133MH	Type 9 CI	320.84	0.760	5.353	4.068	15.00	1.80	5.22	4.068	0.000	21.23	0.09	7.80	0.41	4.51	4.19	0.32	1	29" x 45"	0.10%	3.15	22.46	
															2.09	1.77	0.32			0.06%			
S-132B			0.760	0.837	0.636										7.52	7.39	0.13			0.096%	2.61		
S-132A	Type 9 CI	47.77	0.760	3.105	2.360	13.69	0.30	5.43	2.360	0.000	12.81	0.09	7.74	0.22	4.64	4.59	0.05	1	30	0.10%	2.88	14.12	
															2.14	2.09	0.05			0.08%			
S-132MH					0.000										6.71	6.44	0.28			0.122%	4.65		
S-137	Type 8 MH	18.73			0.000	23.92	0.07	4.20	13.931	0.000	58.45	0.25	9.48	2.77	5.50	5.48	0.02	1	48	0.13%	4.48	56.26	
															1.50	1.48	0.02			0.04%			
S-133A			0.760	0.362	0.275										7.39	7.34	0.05			0.102%	1.74		
S-133B	Type 9 CI	37.53	0.760	1.173	0.892	10.14	0.36	6.14	0.892	0.000	5.48	0.03	9.01	1.62	5.65	5.61	0.04	1	24	0.10%	2.49	7.82	
															3.65	3.61	0.04			0.10%			
S-133B			0.760	1.279	0.972										7.34	7.19	0.15			0.163%	2.93		
S-133D	Type 9 CI	29.25	0.760	2.452	1.864	17.00	0.17	4.94	1.864	0.000	9.20	0.10	8.79	1.45	5.61	5.56	0.05	1	24	0.16%	3.14	9.85	
															3.61	3.56	0.05			0.10%			
S-133C			0.760	0.811	0.617										7.48	7.39	0.10			0.157%	2.16		
S-133A	Type 9 CI	23.32	0.760	0.811	0.617	10.00	0.18	6.18	0.617	0.000	3.81	0.07	9.14	1.65	5.68	5.65	0.04	1	18	0.15%	2.50	4.42	
															4.18	4.15	0.04			0.15%			
S-133D			0.760	0.487	0.370										7.19	7.01	0.18			0.099%	2.49		
S-133MH	Type 9 CI	289.66	0.760	6.404	4.867	17.14	1.94	4.92	4.867	0.000	23.93	0.04	9.09	1.91	5.56	5.27	0.29	1	42	0.10%	3.59	34.58	
															2.06	1.77	0.29			0.05%			
S-133MH					0.000										7.01	6.71	0.30			0.105%	3.39		
S-132MH	Type 8 MH	266.22			0.000	18.39	1.31	4.76	8.935	0.000	42.54	0.10	10.25	3.23	5.77	5.51	0.26	1	48	0.10%	3.91	49.14	
															1.77	1.51	0.26			0.04%			
S-134MH					0.000										5.95	5.55	0.41			0.145%	4.13		
S-145MH	Type 8 MH	213.68			0.000	24.92	0.86	4.11	18.074	0.000	74.29	0.17	8.56	2.61	3.93	3.61	0.32	1	6x3 CBC	0.15%	4.81	86.56	
															0.93	0.61	0.32			0.04%			
S-135MH					0.000										6.04	5.95	0.09			0.138%	4.25		
S-134MH	Type 8 MH	68.56			0.000	24.70	0.27	4.13	15.441	0.000	63.75	0.00	8.61	2.57	4.09	4.00	0.09	1	5x3 CBC	0.13%	4.29	64.33	
															1.09	1.00	0.09			0.04%			
S-139A			0.760	0.777	0.590										7.42	7.39	0.03			0.089%	1.16		
S-132A	Type 9 CI	41.11	0.760	0.777	0.590	10.00	0.59	6.18	0.590	0.000	3.65	0.02	7.57	0.15	4.22	4.18	0.04	1	24	0.09%	2.38	7.47	
															2.22	2.18	0.04			0.10%			
S-140A			0.760	0.720	0.547										7.55	7.52	0.03			0.095%	1.08		
S-132B	Type 9 CI	45.96	0.760	0.720	0.547	10.00	0.71	6.18	0.547	0.000	3.38	0.02	7.82	0.28	4.19	4.14	0.05	1	24	0.10%	2.47	7.77	
															2.19	2.14	0.05			0.10%			
S-145MH					0.000										5.55	5.10	0.45			0.195%	5.34		
S-145A	Type 8 MH	59.96			0.000	25.56	0.19	4.06	23.700	0.000	96.17	0.33	7.92	2.37	3.61	3.50	0.11	1	6x3 CBC	0.19%	5.41	97.42	
															0.61	0.50	0.11			0.04%			
S-147MH					0.000										6.23	5.93	0.30			0.181%	3.86		
S-146	Type 8 MH	61.20			0.000	24.47	0.26	4.15	4.564	0.000	18.93	0.19	7.85	1.62	3.47	3.36	0.11	1	30	0.18%	3.85	18.89	
															0.97	0.86	0.11			0.08%			
S-149A			0.760	0.238	0.181										7.12	6.97	0.15			0.091%	1.98		
S-149MH	Type 9 CI	185.55	0.760	1.801	1.369	20.23	1.56	4.55	1.369	0.000	6.23	0.03	7.65	0.52	3.97	3.78	0.19	1	24	0.10%	2.48	7.78	
															1.97	1.78	0.19			0.10%			
S-149B			0.760	1.563	1.188										7.39	7.12	0.27			0.264%	3.08		
S-149A	Type 9 CI	51.47	0.760	1.563	1.188	20.00	0.28	4.58	1.188	0.000	5.44	0.15	7.67	0.28	3.60	3.47	0.13	1	18	0.26%	3.29	5.82	
															2.10	1.97	0.13			0.15%			
S-149MH					0.000										6.97	6.91	0.06			0.102%	1.98		

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1
County: Duval
Organization: PARSONS
Network: Florida North (Proposed)
State Road: A1A
Sheet: 3 of 3
Prepared by: MM **Date:** 11/30/2020
Checked by: TJG **Date:**

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-150A	Type 8 MH	24.75			0.000	20.23	0.21	4.55	1.369	0.000	6.23	0.04	8.19	1.21	3.78	3.76	0.03	1	24	0.10%	2.49	7.81	ZONE: Zone 4
															1.78	1.76	0.03			0.10%			FREQUENCY (yrs): 3.00 Year
S-150A	Type 6 CI	259.33	0.760	1.039	0.790	21.55	1.42	4.42	2.159	0.000	9.53	0.04	8.50	1.59	6.91	6.48	0.43	1	24	0.175%	3.03	10.13	MANNINGS n: 0.012
S-150MH			0.760	2.840	2.159										3.76	3.32	0.44			0.17%	3.23		TAILWATER EL. (ft): 5.10
															1.76	1.32	0.44			0.10%			
S-150MH	Type 8 MH	307.69			0.000	21.55	2.64	4.42	2.159	0.000	9.53	0.01	9.61	3.13	6.48	6.33	0.15	1	30	0.109%	1.94	14.10	
S-149					0.000										3.82	3.51	0.31			0.10%	2.87		
															1.32	1.01	0.31			0.08%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1
County: Duval
Organization: PARSONS
Network: FloridaSouth (Existing)
State Road: A1A
Sheet: 1 of 1
Prepared by: MM **Date:** 09/17/2020
Checked by: TJG **Date:**

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 5.10

STRUCTURE NO. UPPER LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL CUMULATIVE)	AREA (INCREMENTAL CUMULATIVE)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT CROWN FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) (HYD. GRAD. PHYSICAL MIN. PHYSICAL)	ACTUAL VELOCITY (fps) PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-151 E-145B	Type 5 CI	129.60	0.760 0.760	0.365 11.877	0.278 9.027	27.99	0.30	3.87	9.027	0.000	34.95	0.14	7.43	1.39	6.04 4.47 1.97	5.10 4.01 1.51	0.94 0.46 0.46	1	30	0.535% 0.36% 0.08%	7.12 5.42	26.60	
E-152MH E-151	Type 8 MH	459.34			0.000 0.000	26.93	1.09	3.95	8.749	0.000	34.56	0.71	8.00	-1.54	9.53 5.53 3.03	6.04 4.47 1.97	3.49 1.06 1.06	1	30	0.523% 0.23% 0.08%	7.04 4.36	21.38	
E-153 E-152MH	Type 1 CI	88.86	0.760 0.760	1.750 11.115	1.330 8.447	26.79	0.22	3.96	8.447	0.000	33.46	0.53	8.38	-2.19	10.57 7.14 4.64	9.53 6.12 3.62	1.04 1.02 1.02	1	30	1.160% 1.15% 0.08%	6.82 9.73	47.78	
E-154 E-153	Type F DBI	49.47	0.760 0.760	0.352 9.365	0.268 7.117	26.70	0.09	3.97	7.117	0.000	28.24	1.10	7.62	-4.70	12.32 6.96 4.96	10.57 6.95 4.95	1.75 0.01 0.01	1	24	1.148% 0.02% 0.10%	8.99 1.11	3.49	L-154: Upstream invert adjusted due to adverse slope
E-155 E-154	Type F DBI	346.39	0.760 0.760	0.854 9.012	0.649 6.849	26.33	0.37	4.00	6.849	0.000	27.37	0.22	8.71	-23.87	32.58 6.21 4.71	12.32 5.34 3.84	20.26 0.87 0.87	1	18	4.999% 0.25% 0.15%	15.49 3.23	5.71	
E-156 E-155	Type 9 CI	262.01	0.760 0.760	1.990 8.158	1.512 6.200	26.03	0.31	4.02	6.200	0.000	24.92	22.55	7.78	-59.92	67.69 6.63 5.13	32.58 6.49 4.99	35.11 0.14 0.14	1	18	4.145% 0.05% 0.15%	14.10 1.49	2.63	
E-157 E-156	Type F DBI	34.49	0.760 0.760	2.070 2.070	1.573 1.573	18.00	0.02	4.81	1.573	0.000	7.56	11.12	6.93	-92.09	99.02 6.43 5.83	67.69 5.73 5.13	31.33 0.70 0.70	1	8	50.615% 2.04% 0.51%	26.75 5.00	1.41	L-158: Upstream invert adjusted due to adverse slope
E-158 E-159	Type 9 CI	30.46	0.760 0.760	3.230 3.230	2.455 2.455	26.00	0.01	4.02	2.455	0.000	9.87	18.95	6.97	-225.48	232.45 6.12 5.52	183.10 6.11 5.51	49.35 0.01 0.01	1	8	86.231% 0.02% 0.51%	34.92 0.49	0.14	L-159: Upstream invert adjusted due to adverse slope
E-159 E-156	Type 9 CI	46.40	0.760 0.760	0.868 4.098	0.660 3.114	26.01	0.02	4.02	3.114	0.000	12.52	40.92	7.00	-176.10	183.10 6.06 5.46	67.69 6.05 5.45	115.41 0.01 0.01	1	8	138.717% 0.03% 0.51%	44.29 0.61	0.17	L-152: Upstream invert adjusted due to adverse slope
E-152 E-152MH	Type 4 CI	9.16	0.760 0.760	0.398 0.398	0.302 0.302	10.00	0.10	6.18	0.302	0.000	1.87	0.04	7.99	-1.58	9.58 5.50 4.25	9.53 5.49 4.24	0.04 0.01 0.01	1	15	0.145% 0.15% 0.19%	1.52 2.24	2.74	

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1
County: Duval
Organization: PARSONS
Network: FloridaSouth (Proposed)
State Road: A1A
Sheet: 1 of 1
Prepared by: MM **Date:** 09/15/2020
Checked by: TJG **Date:**

NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 5.10

STRUCTURE NO. (UPPER / LOWER)	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (INCREMENTAL / CUMULATIVE)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) (HYD. GRAD. / PHYSICAL / MIN. PHYSICAL)	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-151 S-145B	Type 5 CI	125.44	0.760 0.760	0.365 10.945	0.278 8.318	23.45	0.89	4.24	8.318	0.000	35.25	0.03	7.43	2.25	5.18 3.63 0.63	5.10 3.50 0.50	0.08 0.13 0.13	1	5x3 CBC	0.100% 0.10% 0.04%	2.35 3.76	56.42	
S-152 S-152MH	Type 4 CI	9.19	0.760 0.760	0.398 0.398	0.302 0.302	10.00	0.14	6.18	0.302	0.000	1.87	0.02	7.99	2.21	5.79 2.51 1.01	5.77 2.50 1.00	0.02 0.01 0.01	1	18	0.150% 0.15% 0.15%	1.06 2.50	4.42	
S-153 S-152MH	Type 1 CI	85.40	0.760 0.760	1.750 10.182	1.330 7.739	23.09	0.41	4.27	7.739	0.000	33.04	0.11	8.38	2.43	5.95 4.67 1.17	5.77 4.58 1.08	0.19 0.09 0.09	1	42	0.092% 0.10% 0.05%	3.43 3.58	34.48	
S-154 S-153	Type F DBI	49.47	0.760 0.760	0.352 8.432	0.268 6.409	22.87	0.29	4.29	6.409	0.000	27.49	0.07	8.64	2.58	6.06 4.72 1.22	5.95 4.67 1.17	0.11 0.05 0.05	1	42	0.089% 0.10% 0.05%	2.86 3.57	34.40	
S-155 S-154	Type F DBI	342.39	0.760 0.760	0.854 8.080	0.649 6.141	21.42	2.02	4.43	6.141	0.000	27.20	0.01	8.71	2.43	6.28 5.06 1.56	6.06 4.72 1.22	0.22 0.34 0.34	1	42	0.098% 0.10% 0.05%	2.83 3.59	34.56	
S-156 S-155	Type 9 CI	262.01	0.760 0.760	0.992 7.225	0.754 5.491	20.40	1.24	4.53	5.491	0.000	24.90	0.17	7.78	1.02	6.75 4.90 1.90	6.28 4.56 1.56	0.48 0.34 0.34	1	36	0.137% 0.13% 0.06%	3.52 3.70	26.12	
S-157 S-156	Type F DBI	34.49	0.760 0.760	1.273 1.273	0.967 0.967	15.00	0.36	5.22	0.967	0.000	5.05	0.04	6.93	0.12	6.81 4.94 2.94	6.75 4.90 2.90	0.06 0.03 0.03	1	24	0.101% 0.10% 0.10%	1.61 2.47	7.77	
S-158 S-159	Type 9 CI	30.46	0.760 0.760	1.667 1.667	1.267 1.267	20.00	0.28	4.58	1.267	0.000	5.80	0.05	6.97	0.04	6.93 4.98 2.98	6.86 4.95 2.95	0.07 0.03 0.03	1	24	0.100% 0.10% 0.10%	1.85 2.47	7.77	
S-159 S-156	Type 9 CI	46.40	0.760 0.760	1.474 4.960	1.120 3.770	20.19	0.32	4.56	3.770	0.000	17.18	0.08	7.00	0.15	6.86 4.95 1.95	6.75 4.90 1.90	0.10 0.05 0.05	1	36	0.101% 0.10% 0.06%	2.43 3.23	22.81	
S-160 S-159MH	Type 9 CI	110.86	0.760 0.760	1.819 1.819	1.382 1.382	18.00	0.87	4.81	1.382	0.000	6.65	0.07	7.43	0.39	7.04 4.17 2.17	6.89 4.06 2.06	0.15 0.11 0.11	1	24	0.103% 0.10% 0.10%	2.12 2.48	7.78	
S-152MH S-151	Type 8 MH	459.34			0.000 0.000	23.45	2.16	4.24	8.041	0.000	34.07	0.13	8.00	2.23	5.77 4.58 1.08	5.18 4.13 0.63	0.58 0.46 0.46	1	42	0.097% 0.10% 0.05%	3.54 3.59	34.55	
S-159MH S-159	Type 8 MH	113.75			0.000 0.000	18.00	1.40	4.81	1.382	0.000	6.65	0.01	7.38	0.49	6.89 4.56 2.06	6.86 4.45 1.95	0.03 0.11 0.11	1	30	0.090% 0.10% 0.08%	1.35 2.87	14.10	

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | County: Duval | Network: Oleander (Existing) | Sheet: 1 of 3
Description: System 1 | Organization: PARSONS | State Road: A1A | Prepared by: MM | Checked by: TJG | Date: 11/30/2020 | Date:

NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 4.66

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-160	Type 1 CI	63.35	0.760	1.810	1.376	10.00	0.15	6.18	1.376	0.000	8.50	0.74	7.52	-42.40	49.92	48.24	1.68	1	15	1.274%	6.92	5.50	
E-161			0.760	1.810	1.376										4.17	3.78	0.39			0.61%	4.48		
															2.92	2.53	0.39			0.19%			
E-161	Type 4 CI	236.36	0.760	1.013	0.770	10.36	0.50	6.09	4.081	0.000	24.86	2.44	7.63	-40.61	48.24	43.37	4.87	1	24	0.889%	7.91	1.43	L-161: Upstream invert adjusted due to adverse slope
E-164MH			0.760	5.369	4.081										3.61	3.60	0.01			0.00%	0.46		
															1.61	1.60	0.01			0.10%			
E-162	Type 4 CI	93.80	0.760	1.175	0.893	10.21	0.23	6.13	1.935	0.000	11.85	0.94	7.91	-42.29	50.20	48.24	1.96	1	18	2.322%	6.71	17.35	
E-161			0.760	2.546	1.935										5.22	3.05	2.17			2.31%	9.82		
															3.72	1.55	2.17			0.15%			
E-163	Type 4 CI	67.70	0.760	1.371	1.042	10.00	0.22	6.18	1.042	0.000	6.43	0.43	7.92	-43.28	51.20	50.20	1.00	1	15	0.730%	5.24	3.75	
E-162			0.760	1.371	1.042										5.35	5.15	0.19			0.29%	3.05		
															4.10	3.90	0.19			0.19%			
E-164	Type F DBI	33.26	0.760	1.790	1.360	12.50	0.09	5.64	1.384	0.000	7.81	1.13	7.30	-37.62	44.92	43.37	1.55	1	15	1.076%	6.36	5.72	
E-164MH			0.760	1.821	1.384										4.26	4.04	0.22			0.66%	4.66		
															3.01	2.79	0.22			0.19%			
E-165	Type F DBI	37.26	0.760	0.633	0.481	10.00	0.37	6.18	0.481	0.000	2.97	0.04	7.82	-42.29	50.11	50.04	0.07	1	18	2.166%	1.68	16.76	
E-165A			0.760	0.633	0.481										6.00	5.20	0.80			2.16%	9.49		
															4.50	3.70	0.80			0.15%			
E-166	Type F DBI	294.32	0.760	1.800	1.368	21.00	0.26	4.47	4.522	0.000	20.22	26.43	6.98	-155.67	162.65	99.61	63.04	1	14	10.749%	19.13	2.20	
E-166A			0.760	5.950	4.522										6.42	5.99	0.43			0.15%	2.08		
															5.26	4.83	0.43			0.21%			
E-167	Type 9 CI	34.22	0.760	1.760	1.338	16.50	0.03	5.00	2.136	0.000	10.68	7.97	7.10	-170.47	177.57	162.65	14.92	1	10	17.547%	19.60	2.71	
E-166			0.760	2.810	2.136										6.63	6.19	0.45			1.30%	4.98		
															5.80	5.35	0.45			0.33%			
E-168	Type F DBI	40.15	0.760	1.050	0.798	12.00	0.04	5.74	0.798	0.000	4.58	4.08	6.88	-183.39	190.27	177.57	12.69	1	8	18.550%	16.20	0.16	L-168: Upstream invert adjusted due to adverse slope
E-167			0.760	1.050	0.798										6.57	6.56	0.01			0.03%	0.58		
															5.97	5.96	0.01			0.51%			
E-169	Type 1 CI	9.05	0.760	1.600	1.216	12.00	0.03	5.74	1.216	0.000	6.98	0.50	7.17	-31.67	38.84	38.24	0.59	1	15	0.859%	5.69	2.33	
E-169A			0.760	1.600	1.216										4.39	4.38	0.01			0.11%	1.90		
															3.14	3.13	0.01			0.19%			
E-170	Type 4 CI	10.73	0.760	2.590	1.968	23.00	0.03	4.28	1.968	0.000	8.42	0.73	7.09	-29.70	36.79	35.90	0.89	1	15	2.151%	6.86	10.27	
E-170A			0.760	2.590	1.968										4.48	4.25	0.23			2.14%	8.37		
															3.23	3.00	0.23			0.19%			
E-171	Type 4 CI	64.80	0.760	2.280	1.733	24.00	0.18	4.19	1.733	0.000	7.26	0.54	7.09	-36.90	43.99	42.75	1.24	1	15	0.929%	5.91	5.23	
E-172			0.760	2.280	1.733										5.42	5.06	0.36			0.56%	4.26		
															4.17	3.81	0.36			0.19%			
E-172	Type 4 CI	24.29	0.760	0.607	0.461	24.18	0.08	4.17	2.194	0.000	9.16	0.55	7.37	-35.38	42.75	42.04	0.71	1	18	0.749%	5.18	9.82	
E-173MH			0.760	2.887	2.194										2.82	2.64	0.18			0.74%	5.56		
															1.32	1.14	0.18			0.15%			
E-173	Type F DBI	63.34	0.760	0.877	0.667	20.73	0.07	4.50	6.040	0.000	27.18	0.20	7.60	-38.25	45.85	42.04	3.82	1	18	4.929%	15.38	1.43	
E-173MH			0.760	7.947	6.040										2.13	2.12	0.01			0.02%	0.81		
															0.63	0.62	0.01			0.15%			
E-174	Type F DBI	13.16	0.760	3.520	2.675	18.00	0.03	4.81	2.675	0.000	12.86	0.82	7.60	-75.17	82.77	81.78	0.99	1	18	9.997%	7.28	36.08	
E-174MH			0.760	3.520	2.675										5.72	4.41	1.32			10.00%	20.42		
															4.22	2.91	1.32			0.15%			
E-175	Type 9 CI	39.04	0.760	3.550	2.698	20.00	0.06	4.58	2.698	0.000	12.35	1.57	7.48	-77.10	84.57	81.78	2.79	1	15	2.691%	10.06	1.00	
E-174MH			0.760	3.550	2.698										5.41	5.40	0.01			0.02%	0.82		
															4.16	4.15	0.01			0.19%			
E-176	Type 1 CI	9.09	0.760	2.310	1.756	25.00	0.03	4.10	1.756	0.000	7.20	0.54	7.57	-32.11	39.68	39.05	0.63	1	15	2.724%	5.87	11.59	
E-176MH			0.760	2.310	1.756										5.22	4.97	0.25			2.73%	9.44		
															3.97	3.72	0.25			0.19%			
E-177	Type 1 CI	87.34	0.760	2.120	1.611	16.50	0.22	5.00	1.611	0.000	8.06	0.67	7.83	-33.05	40.88	39.05	1.83	1	15	2.597%	6.57	11.29	
E-176MH			0.760	2.120	1.611										5.59	3.33	2.26			2.59%	9.20		
															4.34	2.08	2.26			0.19%			
E-178	Type F DBI	32.28	0.760	3.050	2.318	25.00	0.06	4.10	2.767	0.000	11.35	2.14	7.75	-42.48	50.23	47.25	2.99	1	15	2.275%	9.25	6.58	
E-178MH			0.760	3.641	2.767										5.71	5.43	0.28			0.88%	5.36		
															4.46	4.18	0.28			0.19%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | County: Duval | Network: Oleander (Existing) | Sheet: 2 of 3
Description: System 1 | Organization: PARSONS | State Road: A1A | Prepared by: MM | Date: 11/30/2020
Checked by: TJG | Date:

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 4.66

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-179			0.760	0.554	0.421										47.39	47.25	0.14			0.863%	2.12		
E-178MH	Type 1 CI	53.67	0.760	0.554	0.421	10.00	0.42	6.18	0.421	0.000	2.60	0.07	7.90	-39.49	5.05	4.59	0.46	1	15	0.86%	5.30	6.51	
															3.80	3.34	0.46			0.19%			
E-180			0.760	2.140	1.626										60.13	58.85	1.28			4.245%	6.46		
E-181MH	Type 4 CI	49.24	0.760	2.140	1.626	17.50	0.13	4.87	1.626	0.000	7.92	0.65	8.22	-51.91	6.07	3.98	2.09	1	15	4.24%	11.78	14.46	
															4.82	2.73	2.09			0.19%			
E-181			0.760	0.870	0.661										61.62	58.85	2.77			4.995%	15.48		
E-181MH	Type F DBI	43.29	0.760	7.097	5.394	16.00	0.05	5.07	5.394	0.000	27.36	0.27	8.14	-53.48	4.41	4.23	0.18	1	18	0.42%	4.17	7.38	
															2.91	2.73	0.18			0.15%			
E-182			0.760	0.150	0.114										90.11	61.62	28.49			4.202%	14.20		
E-181	Type 9 CI	553.66	0.760	6.227	4.733	14.47	0.65	5.30	4.733	0.000	25.09	1.56	9.46	-80.65	7.16	5.97	1.19	1	18	0.21%	2.99	5.29	
															5.66	4.47	1.19			0.15%			
E-183			0.760	0.624	0.474										90.45	90.11	0.35			3.755%	3.73		
E-182	Type 9 CI	22.88	0.760	0.624	0.474	10.00	0.10	6.18	0.474	0.000	2.93	0.22	9.44	-81.01	7.58	6.72	0.86	1	12	3.76%	9.55	7.50	
															6.58	5.72	0.86			0.26%			
E-184			0.760	1.050	0.798										100.40	99.13	1.27			1.425%	6.28		
E-185MH	Type 9 CI	40.44	0.760	1.050	0.798	10.00	0.11	6.18	0.798	0.000	4.93	0.61	9.56	-90.84	7.26	6.69	0.58	1	12	1.43%	5.90	4.63	
															6.26	5.69	0.58			0.26%			
E-185			0.760	0.758	0.576										99.58	99.13	0.45			7.591%	4.53		
E-185MH	Type 9 CI	15.55	0.760	0.758	0.576	10.00	0.06	6.18	0.576	0.000	3.56	0.32	9.09	-90.49	7.74	6.56	1.18	1	12	7.59%	13.57	10.66	
															6.74	5.56	1.18			0.26%			
E-186			0.760	0.496	0.377										113.08	112.38	0.70			2.055%	6.37		
E-186MH	Type 9 CI	17.02	0.760	1.069	0.813	10.10	0.04	6.15	0.813	0.000	5.00	0.42	10.34	-102.74	7.48	7.14	0.35	1	12	2.05%	7.06	5.54	
															6.48	6.14	0.35			0.26%			
E-187			0.760	0.573	0.436										113.37	113.08	0.28			0.420%	3.43		
E-186	Type 9 CI	20.49	0.760	0.573	0.436	10.00	0.10	6.18	0.436	0.000	2.69	0.18	10.34	-103.02	7.64	7.63	0.01	1	12	0.04%	0.97	0.76	L-187: Upstream invert adjusted due to adverse slope
															6.64	6.63	0.01			0.26%			
E-196			0.760	2.576	1.958										120.73	116.74	3.99			2.018%	8.71		
E-197MH	Type 9 CI	120.45	0.760	2.576	1.958	13.50	0.23	5.46	1.958	0.000	10.69	1.18	9.53	-111.20	7.69	7.52	0.17	1	15	0.14%	2.14	2.62	
															6.44	6.27	0.17			0.19%			
E-197MH					0.000										116.74	112.38	4.36			2.018%	8.71		
E-186MH	Type 8 MH	182.31			0.000	13.50	0.35	5.46	1.958	0.000	10.69	0.10	10.37	-106.37	7.54	7.30	0.24	1	15	0.13%	2.07	2.55	
															6.29	6.05	0.24			0.19%			
E-198			0.760	1.165	0.885										26.00	24.60	1.40			9.596%	6.96		
E-200A	Type F DBI	32.43	0.760	1.165	0.885	10.00	0.08	6.18	0.885	0.000	5.47	0.75	7.68	-18.33	6.23	3.11	3.11	1	12	9.60%	15.27	11.99	
															5.23	2.11	3.11			0.26%			
E-199			0.760	0.707	0.538										25.12	24.60	0.52			8.463%	4.23		
E-200A	Type F DBI	33.34	0.760	0.707	0.538	10.00	0.13	6.18	0.538	0.000	3.32	0.28	7.57	-17.56	5.94	3.11	2.82	1	12	8.46%	14.33	11.26	
															4.94	2.11	2.82			0.26%			
E-200			0.760	0.167	0.127										24.62	24.60	0.02			9.998%	1.00		
E-200A	Type F DBI	16.95	0.760	0.167	0.127	10.00	0.28	6.18	0.127	0.000	0.79	0.02	7.70	-16.92	5.31	3.61	1.69	1	12	10.00%	15.58	12.24	
															4.31	2.61	1.69			0.26%			
E-201			0.760	1.750	1.330										26.34	24.60	1.75			10.009%	9.11		
E-200A	Type F DBI	13.29	0.760	1.750	1.330	14.00	0.02	5.38	1.330	0.000	7.15	1.29	7.77	-18.58	4.94	3.61	1.33	1	12	10.00%	15.58	12.24	
															3.94	2.61	1.33			0.26%			
E-202			0.760	1.270	0.965										9.39	8.98	0.41			3.433%	4.51		
E-201MH	Type F DBI	15.43	0.760	1.270	0.965	12.00	0.06	5.74	0.965	0.000	5.54	0.32	8.60	-0.79	8.15	7.62	0.53	1	15	3.43%	10.59	13.00	
															6.90	6.37	0.53			0.19%			
E-201MH					0.000										8.98	4.66	4.32			0.932%	12.86		
E-203	Type 8 MH	38.25			0.000	27.67	0.05	3.89	40.623	0.000	161.64	3.91	9.41	0.43	2.29	2.15	0.14	1	48	0.38%	7.62	95.74	
															-1.71	-1.85	0.14			0.04%			
E-204			0.760	0.911	0.692										9.27	8.98	0.29			3.033%	3.48		
E-201MH	Type F DBI	27.05	0.760	0.911	0.692	10.00	0.13	6.18	0.692	0.000	4.27	0.19	8.09	-1.18	7.63	6.81	0.82	1	15	3.03%	9.95	12.21	
															6.38	5.56	0.82			0.19%			
E-164A			0.760	0.031	0.023										44.92	44.92	0.00			1.421%	0.12		
E-164	Type F DBI	33.94	0.760	0.031	0.023	10.00	4.81	6.18	0.023	0.000	0.14	0.00	7.28	-37.64	4.73	4.24	0.48	1	15	1.42%	6.81	8.36	
															3.48	2.99	0.48			0.19%			
E-164MH					0.000										43.37	38.24	5.13			0.454%	7.41		
E-169A	Type 8 MH	256.83			0.000	21.59	0.58	4.41	11.092	0.000	52.36	3.78	8.00	-35.37	4.45	4.25	0.20	1	36	0.08%	2.88	20.32	
															1.45	1.25	0.20			0.06%			
E-165A			0.760	0.663	0.504										50.04	43.37	6.67			4.724%	15.06		

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1

County: Duval
Organization: PARSONS

Network: Oleander (Existing)
State Road: A1A

Sheet: 3 of 3
Prepared by: MM
Checked by: TJG

Date: 11/30/2020
Date:

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 4.66

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	COMPOSITE C VALUE (INCREMENTAL / CUMULATIVE)	AREA (ac. or ha.)	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	UPPER END ELEVATION (ft) (HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
E-164MH	Type F DBI	104.00	0.760	7.405	5.628	21.48	0.12	4.42	5.628	0.000	26.60	0.99	7.56	-42.49	4.76	3.32	1.44	1	18	1.38%	7.58	13.40	
															3.26	1.82	1.44			0.15%			
E-166A			0.760	0.823	0.625										99.61	50.04	49.57			13.768%	21.66		
E-165A	Type F DBI	308.31	0.760	6.773	5.147	21.25	0.24	4.45	5.147	0.000	22.89	0.45	8.65	-90.96	6.01	5.26	0.76	1	14	0.25%	2.69	2.85	
															4.85	4.10	0.76			0.21%			
E-168A			0.760	1.340	1.018										180.32	162.65	17.67			28.260%	19.99		
E-166	Type F DBI	35.05	0.760	1.340	1.018	13.00	0.03	5.55	1.018	0.000	5.65	6.21	6.87	-173.45	6.07	6.02	0.05	1	8	0.14%	1.31	0.37	
															5.47	5.42	0.05			0.51%			
E-169A					0.000										38.24	35.36	2.89			0.831%	8.07		
E-170MH	Junction	33.82			0.000	22.16	0.07	4.36	12.308	0.000	57.05	2.68	7.39	-30.85	4.25	3.97	0.28	1	36	0.83%	9.33	65.92	
															1.25	0.97	0.28			0.06%			
E-170MH					0.000										35.36	25.01	10.34			0.786%	11.81		
E-198MH	Type 8 MH	518.77			0.000	26.07	0.73	4.02	36.086	0.000	148.38	5.63	6.96	-28.40	3.96	3.50	0.46	1	48	0.09%	3.70	46.46	
															-0.04	-0.50	0.46			0.04%			
E-170A					0.000										35.90	35.36	0.55			0.647%	8.84		
E-170MH	Junction	27.34			0.000	26.02	0.05	4.02	15.544	0.000	62.50	0.34	6.78	-29.12	4.00	3.87	0.13	1	36	0.48%	7.07	49.96	
															1.00	0.87	0.13			0.06%			
E-173MH					0.000										42.04	35.36	6.68			0.614%	6.99		
E-170MH	Type 8 MH	70.93			0.000	24.24	0.17	4.17	8.234	0.000	34.31	6.26	7.29	-34.75	2.88	2.44	0.44	1	30	0.62%	7.15	35.09	
															0.38	-0.06	0.44			0.08%			
E-174MH					0.000										81.78	45.85	35.93			4.025%	13.90		
E-173	Type 8 MH	570.99			0.000	20.06	0.68	4.57	5.373	0.000	24.56	9.33	8.02	-73.76	4.15	2.50	1.65	1	18	0.29%	3.47	6.13	
															2.65	1.00	1.65			0.15%			
E-176MH					0.000										39.05	35.90	3.15			0.504%	7.81		
E-170A	Type 8 MH	269.68			0.000	25.45	0.58	4.07	13.575	0.000	55.20	1.57	7.30	-31.75	4.57	4.00	0.57	1	36	0.21%	4.72	33.40	
															1.57	1.00	0.57			0.06%			
E-178A			0.760	0.591	0.449										50.37	50.23	0.13			0.182%	2.26		
E-178	Type F DBI	34.69	0.760	0.591	0.449	10.00	0.26	6.18	0.449	0.000	2.77	0.08	7.55	-42.82	5.86	5.79	0.06	1	15	0.18%	2.42	2.97	
															4.61	4.54	0.06			0.19%			
E-178MH					0.000										47.25	39.05	8.20			0.766%	8.52		
E-176MH	Type 8 MH	208.73			0.000	25.06	0.41	4.10	10.208	0.000	41.84	6.35	7.69	-39.56	4.88	4.45	0.43	1	30	0.20%	4.11	20.15	
															2.38	1.95	0.43			0.08%			
E-181MH					0.000										58.85	47.25	11.60			1.677%	10.87		
E-178MH	Type 8 MH	75.93			0.000	17.57	0.12	4.86	7.020	0.000	34.13	10.13	8.13	-50.72	4.73	4.54	0.19	1	24	0.25%	3.91	12.29	
															2.73	2.54	0.19			0.10%			
E-185MH					0.000										99.13	90.11	9.02			3.234%	12.46		
E-182	Type 8 MH	42.87			0.000	14.41	0.06	5.31	4.145	0.000	22.01	7.42	9.47	-89.66	7.25	7.24	0.01	1	18	0.03%	1.08	1.91	L-185A: Upstream invert adjusted due to adverse slope
															5.75	5.74	0.01			0.15%			
E-186MH					0.000										112.38	99.13	13.25			3.902%	12.12		
E-185MH	Type 8 MH	257.57			0.000	14.06	0.35	5.37	2.770	0.000	14.87	1.63	10.57	-101.82	7.42	6.76	0.66	1	15	0.25%	2.88	3.54	
															6.17	5.51	0.66			0.19%			
E-198MH					0.000										25.01	24.60	0.41			0.765%	11.65		
E-200A	Type 8 MH	33.09			0.000	26.78	0.05	3.96	36.086	0.000	146.38	0.12	8.48	-16.53	3.50	3.49	0.01	1	48	0.03%	2.16	27.12	L-198A: Upstream invert adjusted due to adverse slope
															-0.50	-0.51	0.01			0.04%			
E-200A					0.000										24.60	8.98	15.62			0.887%	12.55		
E-201MH	Junction	655.74			0.000	26.83	0.87	3.96	38.966	0.000	157.65	8.89	8.14	-16.46	3.61	2.73	0.88	1	48	0.13%	4.56	57.29	
															-0.39	-1.27	0.88			0.04%			

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | County: Duval | Network: Oleander (Proposed) | Sheet: 1 of 4
Description: System 1 | Organization: PARSONS | State Road: A1A | Prepared by: MM | Date: 12/14/2020
Checked by: TJG | Date:

NOTES AND REMARKS:
ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 4.66

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
S-160	Type 1 CI	63.35	0.760	1.810	1.376	10.00	0.39	6.18	1.376	0.000	8.50	0.11	7.52	0.26	7.26	7.07	0.19	1	24	0.104%	2.70	7.77	
S-161			0.760	1.810	1.376										4.57	4.51	0.06			0.10%	2.47		
															2.57	2.51	0.06			0.10%			
S-161	Type 4 CI	236.44	0.760	1.013	0.770	10.75	0.79	6.00	4.080	0.000	24.48	0.33	7.63	0.56	7.07	6.02	1.05	1	30	0.273%	4.99	23.58	
S-164MH			0.760	5.368	4.080										4.51	3.84	0.66			0.28%	4.80		
															2.01	1.34	0.66			0.08%			
S-162	Type 4 CI	93.80	0.760	1.174	0.892	10.41	0.65	6.08	1.934	0.000	11.76	0.06	7.91	0.71	7.20	7.07	0.13	1	30	0.256%	2.39	22.28	
S-161			0.760	2.545	1.934										4.74	4.51	0.23			0.25%	4.54		
															2.24	2.01	0.23			0.08%			
S-163	Type 4 CI	67.70	0.760	1.371	1.042	10.00	0.55	6.18	1.042	0.000	6.43	0.07	7.92	0.60	7.32	7.20	0.11	1	24	0.097%	2.05	7.77	
S-162			0.760	1.371	1.042										4.31	4.24	0.07			0.10%	2.47		
															2.31	2.24	0.07			0.10%			
S-164	Type F DBI	37.27	0.760	1.789	1.360	12.50	0.14	5.64	1.383	0.000	7.80	0.36	7.30	0.75	6.55	6.02	0.53	1	18	0.544%	4.42	8.38	
S-164MH			0.760	1.820	1.383										4.49	4.29	0.20			0.54%	4.74		
															2.99	2.79	0.20			0.15%			
E-165	Type F DBI	37.26	0.760	0.633	0.481	10.00	0.37	6.18	0.481	0.000	2.97	0.04	7.82	1.66	6.16	6.09	0.07	1	18	2.166%	1.68	16.76	L-165: Existing 18" RCP
S-165A			0.760	0.633	0.481										6.00	5.20	0.80			2.16%	9.49		
															4.50	3.70	0.80			0.15%			
S-166	Type F DBI	294.98	0.760	1.063	0.808	18.65	2.22	4.73	5.897	0.000	27.89	0.04	6.98	0.64	6.34	6.21	0.13	1	48	0.107%	2.22	49.34	
S-166A			0.760	7.759	5.897										4.55	4.26	0.29			0.10%	3.93		
															0.55	0.26	0.29			0.04%			
S-167	Type 9 CI	18.70	0.760	1.763	1.340	16.50	0.14	5.00	2.141	0.000	10.71	0.06	7.10	0.66	6.43	6.37	0.07	1	30	0.104%	2.18	14.20	
S-166MH			0.760	2.817	2.141										4.09	4.07	0.02			0.10%	2.89		
															1.59	1.57	0.02			0.08%			
S-168	Type F DBI	40.15	0.760	1.054	0.801	12.00	0.46	5.74	0.801	0.000	4.60	0.03	6.88	0.40	6.48	6.43	0.05	1	24	0.098%	1.46	7.76	
S-167			0.760	1.054	0.801										4.13	4.09	0.04			0.10%	2.47		
															2.13	2.09	0.04			0.10%			
S-169	Type 1 CI	9.06	0.760	1.602	1.218	12.00	0.04	5.74	1.218	0.000	6.99	0.24	7.17	1.38	5.79	5.51	0.28	1	18	0.326%	3.95	5.59	
S-169A			0.760	1.602	1.218										3.26	3.24	0.02			0.24%	3.16		
															1.76	1.74	0.02			0.15%			
E-170	Type 4 CI	10.81	0.760	2.594	1.971	23.00	0.03	4.28	1.971	0.000	8.43	0.73	7.09	0.66	6.43	5.54	0.89	1	15	2.127%	6.87	10.23	L-170: Existing 15" RCP
S-170A			0.760	2.594	1.971										4.48	4.25	0.23			2.13%	8.34		
															3.23	3.00	0.23			0.19%			
S-171	Type 4 CI	54.24	0.760	2.285	1.737	24.00	0.22	4.19	1.737	0.000	7.27	0.26	7.09	0.89	6.20	5.72	0.49	1	18	0.494%	4.12	8.07	
S-173MH			0.760	2.285	1.737										3.50	3.23	0.27			0.50%	4.57		
															2.00	1.73	0.27			0.15%			
E-172	Type 4 CI	24.71	0.760	0.607	0.461	10.00	0.26	6.18	0.461	0.000	2.85	0.04	7.37	1.60	5.77	5.72	0.06	1	18	0.733%	1.61	9.74	L-172: Existing 18" RCP
S-173MH			0.760	0.607	0.461										2.82	2.64	0.18			0.73%	5.51		
															1.32	1.14	0.18			0.15%			
S-173	Type F DBI	63.34	0.760	0.880	0.669	23.09	0.29	4.27	6.042	0.000	25.80	0.00	7.60	1.80	5.80	5.72	0.08	1	36	0.110%	3.65	22.85	
S-173MH			0.760	7.950	6.042										2.62	2.56	0.06			0.10%	3.23		
															-0.38	-0.44	0.06			0.06%			
S-174MH	Type 7 MH	570.40			0.000	20.40	2.76	4.53	5.373	0.000	24.36	0.00	8.02	1.57	6.45	5.80	0.65	1	36	0.098%	3.45	22.90	
S-173					0.000										3.19	2.62	0.57			0.10%	3.24		
															0.19	-0.38	0.57			0.06%			
S-175	Type 9 CI	37.04	0.760	0.748	0.569	20.26	0.14	4.55	4.775	0.000	21.72	0.21	7.48	0.72	6.75	6.45	0.30	1	30	0.206%	4.42	17.63	
S-174MH			0.760	6.283	4.775										3.25	3.19	0.06			0.16%	3.59		
															0.75	0.69	0.06			0.08%			
E-176	Type 1 CI	9.09	0.760	2.310	1.756	25.00	0.03	4.10	1.756	0.000	7.20	0.54	7.57	1.04	6.53	5.90	0.63	1	15	2.724%	5.87	11.59	L-176: Existing 15" RCP
S-176MH			0.760	2.310	1.756										5.22	4.97	0.25			2.73%	9.44		
															3.97	3.72	0.25			0.19%			
E-177	Type 1 CI	87.35	0.760	2.115	1.607	16.50	0.22	5.00	1.607	0.000	8.04	0.67	7.83	0.11	7.72	5.90	1.82	1	15	2.585%	6.55	11.28	L-177: Existing 15" RCP
S-176MH			0.760	2.115	1.607										5.59	3.33	2.26			2.59%	9.19		
															4.34	2.08	2.26			0.19%			
S-178	Type F DBI	32.18	0.760	3.050	2.318	25.00	0.08	4.10	2.767	0.000	11.35	0.58	7.75	0.47	7.29	6.38	0.90	1	18	0.881%	6.42	10.72	
S-178MH			0.760	3.641	2.767										5.96	5.68	0.28			0.88%	6.07		
															4.46	4.18	0.28			0.15%			

STORM SEWER TABULATION FORM

Financial Project ID: TO 6
Description: System 1

County: Duval
Organization: PARSONS

Network: Oleander (Proposed)
State Road: A1A

Sheet: 2 of 4
Prepared by: MM
Checked by: TJG

Date: 12/14/2020
Date:

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 4.66

Structure No. (Upper / Lower)	Type of Structure	Length (ft)	Drainage Area (ac. or ha.) Incremental / Cumulative: Composite C Value	Area	Sub-Total (C*A)	Time of Concentration (min)	Time of Flow in Section (min)	Intensity (in/hr)	Total (C*A)	Base Flow (cfs)	Total Flow (cfs)	Minor Losses (ft)	Inlet Elevation (ft)	HGL Clearance (ft)	Hydraulic Gradient / Crown / Flowline Elevation: Upper End Elevation (ft)	Lower End Elevation (ft)	Fall (ft)	Number of Barrels	Pipe Size (in) Rise / Span	Slope (%) Hyd. Grad. / Physical / Min. Physical	Actual Velocity (fps) / Physical Velocity (fps)	Full Flow Capacity (cfs)	Notes and Remarks
E-179	Type 1 CI	53.68	0.760	0.554	0.421	10.00	0.42	6.18	0.421	0.000	2.60	0.07	7.90	1.37	6.53	6.38	0.14	1	15	0.863%	2.12	6.51	L-179: Existing 15" RCP
S-178MH			0.760	0.554	0.421										5.05	4.59	0.46			0.86%	5.30		
															3.80	3.34	0.46			0.19%			
E-180	Type 4 CI	49.36	0.760	2.142	1.628	17.50	0.13	4.87	1.628	0.000	7.93	0.65	8.22	0.48	7.74	6.45	1.28	1	15	4.229%	6.46	14.44	L-180: Existing 15" RCP
S-181MH			0.760	2.142	1.628										6.07	3.98	2.09			4.23%	11.77		
															4.82	2.73	2.09			0.19%			
S-181	Type F DBI	43.63	0.760	0.865	0.657	18.35	0.20	4.77	5.390	0.000	25.69	0.02	8.14	1.61	6.54	6.45	0.08	1	36	0.126%	3.63	26.64	
S-181MH			0.760	7.092	5.390										3.91	3.85	0.06			0.14%	3.77		
															0.91	0.85	0.06			0.06%			
S-182	Type 9 CI	553.66	0.760	0.150	0.114	16.12	2.73	5.05	4.733	0.000	23.92	0.00	9.46	2.32	7.14	6.54	0.61	1	36	0.127%	3.38	26.13	
S-181			0.760	6.227	4.733										4.63	3.91	0.72			0.13%	3.70		
															1.63	0.91	0.72			0.06%			
E-183	Type 9 CI	22.88	0.760	0.624	0.474	10.00	0.05	6.18	0.474	0.000	2.93	0.35	9.44	1.63	7.81	6.19	1.61	1	12	7.057%	8.01	7.51	L-183: Existing 12" RCP
S-182			0.760	0.624	0.474										7.58	6.72	0.86			3.76%	9.56		
															6.58	5.72	0.86			0.26%			
E-184	Type 9 CI	41.86	0.760	1.050	0.798	10.00	0.11	6.18	0.798	0.000	4.93	0.61	9.56	0.84	8.71	7.42	1.29	1	12	1.409%	6.28	4.54	L-184: Existing 12" RCP
S-185MH			0.760	1.050	0.798										7.26	6.69	0.58			1.37%	5.78		
															6.26	5.69	0.58			0.26%			
E-185	Type 9 CI	15.85	0.760	0.758	0.576	10.00	0.03	6.18	0.576	0.000	3.56	0.43	9.09	0.87	8.22	6.03	2.19	1	12	13.833%	9.80	10.56	L-185: Existing 12" RCP
S-185MH			0.760	0.758	0.576										7.74	6.56	1.18			7.45%	13.45		
															6.74	5.56	1.18			0.26%			
S-186	Type 9 CI	18.27	0.760	0.496	0.377	10.10	0.11	6.15	0.813	0.000	5.00	0.07	10.34	2.54	7.80	7.70	0.11	1	18	0.192%	2.83	4.92	
S-186MH			0.760	1.069	0.813										5.10	5.06	0.03			0.19%	2.79		
															3.60	3.56	0.03			0.15%			
S-187	Type 9 CI	20.49	0.760	0.573	0.436	10.00	0.16	6.18	0.436	0.000	2.69	0.07	10.34	2.43	7.91	7.80	0.11	1	15	0.282%	2.19	3.70	
S-186			0.760	0.573	0.436										5.15	5.10	0.06			0.28%	3.02		
															3.90	3.85	0.06			0.19%			
S-196	Type 9 CI	120.32	0.760	2.576	1.958	13.50	0.59	5.46	1.958	0.000	10.69	0.18	9.53	1.05	8.48	8.07	0.41	1	24	0.190%	3.40	10.53	
S-197MH			0.760	2.576	1.958										5.63	5.41	0.22			0.18%	3.35		
															3.63	3.41	0.22			0.10%			
S-197MH	Type 7 MH	182.01			0.000	13.50	0.89	5.46	1.958	0.000	10.69	0.03	10.37	2.30	8.07	7.70	0.38	1	24	0.190%	3.40	10.71	
S-186MH					0.000										5.41	5.06	0.35			0.19%	3.41		
															3.41	3.06	0.35			0.10%			
S-198	Type F DBI	32.66	0.760	1.165	0.885	10.00	0.18	6.18	0.885	0.000	5.47	0.15	7.68	2.33	5.34	5.12	0.22	1	18	0.246%	3.09	5.59	
S-200A			0.760	1.165	0.885										2.70	2.62	0.08			0.24%	3.16		
															1.20	1.12	0.08			0.15%			
S-199	Type F DBI	33.44	0.760	0.707	0.537	10.00	0.30	6.18	0.537	0.000	3.32	0.05	7.57	2.36	5.20	5.12	0.08	1	18	0.152%	1.88	4.42	
S-200A			0.760	0.707	0.537										2.65	2.60	0.05			0.15%	2.50		
															1.15	1.10	0.05			0.15%			
S-200	Type F DBI	16.96	0.760	0.168	0.127	10.00	0.37	6.18	0.127	0.000	0.79	0.01	7.70	2.57	5.13	5.12	0.01	1	15	0.069%	0.76	3.06	
S-200A			0.760	0.168	0.127										5.42	5.39	0.03			0.19%	2.49		
															4.17	4.14	0.03			0.19%			
S-201	Type F DBI	13.30	0.760	1.750	1.330	14.00	0.04	5.38	1.330	0.000	7.15	0.53	7.77	1.98	5.79	5.12	0.67	1	15	0.903%	5.83	4.71	
S-200A			0.760	1.750	1.330										2.92	2.86	0.06			0.45%	3.84		
															1.67	1.61	0.06			0.19%			
E-202	Type F DBI	15.86	0.760	1.270	0.965	12.00	0.03	5.74	0.965	0.000	5.54	0.47	8.60	0.05	8.55	7.04	1.50	1	15	9.477%	8.20	12.82	L-202: Existing 15" RCP
S-201MH			0.760	1.270	0.965										8.15	7.62	0.53			3.34%	10.44		
															6.90	6.37	0.53			0.19%			
E-204	Type F DBI	27.06	0.760	0.911	0.692	10.00	0.06	6.18	0.692	0.000	4.27	0.37	8.09	0.38	7.71	6.12	1.59	1	15	5.877%	8.11	12.21	L-204: Existing 15" RCP
S-201MH			0.760	0.911	0.692										7.63	6.81	0.82			3.03%	9.95		
															6.38	5.56	0.82			0.19%			
S-157A	Type 9 CI	33.85	0.760	0.802	0.610	10.00	0.26	6.18	0.610	0.000	3.77	0.07	7.51	0.90	6.61	6.50	0.11	1	18	0.154%	2.13	4.56	
S-157B			0.760	0.802	0.610										4.46	4.40	0.05			0.16%	2.58		
															2.96	2.90	0.05			0.15%			
S-157B	Type 9 CI	23.77	0.760	1.002	0.762	17.00	0.18	4.94	1.371	0.000	6.77	0.05	7.36	0.86	6.50	6.43	0.07	1	24	0.254%	2.15	12.55	
S-157MH			0.760	1.804	1.371										4.40	4.34	0.06			0.26%	4.00		
															2.40	2.34	0.06			0.10%			
S-157C	Type 9 CI	86.07	0.760	0.736	0.559	17.34	1.07	4.89	1.931	0.000	9.44	0.00	7.28	0.87	6.41	6.39	0.02	1	36	0.107%	1.34	22.90	
S-167MH			0.760	2.540	1.931										4.30	4.22	0.09			0.10%	3.24		
															1.30	1.22	0.09			0.06%			
S-157MH					0.000										6.43	6.41	0.02			0.094%	1.38		

STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | County: Duval | Network: Oleander (Proposed) | Sheet: 3 of 4
Description: System 1 | Organization: PARSONS | State Road: A1A | Prepared by: MM | Date: 12/14/2020
Checked by: TJG | Date:

ZONE: Zone 4
FREQUENCY (yrs): 3.00 Year
MANNINGS n: 0.012
TAILWATER EL. (ft): 4.66

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
	Type 8 MH	40.34				17.00	0.49	4.94	1.371	0.000	6.77	0.01	7.79	1.36	4.34	4.30	0.04	1	30	0.10%		14.20	
S-157C					0.000										1.84	1.80	0.04			0.08%	2.89		
E-164A			0.760	0.031	0.023										6.55	6.55	0.00			1.421%	0.12		
S-164	Type F DBI	33.94	0.760	0.031	0.023	10.00	4.81	6.18	0.023	0.000	0.14	0.00	7.28	0.72	4.73	4.24	0.48	1	15	1.42%	6.81	8.36	L-164A: Existing 15" RCP
															3.48	2.99	0.48			0.19%			
S-164MH					0.000										6.02	5.51	0.51			0.141%	4.66		
S-169A	Type 8 MH	256.84			0.000	21.47	0.92	4.42	12.466	0.000	58.57	0.15	8.00	1.98	3.84	3.50	0.35	1	48	0.14%	4.56	57.35	
															-0.16	-0.50	0.35			0.04%			
S-165A			0.760	0.663	0.504										6.09	6.02	0.07			0.107%	2.62		
S-164MH	Type F DBI	104.00	0.760	9.214	7.003	21.07	0.66	4.46	7.003	0.000	32.98	0.03	7.56	1.46	3.95	3.84	0.10	1	48	0.10%	3.93	49.34	
															-0.05	-0.16	0.10			0.04%			
S-166A			0.760	0.823	0.625										6.21	6.09	0.12			0.104%	2.38		
S-165A	Type F DBI	307.65	0.760	8.581	6.522	19.84	2.15	4.59	6.522	0.000	29.97	0.00	8.65	2.44	4.26	3.95	0.31	1	48	0.10%	3.93	49.34	
															0.26	-0.05	0.31			0.04%			
S-166MH					0.000										6.37	6.34	0.02			0.104%	2.01		
S-166	Type 8 MH	15.55			0.000	18.58	0.13	4.74	4.072	0.000	19.29	0.02	7.47	1.10	4.07	4.05	0.02	1	42	0.10%	3.64	35.06	
															0.57	0.55	0.02			0.05%			
S-167MH					0.000										6.39	6.37	0.03			0.107%	1.34		
S-166MH	Type 8 MH	148.26			0.000	17.34	1.85	4.89	1.931	0.000	9.44	0.00	7.44	1.05	4.22	4.07	0.15	1	36	0.10%	3.24	22.89	
															1.22	1.07	0.15			0.06%			
S-168A			0.760	1.338	1.017										6.41	6.34	0.07			0.095%	1.80		
S-166	Type F DBI	35.05	0.760	1.338	1.017	13.00	0.33	5.55	1.017	0.000	5.64	0.05	6.87	0.46	4.59	4.55	0.04	1	24	0.10%	2.47	7.77	
															2.59	2.55	0.04			0.10%			
S-169A					0.000										5.51	5.35	0.17			0.141%	5.00		
S-170MH	Junction	33.84			0.000	22.28	0.11	4.34	13.683	0.000	62.88	0.11	7.39	1.88	3.50	3.45	0.05	1	48	0.15%	4.81	60.43	
															-0.50	-0.55	0.05			0.04%			
S-170A					0.000										5.54	5.35	0.19			0.136%	4.91		
S-170MH	Junction	27.61			0.000	26.64	0.09	3.97	15.541	0.000	61.73	0.15	6.78	1.24	3.48	3.45	0.03	1	48	0.12%	4.29	53.95	
															-0.52	-0.55	0.03			0.04%			
S-170MH					0.000										5.35	5.14	0.20			0.100%	3.38		
S-198MH	Type 8 MH	518.77			0.000	26.73	2.56	3.96	37.464	0.000	151.98	0.00	6.96	1.61	4.45	3.93	0.52	1	9x5 CBC	0.10%	5.39	242.48	
															-0.55	-1.07	0.52			0.02%			
S-173MH					0.000										5.72	5.35	0.37			0.196%	4.86		
S-170MH	Type 8 MH	71.02			0.000	24.18	0.24	4.17	8.240	0.000	34.39	0.21	7.29	1.57	2.56	2.45	0.11	1	36	0.16%	4.11	29.03	
															-0.44	-0.55	0.11			0.06%			
S-174			0.760	0.787	0.598										6.53	6.45	0.08			9.998%	2.09		
S-174MH	Type F DBI	13.64	0.760	0.787	0.598	10.00	0.11	6.18	0.598	0.000	3.70	0.07	7.60	1.07	5.77	4.41	1.36	1	18	10.00%	20.42	36.08	
															4.27	2.91	1.36			0.15%			
S-175A			0.760	1.740	1.323										7.06	6.75	0.31			0.162%	3.92		
S-175	Type 9 CI	63.92	0.760	5.535	4.206	20.00	0.27	4.58	4.206	0.000	19.25	0.19	7.62	0.56	3.32	3.25	0.07	1	30	0.11%	3.00	14.74	
															0.82	0.75	0.07			0.08%			
S-175B			0.760	1.901	1.445										7.17	7.06	0.11			0.151%	2.27		
S-175A	Type 9 CI	32.95	0.760	1.901	1.445	17.00	0.24	4.94	1.445	0.000	7.13	0.08	7.77	0.60	3.37	3.32	0.05	1	24	0.15%	3.02	9.48	
															1.37	1.32	0.05			0.10%			
S-175C			0.760	1.057	0.804										7.40	7.06	0.34			0.092%	2.54		
S-175A	Type F DBI	250.44	0.760	1.893	1.439	13.00	1.64	5.55	1.439	0.000	7.99	0.07	8.35	0.95	3.57	3.32	0.25	1	24	0.10%	2.47	7.76	
															1.57	1.32	0.25			0.10%			
S-175D			0.760	0.836	0.635										7.51	7.40	0.12			0.151%	2.22		
S-175C	Type 9 CI	33.50	0.760	0.836	0.635	10.00	0.25	6.18	0.635	0.000	3.92	0.08	8.62	1.11	3.62	3.57	0.05	1	18	0.15%	2.49	4.41	
															2.12	2.07	0.05			0.15%			
S-176MH					0.000										5.90	5.54	0.36			0.124%	4.37		
S-170A	Type 8 MH	269.75			0.000	25.73	1.03	4.04	13.569	0.000	54.87	0.02	7.30	1.41	3.83	3.48	0.35	1	48	0.13%	4.48	56.28	
															-0.17	-0.52	0.35			0.04%			
E-178A			0.760	0.591	0.449										7.42	7.29	0.13			0.182%	2.26		
S-178	Type F DBI	34.69	0.760	0.591	0.449	10.00	0.26	6.18	0.449	0.000	2.77	0.08	7.55	0.12	5.86	5.79	0.06	1	15	0.18%	2.42	2.97	L-178A: Existing 15" RCP
															4.61	4.54	0.06			0.19%			
S-178MH					0.000										6.38	5.90	0.49			0.170%	4.35		
S-176MH	Type 8 MH	208.75			0.000	25.08	0.80	4.10	10.206	0.000	41.81	0.18	7.69	1.31	3.71	3.33	0.38	1	42	0.18%	4.81	46.32	
															0.21	-0.17	0.38			0.05%			
S-181MH					0.000										6.45	6.38	0.07			0.191%	3.46		
S-178MH	Type 8 MH	75.88			0.000	18.53	0.37	4.74	7.018	0.000	33.30	0.00	8.13	1.68	3.85	3.71	0.15	1	42	0.19%	4.97	47.77	

STORM SEWER TABULATION FORM

Financial Project ID: TO 6 | **County:** Duval | **Network:** Oleander (Proposed) | **Sheet:** 4 of 4
Description: System 1 | **Organization:** PARSONS | **State Road:** A1A | **Prepared by:** MM | **Date:** 12/14/2020
Checked by: TJG | **Date:**

STRUCTURE NO. UPPER / LOWER	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.) INCREMENTAL / CUMULATIVE: COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)	TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT / CROWN / FLOWLINE ELEVATION: UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)	NUMBER OF BARRELS	PIPE SIZE (in) RISE / SPAN	SLOPE (%) HYD. GRAD. / PHYSICAL / MIN. PHYSICAL	ACTUAL VELOCITY (fps) / PHYSICAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS: ZONE: Zone 4; FREQUENCY (yrs): 3.00 Year; MANNINGS n: 0.012; TAILWATER EL. (ft): 4.66
S-178MH					0.000										0.35	0.21	0.15			0.05%	4.97		
S-185MH					0.000										7.42	7.14	0.28			0.284%	4.28		
S-182	Type 8 MH	42.87			0.000	15.99	0.17	5.07	4.145	0.000	21.03	0.18	9.47	2.05	4.75	4.63	0.12	1	30	0.29%	4.88	23.96	
															2.25	2.13	0.12			0.08%			
S-186MH					0.000										7.70	7.42	0.28			0.124%	2.96		
S-185MH	Type 8 MH	258.02			0.000	14.80	1.45	5.25	2.770	0.000	14.54	0.00	10.57	2.87	5.06	4.75	0.31	1	30	0.12%	3.15	15.44	
															2.56	2.25	0.31			0.08%			
S-198MH					0.000										5.14	5.12	0.02			0.095%	3.28		
S-200A	Type 8 MH	33.10			0.000	28.24	0.17	3.85	37.464	0.000	147.81	0.01	8.48	3.34	3.93	3.89	0.03	1	9x5 CBC	0.10%	5.38	242.08	
															-1.07	-1.11	0.03			0.02%			
S-200A					0.000										5.12	4.81	0.31			0.094%	3.53		
S-201MH	Junction	655.82			0.000	28.33	3.10	3.85	40.344	0.000	158.63	0.03	8.14	3.02	3.89	3.24	0.66	1	9x5 CBC	0.10%	5.39	242.46	
															-1.11	-1.76	0.66			0.02%			
S-201MH					0.000										4.81	4.66	0.15			0.095%	3.54		
S-203	Type 8 MH	38.38			0.000	30.25	0.18	3.72	42.001	0.000	159.49	0.13	9.41	4.60	3.24	3.20	0.04	1	9x5 CBC	0.10%	5.38	242.03	
															-1.76	-1.80	0.04			0.02%			

APPENDIX C

PRELIMINARY COST ESTIMATES

City of Neptune Beach Storm Sewer Improvements
Cost Estimate

Item	Weighted Average	Unit Meas	Description	Lemon St. Quantity	Lemon St. Cost	Lemon St. Remarks
0102 1	$968.83	DA	MAINTENANCE OF TRAFFIC	See below		
0102 3	$23.96	CY	COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	107.00	$2,563.72	10 driveways x 12' wide x 12' long x 2' deep
0102 60	$.25	ED	WORK ZONE SIGN	50.00	$12.50	Road closure detours and SR A1A
0102 61	$20.14	EA	BUSINESS SIGN	10.00	$201.40	
0102 71 13	$27.62	LF	TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE	295.10	$8,150.77	10% of culvert and pipe length
0102 71 23	$6.39	LF	TEMPORARY BARRIER, RELOCATE, LOW PROFILE CONCRETE	2,655.94	$16,971.43	90% of culvert and pipe length
0102 74 1	$.12	ED	CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	12,000.00	$1,440.00	30 @ 400 days
0102 74 2	$.32	ED	CHANNELIZING DEVICE, TYPE III, 6'	3,200.00	$1,024.00	8 @ 400 days
0102 74 7	$3.58	LF	CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	200.00	$716.00	
0102 76	$6.33	ED	ARROW BOARD / ADVANCE WARNING ARROW PANEL	400.00	$2,532.00	2 on SR A1A @ 200 days
0102 99	$10.71	ED	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1,600.00	$17,136.00	4 @ 400 days
0104 10 3	$1.59	LF	SEDIMENT BARRIER	50.00	$79.50	
0104 11	$7.84	LF	FLOATING TURBIDITY BARRIER	20.00	$156.80	
0104 18	$93.12	EA	INLET PROTECTION SYSTEM	10.00	$931.20	
0107 1	$19.61	AC	LITTER REMOVAL	10.00	$196.10	2 ac x 5 cycles
0107 2	$34.48	AC	MOWING	10.00	$344.80	2 ac x 5 cycles
0108 1	$15,448.01	EA	MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	2.00	$30,896.02	For 7'x3' installation
0108 3	$4,266.67	EA	MONITOR EXISTING STRUCTURES- GROUNDWATER MONITORING	2.00	$8,533.34	For 7'x3' installation
0110 1 1	$20,221.43	AC	CLEARING & GRUBBING	1.02	$20,548.98	15' wide x culvert and pipe length
0110 4 10	$19.47	SY	REMOVAL OF EXISTING CONCRETE	1,300.06	$25,312.16	Use sidewalk, curb, driveway and paver area
0120 1	$6.68	CY	REGULAR EXCAVATION		$0.00	Included in pipe and culvert
0160 4	$3.23	SY	TYPE B STABILIZATION	3,770.77	$12,179.60	10'+1.5' = 11.5' wide over culvert & pipe length
0285701	$12.09	SY	OPTIONAL BASE, BASE GROUP 01	3,278.93	$39,642.30	10' wide over culvert & pipe length
0334 1 11	$121.53	TN	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	541.02	$65,750.65	Same area as base. 3" Type A SP at 110 lb/sy/inch
0400 4 1	$1,013.10	CY	CONCRETE CLASS IV, CULVERTS	178.80	$181,142.28	0.60 cy/lf for 298 lf of 7' x 3'
0415 1 1	$.97	LB	REINFORCING STEEL- ROADWAY	39,336.00	$38,155.92	220 lb/cy conc for culvert
0425 1203	$7,321.00	EA	INLETS, CURB, TYPE 9, J BOT, <10'	1.00	$7,321.00	See storm tab
0425 1311	$5,025.37	EA	INLETS, CURB, TYPE P-1, <10'	2.00	$10,050.74	See storm tab
0425 1341	$6,829.64	EA	INLETS, CURB, TYPE P-4, <10'	3.00	$20,488.92	See storm tab
0425 1561	$5,023.51	EA	INLETS, DT BOT, TYPE F, <10'	16.00	$80,376.16	See storm tab
0425 1563	$7,381.40	EA	INLETS, DITCH BOTTOM, TYPE F, J BOT, <10'	5.00	$36,907.00	See storm tab
0425 2 41	$4,494.37	EA	MANHOLES, P-7, <10'		$0.00	
0425 2 61	$4,203.17	EA	MANHOLES, P-8, <10'	1.00	$4,203.17	See storm tab
0425 2 91	$6,893.71	EA	MANHOLES, J-8, <10'	4.00	$27,574.84	See storm tab
0425 3 41	$4,242.50	EA	JUNCTION BOX, DRAINAGE, P-7, <10'	1.00	$4,242.50	See storm tab
0430175118	$67.01	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	707.86	$47,433.70	See storm tab
0430175124	$76.53	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	840.21	$64,301.27	See storm tab
0430175130	$109.71	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	97.79	$10,728.54	See storm tab
0430175136	$127.95	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	196.07	$25,087.16	See storm tab
0430175142	$164.02	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 42"S/CD	496.55	$81,444.13	See storm tab
0430175148	$217.73	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 48"S/CD	314.56	$68,489.15	See storm tab
0520 1 10	$23.24	LF	CONCRETE CURB & GUTTER, TYPE F	1,475.52	$34,291.08	COJ curb and drop curb, assume 50% of culvert and pipe length
0522 1	$39.89	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	393.47	$15,695.60	Assume 6' wide over 20% of culvert and pipe length
0522 2	$56.24	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	78.69	$4,425.77	Assume 12' wide over 2% of culvert and pipe length
0526 1 1	$45.67	SY	PAVERS, ARCHITECTURAL, ROADWAY	500.00	$22,835.00	City center along Atlantic Blvd
0526 1 2	$135.29	SY	PAVERS, ARCHITECTURAL, SIDEWALK		$0.00	
0527 2	$29.93	SF	DETECTABLE WARNINGS	100.00	$2,993.00	Est 10 x 10sf each
0570 1 2	$2.61	SY	PERFORMANCE TURF, SOD	500.00	$1,305.00	
0711 11125	$4.51	LF	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	120.00	$541.20	Est 10 lane crossings at 12' each
0711 14123	$8.91	LF	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	240.00	$2,138.40	Est 10 lane crossings at 24' each

Subtotal	$1,047,490.81
MOT 5%	$52,374.54
Subtotal	$1,099,865.35
Mobilization 10%	$109,986.54
Subtotal	$1,209,851.89
Utility Coordination 10%	$120,985.19
Unknowns 20%	$241,970.38
Total Construction	$1,572,807.45
CEI 8% of Const	$125,824.60
Design 10% of Const	$157,280.75
Subtotal	$1,855,912.80
Right-of-way	$0.00
Mitigation	$0.00
Total Cost	$1,855,912.80

Source: Florida Department of Transporation Statewide Averages from 5/1/19 to 4/30/20

City of Neptune Beach Storm Sewer Improvements
Cost Estimate

Item	Weighted Average	Unit Meas	Description	Walnut St.		
				Quantity	Cost	Remarks
0102 1	$968.83	DA	MAINTENANCE OF TRAFFIC	See below		
0102 3	$23.96	CY	COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	107.00	$2,563.72	10 driveways x 12' wide x 12' long x 2' deep
0102 60	$.25	ED	WORK ZONE SIGN	50.00	$12.50	Road closure detours and SR A1A
0102 61	$20.14	EA	BUSINESS SIGN	10.00	$201.40	
0102 71 13	$27.62	LF	TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE	364.97	$10,080.33	10% of culvert and pipe length
0102 71 23	$6.39	LF	TEMPORARY BARRIER, RELOCATE, LOW PROFILE CONCRETE	3,284.69	$20,989.14	90% of culvert and pipe length
0102 74 1	$.12	ED	CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	12,000.00	$1,440.00	30 @ 400 days
0102 74 2	$.32	ED	CHANNELIZING DEVICE, TYPE III, 6'	3,200.00	$1,024.00	8 @ 400 days
0102 74 7	$3.58	LF	CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	200.00	$716.00	
0102 76	$6.33	ED	ARROW BOARD / ADVANCE WARNING ARROW PANEL	400.00	$2,532.00	2 on SR A1A @ 200 days
0102 99	$10.71	ED	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1,600.00	$17,136.00	4 @ 400 days
0104 10 3	$1.59	LF	SEDIMENT BARRIER	50.00	$79.50	
0104 11	$7.84	LF	FLOATING TURBIDITY BARRIER	20.00	$156.80	
0104 18	$93.12	EA	INLET PROTECTION SYSTEM	10.00	$931.20	
0107 1	$19.61	AC	LITTER REMOVAL	10.00	$196.10	2 ac x 5 cycles
0107 2	$34.48	AC	MOWING	10.00	$344.80	2 ac x 5 cycles
0108 1	$15,448.01	EA	MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	2.00	$30,896.02	For 5'x3' installation
0108 3	$4,266.67	EA	MONITOR EXISTING STRUCTURES- GROUNDWATER MONITORING	2.00	$8,533.34	For 5'x3' installation
0110 1 1	$20,221.43	AC	CLEARING & GRUBBING	1.26	$25,413.62	15' wide x culvert and pipe length
0110 4 10	$19.47	SY	REMOVAL OF EXISTING CONCRETE	989.46	$19,264.80	Use sidewalk, curb, driveway and paver area
0120 1	$6.68	CY	REGULAR EXCAVATION		$0.00	Included in pipe and culvert
0160 4	$3.23	SY	TYPE B STABILIZATION	4,663.44	$15,062.92	10'+1.5' = 11.5' wide over culvert & pipe length
0285701	$12.09	SY	OPTIONAL BASE, BASE GROUP 01	4,055.17	$49,026.97	10' wide over culvert & pipe length
0334 1 11	$121.53	TN	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	669.10	$81,316.03	Same area as base. 3" Type A SP at 110 lb/sy/inch
0400 4 1	$1,013.10	CY	CONCRETE CLASS IV, CULVERTS	135.60	$137,376.36	0.40 cy/lf for 339 lf of 5' x 3'
0415 1 1	$.97	LB	REINFORCING STEEL- ROADWAY	29,832.00	$28,937.04	220 lb/cy conc for culvert
0425 1201	$4,567.04	EA	INLETS, CURB, TYPE 9, <10'	12.00	$54,804.48	See storm tab
0425 1203	$7,321.00	EA	INLETS, CURB, TYPE 9, J BOT, <10'	1.00	$7,321.00	See storm tab
0425 1311	$5,025.37	EA	INLETS, CURB, TYPE P-1, <10'	2.00	$10,050.74	See storm tab
0425 1321	$5,923.95	EA	INLETS, CURB, TYPE P-2, <10'	1.00	$5,923.95	See storm tab
0425 1411	$6,964.54	EA	INLETS, CURB TYPE J-1, <10'	1.00	$6,964.54	See storm tab
0425 1561	$5,023.51	EA	INLETS, DT BOT, TYPE F, <10'	10.00	$50,235.10	See storm tab
0425 1563	$7,381.40	EA	INLETS, DITCH BOTTOM, TYPE F, J BOT, <10'	2.00	$14,762.80	See storm tab
0425 2 61	$4,203.17	EA	MANHOLES, P-8, <10'	3.00	$12,609.51	See storm tab
0425 2 91	$6,893.71	EA	MANHOLES, J-8, <10'	4.00	$27,574.84	See storm tab
0430175115	$125.99	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 15"S/CD	609.95	$76,847.60	See storm tab
0430175118	$67.01	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	298.37	$19,993.77	See storm tab
0430175124	$76.53	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	476.81	$36,490.27	See storm tab
0430175130	$109.71	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	1,083.21	$118,838.97	See storm tab
0430175136	$127.95	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	517.70	$66,239.72	See storm tab
0430175142	$164.02	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 42"S/CD	74.28	$12,183.41	See storm tab
0430175148	$217.73	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 48"S/CD	250.33	$54,504.35	See storm tab
0520 1 10	$23.24	LF	CONCRETE CURB & GUTTER, TYPE F	1,824.83	$42,408.93	COJ curb and drop curb, assume 50% of culvert and pipe length
0522 1	$39.89	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	486.62	$19,411.27	Assume 6' wide over 20% of culvert and pipe length
0522 2	$56.24	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	97.32	$5,473.50	Assume 12' wide over 2% of culvert and pipe length
0527 2	$29.93	SF	DETECTABLE WARNINGS	100.00	$2,993.00	Est 10 x 10sf each
0570 1 2	$2.61	SY	PERFORMANCE TURF, SOD	500.00	$1,305.00	
0711 11125	$4.51	LF	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	120.00	$541.20	Est 10 lane crossings at 12' each
0711 14123	$8.91	LF	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	240.00	$2,138.40	Est 10 lane crossings at 24' each

Subtotal	$1,103,846.93
MOT 5%	$55,192.35
Subtotal	$1,159,039.27
Mobilization 10%	$115,903.93
Subtotal	$1,274,943.20
Utility Coordination 10%	$127,494.32
Unknowns 20%	$254,988.64
Total Construction	$1,657,426.16
CEI 8% of Const	$198,891.14
Design 10% of Const	$165,742.62
Subtotal	$2,022,059.91
Right-of-way	$0.00
Mitigation	$0.00
Total Cost	$2,022,059.91

Source: Florida Department of Transporation Statewide Averages from 5/1/19 to 4/30/20

City of Neptune Beach Storm Sewer Improvements
Cost Estimate

Item	Weighted Average	Unit Meas	Description	Pine St.		
				Quantity	Cost	Remarks
0102 1	$968.83	DA	MAINTENANCE OF TRAFFIC	See below		
0102 3	$23.96	CY	COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	107.00	$2,563.72	10 driveways x 12' wide x 12' long x 2' deep
0102 60	$.25	ED	WORK ZONE SIGN	50.00	$12.50	Road closure detours and SR A1A
0102 61	$20.14	EA	BUSINESS SIGN	10.00	$201.40	
0102 71 13	$27.62	LF	TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE	199.32	$5,505.08	10% of culvert and pipe length
0102 71 23	$6.39	LF	TEMPORARY BARRIER, RELOCATE, LOW PROFILE CONCRETE	1,793.84	$11,462.61	90% of culvert and pipe length
0102 74 1	$.12	ED	CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	12,000.00	$1,440.00	30 @ 400 days
0102 74 2	$.32	ED	CHANNELIZING DEVICE, TYPE III, 6'	3,200.00	$1,024.00	8 @ 400 days
0102 74 7	$3.58	LF	CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	200.00	$716.00	
0102 76	$6.33	ED	ARROW BOARD / ADVANCE WARNING ARROW PANEL	400.00	$2,532.00	2 on SR A1A @ 200 days
0102 99	$10.71	ED	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1,600.00	$17,136.00	4 @ 400 days
0104 10 3	$1.59	LF	SEDIMENT BARRIER	50.00	$79.50	
0104 11	$7.84	LF	FLOATING TURBIDITY BARRIER	20.00	$156.80	
0104 18	$93.12	EA	INLET PROTECTION SYSTEM	10.00	$931.20	
0107 1	$19.61	AC	LITTER REMOVAL	10.00	$196.10	2 ac x 5 cycles
0107 2	$34.48	AC	MOWING	10.00	$344.80	2 ac x 5 cycles
0108 1	$15,448.01	EA	MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	2.00	$30,896.02	For 5'x3' installation
0108 3	$4,266.67	EA	MONITOR EXISTING STRUCTURES- GROUNDWATER MONITORING	2.00	$8,533.34	For 5'x3' installation
0110 1 1	$20,221.43	AC	CLEARING & GRUBBING	0.69	$13,878.91	15' wide x culvert and pipe length
0110 4 10	$19.47	SY	REMOVAL OF EXISTING CONCRETE	540.37	$10,520.91	Use sidewalk, curb, driveway and paver area
0120 1	$6.68	CY	REGULAR EXCAVATION		$0.00	Included in pipe and culvert
0160 4	$3.23	SY	TYPE B STABILIZATION	2,546.80	$8,226.17	10'+1.5' = 11.5' wide over culvert & pipe length
0285701	$12.09	SY	OPTIONAL BASE, BASE GROUP 01	2,214.61	$26,774.65	10' wide over culvert & pipe length
0334 1 11	$121.53	TN	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	365.41	$44,408.38	Same area as base. 3" Type A SP at 110 lb/sy/inch
0400 4 1	$1,013.10	CY	CONCRETE CLASS IV, CULVERTS	94.80	$96,041.88	0.40 cy/lf for 237 lf of 5' x 3'
0415 1 1	$.97	LB	REINFORCING STEEL- ROADWAY	20,856.00	$20,230.32	220 lb/cy conc for culvert
0425 1201	$4,567.04	EA	INLETS, CURB, TYPE 9, <10'	6.00	$27,402.24	See storm tab
0425 1203	$7,321.00	EA	INLETS, CURB, TYPE 9, J BOT, <10'	2.00	$14,642.00	See storm tab
0425 1311	$5,025.37	EA	INLETS, CURB, TYPE P-1, <10'	3.00	$15,076.11	See storm tab
0425 1341	$6,829.64	EA	INLETS, CURB, TYPE P-4, <10'	1.00	$6,829.64	See storm tab
0425 1411	$6,964.54	EA	INLETS, CURB TYPE J-1, <10'	1.00	$6,964.54	See storm tab
0425 1561	$5,023.51	EA	INLETS, DT BOT, TYPE F, <10'	3.00	$15,070.53	See storm tab
0425 1563	$7,381.40	EA	INLETS, DITCH BOTTOM, TYPE F, J BOT, <10'	3.00	$22,144.20	See storm tab
0425 2 61	$4,203.17	EA	MANHOLES, P-8, <10'	2.00	$8,406.34	See storm tab
0425 2 91	$6,893.71	EA	MANHOLES, J-8, <10'	3.00	$20,681.13	See storm tab
0430175118	$67.01	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	360.52	$24,158.45	See storm tab
0430175124	$76.53	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	377.94	$28,923.75	See storm tab
0430175130	$109.71	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	17.08	$1,873.85	See storm tab
0430175136	$127.95	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	305.97	$39,148.86	See storm tab
0430175142	$164.02	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 42"S/CD	694.64	$113,934.85	See storm tab
0520 1 10	$23.24	LF	CONCRETE CURB & GUTTER, TYPE F	996.58	$23,160.40	COJ curb and drop curb, assume 50% of culvert and pipe length
0522 1	$39.89	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	265.75	$10,600.90	Assume 6' wide over 20% of culvert and pipe length
0522 2	$56.24	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	53.15	$2,989.19	Assume 12' wide over 2% of culvert and pipe length
0527 2	$29.93	SF	DETECTABLE WARNINGS	100.00	$2,993.00	Est 10 x 10sf each
0570 1 2	$2.61	SY	PERFORMANCE TURF, SOD	500.00	$1,305.00	
0711 11125	$4.51	LF	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	120.00	$541.20	Est 10 lane crossings at 12' each
0711 14123	$8.91	LF	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	240.00	$2,138.40	Est 10 lane crossings at 24' each
			Subtotal		$692,796.86	
			MOT 5%		$34,639.84	
			Subtotal		$727,436.71	
			Mobilization 10%		$72,743.67	
			Subtotal		$800,180.38	
			Utility Coordination 10%		$80,018.04	
			Unknowns 20%		$160,036.08	
			Total Construction		$1,040,234.49	
			CEI 8% of Const		$124,828.14	
			Design 10% of Const		$104,023.45	
			Subtotal		$1,269,086.08	
			Right-of-way		$0.00	
			Mitigation		$0.00	
			Total Cost		$1,269,086.08	

Source: Florida Department of Transporation Statewide Averages from 5/1/19 to 4/30/20

City of Neptune Beach Storm Sewer Improvements
Cost Estimate

Item	Weighted Average	Unit Meas	Description	Florida Blvd. N		
				Quantity	Cost	Remarks
0102 1	$968.83	DA	MAINTENANCE OF TRAFFIC	See below		
0102 3	$23.96	CY	COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	107.00	$2,563.72	10 driveways x 12' wide x 12' long x 2' deep
0102 60	$.25	ED	WORK ZONE SIGN	50.00	$12.50	Road closure detours and SR A1A
0102 61	$20.14	EA	BUSINESS SIGN	10.00	$201.40	
0102 71 13	$27.62	LF	TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE	421.98	$11,654.95	10% of culvert and pipe length
0102 71 23	$6.39	LF	TEMPORARY BARRIER, RELOCATE, LOW PROFILE CONCRETE	3,797.78	$24,267.78	90% of culvert and pipe length
0102 74 1	$.12	ED	CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	12,000.00	$1,440.00	30 @ 400 days
0102 74 2	$.32	ED	CHANNELIZING DEVICE, TYPE III, 6'	3,200.00	$1,024.00	8 @ 400 days
0102 74 7	$3.58	LF	CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	200.00	$716.00	
0102 76	$6.33	ED	ARROW BOARD / ADVANCE WARNING ARROW PANEL	400.00	$2,532.00	2 on SR A1A @ 200 days
0102 99	$10.71	ED	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1,600.00	$17,136.00	4 @ 400 days
0104 10 3	$1.59	LF	SEDIMENT BARRIER	50.00	$79.50	
0104 11	$7.84	LF	FLOATING TURBIDITY BARRIER	20.00	$156.80	
0104 18	$93.12	EA	INLET PROTECTION SYSTEM	10.00	$931.20	
0107 1	$19.61	AC	LITTER REMOVAL	10.00	$196.10	2 ac x 5 cycles
0107 2	$34.48	AC	MOWING	10.00	$344.80	2 ac x 5 cycles
0108 1	$15,448.01	EA	MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	2.00	$30,896.02	For 5'x3' and 6'x3' installation
0108 3	$4,266.67	EA	MONITOR EXISTING STRUCTURES- GROUNDWATER MONITORING	2.00	$8,533.34	For 5'x3' and 6'x3' installation
0110 1 1	$20,221.43	AC	CLEARING & GRUBBING	1.45	$29,383.40	15' wide x culvert and pipe length
0110 4 10	$19.47	SY	REMOVAL OF EXISTING CONCRETE	1,144.02	$22,274.09	Use sidewalk, curb, driveway and paver area
0120 1	$6.68	CY	REGULAR EXCAVATION		$0.00	Included in pipe and culvert
0160 4	$3.23	SY	TYPE B STABILIZATION	5,391.90	$17,415.85	10'+1.5' = 11.5' wide over culvert & pipe length
0285701	$12.09	SY	OPTIONAL BASE, BASE GROUP 01	4,688.61	$56,685.31	10' wide over culvert & pipe length
0334 1 11	$121.53	TN	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	773.62	$94,018.14	Same area as base. 3" Type A SP at 110 lb/sy/inch
0400 4 1	$1,013.10	CY	CONCRETE CLASS IV, CULVERTS	148.16	$150,100.90	0.40 cy/lf for 69 lf of 5' x 3' and 0.44 cy/lf for 274 lf of 6' x 3'
0415 1 1	$.97	LB	REINFORCING STEEL- ROADWAY	32,595.20	$31,617.34	220 lb/cy conc for culvert
0425 1201	$4,567.04	EA	INLETS, CURB, TYPE 9, <10'	15.00	$68,505.60	See storm tab
0425 1203	$7,321.00	EA	INLETS, CURB, TYPE 9, J BOT, <10'	3.00	$21,963.00	See storm tab
0425 1311	$5,025.37	EA	INLETS, CURB, TYPE P-1, <10'	4.00	$20,101.48	See storm tab
0425 1341	$6,829.64	EA	INLETS, CURB, TYPE P-4, <10'	4.00	$27,318.56	See storm tab
0425 1351	$5,067.61	EA	INLETS, CURB, TYPE P-5, <10'	2.00	$10,135.22	See storm tab
0425 1361	$5,358.64	EA	INLETS, CURB, TYPE P-6, <10'	2.00	$10,717.28	See storm tab
0425 1563	$7,381.40	EA	INLETS, DITCH BOTTOM, TYPE F, J BOT, <10'	2.00	$14,762.80	See storm tab
0425 2 61	$4,203.17	EA	MANHOLES, P-8, <10'	4.00	$16,812.68	See storm tab
0425 2 91	$6,893.71	EA	MANHOLES, J-8, <10'	6.00	$41,362.26	See storm tab
0430175118	$67.01	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	151.30	$10,138.61	See storm tab
0430175124	$76.53	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	1,208.17	$92,461.25	See storm tab
0430175130	$109.71	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	705.47	$77,397.11	See storm tab
0430175136	$127.95	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	361.83	$46,296.15	See storm tab
0430175142	$164.02	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 42"S/CD	289.66	$47,510.03	See storm tab
0430175148	$217.73	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 48"S/CD	527.82	$114,922.25	See storm tab
0520 1 10	$23.24	LF	CONCRETE CURB & GUTTER, TYPE F	2,109.88	$49,033.50	COJ curb and drop curb, assume 50% of culvert and pipe length
0522 1	$39.89	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	562.63	$22,443.44	Assume 6' wide over 20% of culvert and pipe length
0522 2	$56.24	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	112.53	$6,328.50	Assume 12' wide over 2% of culvert and pipe length
0527 2	$29.93	SF	DETECTABLE WARNINGS	100.00	$2,993.00	Est 10 x 10sf each
0570 1 2	$2.61	SY	PERFORMANCE TURF, SOD	500.00	$1,305.00	
0711 11125	$4.51	LF	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	120.00	$541.20	Est 10 lane crossings at 12' each
0711 14123	$8.91	LF	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	240.00	$2,138.40	Est 10 lane crossings at 24' each
			Subtotal		$1,304,414.23	
			MOT 5%		$65,220.71	
			Subtotal		$1,369,634.94	
			Mobilization 10%		$136,963.49	
			Subtotal		$1,506,598.44	
			Utility Coordination 10%		$150,659.84	
			Unknowns 20%		$301,319.69	
			Total Construction		$1,958,577.97	
			CEI 8% of Const		$235,029.36	
			Design 10% of Const		$195,857.80	
			Subtotal		$2,389,465.12	
			Right-of-way		$0.00	
			Mitigation		$0.00	
			Total Cost		$2,389,465.12	

Source: Florida Department of Transporation Statewide Averages from 5/1/19 to 4/30/20

City of Neptune Beach Storm Sewer Improvements
Cost Estimate

Item	Weighted Average	Unit Meas	Description	Florida Blvd. S Quantity	Cost	Remarks
0102 1	$968.83	DA	MAINTENANCE OF TRAFFIC	See below		
0102 3	$23.96	CY	COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	53.00	$1,269.88	5 driveways x 12' wide x 12' long x 2' deep
0102 60	$.25	ED	WORK ZONE SIGN	50.00	$12.50	Road closure detours and SR A1A
0102 61	$20.14	EA	BUSINESS SIGN	10.00	$201.40	
0102 71 13	$27.62	LF	TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE	166.88	$4,609.14	10% of culvert and pipe length
0102 71 23	$6.39	LF	TEMPORARY BARRIER, RELOCATE, LOW PROFILE CONCRETE	1,501.89	$9,597.10	90% of culvert and pipe length
0102 74 1	$.12	ED	CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	6,000.00	$720.00	15 @ 400 days
0102 74 7	$3.58	LF	CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	100.00	$358.00	
0102 76	$6.33	ED	ARROW BOARD / ADVANCE WARNING ARROW PANEL	400.00	$2,532.00	2 on SR A1A @ 200 days
0102 99	$10.71	ED	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1,600.00	$17,136.00	4 @ 400 days
0104 10 3	$1.59	LF	SEDIMENT BARRIER	50.00	$79.50	
0104 11	$7.84	LF	FLOATING TURBIDITY BARRIER	20.00	$156.80	
0104 18	$93.12	EA	INLET PROTECTION SYSTEM	10.00	$931.20	
0107 1	$19.61	AC	LITTER REMOVAL	10.00	$196.10	2 ac x 5 cycles
0107 2	$34.48	AC	MOWING	10.00	$344.80	2 ac x 5 cycles
0108 1	$15,448.01	EA	MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	1.00	$15,448.01	For 5'x3' installation
0108 3	$4,266.67	EA	MONITOR EXISTING STRUCTURES- GROUNDWATER MONITORING	1.00	$4,266.67	For 5'x3' installation
0110 1 1	$20,221.43	AC	CLEARING & GRUBBING	0.57	$11,620.15	15' wide x culvert and pipe length
0110 4 10	$19.47	SY	REMOVAL OF EXISTING CONCRETE	452.42	$8,808.66	Use sidewalk, curb, driveway and paver area
0120 1	$6.68	CY	REGULAR EXCAVATION		$0.00	Included in pipe and culvert
0160 4	$3.23	SY	TYPE B STABILIZATION	2,132.32	$6,887.38	10'+1.5' = 11.5' wide over culvert & pipe length
0285701	$12.09	SY	OPTIONAL BASE, BASE GROUP 01	1,854.19	$22,417.14	10' wide over culvert & pipe length
0334 1 11	$121.53	TN	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	305.94	$37,181.03	Same area as base. 3" Type A SP at 110 lb/sy/inch
0400 4 1	$1,013.10	CY	CONCRETE CLASS IV, CULVERTS	50.00	$50,655.00	0.40 cy/lf for 125 lf of 5' x 3'
0415 1 1	$.97	LB	REINFORCING STEEL- ROADWAY	11,000.00	$10,670.00	220 lb/cy conc for culvert
0425 1201	$4,567.04	EA	INLETS, CURB, TYPE 9, <10'	2.00	$9,134.08	See storm tab
0425 1203	$7,321.00	EA	INLETS, CURB, TYPE 9, J BOT, <10'	2.00	$14,642.00	See storm tab
0425 1311	$5,025.37	EA	INLETS, CURB, TYPE P-1, <10'	1.00	$5,025.37	See storm tab
0425 1341	$6,829.64	EA	INLETS, CURB, TYPE P-4, <10'	1.00	$6,829.64	See storm tab
0425 1411	$6,964.54	EA	INLETS, CURB TYPE J-1, <10'	1.00	$6,964.54	See storm tab
0425 1451	$7,269.63	EA	INLETS, CURB, TYPE J-5, <10'	1.00	$7,269.63	See storm tab
0425 1561	$5,023.51	EA	INLETS, DT BOT, TYPE F, <10'	1.00	$5,023.51	See storm tab
0425 1563	$7,381.40	EA	INLETS, DITCH BOTTOM, TYPE F, J BOT, <10'	2.00	$14,762.80	See storm tab
0425 2 61	$4,203.17	EA	MANHOLES, P-8, <10'	1.00	$4,203.17	See storm tab
0425 2 91	$6,893.71	EA	MANHOLES, J-8, <10'	1.00	$6,893.71	See storm tab
0430175118	$67.01	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	9.19	$615.82	See storm tab
0430175124	$76.53	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	175.82	$13,455.50	See storm tab
0430175130	$109.71	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	113.75	$12,479.51	See storm tab
0430175136	$127.95	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	308.41	$39,461.06	See storm tab
0430175142	$164.02	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 42"S/CD	936.60	$153,621.13	See storm tab
0520 1 10	$23.24	LF	CONCRETE CURB & GUTTER, TYPE F	834.39	$19,391.11	COJ curb and drop curb, assume 50% of culvert and pipe length
0522 1	$39.89	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	222.50	$8,875.63	Assume 6' wide over 20% of culvert and pipe length
0522 2	$56.24	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	44.50	$2,502.71	Assume 12' wide over 2% of culvert and pipe length
0527 2	$29.93	SF	DETECTABLE WARNINGS	50.00	$1,496.50	Est 5 x 10sf each
0570 1 2	$2.61	SY	PERFORMANCE TURF, SOD	250.00	$652.50	
0711 11125	$4.51	LF	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	60.00	$270.60	Est 5 lane crossings at 12' each
0711 14123	$8.91	LF	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	120.00	$1,069.20	Est 5 lane crossings at 24' each
			Subtotal		$540,738.19	
			MOT 5%		$27,036.91	
			Subtotal		$567,775.10	
			Mobilization 10%		$56,777.51	
			Subtotal		$624,552.61	
			Utility Coordination 10%		$62,455.26	
			Unknowns 20%		$124,910.52	
			Total Construction		$811,918.40	
			CEI 8% of Const		$97,430.21	
			Design 10% of Const		$81,191.84	
			Subtotal		$990,540.45	
			Right-of-way		$0.00	
			Mitigation		$0.00	
			Total Cost		$990,540.45	

Source: Florida Department of Transporation Statewide Averages from 5/1/19 to 4/30/20

City of Neptune Beach Storm Sewer Improvements
Cost Estimate

Item	Weighted Average	Unit Meas	Description	Oleander St. Quantity	Cost	Remarks
0102 1	$968.83	DA	MAINTENANCE OF TRAFFIC	See below		
0102 3	$23.96	CY	COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	214.00	$5,127.44	20 driveways x 12' wide x 12' long x 2' deep
0102 60	$.25	ED	WORK ZONE SIGN	100.00	$25.00	
0102 61	$20.14	EA	BUSINESS SIGN	20.00	$402.80	
0102 71 13	$27.62	LF	TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE	633.30	$17,491.61	10% of culvert and pipe length
0102 71 23	$6.39	LF	TEMPORARY BARRIER, RELOCATE, LOW PROFILE CONCRETE	5,699.66	$36,420.80	90% of culvert and pipe length
0102 74 1	$.12	ED	CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	24,000.00	$2,880.00	60 @ 400 days
0102 74 2	$.32	ED	CHANNELIZING DEVICE, TYPE III, 6'	6,400.00	$2,048.00	16 @ 400 days
0102 74 7	$3.58	LF	CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	400.00	$1,432.00	
0102 76	$6.33	ED	ARROW BOARD / ADVANCE WARNING ARROW PANEL	400.00	$2,532.00	2 on SR A1A @ 200 days
0102 99	$10.71	ED	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1,600.00	$17,136.00	4 @ 400 days
0104 10 3	$1.59	LF	SEDIMENT BARRIER	100.00	$159.00	
0104 11	$7.84	LF	FLOATING TURBIDITY BARRIER	40.00	$313.60	
0104 18	$93.12	EA	INLET PROTECTION SYSTEM	20.00	$1,862.40	
0107 1	$19.61	AC	LITTER REMOVAL	20.00	$392.20	4 ac x 5 cycles
0107 2	$34.48	AC	MOWING	20.00	$689.60	4 ac x 5 cycles
0108 1	$15,448.01	EA	MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	4.00	$61,792.04	For 9'x5' installation
0108 3	$4,266.67	EA	MONITOR EXISTING STRUCTURES- GROUNDWATER MONITORING	4.00	$17,066.68	For 9'x5' installation
0110 1 1	$20,221.43	AC	CLEARING & GRUBBING	2.18	$44,098.25	15' wide x culvert and pipe length
0110 4 10	$19.47	SY	REMOVAL OF EXISTING CONCRETE	1,716.93	$33,428.69	Use sidewalk, curb, driveway and paver area
0120 1	$6.68	CY	REGULAR EXCAVATION		$0.00	Included in pipe and culvert
0160 4	$3.23	SY	TYPE B STABILIZATION	8,092.10	$26,137.49	10'+1.5' = 11.5' wide over culvert & pipe length
0285701	$12.09	SY	OPTIONAL BASE, BASE GROUP 01	7,036.61	$85,072.63	10' wide over culvert & pipe length
0334 1 11	$121.53	TN	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	1,161.04	$141,101.29	Same area as base. 3" Type A SP at 110 lb/sy/inch
0400 4 1	$1,013.10	CY	CONCRETE CLASS IV, CULVERTS	971.88	$984,611.63	0.78 cy/lf for 1246 lf of 9' x 5'
0415 1 1	$.97	LB	REINFORCING STEEL- ROADWAY	213,813.60	$207,399.19	220 lb/cy conc for culvert
0425 1201	$4,567.04	EA	INLETS, CURB, TYPE 9, <10'	13.00	$59,371.52	See storm tab
0425 1203	$7,321.00	EA	INLETS, CURB, TYPE 9, J BOT, <10'	2.00	$14,642.00	See storm tab
0425 1311	$5,025.37	EA	INLETS, CURB, TYPE P-1, <10'	5.00	$25,126.85	See storm tab
0425 1341	$6,829.64	EA	INLETS, CURB, TYPE P-4, <10'	7.00	$47,807.48	See storm tab
0425 1561	$5,023.51	EA	INLETS, DT BOT, TYPE F, <10'	15.00	$75,352.65	See storm tab
0425 1563	$7,381.40	EA	INLETS, DITCH BOTTOM, TYPE F, J BOT, <10'	5.00	$36,907.00	See storm tab
0425 2 41	$4,494.37	EA	MANHOLES, P-7, <10'	1.00	$4,494.37	See storm tab
0425 2 61	$4,203.17	EA	MANHOLES, P-8, <10'	3.00	$12,609.51	See storm tab
0425 2 71	$8,605.10	EA	MANHOLES, J-7, <10'	1.00	$8,605.10	See storm tab
0425 2 91	$6,893.71	EA	MANHOLES, J-8, <10'	10.00	$68,937.10	See storm tab
0425 3 41	$4,242.50	EA	JUNCTION BOX, DRAINAGE, P-7, <10'	3.00	$12,727.50	See storm tab
0430175115	$125.99	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 15"S/CD	50.75	$6,393.99	See storm tab
0430175118	$67.01	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	298.11	$19,976.35	See storm tab
0430175124	$76.53	LF	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	815.73	$62,427.82	See storm tab
0430175130	$109.71	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	791.13	$86,794.87	See storm tab
0430175136	$127.95	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	1,536.37	$196,578.54	See storm tab
0430175142	$164.02	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 42"S/CD	300.19	$49,237.16	See storm tab
0430175148	$217.73	LF	PIPE CULVERT, OPT MATERIAL, ROUND, 48"S/CD	1,294.67	$281,888.50	See storm tab
0520 1 10	$23.24	LF	CONCRETE CURB & GUTTER, TYPE F	3,166.48	$73,588.88	COJ curb and drop curb, assume 50% of culvert and pipe length
0522 1	$39.89	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	844.39	$33,682.85	Assume 6' wide over 20% of culvert and pipe length
0522 2	$56.24	SY	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	168.88	$9,497.74	Assume 12' wide over 2% of culvert and pipe length
0527 2	$29.93	SF	DETECTABLE WARNINGS	200.00	$5,986.00	Est 20 x 10sf each
0570 1 2	$2.61	SY	PERFORMANCE TURF, SOD	1,000.00	$2,610.00	
0711 11125	$4.51	LF	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	240.00	$1,082.40	Est 20 lane crossings at 12' each
0711 14123	$8.91	LF	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	480.00	$4,276.80	Est 20 lane crossings at 24' each

Subtotal	$2,890,223.31
MOT 5%	$144,511.17
Subtotal	$3,034,734.48
Mobilization 10%	$303,473.45
Subtotal	$3,338,207.93
Utility Coordination 10%	$333,820.79
Unknowns 20%	$667,641.59
Total Construction	$4,339,670.30
CEI 8% of Const	$520,760.44
Design 10% of Const	$433,967.03
Subtotal	$5,294,397.77
Right-of-way	$0.00
Mitigation	$0.00
Total Cost	$5,294,397.77

Source: Florida Department of Transporation Statewide Averages from 5/1/19 to 4/30/20

SPONSORED BY:
COUNCILOR MESSINGER

ORDINANCE NO. 2021-__

A BILL TO BE ENTITLED

AN ORDINANCE OF THE CITY OF NEPTUNE BEACH, FLORIDA, AMENDING DIVISION 2, PURCHASING AND CONTRACTS, OF ARTICLE VI, FINANCE, OF CHAPTER 2 OF THE CODE OF ORDINANCES, ADMINISTRATION, BY CREATING SECTION 2-388, PROFESSIONAL SERVICES REQUIREMENTS; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Neptune Beach from time to time undertakes various capital improvement projects of differing natures; and

WHEREAS, the differing nature of such capital improvement projects necessitates a case by case analysis of the professional services required to ensure efficient and proper completion of the project; and

WHEREAS, the Code of Ordinance of the City of Neptune Beach currently provides no procedure for evaluation of projects on a case by case basis to determine the professional services that should be obtained; and

WHEREAS, the City Council desires to establish such a procedure; and

WHEREAS, the City Council has determined that its involvement in the process will advance the City's interest in ensuring efficient and proper completion of capital improvement projects; and

WHEREAS, the City Council of the City of Neptune Beach finds that these revisions to the City of Neptune Beach's Code will preserve, promote, and protect the health, safety, and welfare of its citizens.

NOW, THEREFORE, BE IT ENACTED BY THE CITY COUNCIL ON BEHALF OF THE PEOPLE OF THE CITY OF NEPTUNE BEACH, FLORIDA that:

SECTION 1. ~~Chapter~~ Section 2-388, of the Code of Ordinances of the City of Neptune Beach, Florida is hereby created as follows:

Sec. 2-388. – Professional Services Requirements.

(a) Notwithstanding anything to the contrary in this code, prior to solicitation of any bid or contract or otherwise undertaking any proposed capital improvement project by the city, the director of public services shall prepare a recommendation for professional services to be acquired for such capital improvement project for presentation to the city council and any committee responsible for planning of such capital improvement project.

(b) T~~t~~he city council shall review the proposed capital improvement project and recommendation of the director of public services, and shall instruct city staff on the professional services that shall be obtained in the course of such capital improvement project.

~~(a)~~

(c) In accordance with the terms of this code and Florida Statutes, the city shall procure the services of a firm or firms for each of the professional services required by the city council for each capital improvement project, as well as any others that may otherwise be required by law.

~~(b)~~(d) Definitions

~~"~~*Capital improvement project*~~"~~ shall mean any major construction, expansion, purchase, or major repair or replacement of buildings, utility systems, streets, or other physical structures or property, for which the estimated cost exceeds the monetary threshold established in section 2-377(a) and has an expected life or useful life of at least five years.

~~(c)~~

~~"~~*Firm*~~"~~ shall mean any individual, firm, partnership, corporation, association, or other legal entity permitted by law to practice their respective professional service.

~~(d)~~

~~(e)~~ ~~"~~*Professional services*~~"~~ shall mean those services within the scope of the practice of architecture, professional engineering, landscape architecture, or registered surveying and mapping, as defined by the laws of the state, or those performed by any architect, professional engineer, landscape architect, or registered surveyor and mapper in connection with his or her professional employment or practice.

SECTION 2. Conflict. All ordinances, resolutions, official determinations or parts thereof previously adopted or entered by the City or any of its officials and in conflict with this ordinance are repealed to the extent inconsistent herewith.

SECTION 3. Severability. If a Court of competent jurisdiction at any time finds any provision of this Ordinance to be unlawful, illegal, or unenforceable, the offending provision shall be deemed severable and removed from the remaining provisions of this Ordinance which shall remain in full force and intact.

SECTION 4. Effective Date. This ordinance shall take effect upon final reading and approval.

VOTE RESULTS OF FIRST READING:

Mayor Elaine Brown
Vice Mayor Fred Jones
Councilor Kerry Chin
Councilor Lauren Key
Councilor Josh Messinger

Passed on First Reading this ____ day of ~~February~~April, 2021.

VOTE RESULTS OF SECOND AND FINAL READING:

Mayor Elaine Brown
Vice Mayor Fred Jones
Councilor Kerry Chin
Councilor Lauren Key
Councilor Josh Messinger

Passed on Second and Final Reading this _____ day of Ma~~rch~~y, 2021.

____
Elaine Brown, Mayor

ATTEST:

____
Catherine Ponson, City Clerk

Approved as to form and content:

____
Zachary Roth, City Attorney