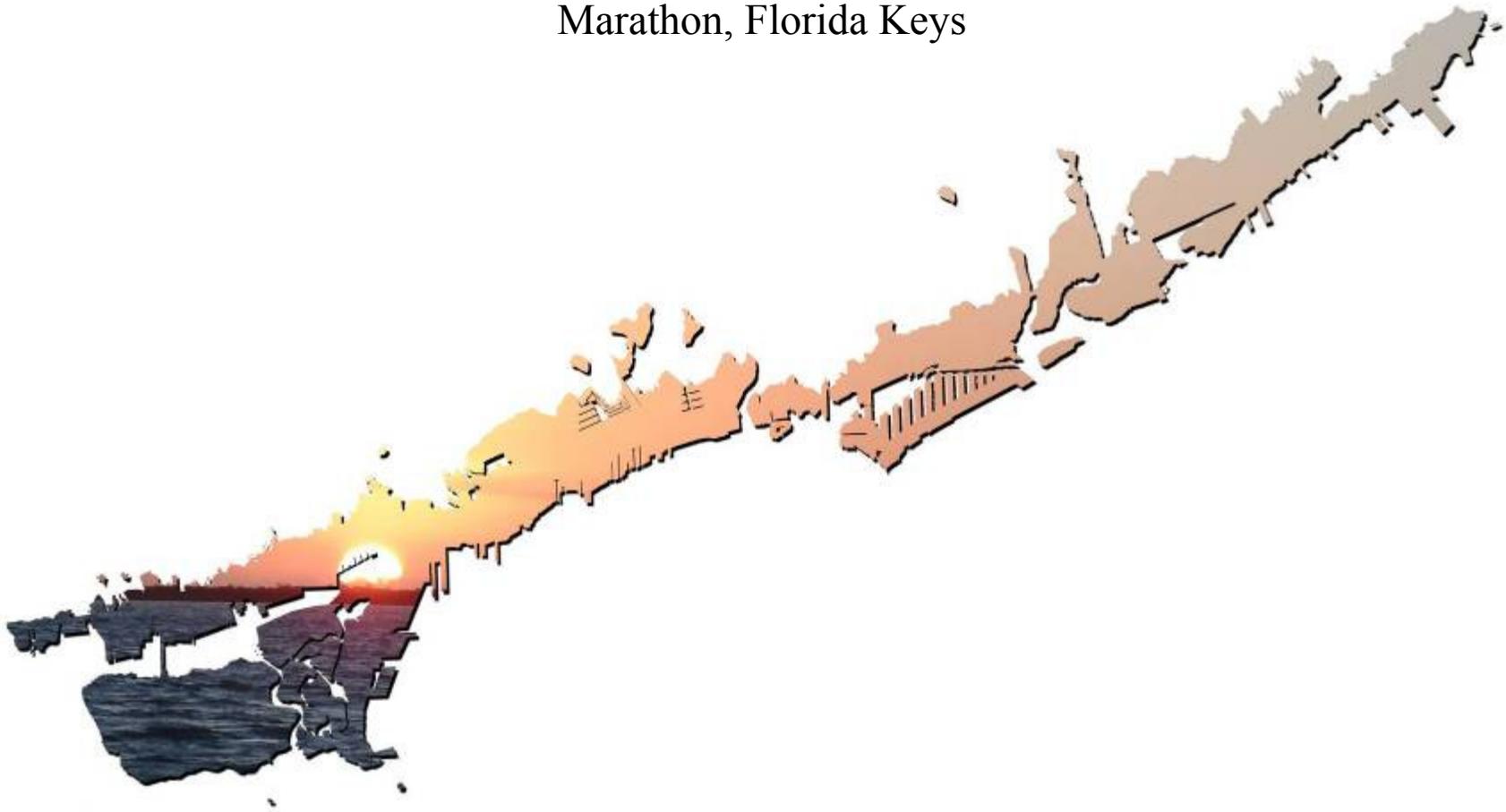


MARATHON SHORES

A Coastal Mixed-Use Development

Marathon, Florida Keys



I would like to dedicate this project to my mom and dad for putting me through college and instilling in me the drive and passion necessary to be a successful landscape architect.

Thank you

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INTRODUCTION & PROJECT DESCRIPTION



Introduction:

Located in the heart of the Florida Keys, Marathon is seldom appreciated for its unique qualities and casual lifestyle, as it is often seen as the "Road to Key West". However, if given a chance this thirteen mile long island provides a variety of outdoor and community experiences that are unrivaled elsewhere in the Keys. With its tropical atmosphere, dedicated community involvement, and beautiful scenery Marathon has the potential to be a prime location for a small community-oriented, mixed-use development.

The site of this project is located on the Northwest edge of the island, and at nearly 16 acres is a relatively large site in comparison with others nearby. The site is open to the Gulf of Mexico and has direct access to the only highway in the Keys: US-1 Overseas Highway. It is also centrally located between many important community and nature areas. This site provides ample opportunities for the proposed middle to high-end residential and commercial development, along with having great existing amenities that can be shared with the community.

Vision:

Marathon Shores will be a commercial hub along the waterfront that provides services and open space for the community, while integrating middle to high-end residences into the development. The public spaces will be adaptive to account for the highly fluctuating population and multi-use to make the most of space limitations. Both structures and landscaping will be representative of classic Florida Keys styles and tolerant to the ever present danger of hurricanes. The site will also utilize, exemplify, and protect the many natural resources that the Keys have to offer.

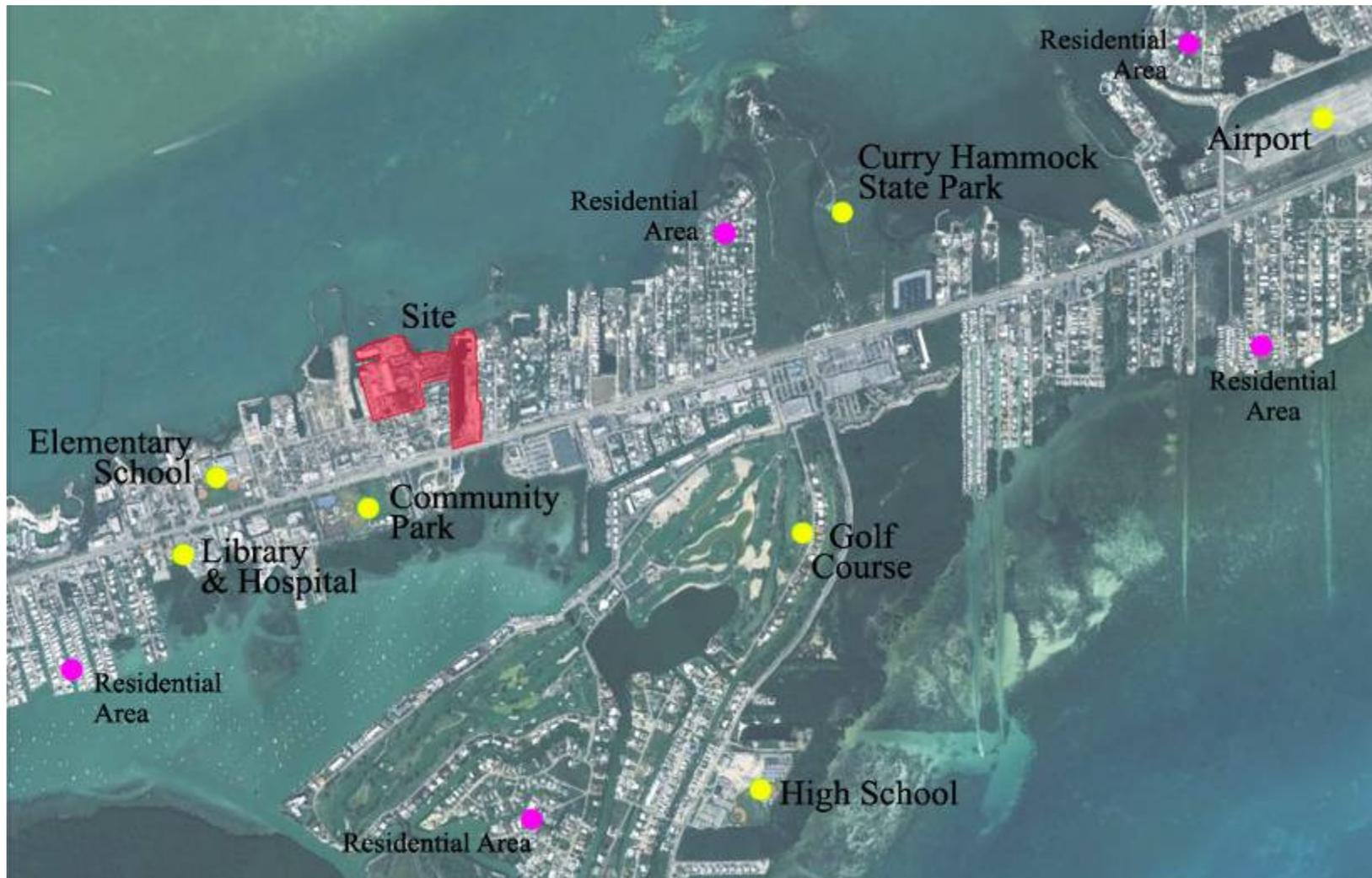


Marathon is in the center of the Florida Keys chain of islands. It is approximately a two hour drive south from Miami, and a hour drive north from Key West.



Within the islands of Marathon, there are a variety of destinations for locals and tourists. The site is located in the western half, which has more development and a greater concentration of amenities.

MARATHON SHORES: Site Location



The Marathon Shores site is directly exposed to the Gulf of Mexico, but has a land barrier between it and the Atlantic Ocean. There are a number of community destinations and residential neighborhoods very close to the site that add diversity and interest to the program of Marathon Shores. With its central location, the site allows for easy access and can entice users from Marathon and other islands of the Florida Keys.

Historic railroad car, now visitor's center

Marina for commercial fishermen

Sunset over the 7-mile Bridge

Damages caused by Hurricane of 1935



The history of Marathon is closely tied with the Flagler Railroad. In the early 1900's, construction on the railroad began in Marathon, which was a major destination because the train had two stops on the island. One at the port of Knight's Key and another along what is now Overseas Highway. Prolonged construction of the railroad gave Marathon its name because it was a marathon of a project. The completion of the railroad through Marathon changed the makeup of its residents from migrating fisherman to a tourism town with a fishing industry.

The archipelago of the Florida Keys is a world renown fishing destination and Marathon sits at its heart. The warm waters of the Gulf Stream bring fish throughout the year and the islands provide a buffer from winds, making for calm sailing on almost every occasion. Commercial fishing for food and charter fishing with guides are crucial occupations for many locals, not to mention the restaurants and fisheries that established their business on the ocean's bounty.

The beauty and possibilities of the Atlantic Ocean and Gulf of Mexico have made the Florida Keys a thriving tourist destination. With very little industry and manufacturing, tourism is Marathon's primary form of commerce. However, tourism fluctuates throughout the year. The primary season is Christmas through Memorial Day and during this time the population increases by nearly 50%, from 10,496 to 15,579. Tourists and second-homeowners travel south in the winter and spring to avoid to the cold weather in more northern locations. There are events in the summer and fall months that draw tourists in great numbers to the keys, including 4th of July and the opening of lobster season. However, very hot weather and the threat of hurricanes makes Marathon less desirable .

The Florida Keys has a long record of hurricane impacts. Probably the most notable is the Labor Day Hurricane of 1935 that washed out parts of the Flagler Railroad and destroyed anything else in its path. In 2005, Marathon was impacted by five tropical storms and hurricanes, reestablishing that importance of hurricane tolerance.

Part of what makes Marathon special is the allure that this quaint fishing town has on travelers. The casual lifestyle combined with friendly locals makes for an enjoyable environment. Large community festivals and events are a part of the Marathon tradition, bringing people together with island activities. Art shows, small concerts, sporting events, and the annual Seafood Festival are just a few of Marathon's community events.

The casual, informal, care-free, outdoor-loving lifestyle that is associated with the Keys is very apparent in the Marathon culture. However, after the gorgeous sunset, there is little nightlife in Marathon and what little that is there comes from an old one-theater movie theater and a couple low key bars. There is potential for a nighttime destination in Marathon as long as it can be flexible and attract a range of users. While a nightlife would be appreciated in Marathon, locals will tell you that partying and boating on the weekends is what everyone in town looks forward to. The waters that surround Marathon are some of the most beautiful and have the greatest abundance of fish, rivaling all other populated Florida fishing spots.

Marathon also has many cultural attractions and community destinations. Three white sand public beaches, three community parks, four natural parks, the Crane Point Museum, Knight's Key Historic Railroad Visitor's Center, the infamous 7-mile bridge, an 18-hole golf course, dive shops, marinas, and over thirty restaurants all add to the character of Marathon. Marathon's greatest community destination is the 12 acre community park and sporting complex. This park includes tennis courts, bocce courts, a hockey rink with basketball courts, softball fields, soccer fields, a skate park, outdoor amphitheater and a viewing tower. The Marathon Community Park has become a unifying center of the town.



Classic Florida Keys dive shop



Sombrero public beach



Crane Point Museum and nature center



Key Fisheries restaurant on the water

MARATHON SHORES: Cultural Context

The Marathon Shores site is a 15.6 acre, multiple parcel property located on the northern shoreline of Vaca Key in the municipality of Marathon. Included in the 15.6 acre site is a 2.4 acre saltwater pond that creates many interesting opportunities. The site has few construction limitations except in shoreline or property setbacks and in the locations of mangroves. Constructing over the saltwater pond is also an option in this project because it is not considered natural shoreline. The saltwater pond was excavated in the 1970s as a limestone-fill barrow pit with the eventual hope to turn this into a marina. However, current regulations in the Florida Keys no longer allow dredging, so connecting this pond to the Gulf of Mexico is not an option. Other amenities including a marina, 1,712 feet of bay front shoreline, multiple points of access, and several existing structures add to the character of the project.

There are currently three different uses occupying the site. These include a working marina with marine mechanics and fishermen, a construction staging area, and a for-rent storage facility. The marina, Keys Boat Works, was established in 1952 and has become a well known Marathon boatyard. There are 35 wet-slips that can be used for commercial fishermen, charter captains, boat repairs, and temporary dockage. Adjoining the marina, are several metal structures used for dry-dock storage that can be reused or relocated on site. The Marathon Shores project will enhance the uses of the marina and develop a notable destination.

The construction staging area and for-rent storage center are based out of temporary facilities. The staging area was created to address that large quantities of fill that are being produced from the implementation of Marathon’s sanitary sewer system. The fill is staged there until it is sold or can be trucked off site. Some of this fill can be used on the Marathon Shores project where structures need to be raised because of the flood plain elevations on site. The for-rent storage facility uses old shipping containers that have little value and will need to be removed from the site.



Saltwater Pond



Splashing a boat at the marina



Gravel and fill staging

MARATHON SHORES: Project Description



Northeast shoreline



Wet boat slips



Metal frame dry docks



Abandoned structure and vegetation

Development of the site needs to consider several issues that are important throughout the Florida Keys. These issues include integrating a range of user types and classes, maintaining high property value, dealing with potable water storages, and creating and respecting the culture. Low-income and blighted neighborhoods surrounding the site are in need of rehabilitation. Units with waterfront views and access demand two to three times the property value of a dry lot. Marathon receives all of its potable water by pipeline from the Biscayne Aquifer, which is at risk from hurricanes and is starting to lead to water shortages. Incorporating solutions to these issues into a small scale residential and retail development in Marathon will provide the community with a much needed destination.

Site Context Scale- At this largest scale, the project will look at connections within the community and how people will travel to and from the site. There is minimal public transit in Marathon, so allowing for vehicle, bicycle, and pedestrian friendly routes will be key. It will also show how the location of the project can enhance the surrounding area.

Overall Site Scale - This scale will show locations of site elements and how a unifying architectural style can unite the spaces. Also shown, is how to maximize residential units and commercial buildings without sacrificing function and overall aesthetic. The layout of these structures, along with the landscape will create aesthetic, definition, environmental restoration, and a tolerance to storms. Specific design techniques and guidelines that are important to the overall theme and function will also be incorporated.



Site Context Scale



Overall Site Scale

Keys Culture - Create an appropriate sense of place that incorporates keys vernacular architecture and landscape styles along with the casual keys life style.

Site Context Objectives

- Create linkages to culturally important sites including tourist destinations, natural parks, and restaurants
- Use design elements along these linkages that will restore and unify this area by beautifying the community and giving residents a sense of community pride
- Highlight key features that exemplify the area

Overall Site Objectives

- Use microclimate to increase comfort for the changing seasons
- Restore historic plant communities that still have remnants on site
- Use the public spaces to connect the commercial and residential zones
- Incorporate activities that apply to locals, part-time residents, and tourists
- Develop a central gathering space that has multiple uses

Hurricane Tolerance - Design a project that can withstand the reality of living in the Florida Keys. Hurricanes are a very destructive force, but there are guidelines that can be implemented to reduce or even eliminate their effects.

Site Context Objectives

- Have a network of roads, which allows for multiple routes and therefore easier egress
- Use the actual location of the site with the island as a beneficial buffer

Overall Site Objectives

- Use low vegetation and short fences to minimize debris and storm surge damage
- Use landscape buffers to reduce wind impact on structures
- Keep trees away from building facades to reduce potential damage from wind
- Incorporate materials and vegetation that will withstand hurricanes and allow people to maintain necessary amenities

Water Resources - Reduce the demand for potable water and reuse whenever possible. Control stormwater runoff and design for future sea-level rise.

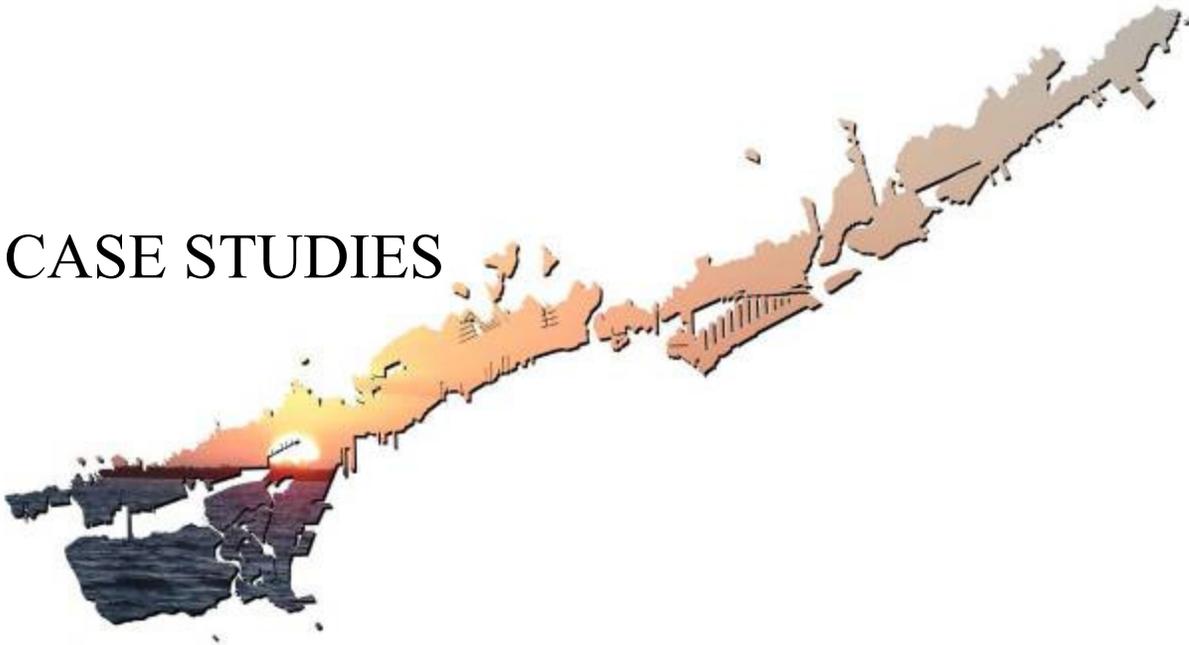
Site Context Objectives

- Use the linkages to cultural sites as a means to educate people about the importance of sustainability
- Reduce stormwater runoff along streetscapes
- Make the berms and walls of the Marathon Shores site easily increased upon to connect to future waterfront sites

Overall Site Objectives

- Accommodate sea-level where possible, fortify with walls and berms only when necessary
- Incorporate features like cisterns and saltwater irrigation to reduce demand on city water

CASE STUDIES



Type: Mixed-Use Development

Location: Victoria, British Columbia, Canada

Size: 11.6 acres

Year of Completion: 75% Completion

General Description:

Dockside Green is redeveloping a former brownfield site into an internationally known, sustainable, mixed-use development. It is a large scale planned community that incorporates a variety of services including, retail, office, hotel, recreation, residential, and light industrial uses. The goal of the project is to be an ecologically, socially, and economically responsible community. With LEED certification for all of the 26 proposed buildings and the preservation of the waterfront, Dockside Green is an environmentally friendly project that focuses on the overall benefit of the community.



Influences to Marathon Shores:

The incorporation of ecologic and economic sustainability into a mixed-use development is very similar to the goals behind Marathon Shores. Dockside Green also uses the waterfront as a major public attraction and surrounds it with retail buildings. Nearly all of the structures on the site have views of the water making them more valuable. Dockside Green accomplished this by staggering the buildings and having the taller structures in the rear. This project also integrates a network of green spaces to encourage pedestrian traffic and create an outdoor experience.

Type: Mixed-Use Development

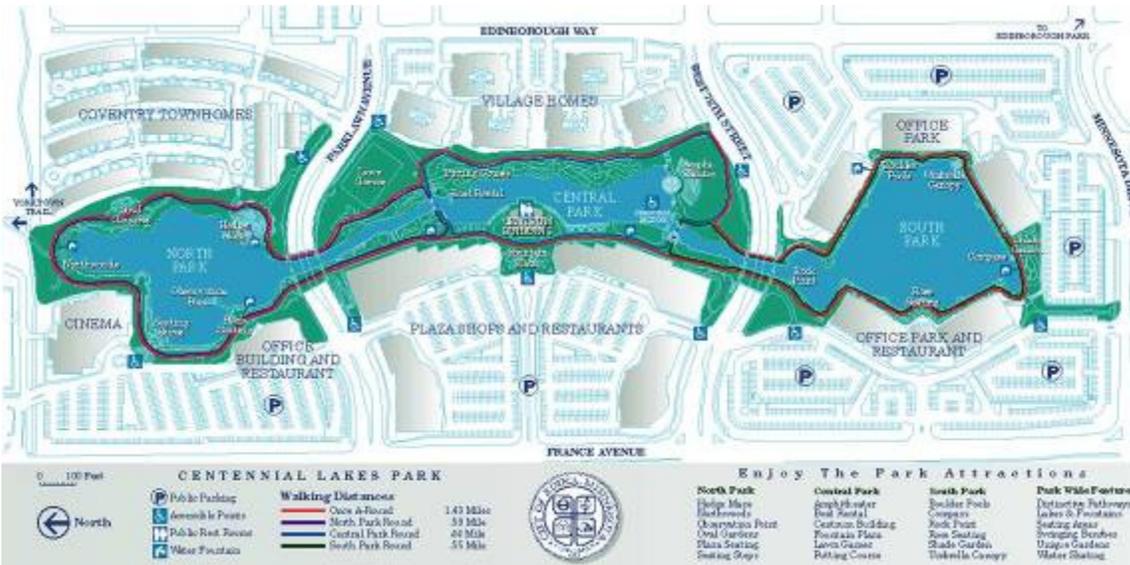
Location: Edina, Minnesota

Size: 100 acres

Year of Completion: 2000

General Description:

Centennial Lakes is an infill site in a suburb of Minneapolis. The new project includes 940,000 square feet of Class A office Buildings, 106,000 square feet of medical office building, 250 residential condominiums, 96 luxury townhouses, a 39,000 square-foot eight-screen movie theater, and 220,000 square feet of retail. The 25-acre Central park and lake connect the sites multiple uses along with providing recreation and natural beauty. This park also makes Centennial Lakes a very pedestrian friendly development and a regional destination.



Influences to Marathon Shores:

Centennial Lakes is a large scale development in a moderate size suburb. Although the size and quantities of the buildings are larger than Marathon Shores they can be scaled down proportionally. Incorporating a movie theater into the development at its relative size can directly apply to Marathon Shores. Centennial Lakes is also built around a linear public waterfront. Although the lake is landlocked, it still provides great scenery and a great outdoor experience. The central park also creates a safe pedestrian environment in a suburb that is primary automobile driven.

MARATHON SHORES: Centennial Lakes Case Study

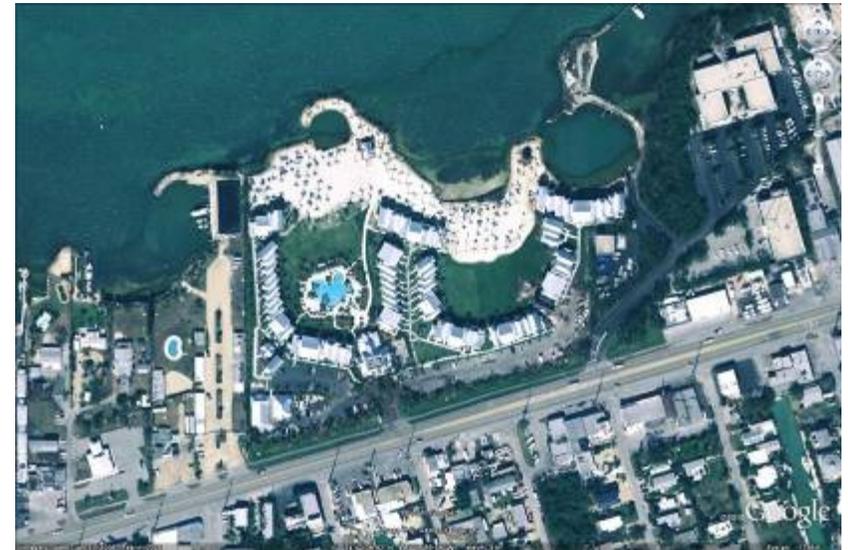
Type: Condo-Hotel

Location: Marathon, FL

Size: 12 acres

Year of Completion: 2004

Description: Tranquility Bay is a Florida Keys Resort located on the calm waters of the Gulf of Mexico. There are 87 units, all of which have access to a variety of on-site and nearby amenities including award winning dining, two beaches, tropical gardens, fishing, diving, water sports, and a beachfront tiki bar. The resort is also very close to the Marathon Airport, 18-hole golf course, tennis courts and state parks.



Influences to Marathon Shores:

Located less than 1 mile west of the Marathon Shores site, Tranquility Bay shares many of the same community amenities. They also successfully incorporate on-site amenities such as a raised beach, sunset views, tiki bar, restaurant, clubhouse, dock house, native landscaping, pools, and marina access; all of which would add intrigue to Marathon Shores. Although Tranquility Bay is associated as a resort, the layout, size, and design of the buildings is very similar to the residential units for Marathon Shores. The Keys style architecture that Tranquility Bay uses on their structures is the same style that the Marathon Shores project will incorporate into the design.



Architectural Style:

The Florida Keys vernacular style is recognizable by its features and materials. The buildings are usually one to two stories with large porches and high, steep ceilings. Metal roofing and louvered shutters are also typical to prevent storm damage. White picket fences and railings, whether wood or metal, are also common with a variety of ginger-breading details. The building's facades will either be siding or stucco, painted with light pastel colors, while the landscapes are lush with vibrant colors. These elements will be incorporated into this project to reflect a sense of place characteristic to the Florida Keys.



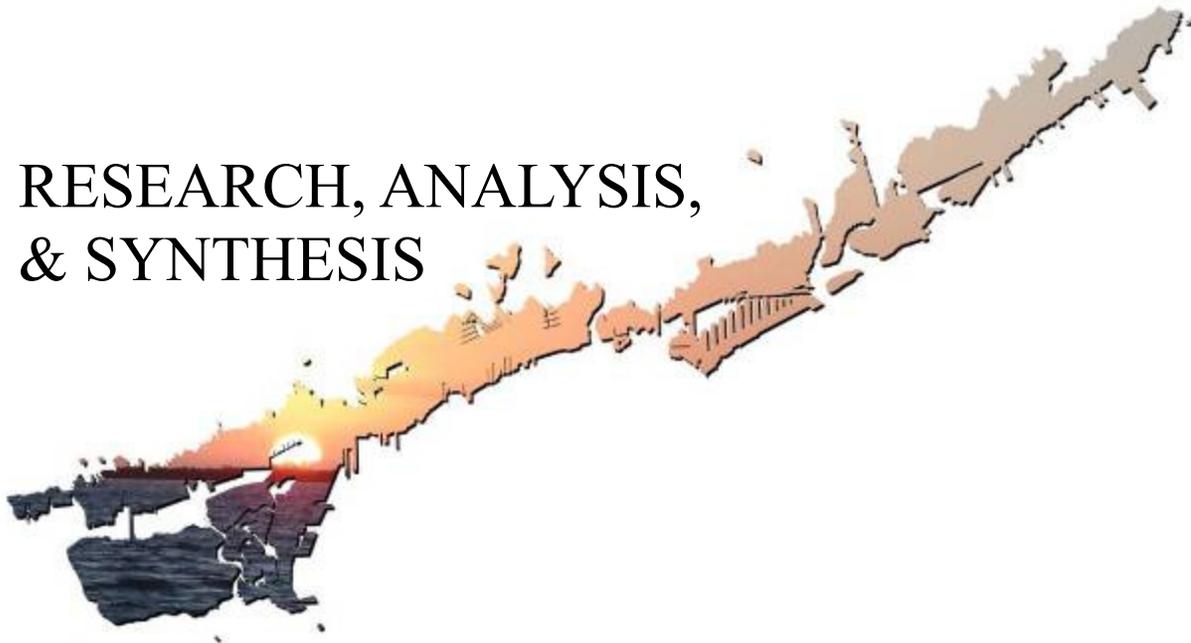
Photo Source: *Living in the Key West Style Anywhere*. David Hemmel

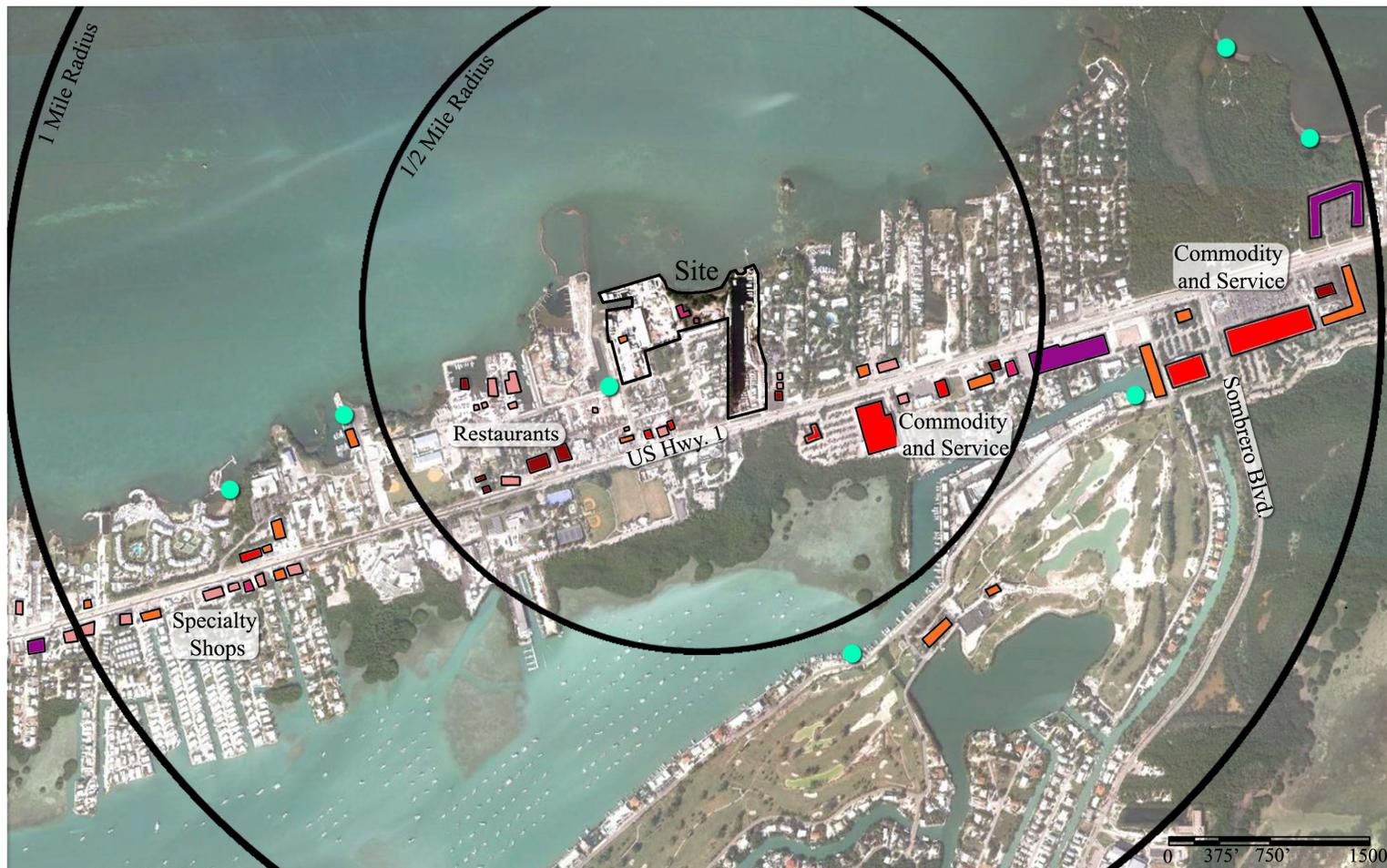
The photos of Tranquility Bay show the classic key's style both in architecture and landscape. The colorful, tropical foliage not only adds color, but also scales down the size of the building units. Providing each unit with an appealing view adds value to the individual units and the site as a whole. Tranquility Bay also shows how to plan for full capacity and keep the expectation of a secluded oasis for the residents. The needs and viewpoints of locals, part-time residents, and tourists vary, but all view this project as being conscious to the Florida Keys lifestyle.



MARATHON SHORES: Tranquility Bay Case Study

RESEARCH, ANALYSIS,
& SYNTHESIS





LEGEND

- Commodity Com.
- Service Com.
- Specialty Com.
- Restaurant
- Mixed Com.
- Abandoned Com.
- Water Access

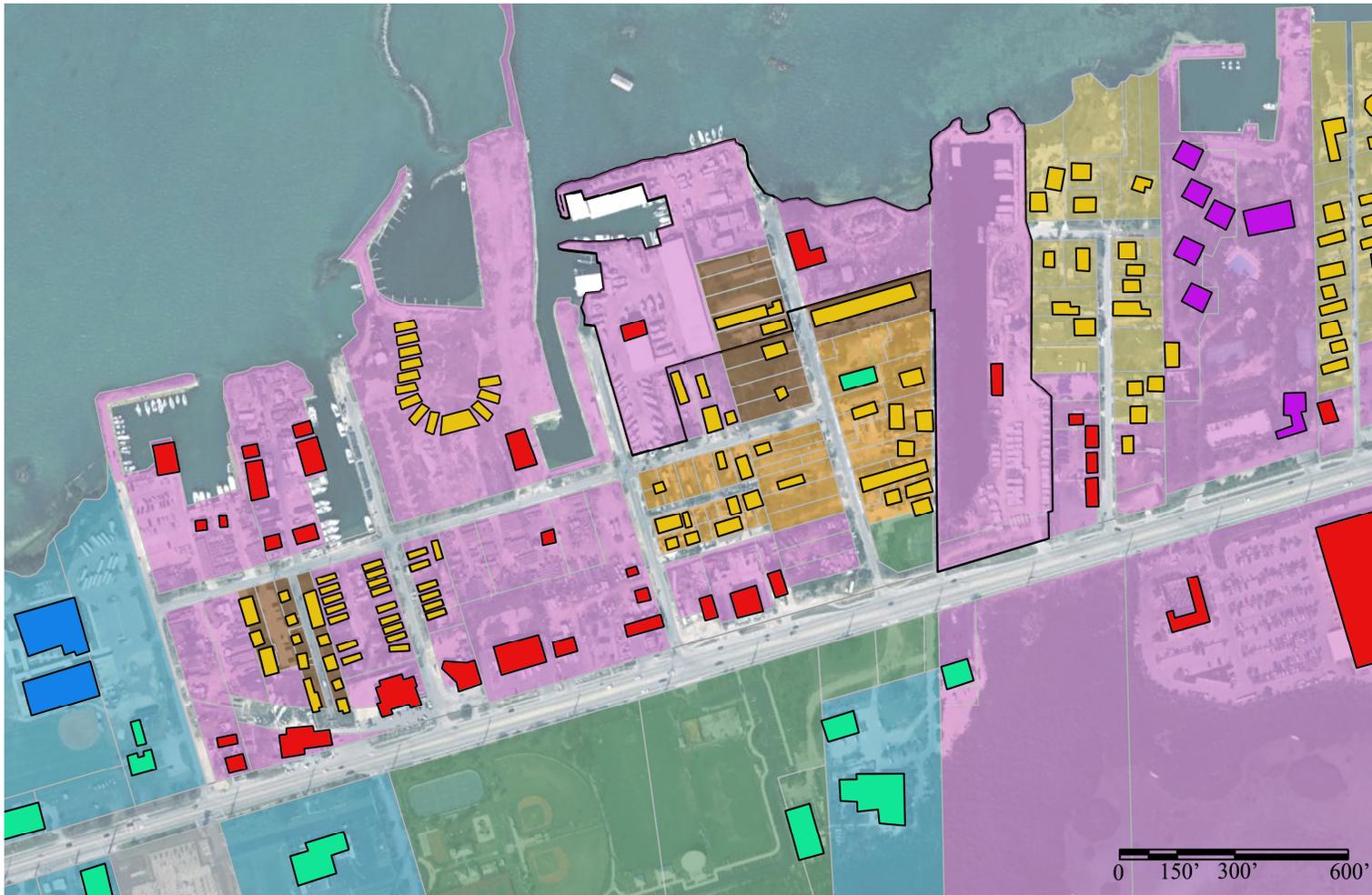
The driving force behind the economy of Marathon is tourism. Therefore, the locations and types of commercial around my site need to be well understood. The commercial business are broken down into six categories; commodity, service, specialty, restaurant, mixed, and abandoned. Commodity commercial represents the chain stores or “big box” retailers. Service commercial represents banks, real estates, repair shops, and other service providing businesses. Specialty commercial represents local businesses that have a niche market. Mixed commercial is a combination of any of the above including restaurants. All six types are located within one mile of the site with certain regions have a higher portion of one type than others.

US-1 is the primary traffic route in the keys, which facilitates the development of commercial business along this corridor. At the western edge of the mile radius, there is a concentration of locally owner specialty shops along US-1 with no business located off the main route. This area has a lower speed limit which allows buildings to be located closer to the street, so business can draw unfamiliar tourists into their shops. These commercial businesses include an antique book store, appliance store, salvation army, bicycle shop, and tackle store. Most of which are both well known to locals and attractive to tourists.

Immediately west of the site, the commercial consists primarily of restaurants with a few specialty shops. The restaurants and shops in this area are geared and advertise toward tourists because of their location to the water. This area is also home to Keys Fisheries, a commercial fish market that supplies fresh seafood to many restaurants in the Keys. Seafood restaurants, especially those located on the water, definitely have an advantage over other restaurant types.

East of the site, where Sombrero Boulevard intersects US-1 is one of two commercial cores in Marathon. This intersection has all of the commercial types, but is anchored by several brand-name retailers. Kmart, Publix, Winn/Dixie, and CVS are all located at this intersection. There is also a variety of service and specialty shops, with more retail and restaurants located in the u-shaped building across the street. This commercial core is also beginning to stretch west along US-1 with the development of Home Depot.

Public connections to the water are also important because these are very popular tourist destinations and the Marathon Shores site will need to incorporate this feature. Waterfront access is scattered throughout the region with no major interesting elements within one mile. Sombrero Beach is a popular destination for locals and tourists, but is located approximately 1.5 miles away.



LEGEND

	School
	Public Building
	Commercial Unit
	Residential Unit
	Resort Unit
	Public Zone
	Park Zone
	Industrial Zone
	Mixed-Use Zone
	Res. High Zone
	Res. Med. Zone
	Res. Mobile Zone

The surrounding context of Marathon Shores consists of seven zoning types, three of which are residential. The high density residential and mobile home residential areas are primarily low income, while the medium density residential is middle class, single family units. The most abundant zoning type in Marathon is mixed-use, which promotes an integration of a variety of building types and uses. The relatively small size of Marathon enables the prime real estate along the waterfront to have an immediate connection to US-1. These two locations are where a majority of commercial buildings are found.

Within the site there are two zoning types, mixed-use and high density residential. The high density residential occupies 1.15 acres, leaving the remaining 12 acres as mixed-use. Both mixed-use and residential zones are directly adjacent to the site. However, a majority of the mixed-use parcels are vacant of structure, with several being used for residential units. The residential zones have a greater percentage of occupied parcels.

There are three key land-uses within the context of the site that are of notable community importance. The Stanley Switlik Elementary School that serves the entire middle keys, the Marathon Community Park which provides a location of community events, and the Banana Bay Resort which is a tourism destination.



Commercial along US-1



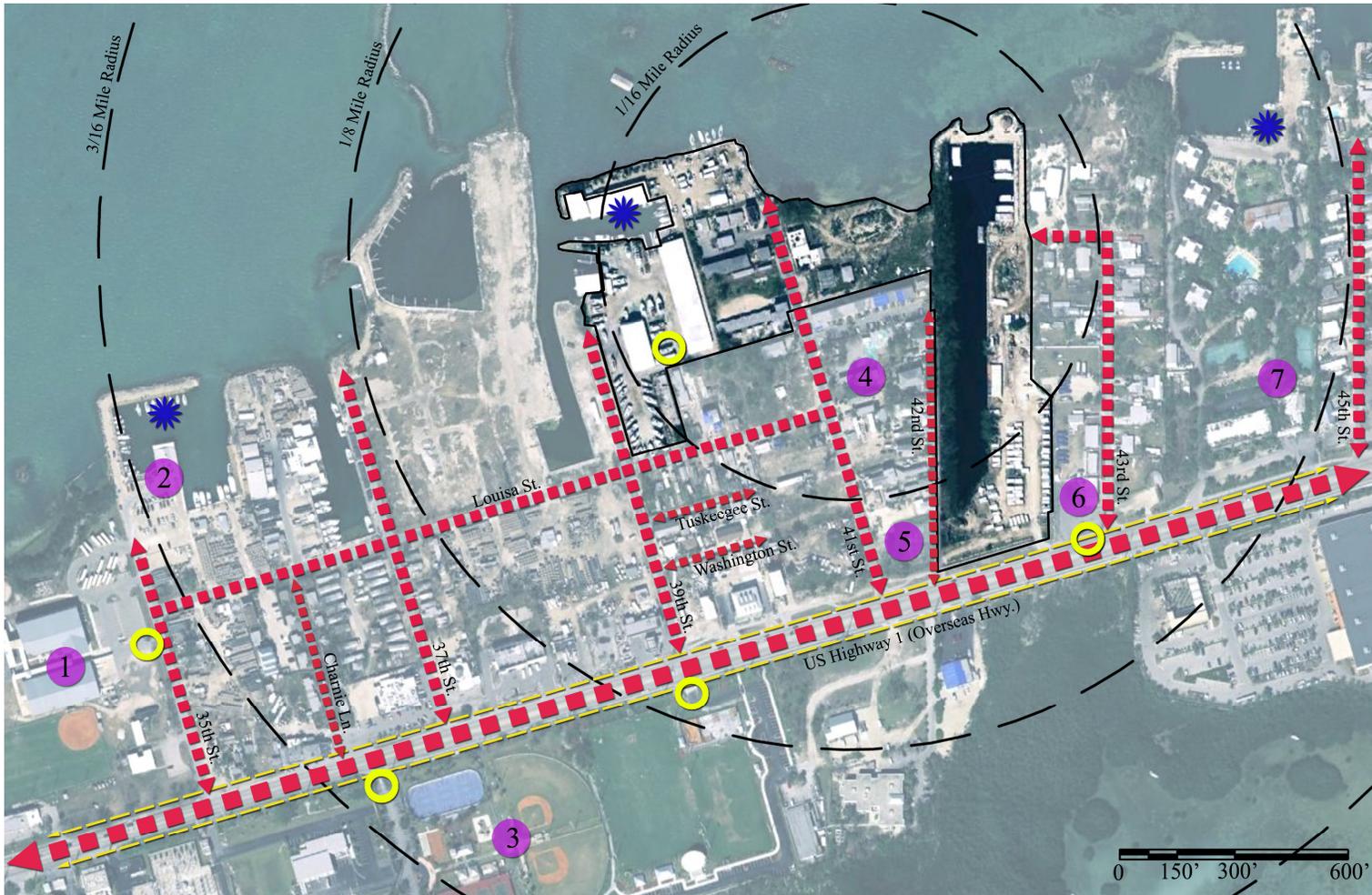
Commercial Fishery Traps



Neighborhood Home



Neighborhood Low-Income Housing



- ### LEGEND
- Primary Road
 - Secondary Road
 - Sidewalk
 - Point of Entry
 - Marina
 - 1 Elementary School
 - 2 Restaurant
 - 3 Community Park
 - 4 Child Day Care
 - 5 Community Park
 - 6 Restaurant
 - 7 Banana Bay Resort

MARATHON SHORES: Site Context Circulation and Connections Analysis

The primary means of transportation in Marathon is by automobile. Public transit is nonexistent and the only sidewalks in this area are along US-1. Pedestrians and bicyclist do use the back streets, however, there are no dividers to separate vehicles from them. US-1 is the busiest highway in the Keys, connecting Key West to the mainland. The north sidewalk along US-1 is in the process of being modified to connect to the Florida Keys Heritage Trail, which will be an off-street path that runs the length of the Keys. The side streets in this area are the start of a network than can be developed. This is relatively little traffic and low speed limits making them great corridors for wayfinding and adding visual interest.

There are a number of important social destinations within a quarter-mile radius of the site. One of the few resorts in Marathon is located one block from my site. There is no existing direct connection to the resort, but with the development of the site, tourists will want to easily make the walk. Multiple marinas in the area attract boaters. If there is a restaurant close to the marina customers can have access by the water, making for a great Keys experience. Other boaters are homeowners and dock their boats at the marinas for quick use. Either way, capitalizing on both users at the marinas will bring more people to the site. The Marathon Community Park located across US-1 from the site is a great opportunity. The park has all of the active recreation sports complexes including, soccer fields, baseball field, tennis courts, a hockey rink, and skate park. It also has an amphitheater and a lookout tower. Access across US-1 will need to be addressed. The Elementary school is also with walking distance of the site and Marathon High School is only a couple miles away.

There are also many amenities that are within a five minute drive of the site including an 18-hole golf course, the 7-Mile Bridge, the Crane Point Hammock Museum and Nature Preserve, the Marathon Airport, a beautiful white sand beach and many others.



1. Stanley Switlik Elementary School



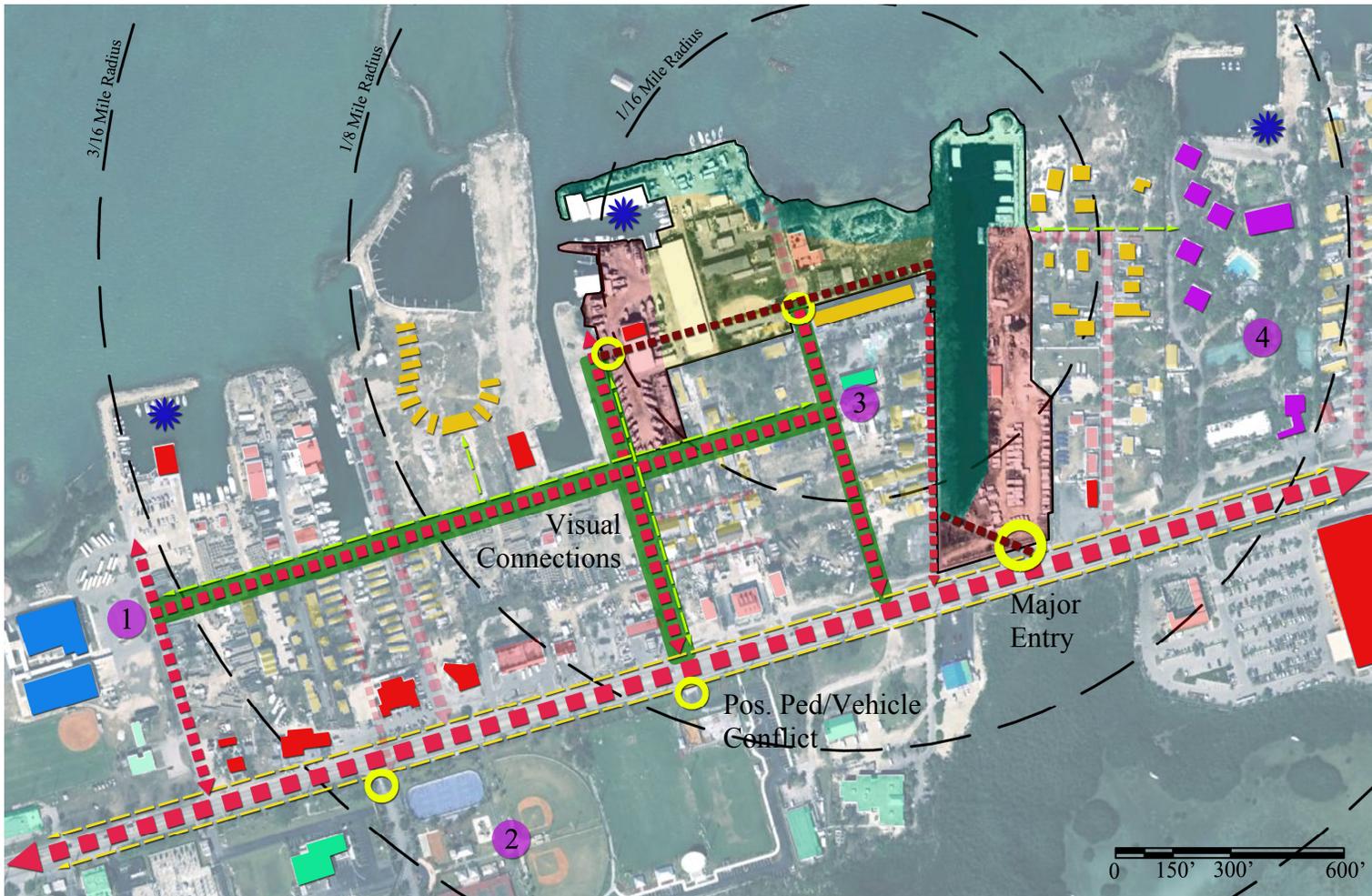
3. Community Park Skate Park



4. Grace Jones Community Day Care



7. Banana Bay Resort



MARATHON SHORES: Site Context Synthesis

The neighborhood surrounding the site needs to be represented as a whole and an axis through the residential areas that connects the elementary school to the Grace Jones Community Center Day Care would help do so. This axis can act as an unifying element to the community. A cross axis can connect the western edge of the site with US-1 and the eastern entrance of the community park. Placing a major entry to the site adjacent to US-1 will encourage the most customers and begin to create a network of routes around Marathon Shores.

Pedestrian circulation throughout the site and along the axes will allow for an outdoor-friendly environment upon which the community can build. A pedestrian connection can also be made to Banana Bay resort to the east and will entice tourists to the amenities Marathon Shores has to offer.

With this map, one can begin to see a possible breakdown of uses within and around the site. Commercial should be easily accessed by pedestrians and in locations that will attract business. Residential should have views of the water and have direct access to the commercial and public spaces. The public spaces can be intermixed throughout the site and along the waterfront.



Major entry on US-1



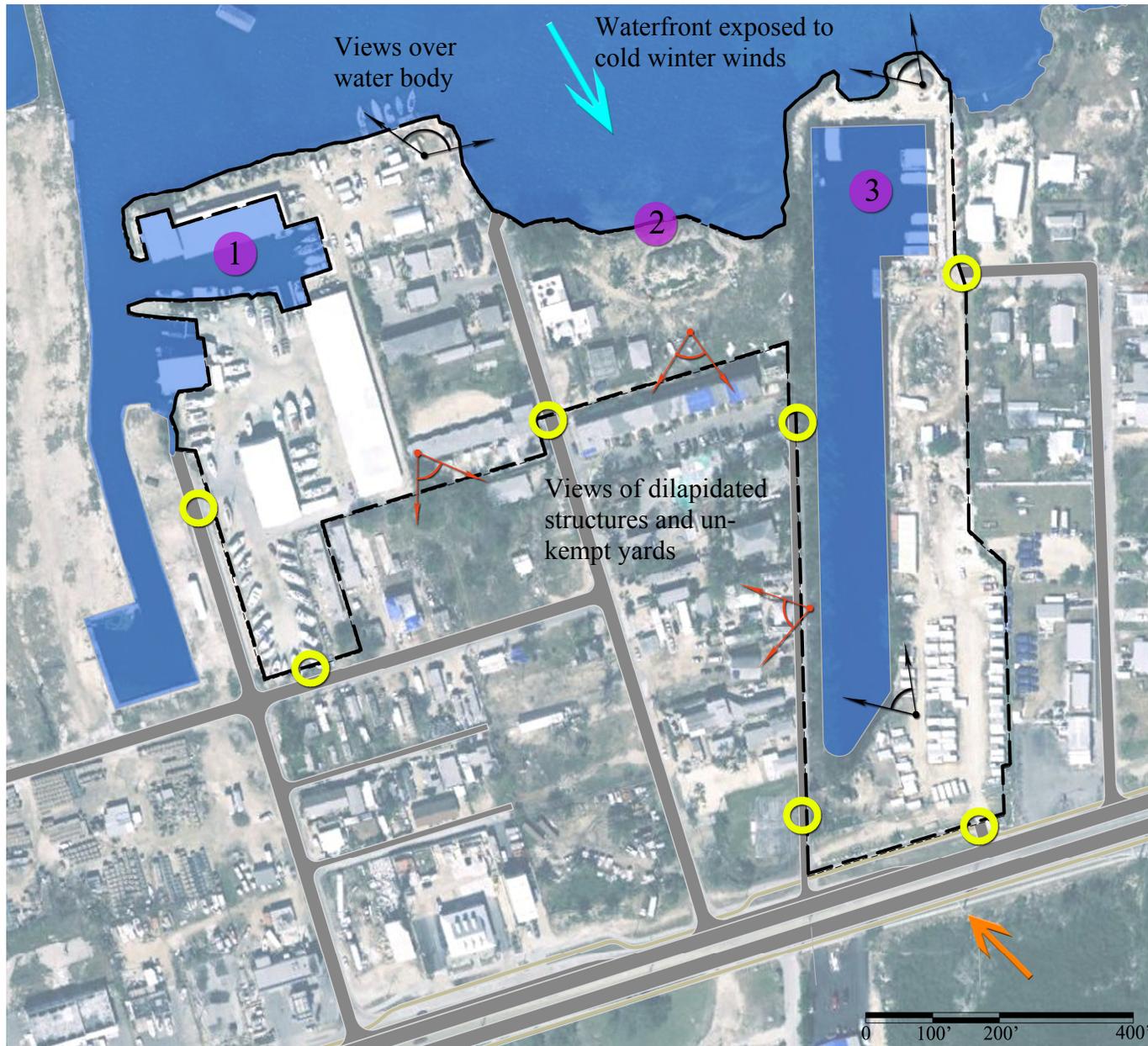
Viewing north from park to site



Viewing west toward Elem. School



Viewing east toward site



MARATHON SHORES: Overall Site Key Features and Microclimate Analysis

Using and creating microclimate on the site is a must to provide human comfort. Wind and sun will be the two most influential elements on the site. One goal of this project is to create an enjoyable outdoor experience for the users and with the highly variable climate of the Florida Keys, the site's microclimate will play an important design role.

Marathon is a very narrow, linear island making it susceptible to winds from all directions. During the summer months, winds are relatively mild (8-10 mph) and often have a cooling effect because they are cooled while crossing the Atlantic Ocean. These winds generally blow out of the southeast because they are sea breezes. The winter winds are much different. They blow out of the north-northwest and are associated with cold fronts. These winds can be very strong, it is not uncommon to see winds over 40 mph in these cold fronts, and they are bitterly cold because they blow across the low temperature waters of the Gulf of Mexico. The Marathon Shores site is severely exposed to these winter winds, while blocked from the more desirable summer winds. Buffers along the north side and breeze ways from the southeast should be incorporated.

Solar radiation and associated temperatures are closely tied with the winds, however there is one additional factor, the Gulf Stream. The Gulf Stream regulates the island's temperature so that it is cooler in the summer and warmer in the winter. This is one reason why the Florida Keys is such a desirable location for vacation and winter residences. Temperatures in the summer range between 74° as the low and 90° as the high. The high humidity makes it feel much warmer and when there is no wind temperatures can reach the low 100s, making shade a must. The winter temperatures range between 56° as the low and 77° as the high. Temperatures in the winter can fall below 50°, but this is uncommon and only lasts a short time. Solar orientation and shade is discussed on the following page.



Intersection at west entry



View looking north from center of site

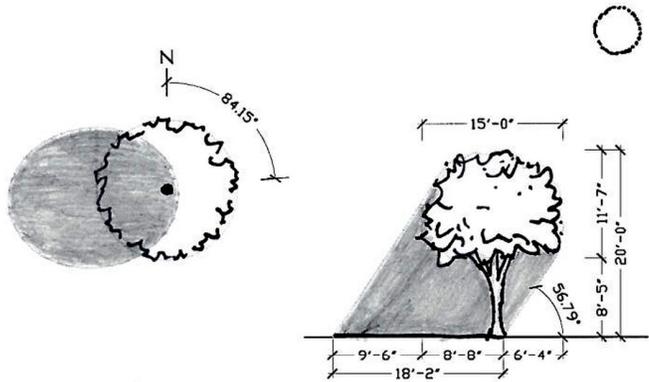


Northwest waterfront view

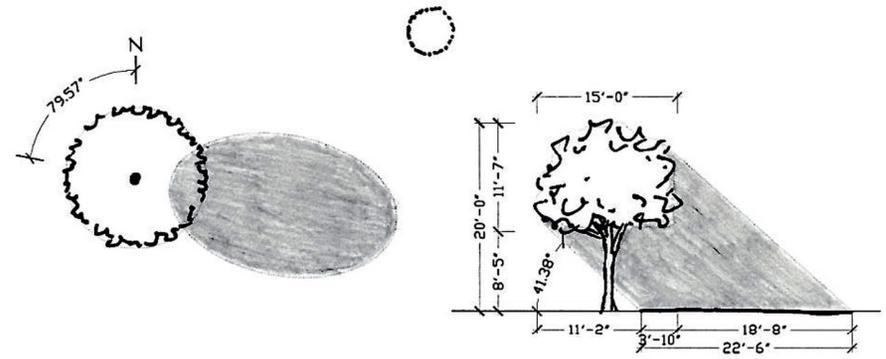


Northeast waterfront view

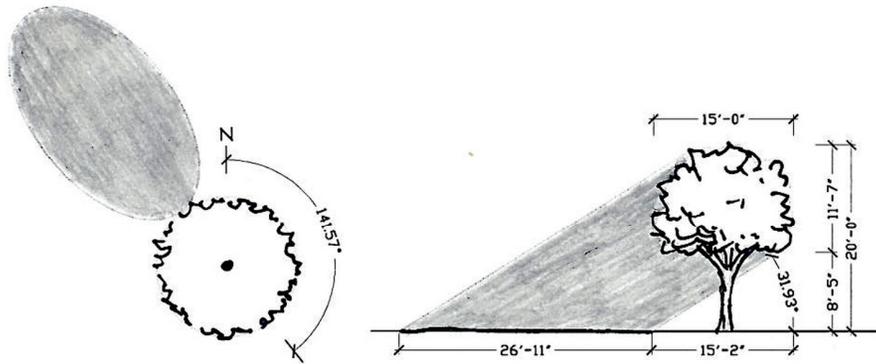
MARATHON SHORES: Overall Site Key Features and Microclimate Analysis



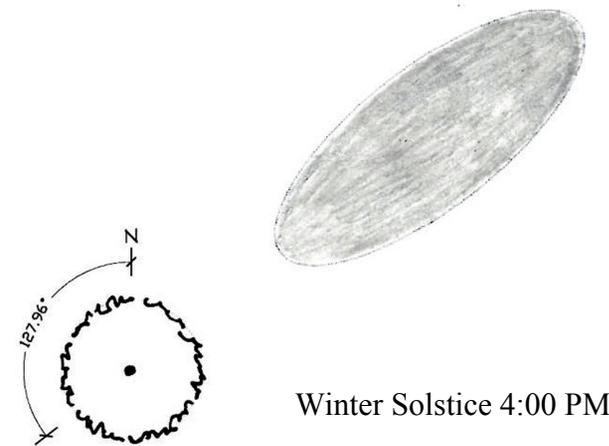
Summer Solstice 10:00 AM



Summer Solstice 4:00 PM

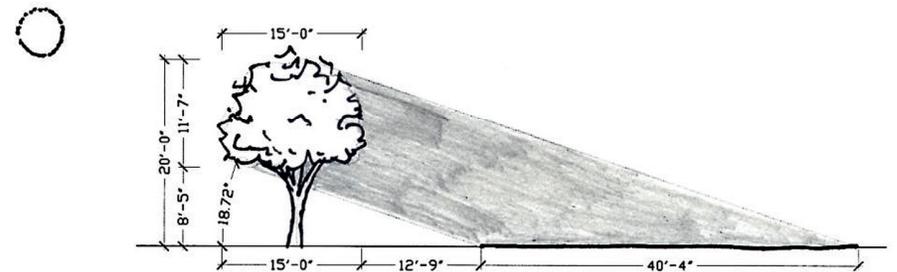


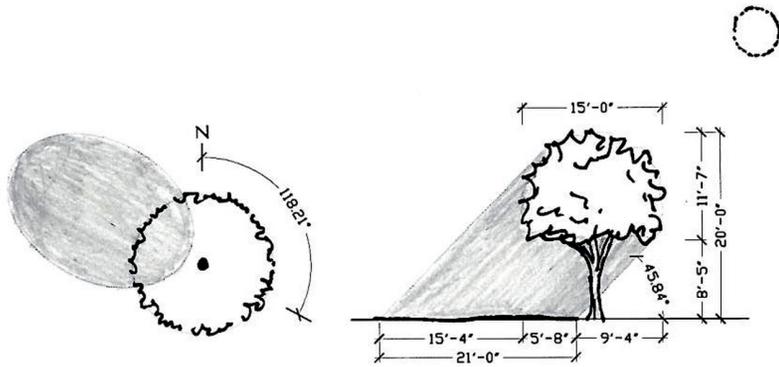
Winter Solstice 10:00 AM



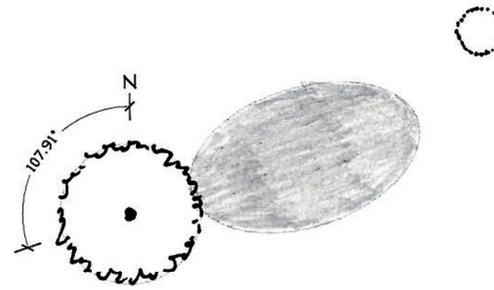
Winter Solstice 4:00 PM

The summer and winter solstices show the extremes of the solar orientation and the shade provided. With nearly 50% longer days in the summer (over 14hrs of daylight compared to 10), shade in the summer becomes much more important. The slightly south angle of the summer shadows allows for more shadow over land instead of water. This angle also makes sunset visible in the summer. The winter shadows can be avoided by locating trees on the south side of unused space or where deciduous trees can be used. This will allow for greater sun radiation and higher human comfort.

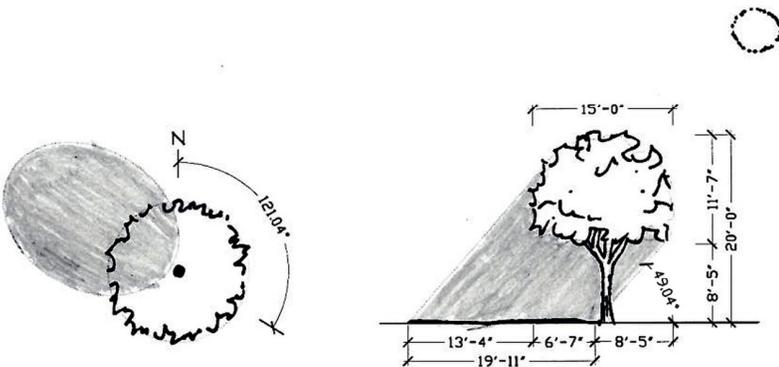
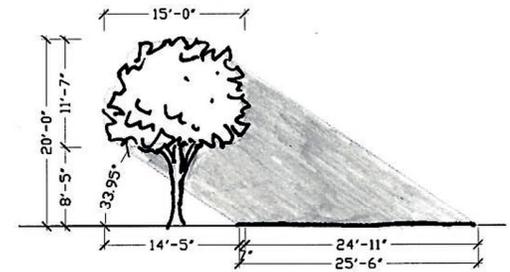




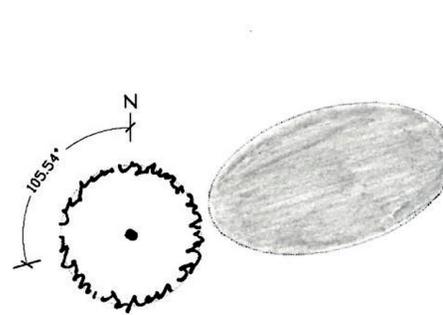
Vernal Equinox 10:00 AM



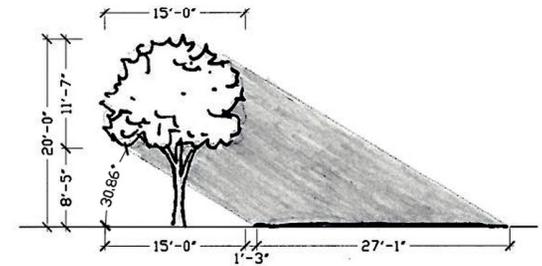
Vernal Equinox 4:00 PM



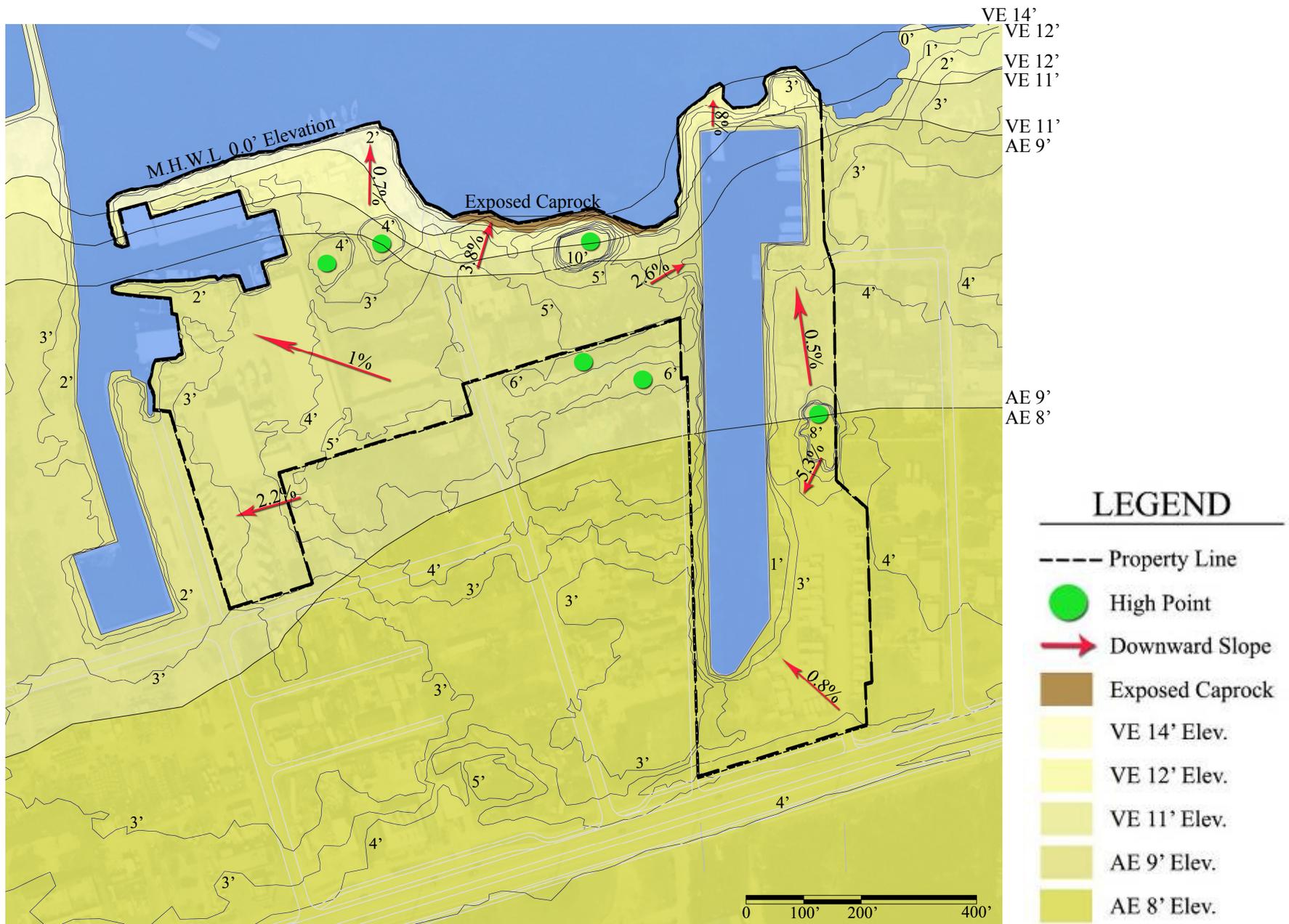
Autumn Equinox 10:00 AM



Autumn Equinox 4:00 PM



The vernal (spring) and autumn equinox represent the mean solar orientation and shade. Marathon can still be very warm during this time with temperatures averaging 70 to 80 degrees creating a need for areas with shade. This time of year is also known for its cool breezes over the water necessitating sunny enclosed areas. A variety of microclimates can be created and used during the spring and autumn months to account for the fluctuating weather conditions.



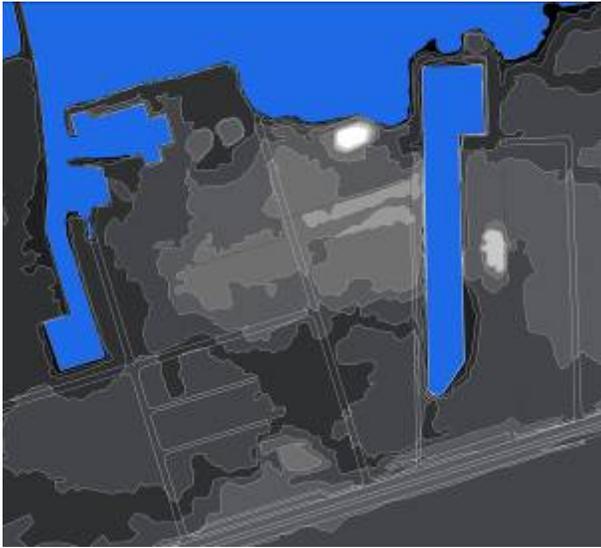
MARATHON SHORES: Overall Site Topography Analysis

Over eighty percent of the site has a slope ranging from 0.5% to 3%. The remaining locations have a topographic change of up to 8% and these areas are primarily located near the coastline and where large soil mounds have been deposited. The general direction that the site slopes is towards the Gulf of Mexico waterfront. Stormwater runoff can be detrimental to this water body, especially since all waters surrounding the Florida Keys are designated as Florida Outstanding Waterbodies. The City of Marathon has placed regulations for new developments that require all stormwater to remain on site and these regulations are determined by rainfall and impervious coverage.

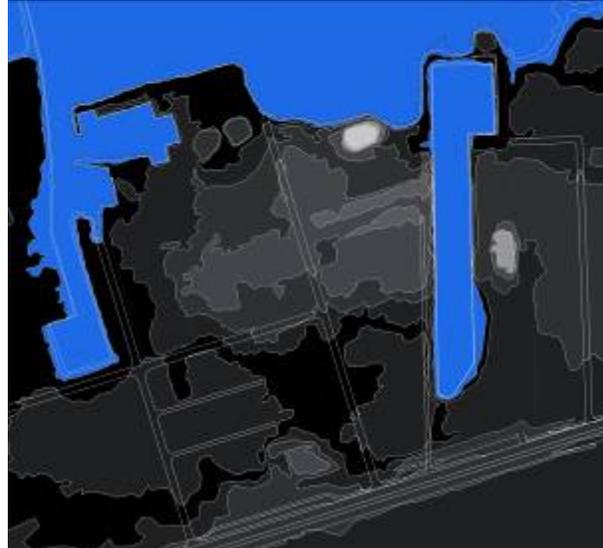
The average annual rainfall for Marathon is just over 47", however, it is the way in which this rainfall is received that is important. Almost half of the rainfall occurs during the summer months and is usually associated with a few large rain events from tropical systems. As stated above the stormwater calculation guidelines are based on impervious coverage. A site with less than 40% impervious coverage bases its retention capabilities on a 0.5" rain event, while a site with greater than 40% impervious coverage must accommodate an 1.25" rain event. Further complicating this, is the extra security taken to protect the Florida Outstanding Waterbody, which imposes a multiplying factor of 1.5 to the rainfall amount.

The soil on the site is an urban land complex (udorthent) comprised of a variety of Keys soils and aggregates. This soil was brought in as fill to raise the site's elevation and make for more feasible construction. This urban land complex varies in depth across the site, but it averages between 3' and 5'. However, there are several locations on the site where spoils of soil have built up, which can protrude an additional 5' above grade and still other areas where there is no udorthent soil and caprock is exposed. Florida Keys caprock is the remnants of an ancient reef. It is very porous, but has great structural integrity. Most buildings and even small structures in the Keys need to be fastened to the caprock, usually with pilings, to eliminate the effects of settling. Udorthent soils have moderate construction properties and are moderately well drained, however it is a poor growing material because there are very few organics.

The Marathon Shores site also includes a number of FEMA flood plains that represent the possible inundation after a 100 year storm. This site has five such flood plains that decrease in height from 14' to 8' as they recede from the waterfront. Since Marathon is an island, this storm event is not based off rainfall amounts, but rather hurricane storm surge and the distance it will penetrate. Hurricane storm surge is equivalent to a flood with addition destructive forces like wind and waves accompanying it. With a major hurricane the storm surge can be nine feet plus depending on the direction of the storm making for a lethal moving body of water and even more reason to design for these forces. The flood plains are based off a 100 year storm. There are also two different flood plain types AE (High Risk Zone) and VE (High Risk Zone with velocity hazard). The difference between these will be discussed in the structure's analysis.



Current sea-level elevation as of 2010



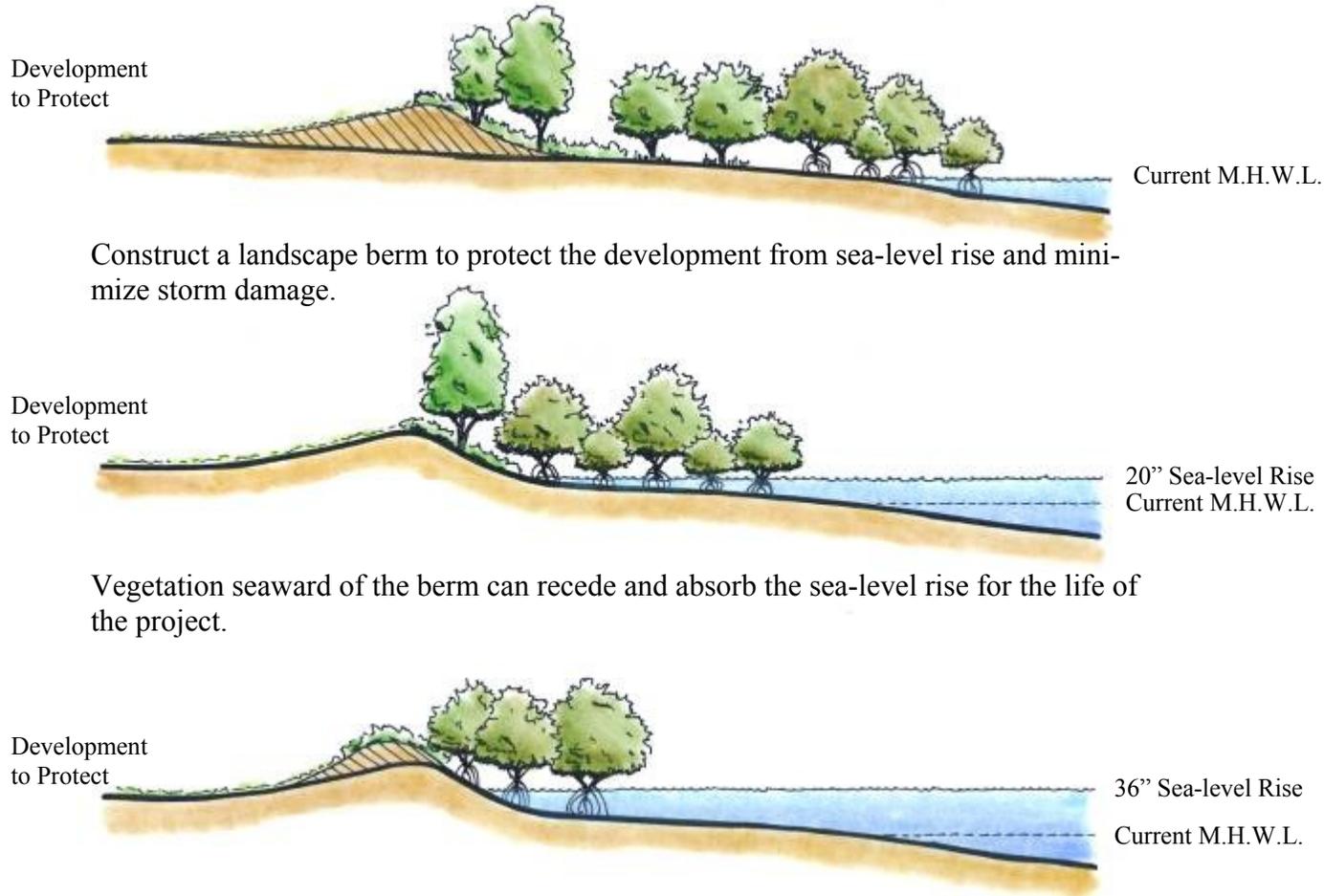
Projected sea-level rise of 20" by 2060. 2060 is the estimated life span of the project based on similar developments and physical design and materials.



Projected sea-level rise of 36" by 2100. The site should be designed to accommodate developments in the distant future.

The Marathon Shores site faces the shallow waters of the Gulf of Mexico. The minimal amount of wave action, wind, and current yields little erosion, making the waterfront a low energy shoreline. This allows for a static sea-level rise solution to be successful and economically practical. A landscape berm that can be added to and allows vegetation to recede is the best option and this solution can be adapted to fit most of the site's shoreline. However, there are some locations around the marina that will require a seawall to protect the developable property. Implementing these modifications will also mitigate the damages caused by hurricane wind and surge, along with aiding in keeping stormwater runoff on site.

Sea-level Rise Solution for a Low Energy Shoreline



As sea-level continues to rise, increasing the backside of the berm is a cost-effective way to allow the vegetation to recede and maintain a fluctuating ecosystem.

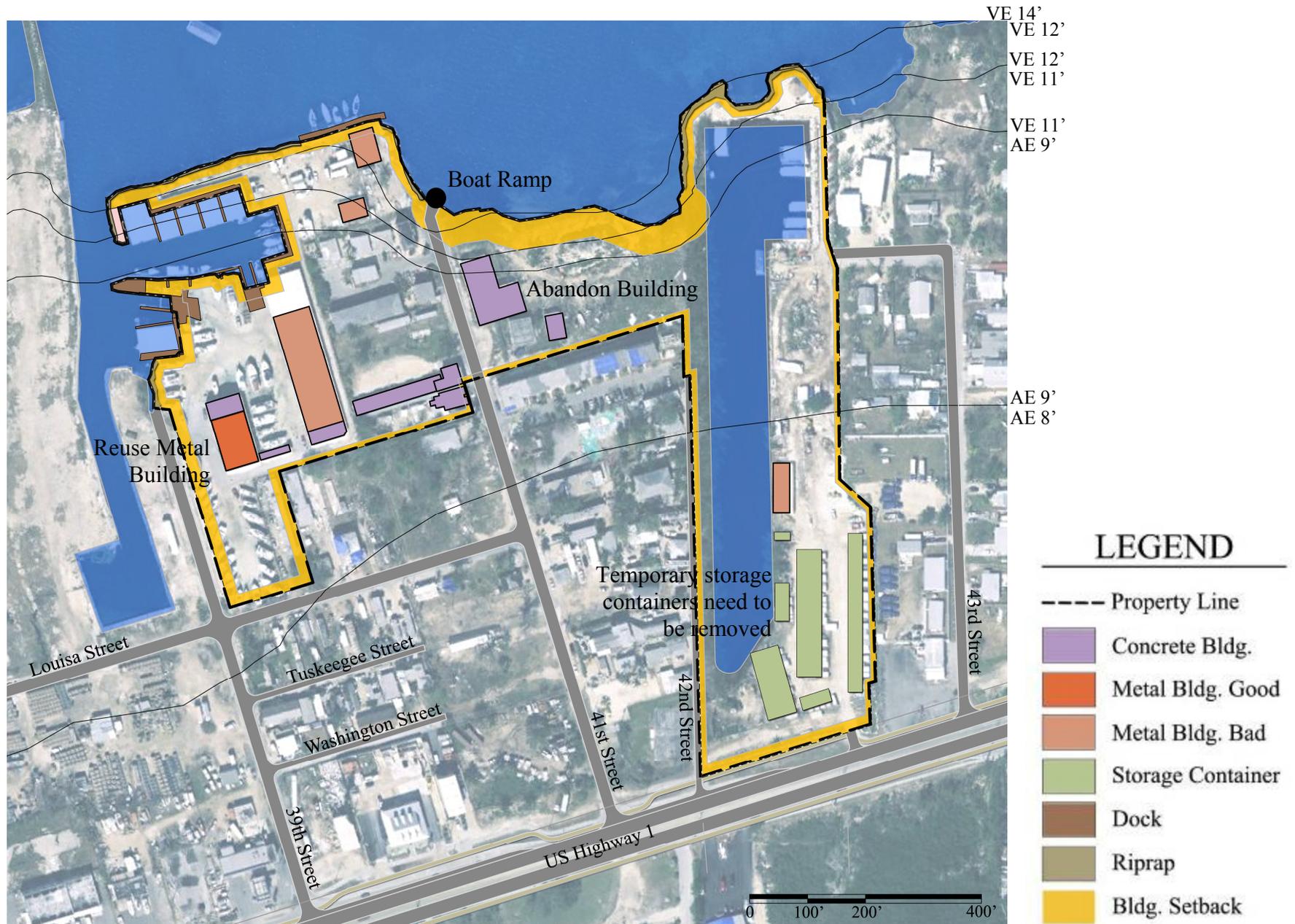
A Minimal Rise can cause Extensive Damage



A 4' storm surge flooded backstreets and several houses below the floodplains.



A 6' storm surge flooded all roads and properties on the gulf-side including US-1.



MARATHON SHORES: Overall Site Structure Analysis

The Marathon Shores site has a variety of setbacks along the entire property line including the waterfront. There are two categories of shoreline setbacks on the site, altered and unaltered. A majority of the site's shoreline is altered with a seawall or riprap boulders to protect from wave erosion. However, in the middle of the site's waterfront is a portion of unaltered shoreline, where exposed caprock gradually slopes into the water. The altered shoreline only requires a 20' setback, while the unaltered shoreline requires a 50' setback. The setback distance is measured from Mean High Water Line (M.H.W.L.). The other setbacks on the site are either 10' or 20' measured from the property line depending on several factors including adjacent land uses, proximity to US-1, and orientation on the site.

There are two types of buildings existing on the site, concrete and metal frame, and only one building is suitable for reuse. This building is an open metal structure with tall ceilings and a sturdy frame. The others are in poor condition and will need to be demolished. The concrete from the demolition can be crushed and used as fill, some materials can be salvaged to add character to the project, and the rest need to be removed from the site. The storage containers are temporary metal structures that will also need to be removed. Structures including the docks and boat ramp will remain and be incorporated into the project's design.

Along with setbacks, FEMA flood plains also regulate structures. Unlike setbacks that limit location of structures, flood plains determine the elevation of the first floor. The two flood plain categories, AE and VE, differ from where the first floor elevation is measured. AE zones are measured from M.H.W.L. to the top of the finished floor elevation (F.F.E.), while VE zones are measured from M.H.W.L. to the bottom of the lowest structural horizontal member. There can be no habitable structures built below the flood plain limitations. This is particularly important because Marathon has a height limitation of 37' from grade to the tallest structural element.

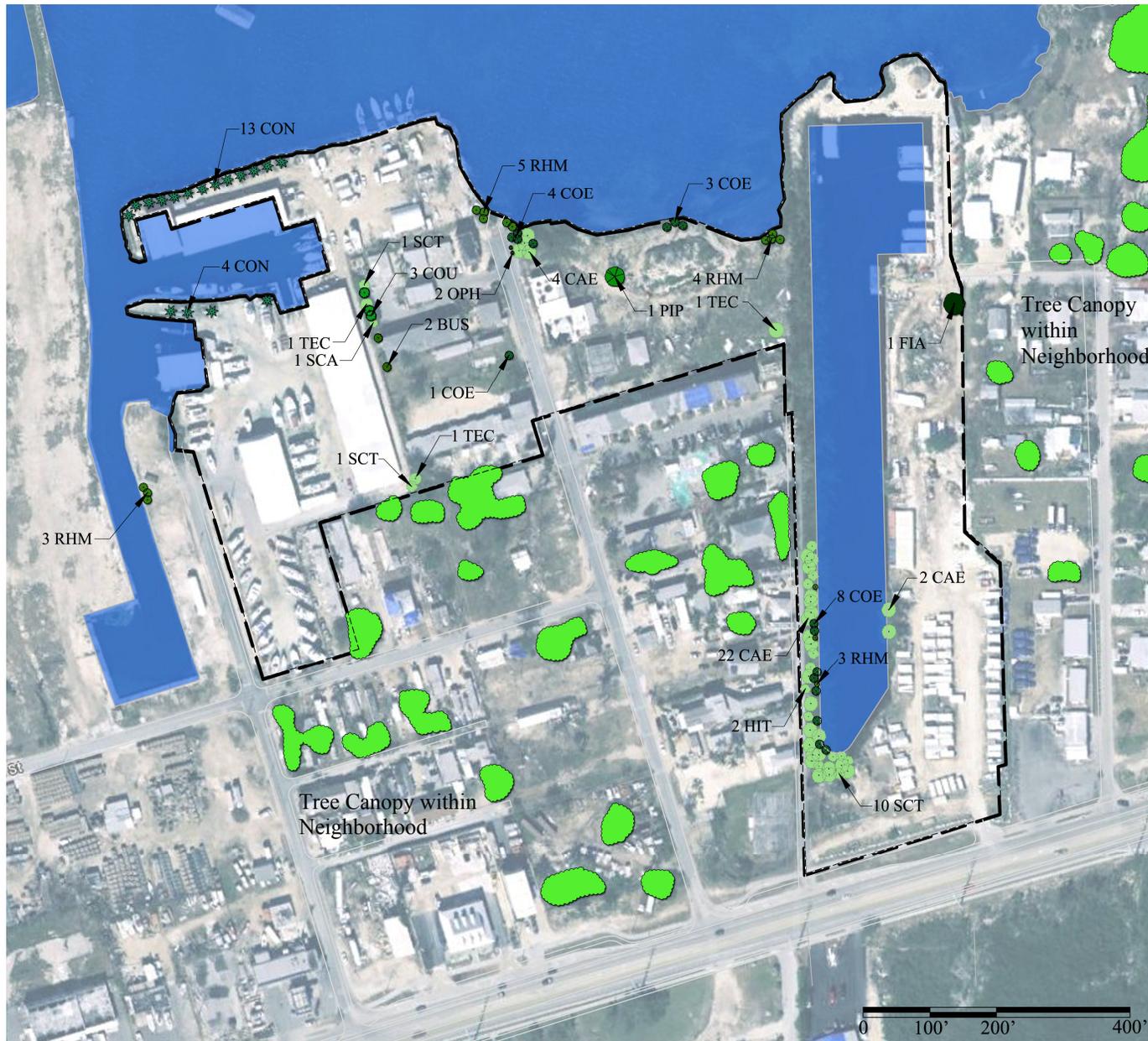


Metal frame building in good condition

Trailer and storage container

Abandoned commercial building

Riprap and debris shoreline edge



MARATHON SHORES: Overall Site Vegetation Analysis

Existing Species Legend

Sym.	Qty.	Botanical Name	Common Name	Status	Design Options
BUS	2	<i>Bursera simaruba</i>	Gumbo Limbo	Native	Remain/Relocate
CAE	28	<i>Causarina euisetifolia</i>	Australian Pine	Invasive Exotic	Remove
COU	3	<i>Cocoloba uvifera</i>	Sea Grape	Native	Remain/Relocate
CON	17	<i>Cocos nucifera</i>	Coconut	Exotic	Remain/Relocate
COE	16	<i>Conocarpus erectus</i>	Buttonwood	Native	Remain/Mitigate
FIA	1	<i>Ficus aurea</i>	Strangler Fig	Native	Remain/Relocate
HIT	2	<i>Hibiscus tiliaceus</i>	Mahoe	Invasive Exotic	Remove
OPH	2	<i>Opuntia humifusa</i>	Prickly Pear	Native	Remain/Relocate
PIP	1	<i>Piscidia piscipula</i>	Jamaican Dogwood	Native	Remain/Mitigate
RHM	15	<i>Rhizophora mangle</i>	Red Mangrove	Protected Native	Selective Trimming
SCA	1	<i>Schefflera actinophylla</i>	Umbrella Tree	Invasive Exotic	Remove
SCT	12	<i>Schinus terebinthifolius</i>	Brazilian Pepper	Invasive Exotic	Remove
TEC	3	<i>Terminalia catappa</i>	Tropical Almond	Invasive Exotic	Remove

Protected Native Species



Red Mangrove Stand

Design Option Notes:

Rhizophora mangle and other mangrove species are vital to the natural ecosystem and therefore are protected in the Florida Keys. There are strict regulations regarding these species. Mangroves may not be removed even if mitigated, unless given a variance, which is nearly impossible. There is also strict rules on the trimming of the branches that depends on the height of the tree and diameter of the branches. Red Mangroves have an aesthetic character that can be highlighted in the project.

Some natives, not including mangroves, that do not transplant well can be removed and replaced with a 3:1 mitigation. This is a good option because it allows creativity and also ensures the replanting of more natives. Species that transplant well or are specimens should be relocated on site.

There are five invasive species on site and they heavily outnumber the natives. This is probably caused by the poor growing properties of the soil that give durable species the advantage over natives. All invasive species must be removed from the site before any construction may begin.

Existing noninvasive plants on site



Historic Plant Communities of the Region

Mangrove Swamp: Usually found in low lying areas often adjacent to saltwater coastlines. This ecosystem is located throughout the Florida Keys

Associated species include Red Mangrove and Black Mangrove

Salt Marsh: This ecosystem is also prominent around coastlines, but migrates further inland. The salt marsh is sometimes seen connecting mangrove swamps to hammocks where there is minimal topographic change. These plants are very salt and wind tolerant.

Associated species include Red Mangrove, Black mangrove, Buttonwood, Sea Grape, and Poisonwood

Tropical Hammock: This is a higher elevation ecosystem that requires better soil and greater wind protection. There are a full range of canopy and under-story species in this plant community making it dense and diverse.

Associate species include Gumbo Limbo, Thatch Palm, Poisonwood, Pigeon Plum, Mahogany, Paradise Tree, Stopper, and Jamaican Dogwood



Proposed Native Plant Palette

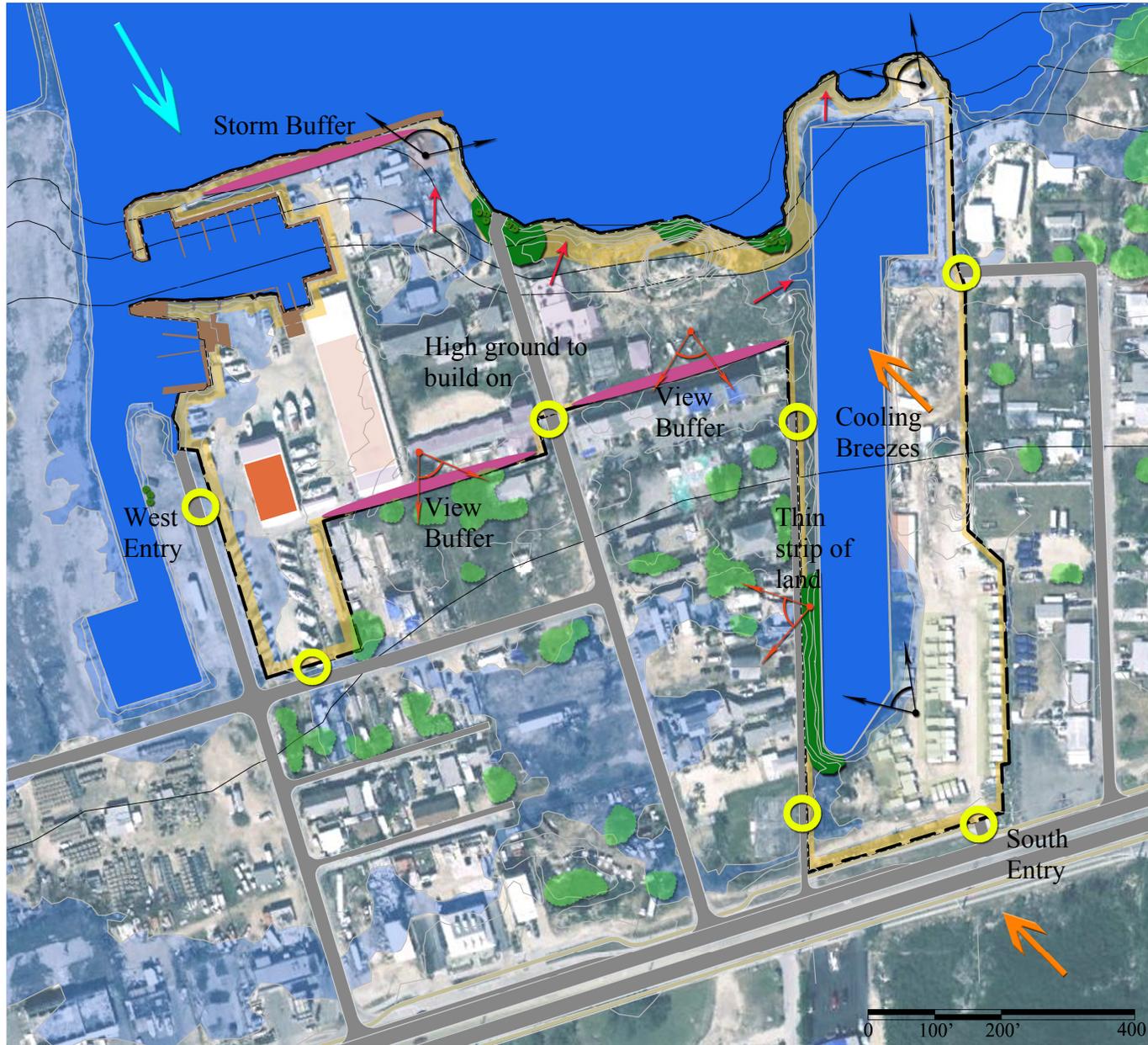
<i>Bursera simaruba</i>	Gumbo Limbo
<i>Chrysobalanus icaco</i>	Red Tip Cocoplum
<i>Clusia rosea</i>	Autograph Tree
<i>Coccothrinax argentata</i>	Silver Palm
<i>Cocoloba uvifera</i>	Sea Grape
<i>Conocarpus erectus</i>	Buttonwood
<i>Ernodea littoralis</i>	Beach Creeper
<i>Ficus citrifolia</i>	Shortleaf Fig
<i>Galphimia gracilis</i>	Thryallis
<i>Guaiacum sanctum</i>	Lignumvitae
<i>Helianthus debilis</i>	Dune Sunflower
<i>Hymenocallis latifolia</i>	Spider Lily
<i>Pseudophoenix sargentii</i>	Buccaneer Palm
<i>Sabal palmetto</i>	Cabbage Palm
<i>Suriana maritima</i>	Bay Cedar
<i>Thrinax radiata</i>	Thatch Palm
<i>Uniola paniculata</i>	Sea Oates
<i>Zamia pumila</i>	Coontie

The above species represent a range of native plants that thrive in the Florida Keys and are readily available.

Proposed Exotic Plant Palette

<i>Bambusa vulgaris</i> ‘Vitatta’	Golden Hawaiian Bamboo
<i>Bougainvillea sp.</i>	Bougainvillea
<i>Cocos nucifera</i>	Coconut
<i>Codiaeum variegatum</i>	Croton
<i>Copernicia baliyana</i>	Bailey Palm
<i>Delonix regia</i>	Royal Poinciana
<i>Dioon edule</i>	Silver Dioon
<i>Gardenia jasminoides</i>	Gardenia
<i>Hamelia nodosa</i>	Dwarf Firebush
<i>Paspalum vaginatum</i>	Seashore Paspalum
<i>Phoenix dactylifera</i>	True Date Palm
<i>Pimenta diocia</i>	Allspice
<i>Strelitzia reginae</i>	Orange Bird of Paradise
<i>Veitchia arecina</i>	Sunshine Palm

The above species are very durable and readily available. They are also associated with the Florida Keys aesthetic and bring color and interest to the garden.



LEGEND	
---	Property Line
→	Downward Slope
○	Access to Site
→	Summer Winds
→	Winter Winds
↖	Good View
↘	Poor View
●	Prop. Vegetation
●	Tree Canopy
■	Buffer
■	Bldg. to Remain
■	Setback

MARATHON SHORES: Overall Site Synthesis

The Marathon Shores site has many natural and human opportunities and constraints. One of the greatest opportunities is the ability to protect, restore, and develop the existing mangrove and native plant stands into native plant communities for strolling paths and education. These stands will also help with sea-level rise and protection from storm surge and wind. There is also the opportunity for a linear public space along the shoreline, which will provide everyone with great views offshore. One of the biggest constraints is the thin strip of land west of the pond. This 29' wide corridor has many native plants and is adjacent to a residential roadway. The 100' wide by 930' long saltwater pond is a great visual amenity, but creating circulation from one side to the other will be challenging.

The central portion of the site can contain a majority of the development because cold winter winds can be blocked, cooling summer breezes of the saltwater pond can be funneled in, there are multiple points of access, and this location allows for over 180° of waterfront view. The central portion also has the highest elevations, creating viewsheds and reducing standing water. The west and south-east sections of the site are also suitable for development and have great access. Constructing and cantilevering structures over the saltwater pond is a great opportunity that can make Marathon Shores a unique destination.

Intercepting stormwater runoff before it reaches the coast and reusing the water on site is an obligation of the development. Minimizing structures in the VE flood plains along with creating rain gardens and cisterns will aid in this goal. A buffer along the waterfront will stop direct runoff, but reusing the water and allowing it to go through multiple purification processes will be most beneficial. Cisterns and rain barrels are the best option because the water table is so close to finished grade.

The lack of reusable structures on site creates a financial restraint because demolition and removal of the structures from the site is mandatory. There is one metal frame structure that can be reused as a covered open space. This structure can be relocated to make it more useful. The structures that need to be demolished are old and in poor condition, some of which are abandoned and in ruins. There are homes in a similar condition in the neighborhood south of the site, that have the potential to be restored or buffered from view of the site.

PROGRAM



The Marathon Shores site has two categories of program elements, those that are required and those that need to be explored.

The required program elements are derived from developers, architects, and chamber of commerce members and are what they believe the project needs to incorporate for it to be economically and financially successful, along with being a unique and attractive destination for its proposed users. The required program elements include a connection to the community, increased night time attractions, 35,000 to 50,000 square feet of commercial, and 56 to 68 market rate residential units. In addition to the market rate units there needs to be 12 to 17 affordable residential units. Several architects and a realtor have also outlined the size of the residential units. 1,600 to 2,000 square foot units are currently the most saleable and most efficient to build. Single-family detached is very expensive and having more than six attached units deters from the Keys atmosphere and low-key, tropical lifestyle.

Through the developers, architects, and chamber members plus additional suggestions from restaurant owners, community representatives, and locals there are numerous program elements to be explored. There are various types of commercial buildings that can attract a variety of users along with providing interest during the day and night. Marathon currently has a small, one theater cinema that is constantly sold out. A movie theater is a great night time business and this has proven to be successful elsewhere in the Keys. A two theater cinema was recently expanded to five in the upper keys, which has brought new life to a retail center. A dock house to serve the marina and specialty retail shops that carry apparel, fishing supplies, and tourist commodities can also be successful.

Restaurants and bars are also great day and night attractions, especially if located on the water where people can sit back and relax. Due to the number of restaurants with close proximity to the site, there is little opportunity for single use restaurants, especially ones that only serve breakfast. There is a high end restaurant close to the site that is willing to relocate closer to the water, which can be a great opportunity for Marathon Shores. This restaurant plus a bar & grill, a beach side bar, and a small deli could be a great combination. Several successful restaurants that I am looking at as precedents are Morada Bay, Barracuda Grill, and Cabana Breezes outdoor bar. Morada Bay is a 4,000 square foot bar and grill that seats approximately 120 people and is famous for its beach side seating. Barracuda Grill is a 2,200 square foot high end restaurant that seats approximately 60 people. Cabana Breezes outdoor bar is a 800 square foot open air hut that seats approximately 25 people right on the water.

There is also a lot to be explored regarding public uses and amenities. A waterfront park that connects the residential units to the commercial business would be a great amenity and a first for Marathon. This park could be the symbol of the project and unique attraction to boost the projects success. A small amphitheater, beachside tiki huts, and covered picnic areas can also be incorporated into the site. Trails and boardwalks can connect all of the public uses plus the marina. The trails can be used for exercise, viewing, and education.

Residential

Type	Quantity	Total Squarefootage	Footprint	Comment	Parking Ratio	Total Parking
Single Family Market-Rate Unit	60	1,760	1088sf (22'x54')	Quadplex	2spots:1unit	120
Single Family Affordable Unit	12	800	N/A	Above Commercial	1spot:1unit	12

Commercial

Type	Seats	Total Squarefootage	Footprint	Comment	Parking Ratio	Total Parking
Movie Theater	450	12,500	12,500sf	3-theater w/ parking below, stager show time to reduce parking	1spot:3seats in use 1spot:3seats +	100
Restaurant A	150	4,000	4,000sf	indoor/outdoor dining	1spot:1employee 1spot:3seats +	60
Restaurant B	100	2,500	2,500sf	dining on the water	1spot:1employee	40
Bar	15	800	800sf		10spots:1000sf	8
Fishing Club w/ marina services	N/A	2,577	2.577sf	parking below	3spots:1000sf	9
Retail	N/A	19,755	19,755sf	Art, Clothing, Fishing, Souvenirs	3spots:1000sf + 1spot:1employee	84

Public Uses

Type	Comment	Total Parking
Waterfront Park	Open to anyone	10
Marina & Docks	Includes commercial fishing, charters, and boat repairs	8
Boardwalk and Trails	Exercise and relaxation for locals and tourists	6
Amphitheater	Community events and daily shade structure	12
Parking Garage	242 parking spots	N/A
Bicycle	1spot:10commercial and public spots	24

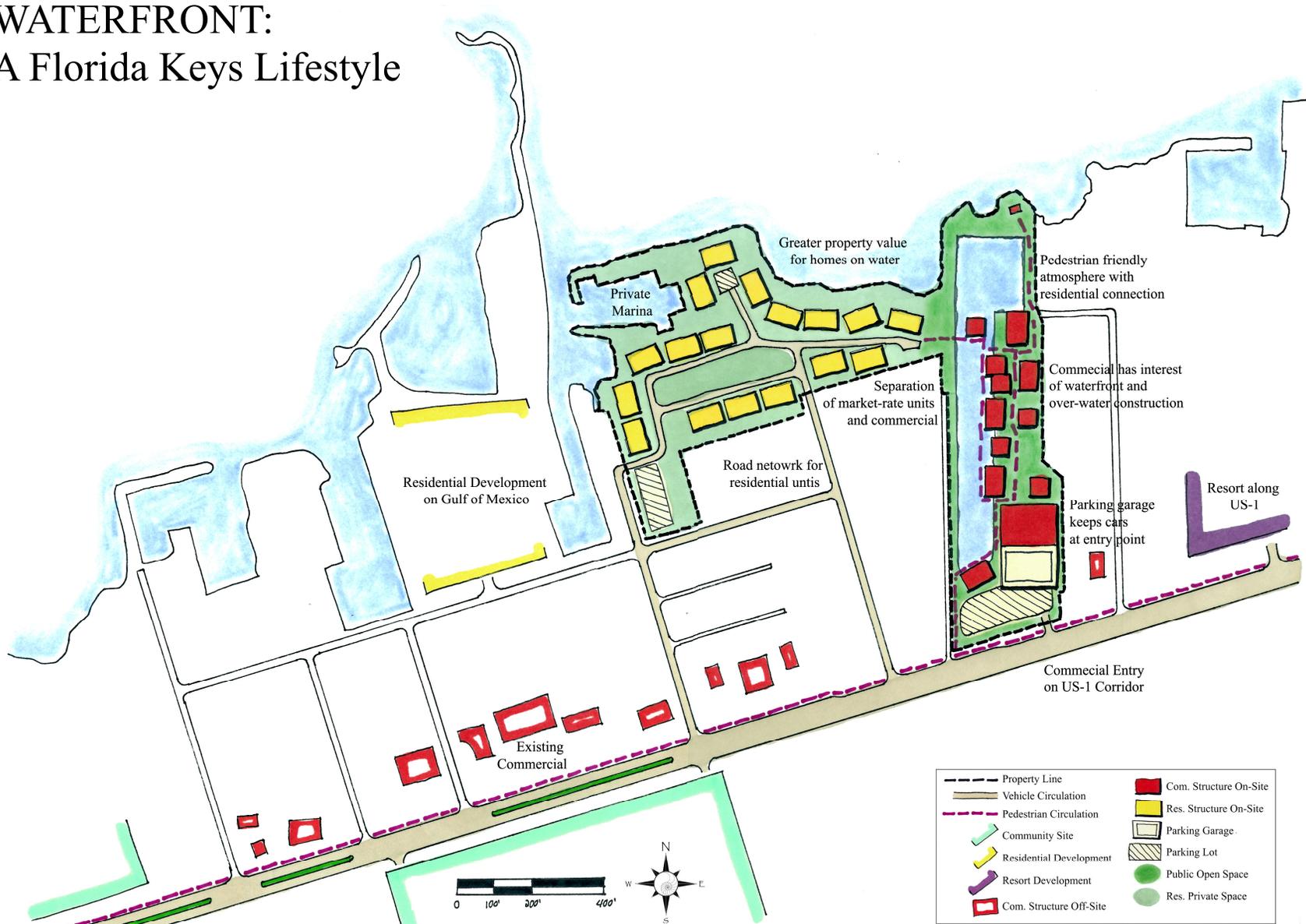
Total Parking Required = 337*

* Residential parking is incorporated into the unit and driveway

Schematic
Design



WATERFRONT: A Florida Keys Lifestyle



The Waterfront concept exemplifies a typical Florida Keys development. The uses along the shoreline and structures with waterfront views are a priority. Real estate that is adjacent to a body of water is a minimum of twice the expense as the same on dry land. This concept also realizes that commercial business are most successful along the busiest street, therefore placing the commercial entry on US-1 creates a highly visible entry. Within the site, there are great amenities to both the residences and commercial users including community open spaces, a pedestrian friendly atmosphere, and both residential and commercial waterfront property. The layout of residences along the waterfront and small individual commercial business is also typical of the Keys. This concept provides direct pedestrian circulation through the site, however, connections to surrounding community elements is at a minimum.

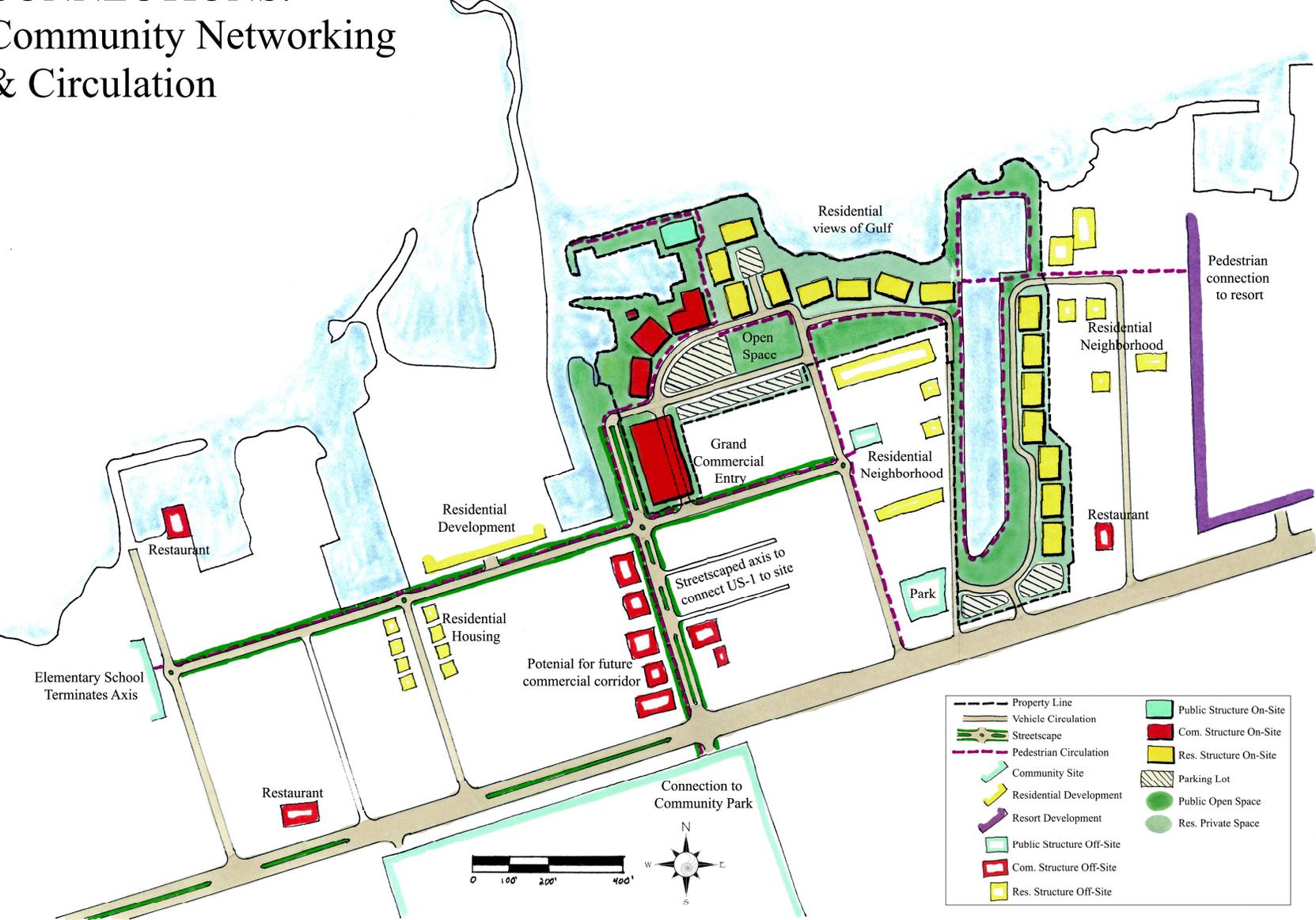
Objectives:

- Focus on the US-1 corridor
- Commercial on highest traffic route with shoreline connection
- Residential along waterfront for greatest value with direct US-1 access
- Separation between residential and commercial
- Maximum build-out
- Multiple structures with open space integrated between to create Keys atmosphere

Specifications:

- Market Rate Units - 68
- Affordable Units - 17
- Commercial Square footage: 50,000
- Circulation - 2,800 linear feet
- Public Waterfront - 1,000 linear feet

CONNECTIONS: Community Networking & Circulation



The overwhelming theme behind the Connections concepts was the network that the site needed to have with its surrounding community elements. Streetscapes on two major axes became community unifying elements along with being vehicle and pedestrian friendly routes. Rotaries and islands would enable the use of public art or design elements to distinguish this unique neighborhood from others. The north/south axis is the major thoroughfare to the site. This allows direct connection to US-1 and the community park across the street while also having the potential of becoming a commercial corridor. This concept places the commercial in a linear fashion to encourage future growth. This concept also allows for residential units along the waterfront and a vast amount of public open space. Vehicles and pedestrians have a number of entries to the site that all connect to form a network so that there are no dead ends. A pedestrian connection is also extended to the resort to the east to attract additional users.

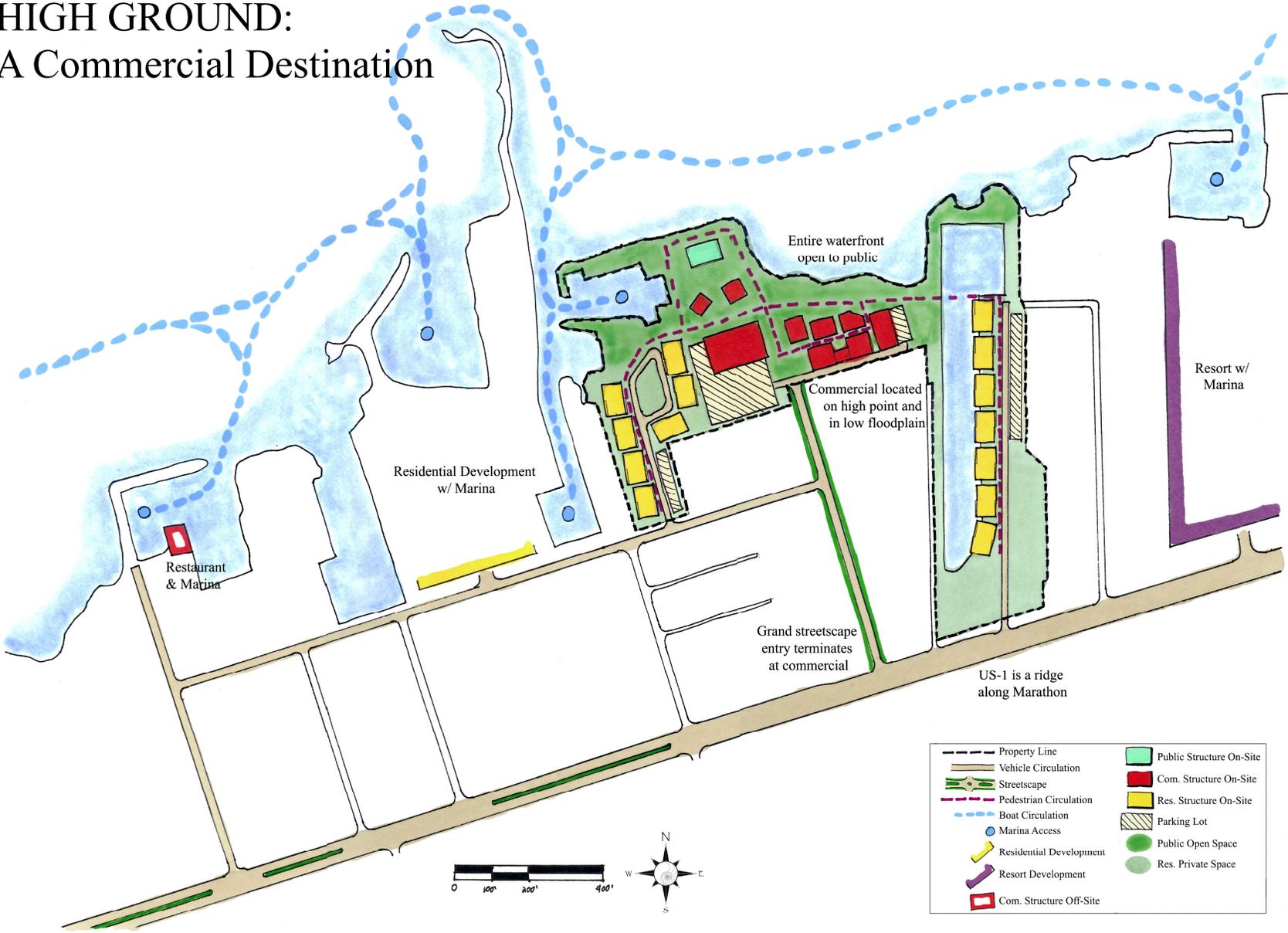
Objectives:

- Axial connections to community elements
- Streetscape to absorb stormwater runoff
- Connections to residential neighborhoods
- Accommodate vehicle and pedestrian circulation on backstreets
- Create an open space network within the site

Specifications:

- Market Rate Units - 60
- Affordable Units - 12
- Commercial Square footage - 40,000
- Circulation - 3,100 linear feet
- Public Shoreline - 800 linear feet
- Public Marina

HIGH GROUND: A Commercial Destination



The High Ground concept concentrates on providing the best solution to accommodate sea-level rise. The highest elevation on the site is located in the central area, which is where the commercial core is. The commercial core is located here because this allows for on grade access to the business without having to incorporate stairs. This is a big advantage for attracting people, second floor retail never sells as well as first floor retail. The residential units can be located on lower elevations because they have garages on the ground floor and stairs are an acceptable means of entry. The commercial core also creates a destination that will be unique to the site and allows for great public access to the shoreline. The buildings have been offset from the shoreline to allow for flexible public uses along the waterfront and to accommodate future sea-level rise. This concept also looks at connections to other marinas in the area by water, which is an alternative means of travel that many users enjoy taking part in. In this concept the vehicle has taken a back seat. Minimal vehicle circulation opens the possibility of successful pedestrian and bicycle traffic to the site.

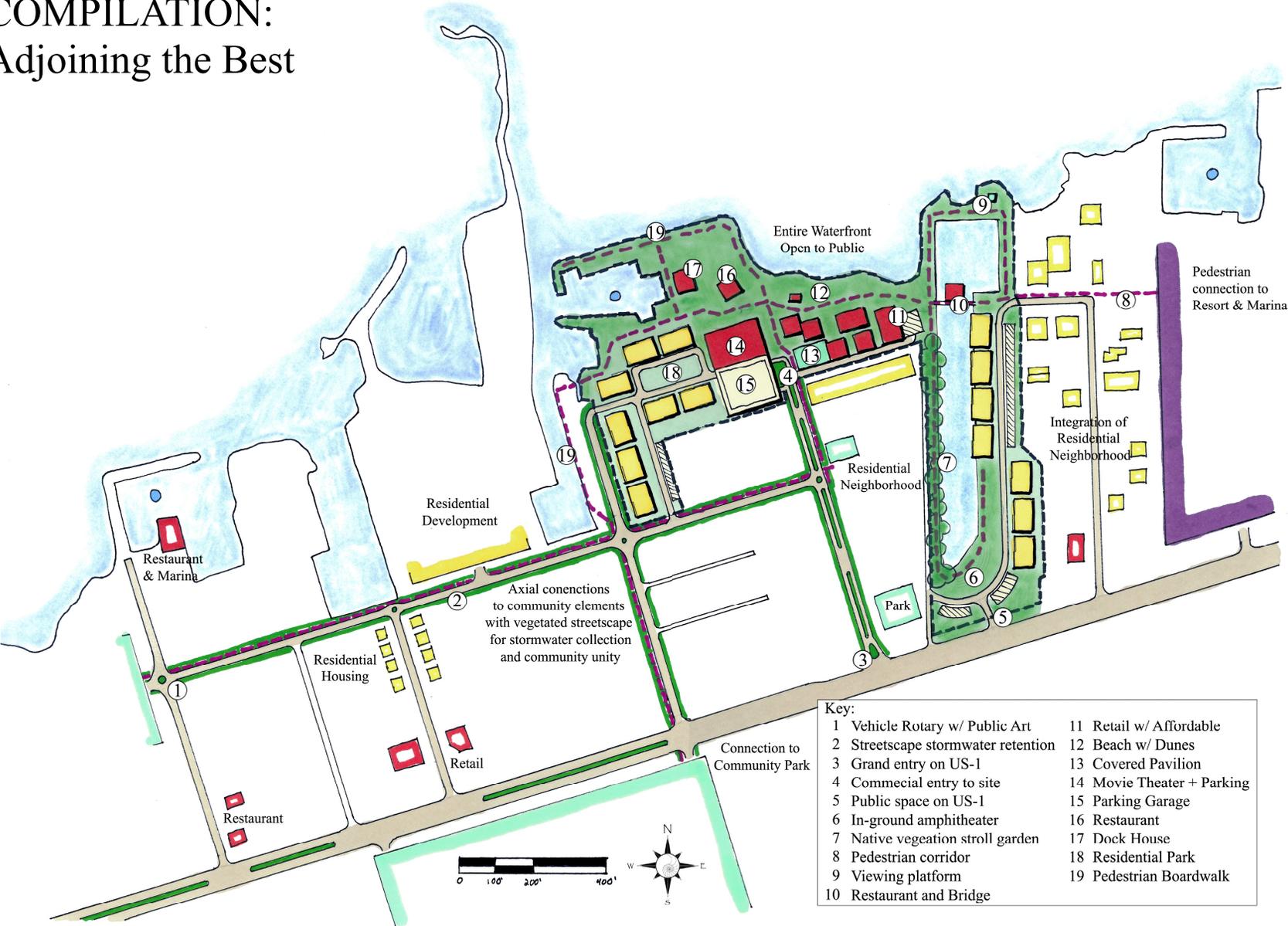
Objectives:

- Accommodate a 1-meter sea-level rise, while protecting the development
- Access by water to other important destinations
- Structures offset from shoreline to minimize hurricane impacts
- Separate residential and commercial entries to reduce vehicle/pedestrian conflict
- Requires Zoning Change

Specifications:

- Market Rate Units - 56
- Affordable Units - 15
- Commercial Square footage - 45,000
- Circulation - 1,650 linear feet
- Public Shoreline - 1,700 linear feet
- Public Marina

COMPILATION: Adjoining the Best



The Compilation concept is a mixture of the best features from the previous three designs. A central commercial core is above the proposed sea-level rise and also terminates an axis that connects to other community elements. There is a sense of community unity and a network of pedestrian and bicycle circulation. There is ample community open spaces along with private spaces for the residences. Each residence has a view and amenity, many of which are waterfront. Vehicle circulation has been limited to reduce conflict between pedestrians and create a more informal atmosphere along the waterfront. There is also ample parking for the users that wish to drive. The Compilation concept make the Marathon Shores project a unique destination that will attract users from the surrounding neighborhoods, islands, and cities.

This concept also starts defining specific program elements and their locations

Objectives:

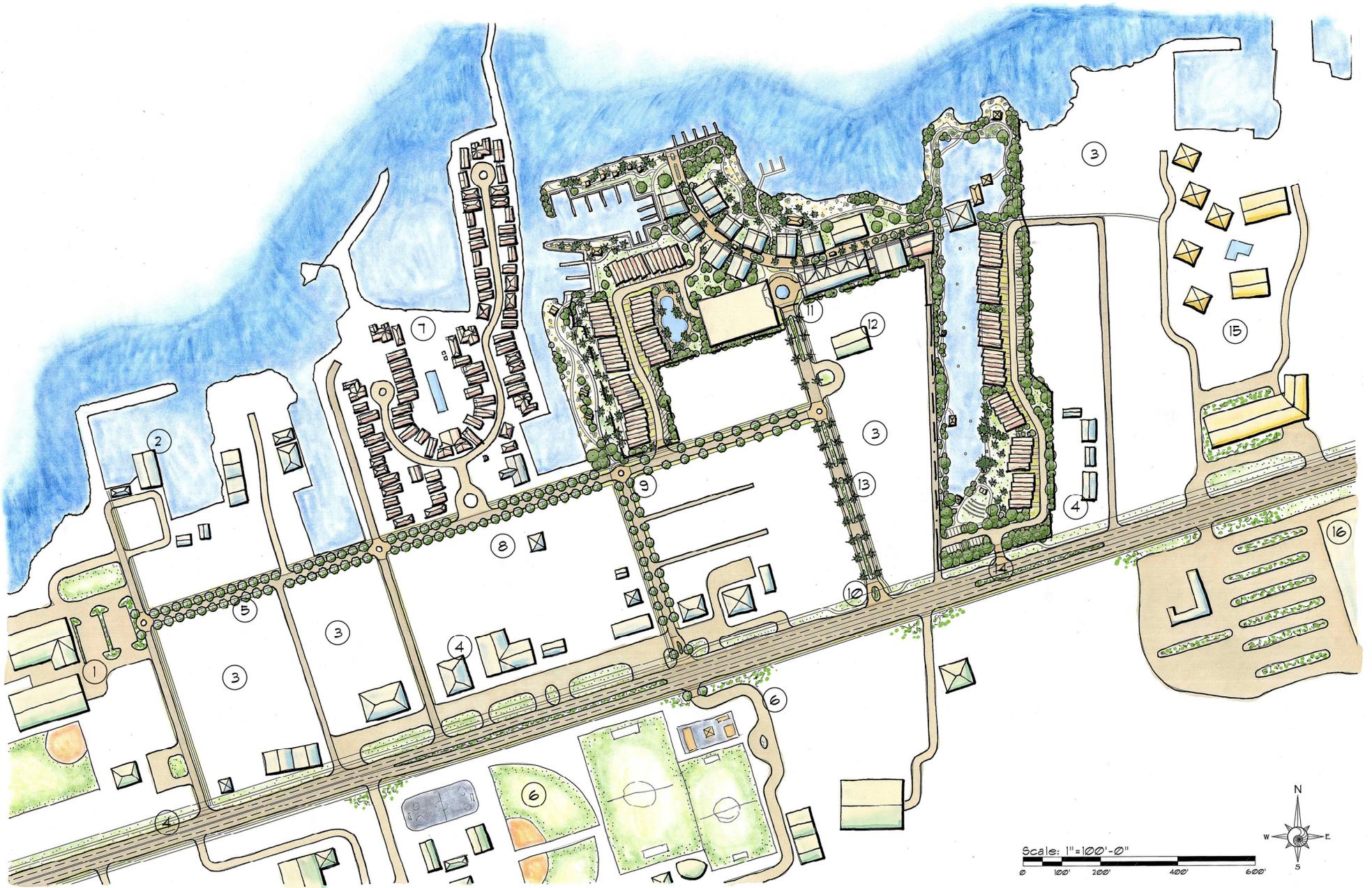
- Green connections to community elements
- Network of pedestrian and vehicle circulation
- Central commercial destination
- Greatest public amenities
- Waterfront access with Keys atmosphere
- Tolerant to hurricanes and sea-level rise

Specifications:

- Market Rate Units - 60
- Affordable Units - 16
- Commercial Square Footage - 49,000
- Circulation - 2,550 linear feet
- Public Shoreline - 1,700 linear feet
- Public Marina
- Parking - 280spots

Community Master Plan





MARATHON SHORES: Community Master Plan

General Specifications

Connects **156** Residential Houses
Connects **15** Commercial Retailers
Connects **6** Restaurants
Connects **3** Community Destination
Adds **3** Public Waterfront Access Points

Legend

1. Elementary School
2. Waterfront Restaurant
3. Residential Housing
4. Commercial Retail along US-1 (mostly restaurants)
5. Canopy road for comfortable pedestrian environment
6. Marathon Community Park
7. High-end Residential Development
8. Commercial Fishery property and storage
9. Vehicle rotary to slow traffic
10. Main Vehicular Entry
11. Grand Entry to Site
12. Community Day Care Center
13. Palm Allee for focusing view into site
14. Side entrance to site residences
15. Resort connected to site by pedestrian path
16. Big-box Commercial Store (Home Depot)

Key Features

- The site connects neighborhoods, a commercial corridor, schools, parks, a resort, and the waterfront
- The streetscape is an unifying element to the surrounding neighborhoods
- An axial streetscape network of back roads encourages safe walking and biking
- The main entry along the US-1 corridor gives the site street frontage and adds curb appeal
- Multiple access points make it easy for vehicles and pedestrians to enter the site
- Public access to the site and to the waterfront amenities make it part of the community fabric
- Possibility for future sea-level rise accommodation and fortification along the waterfront of neighboring sites

Master Plan





MARATHON SHORES: Master Plan

Legend

1. Public Gardens & Pergolas
2. Townhouse Quadplex (60 total units)
3. Residential Swimming Pool
4. Marina (21 total slips)
5. Visitor Dockage (17 total slips)
6. Dock House & Fishing Club (2,577s.f.)
7. Retail Boating (1,800s.f.)
8. Retail Apparel w/ Cistern Below (2,500s.f.) (140,000 gal.)
9. Retail Keys Living w/ Cistern Below (2,500s.f.) (140,000 gal.)
10. Restaurant Bar & Grill (4,000s.f.)
11. Retail Art (1,700s.f.)
12. Retail Accessories (1,840s.f.)
13. Retail Apparel (2,325s.f.)
14. Retail Tourist Souvenir (2,100s.f.)
15. Covered Public Open Space
16. Tiki Bar (800s.f.)
17. Waterfront Access
18. Pedestrian Promenade
19. Grand Entry
20. 3-Theater Cinema w/ 1st-Floor Parking (12,500s.f.) (36 parking spots)
21. Retail Coastal Products w/ 1st-Floor Parking & 3rd-Floor Affordable Residential Units (4,990s.f.) (14 parking spots) (4 total units)
22. Affordable Residential Units (8 total units)
23. Restaurant (2,500s.f.)
24. Covered Seating Over Water
25. Natural Bay Scenery
26. Viewing Platform at Point
27. Lagoon fountain for aeration
28. Native Garden Platform
29. Amphitheater
30. Parking Lot (36 spaces)
31. Parking Lot (15 spaces)
32. 4-Level Parking Garage (242spaces)
33. Parking Lot (12 spaces)

Site Specifications

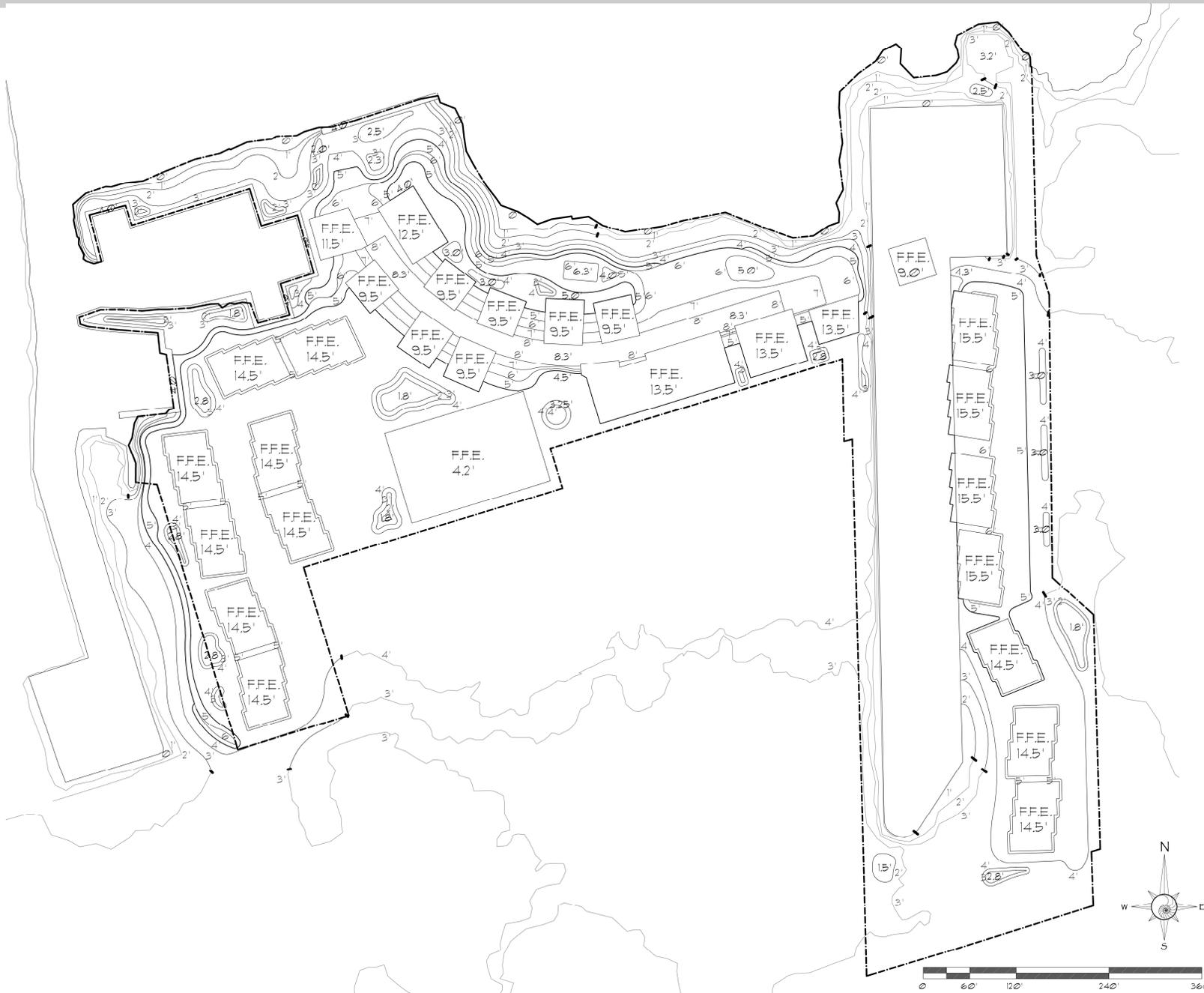
Acreage - 15.6
Market Rate Residential Units - 60
Affordable Residential Units - 12
Commercial Square Footage - 42,132
Visitor Parking Spots - 343
Boat Slips - 36

Key Features

- Multiple access points create some separation between residential and commercial sections of the site.
- The waterfront and other public spaces unite commercial and residential zones
- Parking connected to the main entry gets the users out of their cars and directly onto the pedestrian promenade
- The buildings are separated by vegetation to maintain the small scale Keys atmosphere
- Vegetation and berms are implemented around the structures to reduce wind and flood impacts
- The promenade and major pedestrian pathways are useable by service vehicles and emergency vehicles
- A separate road for ‘back of house’ service is also provided
- The central pedestrian promenade is a linear space bordered by retail shops and restaurants
- Native vegetation stands along the waterfront return portions of the site to its original condition
- The public waterfront and covered seating area can be used for community events

Grading & Drainage





The grading on the site has been modified to accommodate sea-level rise, stormwater runoff, and hurricane flooding. Varying elevation and topography throughout the site were also created to add interest to the landscape. The site is completely handicap accessible. The northern shoreline was returned to its natural slope so that native vegetation can be reestablished. This also allows easy access to the water. Restoring the waterfront slope provided some of the fill soil that is required to construct the pedestrian promenade. There were also several fill spoils that can be used, but there will still be a need to bring in soil from external sources.

MARATHON SHORES: Site Grading



The site has been graded to accommodate a 3' sea-level rise. This has been accomplished through several fortifying techniques including a landscape berm and retaining wall. These elements are placed on the water side of the structures and are as close to the structures as possible, while still allowing for an 8% slope.

The site and uses within the site can actually accommodate a 5' sea-level rise without any modifications. However, a 5' sea-level rise would flood the roads connecting the site making it inaccessible. If the berm and retaining wall were continued down the waterfront properties or the elevation of the roads raised, the site will be functional into the future.

The **BLUE** areas show elevations that would be inundated with a 3' sea-level rise

The Marathon building codes requires that all stormwater runoff being collected on-site and allowed to percolate into the soil. The site has a total land area of 13.17 acres. If the impervious coverage is less than 40%, the site needs to accommodate a 0.75" rainfall event. The site will also incorporate two 140,000 gallon cisterns located under the apparel and keys living retail stores.

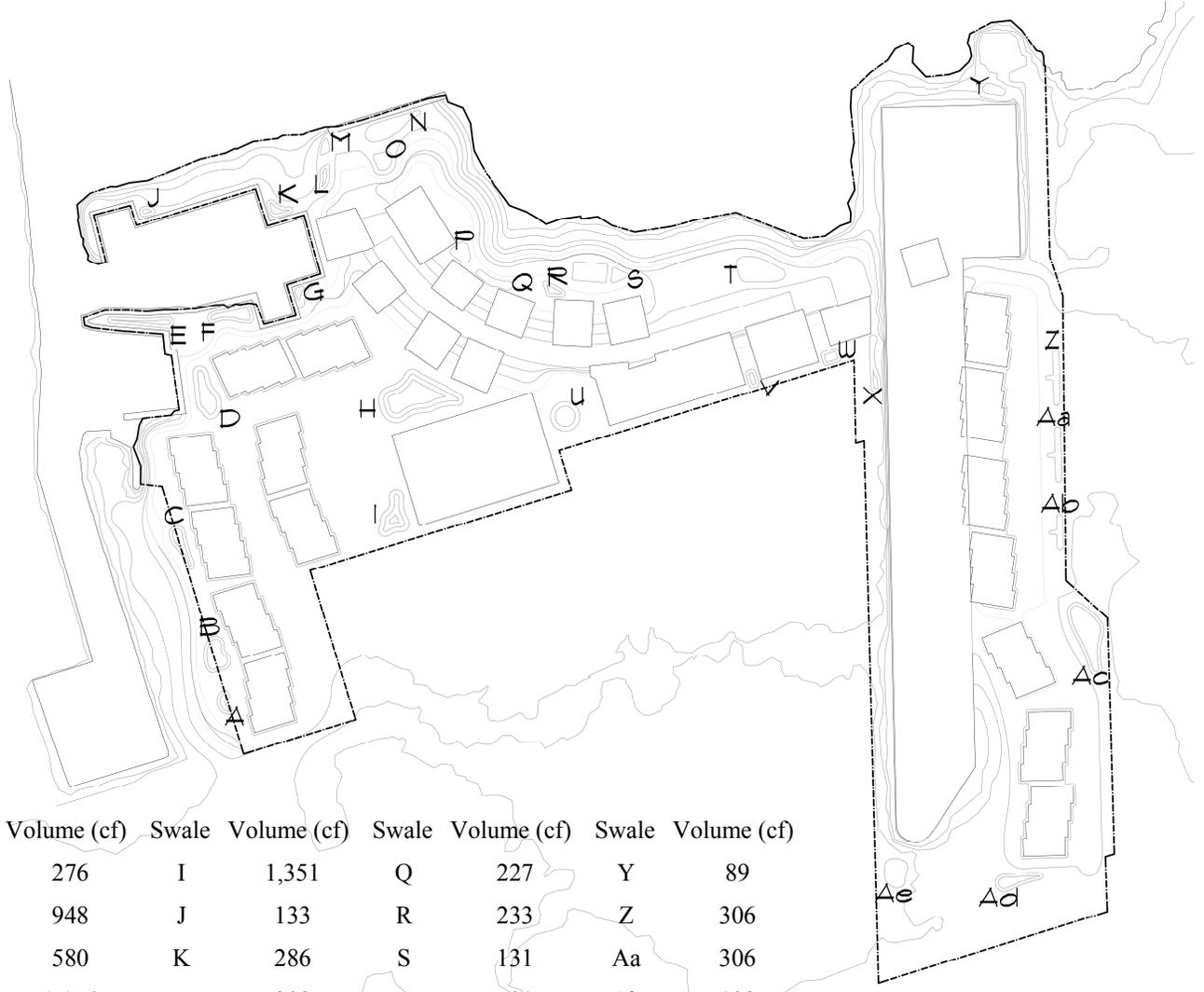
Impervious Surface Type	Square Footage
Foundations/Slabs	158,273
Deck/Patios	19,187
Driveways	5,049
Sidewalks/Dockage	10,788
Promenade	23,003

The total impervious square footage is 216,300 square feet, or 37.7% of the site

The total required retention volume is 13,465 cubic feet

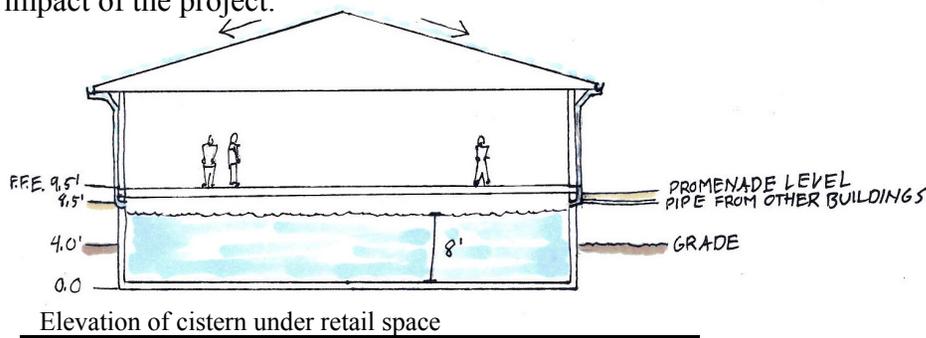
Swale	Volume (cf)						
A	276	I	1,351	Q	227	Y	89
B	948	J	133	R	233	Z	306
C	580	K	286	S	131	Aa	306
D	1,154	L	208	T	791	Ab	198
E	522	M	86	U	402	Ac	2,084
F	713	N	626	V	181	Ad	656
G	57	O	282	W	278	Ae	228
H	5,561	P	242	X	351		

The total provided retention volume is 19,486 cubic feet

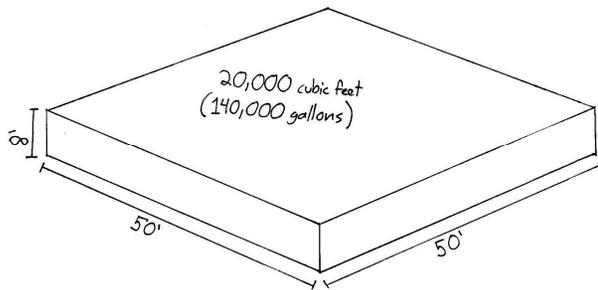


As drought duration continues to lengthen and growing populations are requiring more resources, potable water will become a limiting factor. The Keys already experiences fresh-water restrictions, making alternative sources a great option for new developments. The Marathon Shores project will collect stormwater from 10 commercial building rooftops with a combined surface area of over 44,000 square feet, along the pedestrian promenade, and will store the harvested water in two 140,000 gallon cisterns. The 280,000 gallons of cistern water can be used for irrigation or a variety of other grey water uses. The water can also be used, in extreme case, as drinkable water in the event of a devastating hurricane.

Since most of the potable water in the Keys is used for irrigation and 280,000 gallons is not enough volume to sustain irrigation on a 13.3 acre site, there is an alternative irrigation option. This option is to irrigate certain portions of the landscape with saltwater. With periodic flushing of freshwater (approximately once every two weeks) and the addition of salt eating microbes in to the soil, many plants can withstand this high salt environment. Many of the coastal native plant species including paspalum grass, zoysia grass, and island plants like coconuts are not hindered by this irrigation technique. This would save copious amounts of water and lower the impact of the project.



Elevation of cistern under retail space



Cistern Dimension Diagram



Cistern construction in the Florida Keys



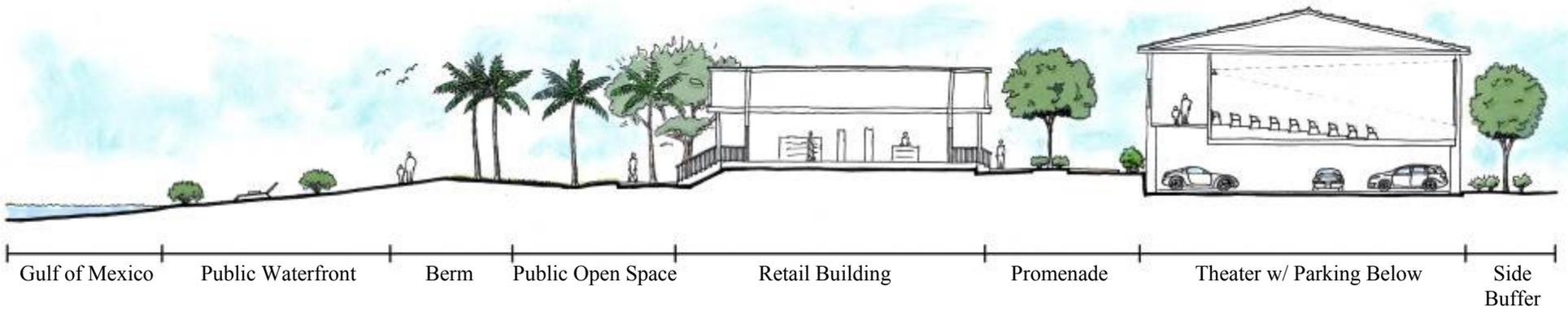
Cistern construction in the Florida Keys

Design Details



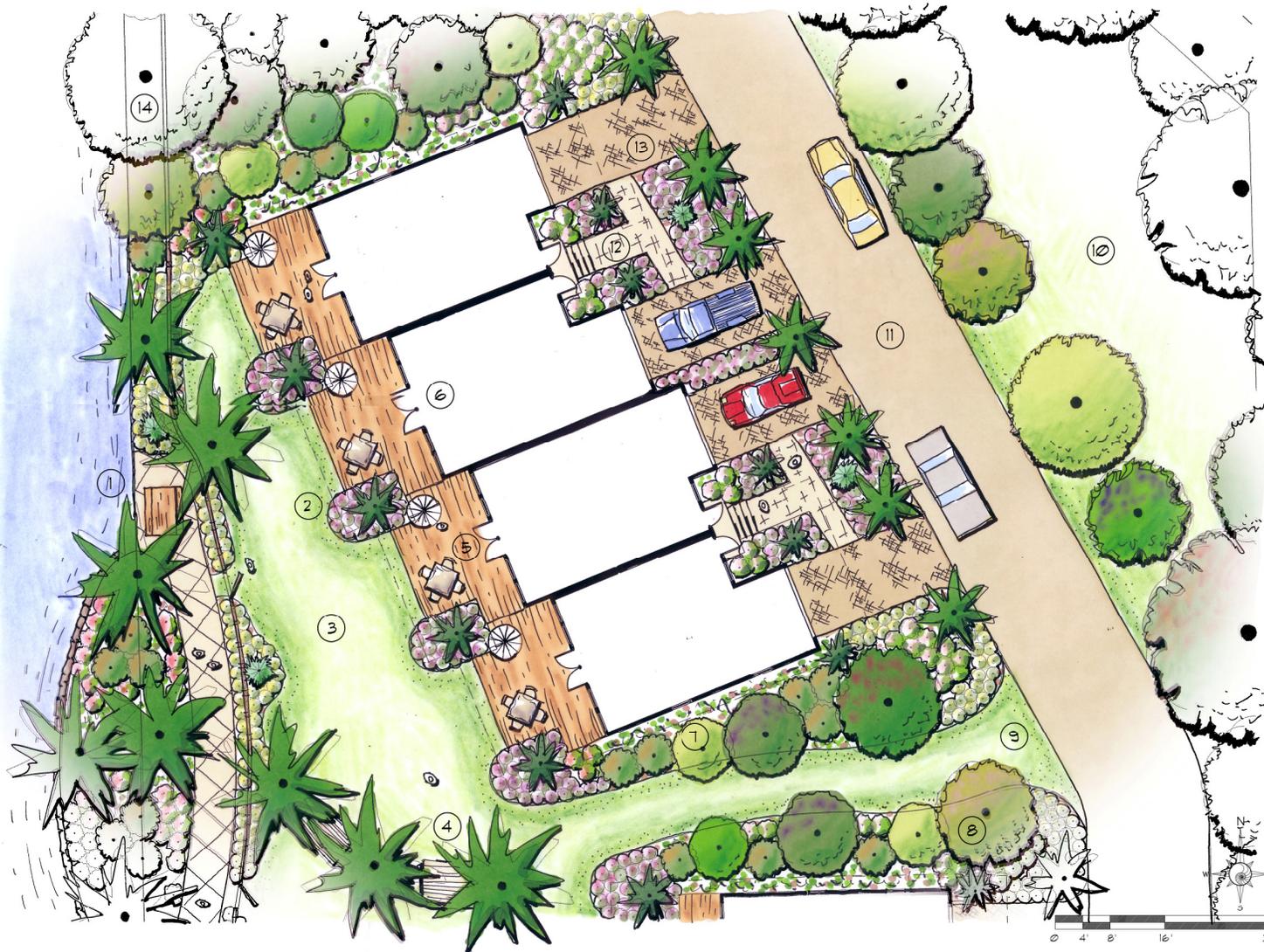


Detail Key



A - Site Section from the movie theater to the waterfront

MARATHON SHORES: Detail Key & Site Section



Legend

1. Waterfront Seating
2. Colorful vegetation to accent backyard
3. Open Lawn
4. Hammocks
5. Covered porch for cooling atmosphere
6. Raised floor elevation creates better views and lessens impact of flooding
7. Space between vegetation and façade to reduce damage
8. Foliage to create privacy
9. Grass access path to backyard
10. Runoff Retention Pond
11. Pervious Pavement Roadway
12. Shared entry to units
13. Pervious Pavers Driveway
14. Dense foliage to reduce wind

B - Residential Plan Detail along the water

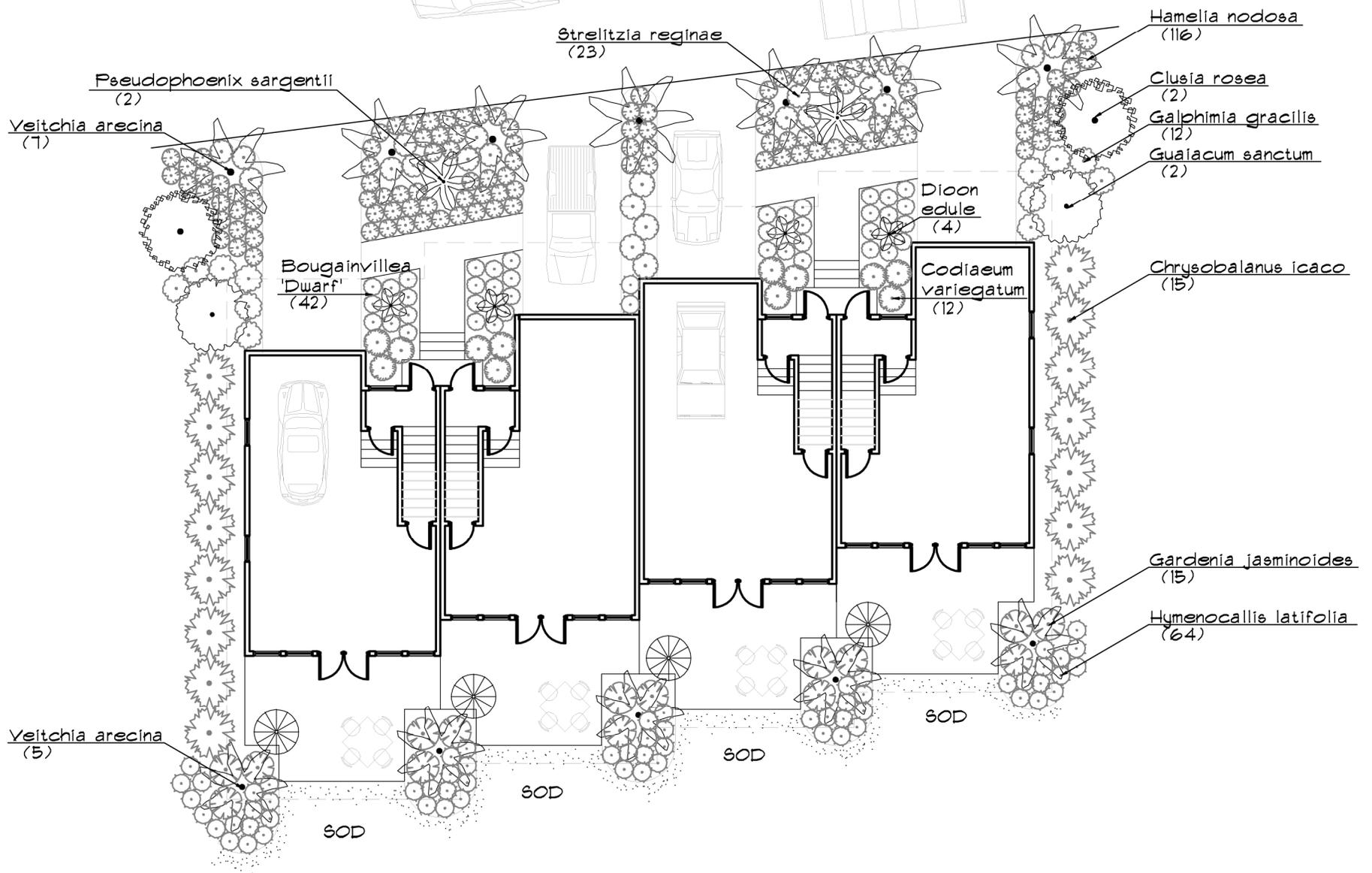
MARATHON SHORES: Residential Detail



C - Residential Front Elevation

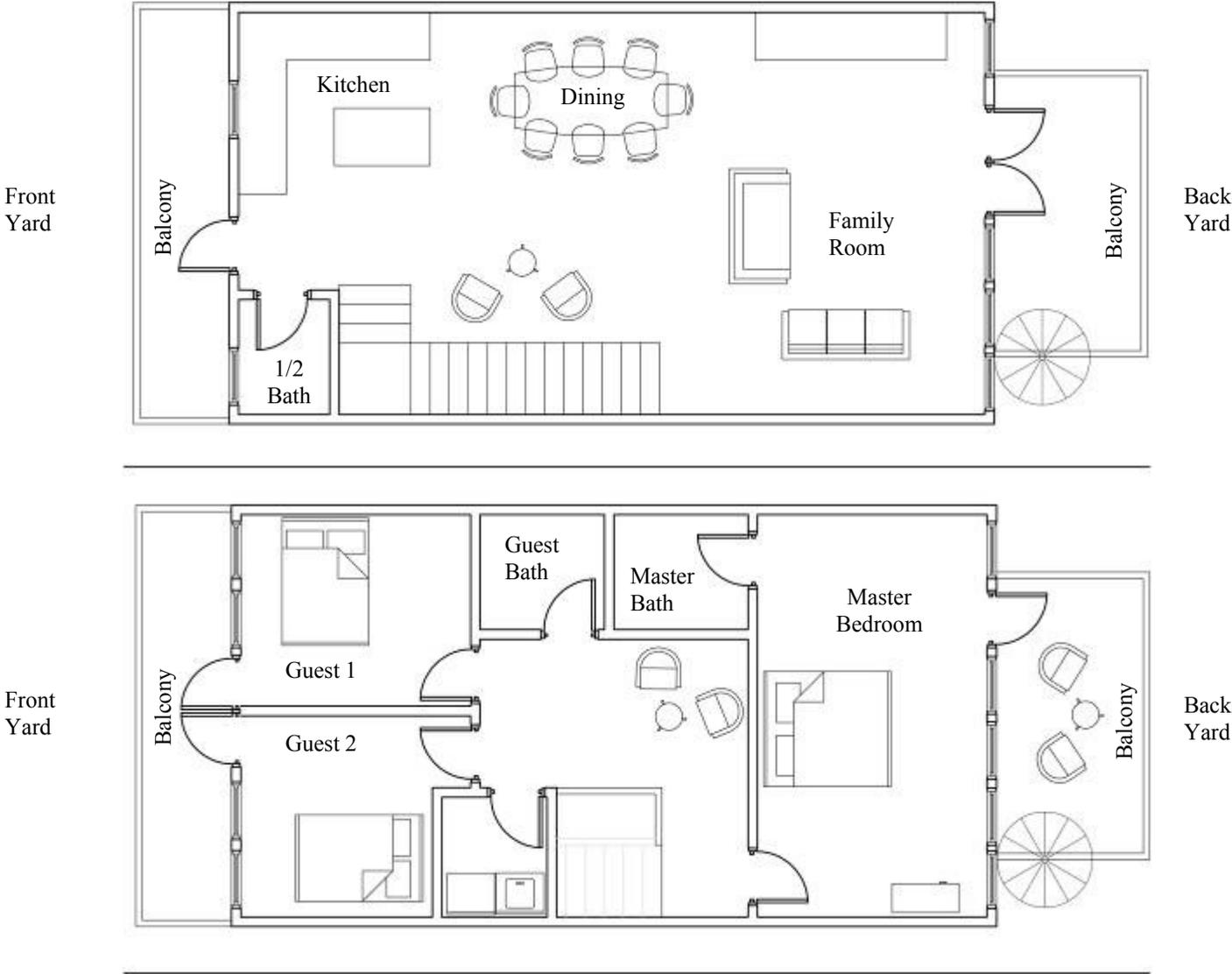


D - Residential Side Elevation from marina to swimming pool



MARATHON SHORES: Residential 1st Floor and Planting Plan

3 Bed, 2 1/2 Bath Residence (1760 square feet)





Legend

1. Marina Covered Seating
2. Dock House & Fishing Club
3. Retail
4. Pavers for Pedestrian Promenade
5. Promenade seating, open and covered
6. Canopy to provide shade
7. Grass access to water
8. Restaurant
9. Outdoor restaurant seating
10. Coconut Palm to set tropical atmosphere
11. Restored natural slope to access water
12. Raised pedestrian path to emphasize views and block sea-level rise
13. Native vegetation along waterfront, storm tolerant and acts as a wind buffer
14. Access to visitor dockage
15. Dense foliage for shade and create lush aesthetic
16. Low planting at building base for color and scale

E - Plan Detail of retail shops along the pedestrian promenade

MARATHON SHORES: Commercial Promenade Detail



F - Promenade Balcony Perspective



G - Promenade Elevation



H - Waterside Dining & Seating Perspective at north end of the saltwater pond



I - Waterfront Perspective of public shoreline, tiki bar, and retail shops

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