WINSTON WATERWAYS ROAD ELEVATION AND STORMWATER DESIGN PERMITTING PROJECT

STAKEHOLDER ENGAGEMENT MEETING

February 10, 2026

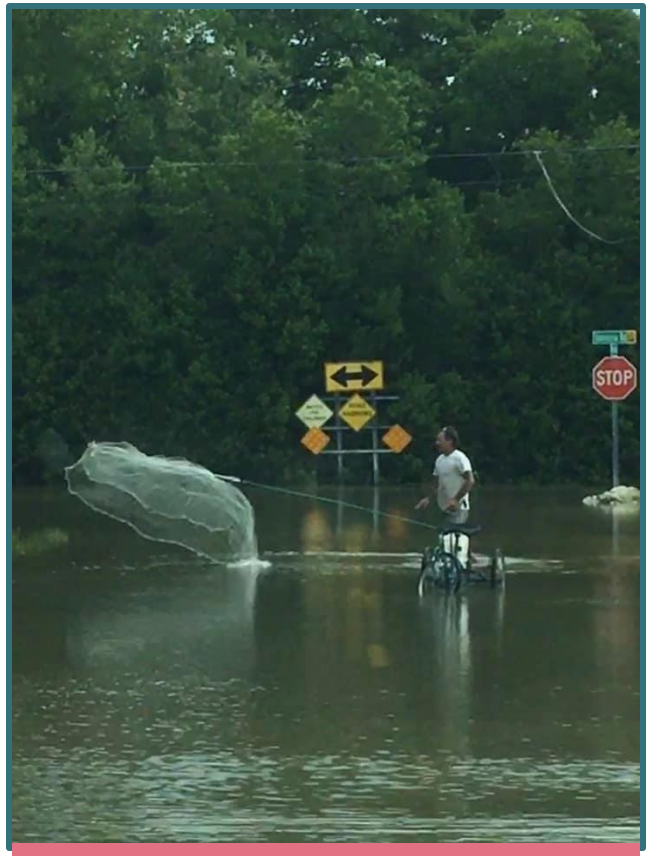
County Staff:
Judith Clarke, P.E.
Director of Engineering Services
Rhonda Haag
Chief Resilience Officer

Leonel Montiel
Project Manager

Agenda:

1. Project Background
2. Design Approach
3. Roadway Design
4. Stormwater Design
5. Private Property Easements
6. Permitting
7. Benefits
8. Funding
9. What's Next?
10. Questions?

Project Background



Mahogany & Valencia- Key Largo(2020)

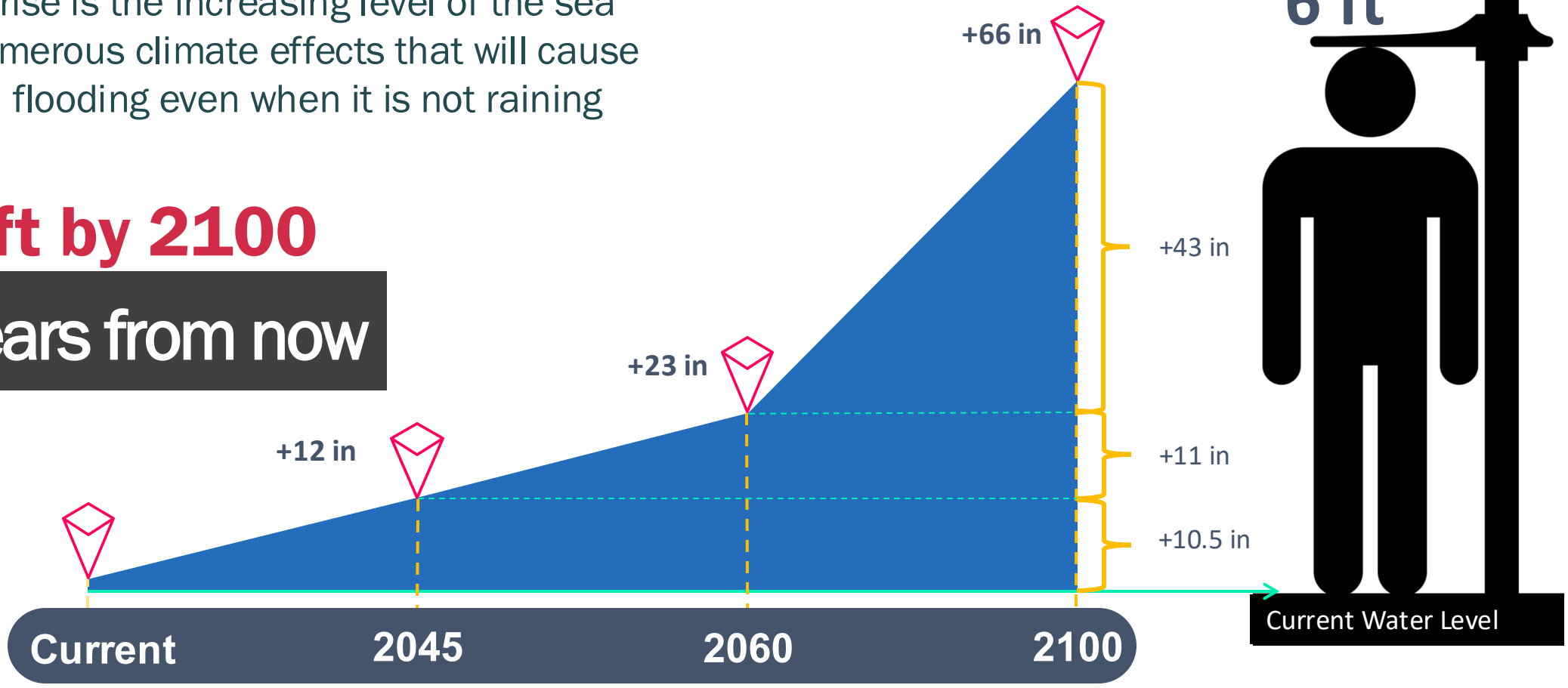
Changing Flooding Conditions That Impact Roads: Sea Level Rise

MONROE COUNTY FLORIDA

Sea level rise is the increasing level of the sea due to numerous climate effects that will cause increased flooding even when it is not raining

+5.5 ft by 2100

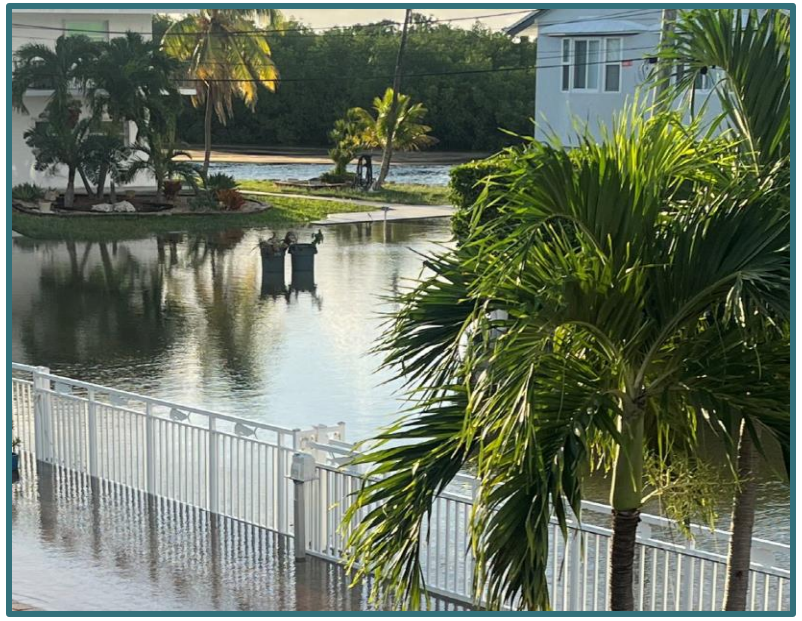
74 years from now



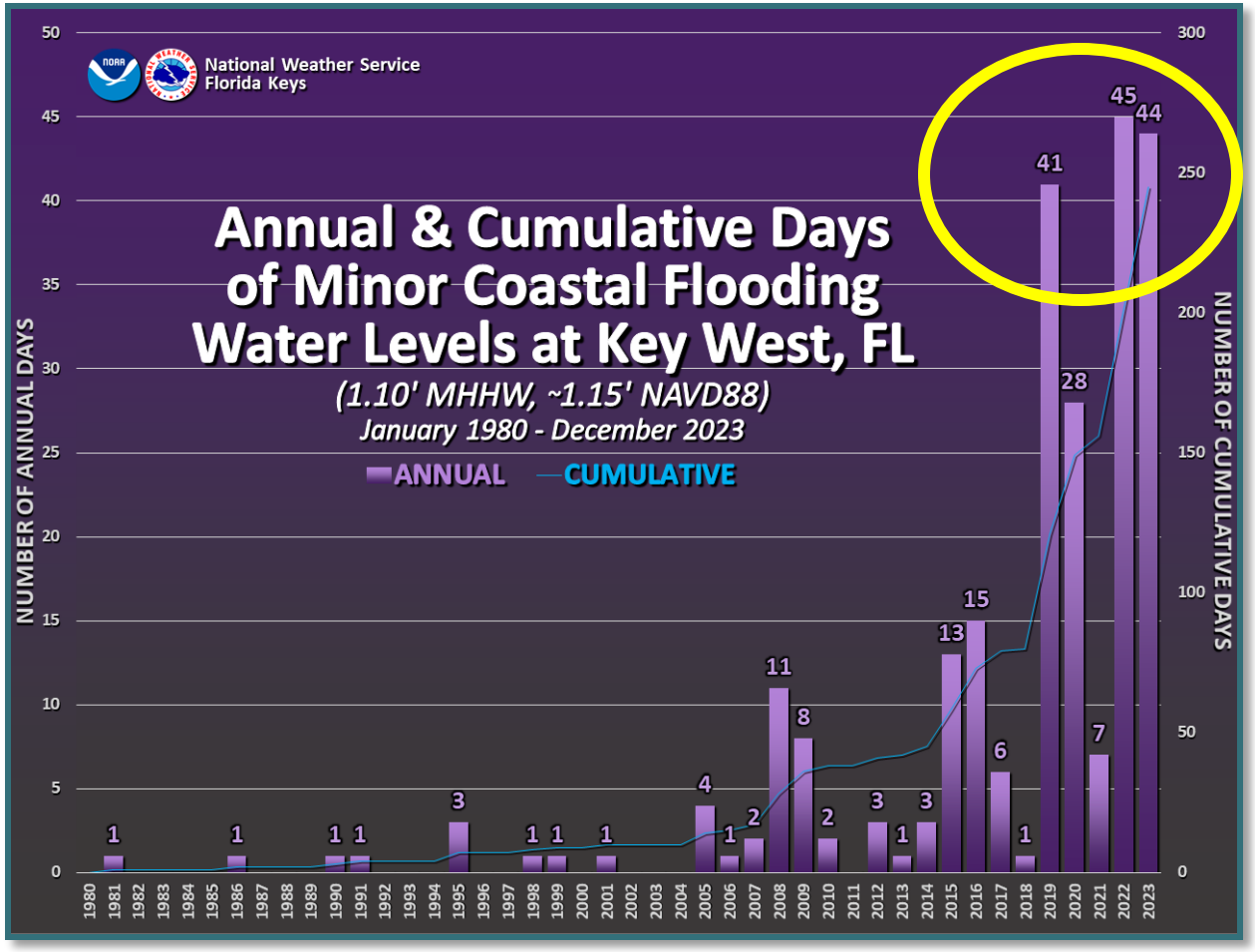
SLR Condition: NOAA 2017 Intermediate-High

Changing Flooding Conditions That Impact Roads: King Tides "Sunny Day Flooding"

MONROE COUNTY FLORIDA



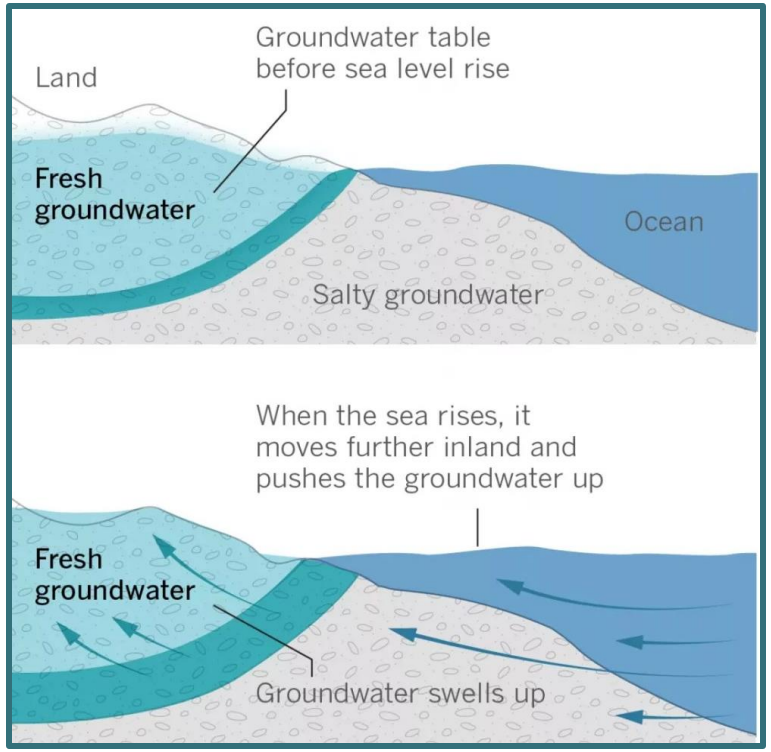
Seasonal tidal flooding on roads is becoming more common especially in the Fall and Spring when the moon is closest to the earth. This is why we see "sunny day flooding" more days of the year.

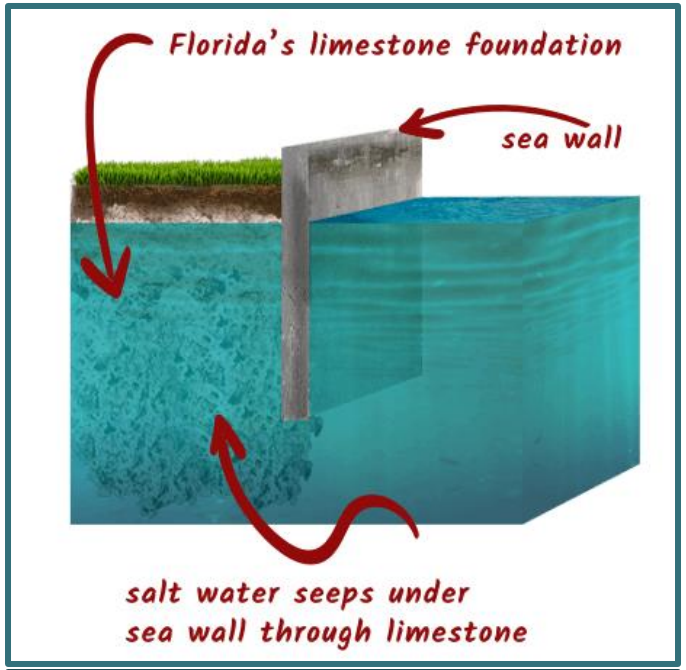


Changing Flooding Conditions That Impact Roads: Increasing Groundwater and Reduced Ability to Drain

MONROE COUNTY FLORIDA

When the sea pushes groundwater up, the ground stays saturated ⟶ current gravity drainage systems (such as exfiltration trenches) can't absorb and manage the water.





The County's Response:
The Roads Vulnerability Study (2022-2025)

MONROE COUNTY FLORIDA

Evaluation of flooding impacts:

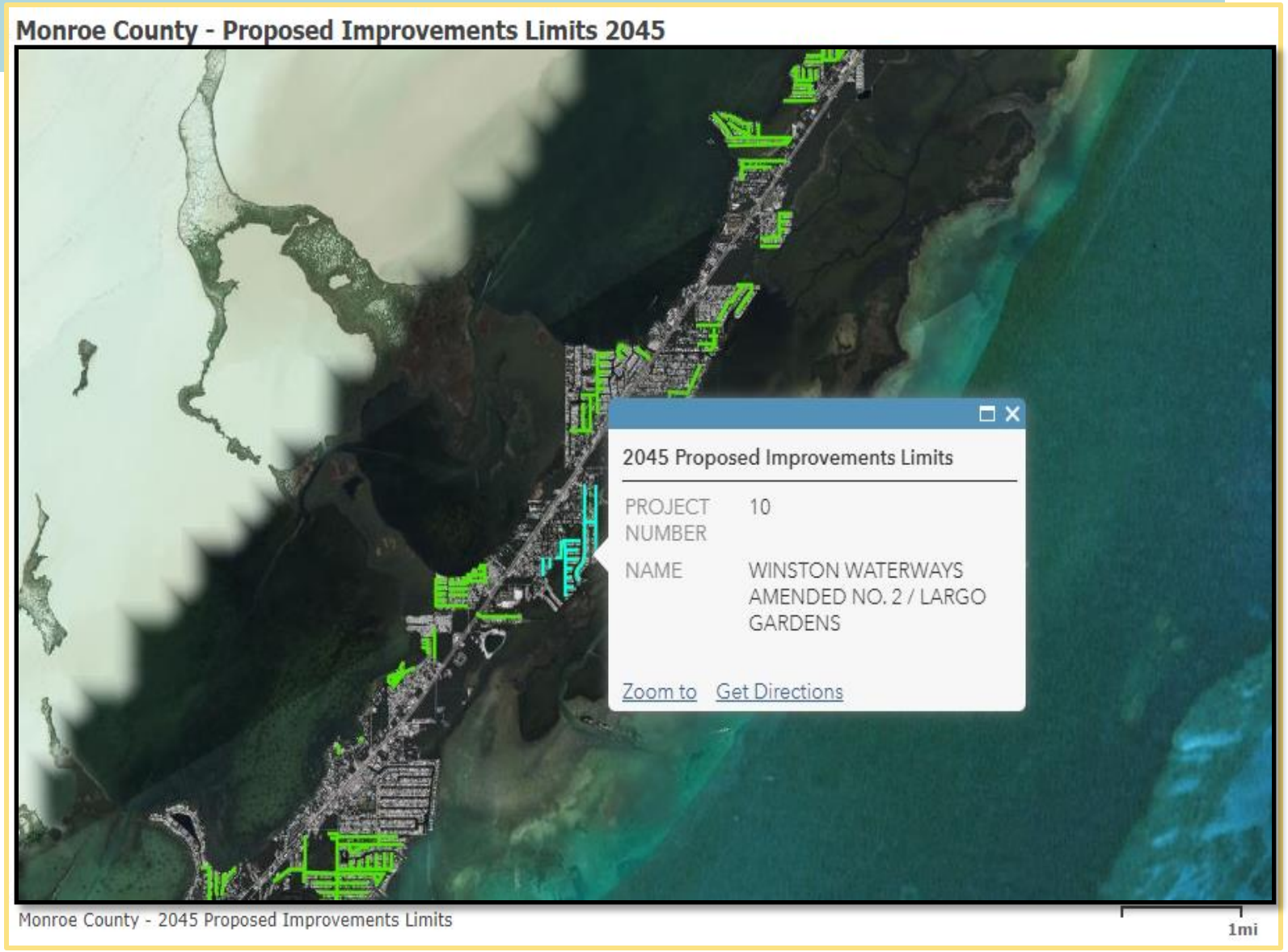
- Years 2025, 2030, 2035, 2040, 2045, 2060, and 2100 and Study factored in:
  - Sea Level Rise and King Tide Predictions
  - Roadway LiDAR (current road elevations)
  - Impacts of : storm surge, wind, waves, extreme events

Analysis conducted which allows us to:

- Project water surface elevations from flooding
- Determine where roads are vulnerable and identify areas of concern
- Define road improvement projects limits
- Developed timeline of vulnerability (prioritization/grouping of projects) and road design concepts

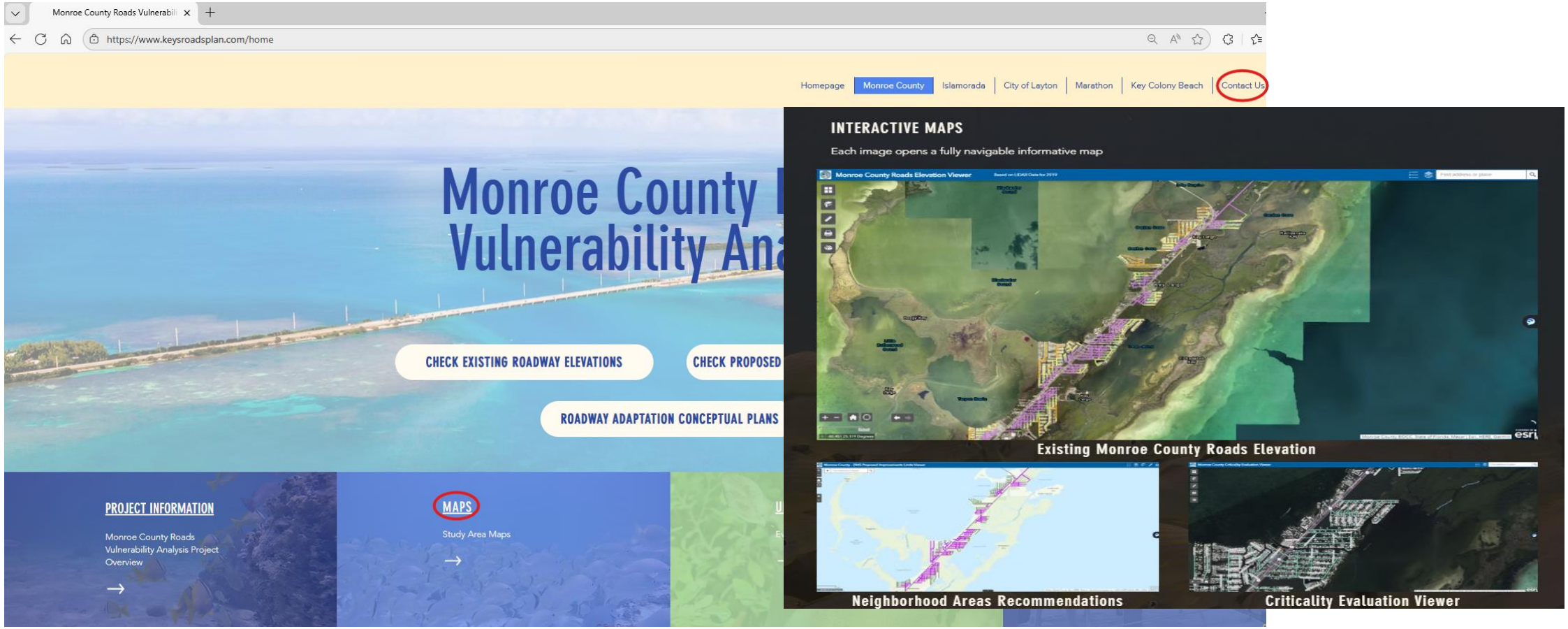
82 Neighborhood Areas Were Identified with Road Projects

MONROE COUNTY FLORIDA



*Winston Waterways included in 2025 grouping.

www.keysroadsplan.com



MONROE COUNTY FLORIDA

Design Approach

Sea Level Rise Solutions

MONROE COUNTY FLORIDA

Elevate the roads

- Elevate Roadways to minimum 2.26 ft NAVD88
- Driveway and private property harmonization and utility relocation will be required.
- Higher road elevations reverse existing drainage flow, making stormwater collection and management necessary.

Install a Modern Engineered Drainage System

- A closed stormwater system to collect rainfall and mitigate king tides, replacing gravity infiltration which is not working.
- The Drainage System includes a collection system with inlets and pipes, a pump station with a backup generator, and injection wells.

2045	NOAA Tidal Datum (ft) (Relative to 2000 MSL)	SLR Projection (ft)	2045 Water Level Projection (ft) (NAVD88)
NOAA 2017 Int-High (SLR)	0.6037	1.66	2.26
NOAA 2017 Int-High (SLR + King Tide)	-0.6168	4.02	3.40

Design Standards and Regulations

Design standards and regulations that need to be met:

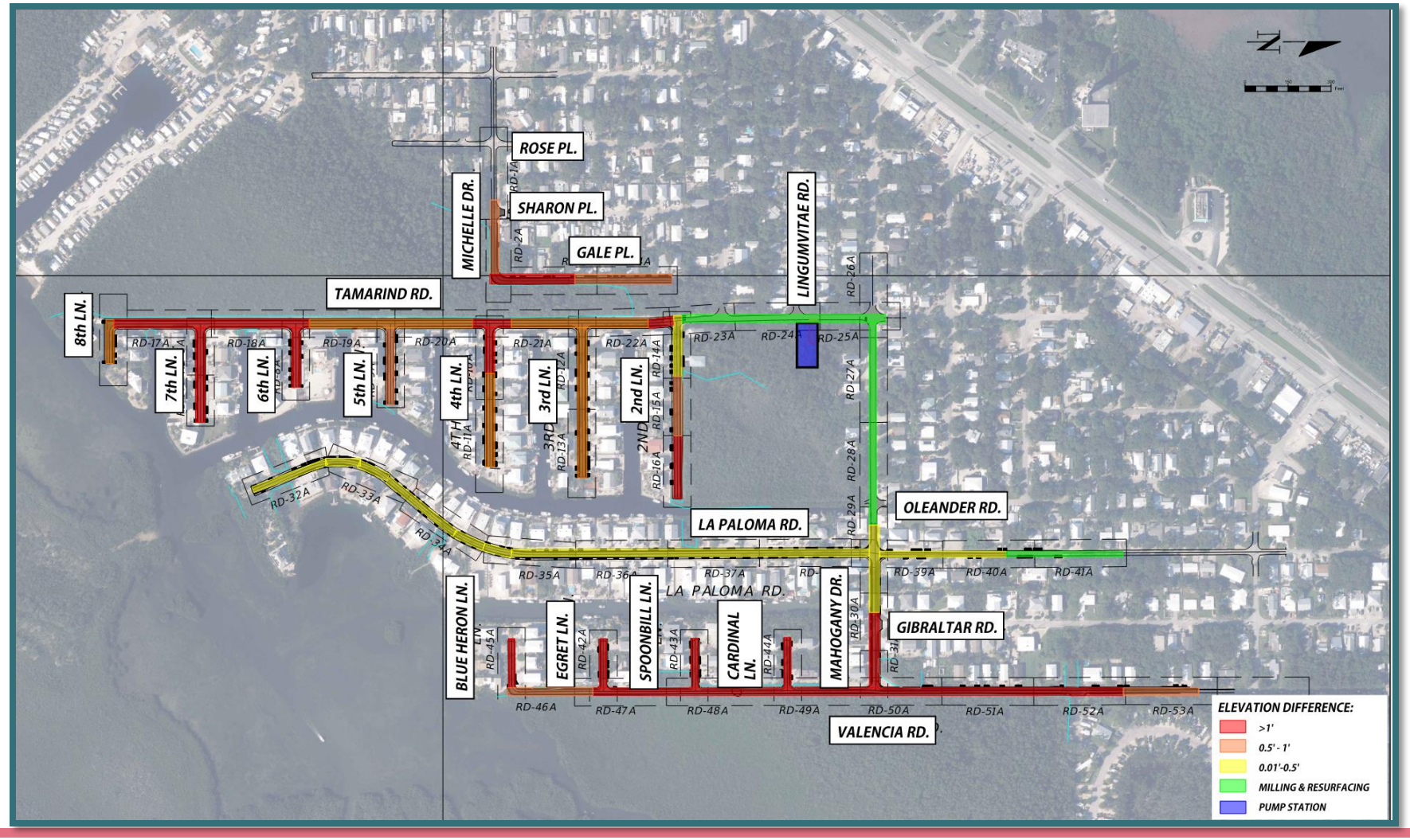
- FDOT (Florida Department of Transportation)
  Florida Greenbook
  - 9’ lane widths
- **SFWMD (South Florida Water Management District)**
  - Project design must demonstrate that changes to rainfall flow patterns **do not create adverse impacts** to adjacent properties.
- FDEP (Florida Department of Environmental Protection)

MONROE COUNTY FLORIDA

Roadway Design

Project Location

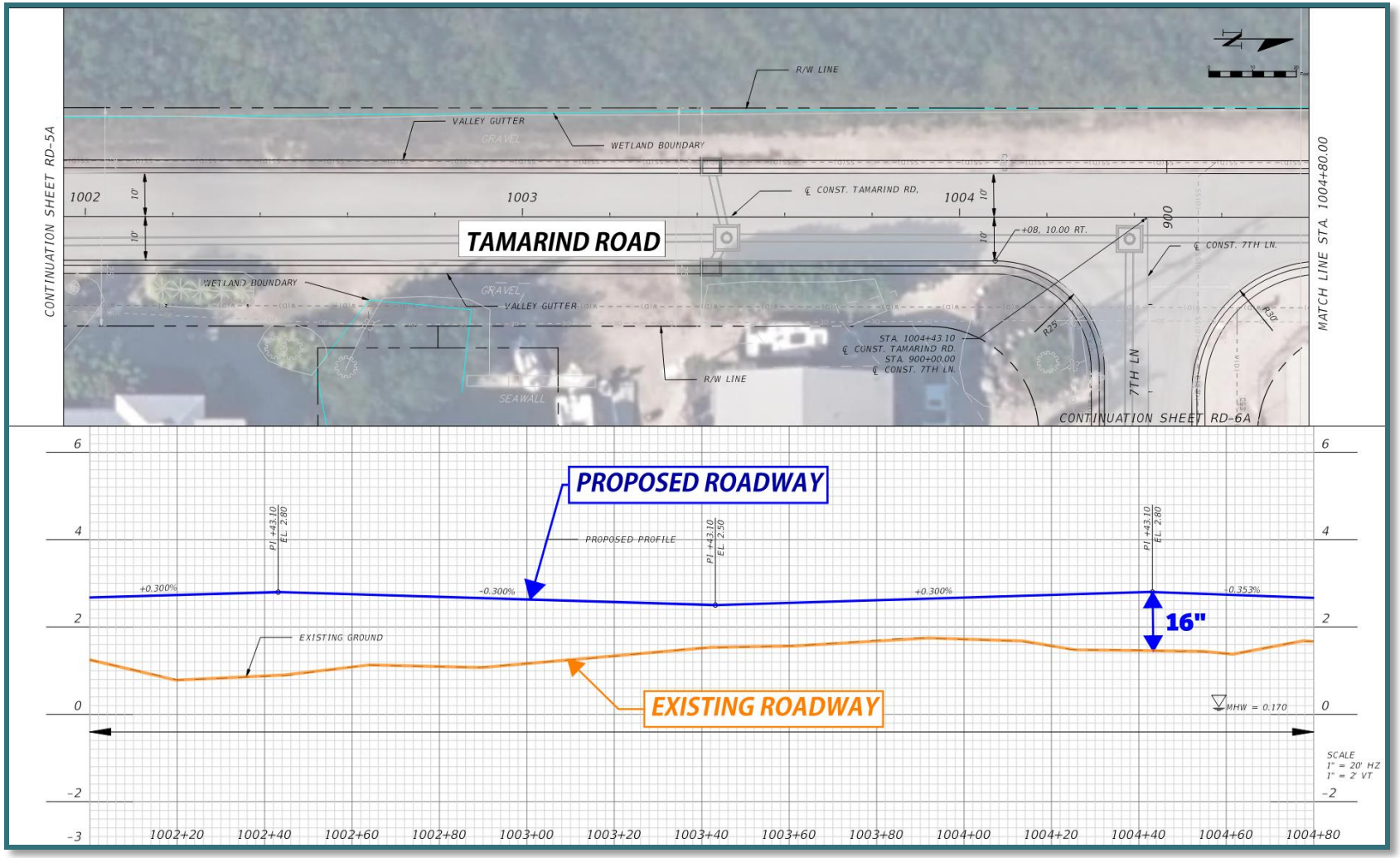
MONROE COUNTY FLORIDA



Design Elements – Raising Roads

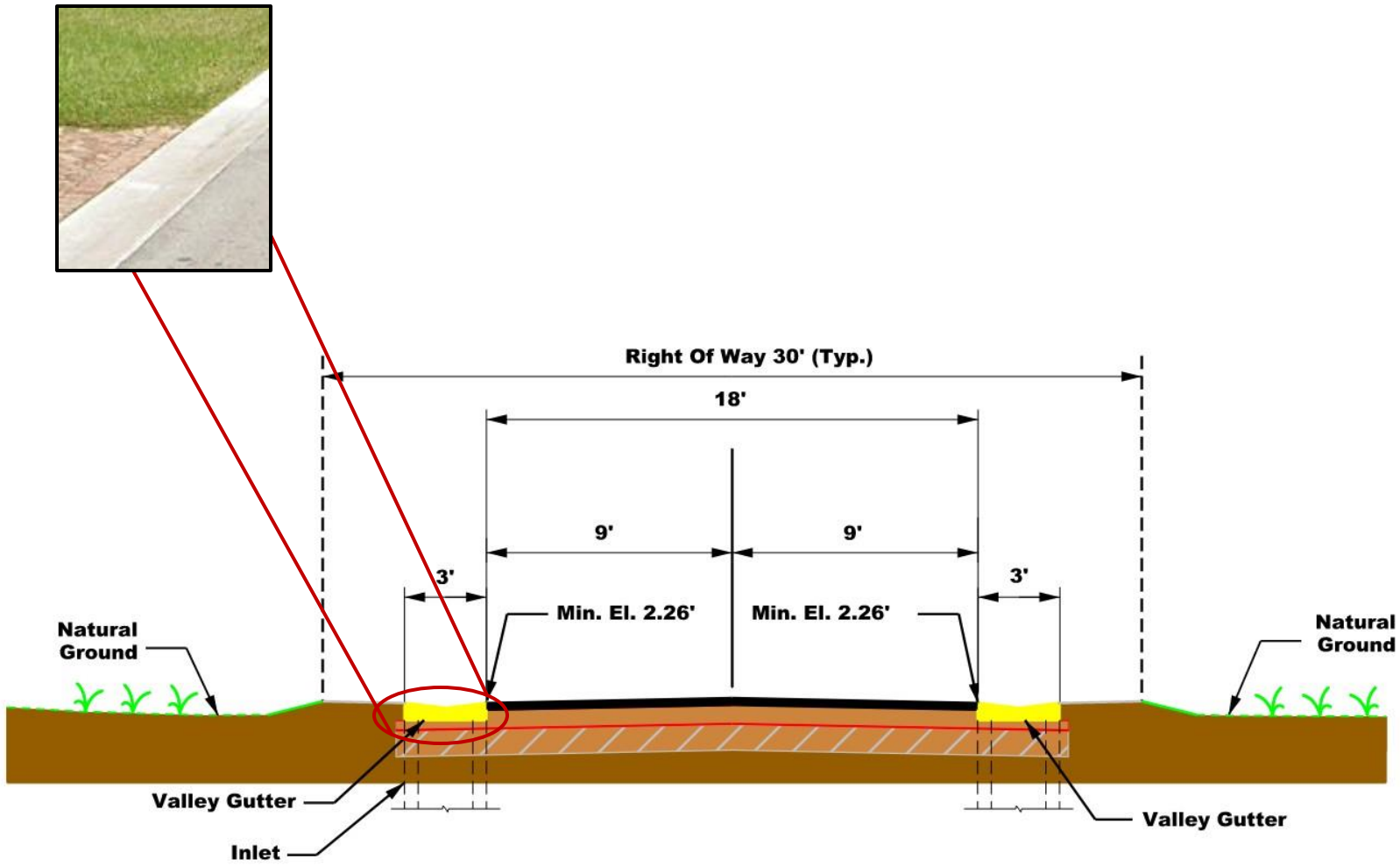
Roadway Segment	How many inches?
Michelle Drive	0” – 6"
Gale Place	0” – 7"
2nd Lane	0” – 12"
3rd Lane	2" - 10"
4th Lane	4" - 14"
5th Lane	8" - 10"
6th Lane	12" - 15"
7th Lane	10" - 21"
8th Lane	0” – 12"
Tamarind Road	6" - 12"
La Paloma Road	0” – 6"
Mahogany Road	0” – 19"
Valencia Road	3" - 23"
Blue Heron Lane	0" - 18"
Egret Lane	0" - 23"
Spoonbill Lane	0" - 24"
Cardinal Lane	0" - 23"

Roadway Plan & Profile

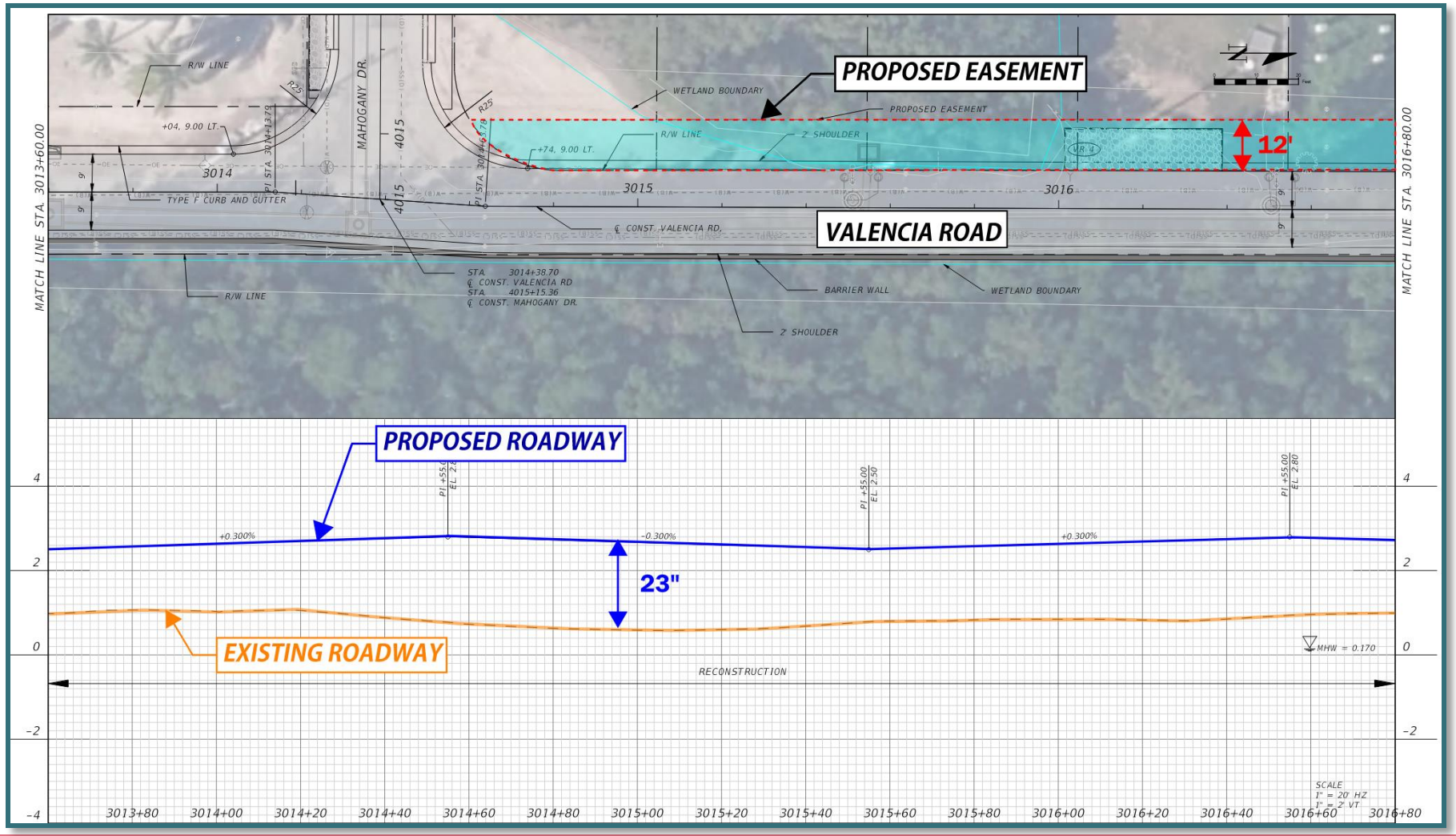


Roadway Typical Section 1

Spoonbill Ln.

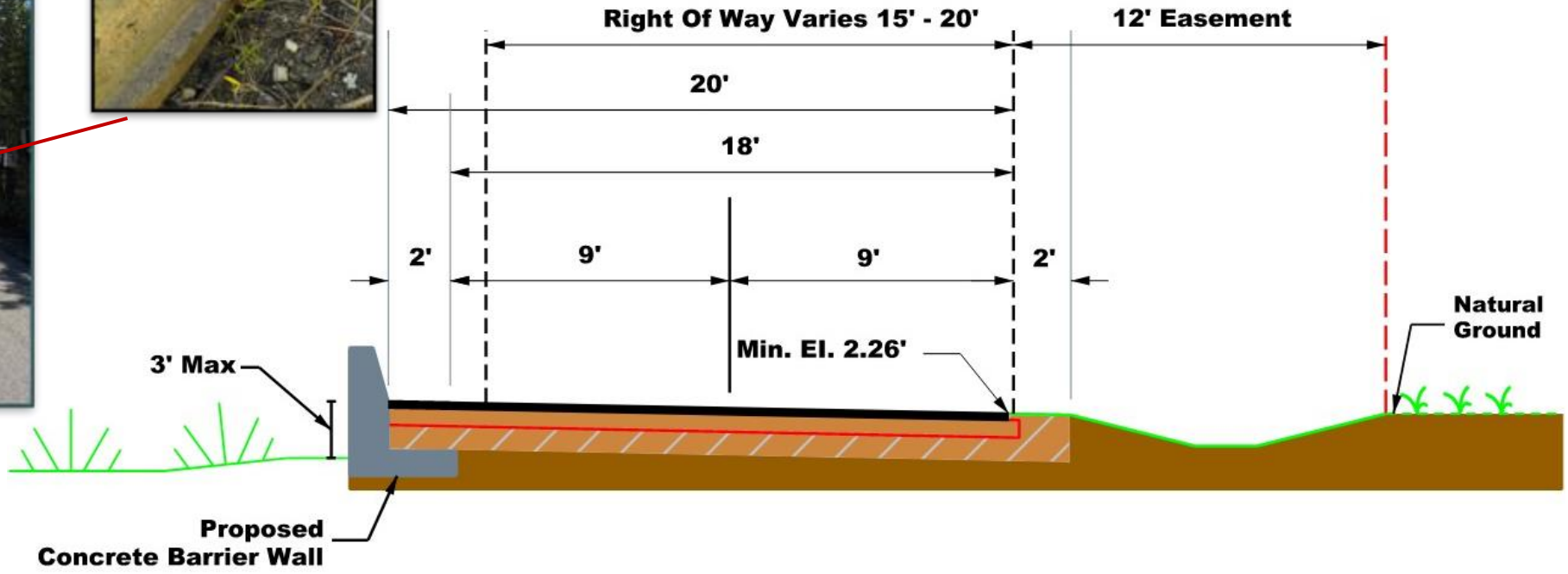


Roadway Plan & Profile

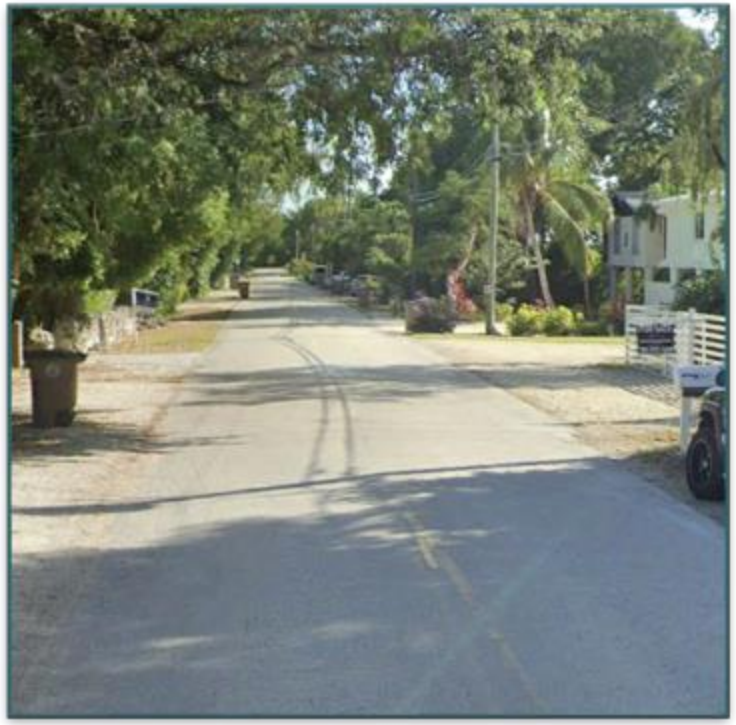


Roadway Typical Section 2

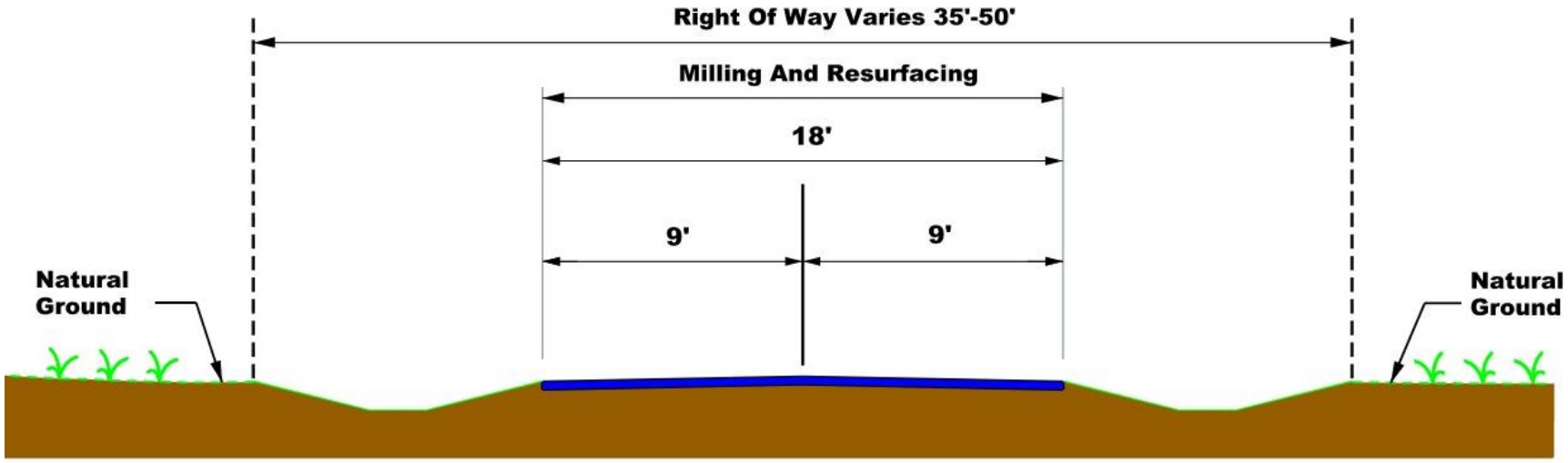
Valencia Road



Roadway Typical Section 3



Tamarind Road



MONROE COUNTY
FLORIDA

Stormwater Design

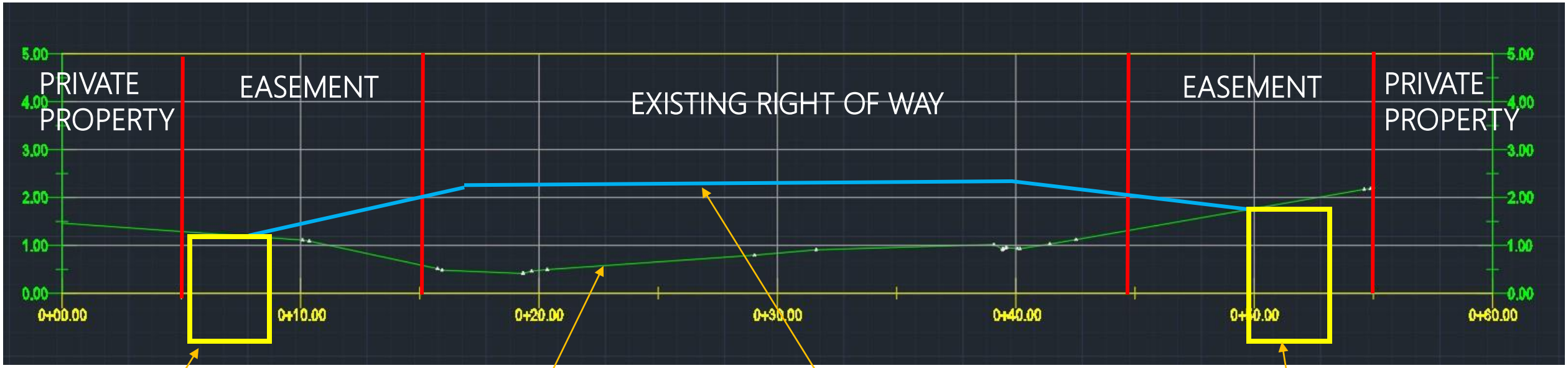
Solutions to Address the Flooding

- Raising the roads will be needed to make them higher than the flood waters from increased sea levels, groundwater and tidal flooding
- Because of the higher roads, new drainage systems will be needed to manage stormwater so that it does not flow onto and flood adjacent properties.
- The design of the Winston Waterways Project incorporates both of these elements.

Stormwater Regulations

- **SFWMD approval is required for any drainage or elevation changes** that affect flow, impervious area, water quality, rainfall impacts, or offsite properties.
- Performance based evaluation, i.e. each project **(any road modification) needs to be evaluated to determine drainage parameters so as to not cause adverse impacts to surrounding properties.** We must evaluate:
  - Water movement, land use and soil conditions such as developed properties, vacant properties, pavement, grass, rock affect the movement of the rainfall across the project area that gets incorporated into the Hydraulic models.
  - Groundwater table conditions (King Tide and Sea Level Rise) to determine water storage capacity below the ground
  - Rainfall storm events to be evaluated (500-year, 100-year and25-year, 3 day and 5-year and 2-year, 1 day)

Stormwater Design – Typical Section



TYPICAL DRAINAGE WITHIN EASEMENT

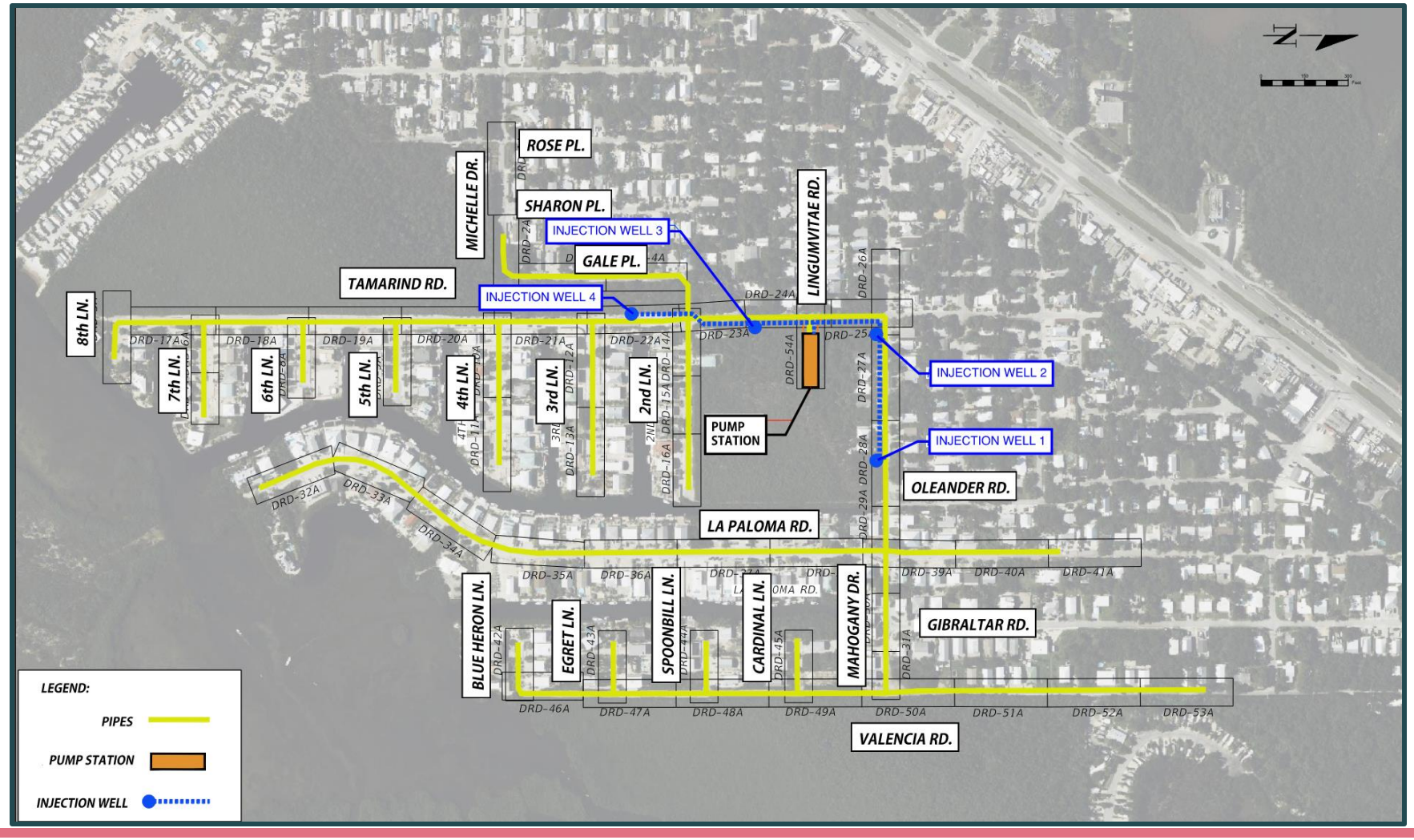
EXISTING ELEVATION OF GROUND

TYPICAL ROAD PAVING ELEVATION

TYPICAL DRAINAGE WITHIN EASEMENT

Engineering Stormwater Management System

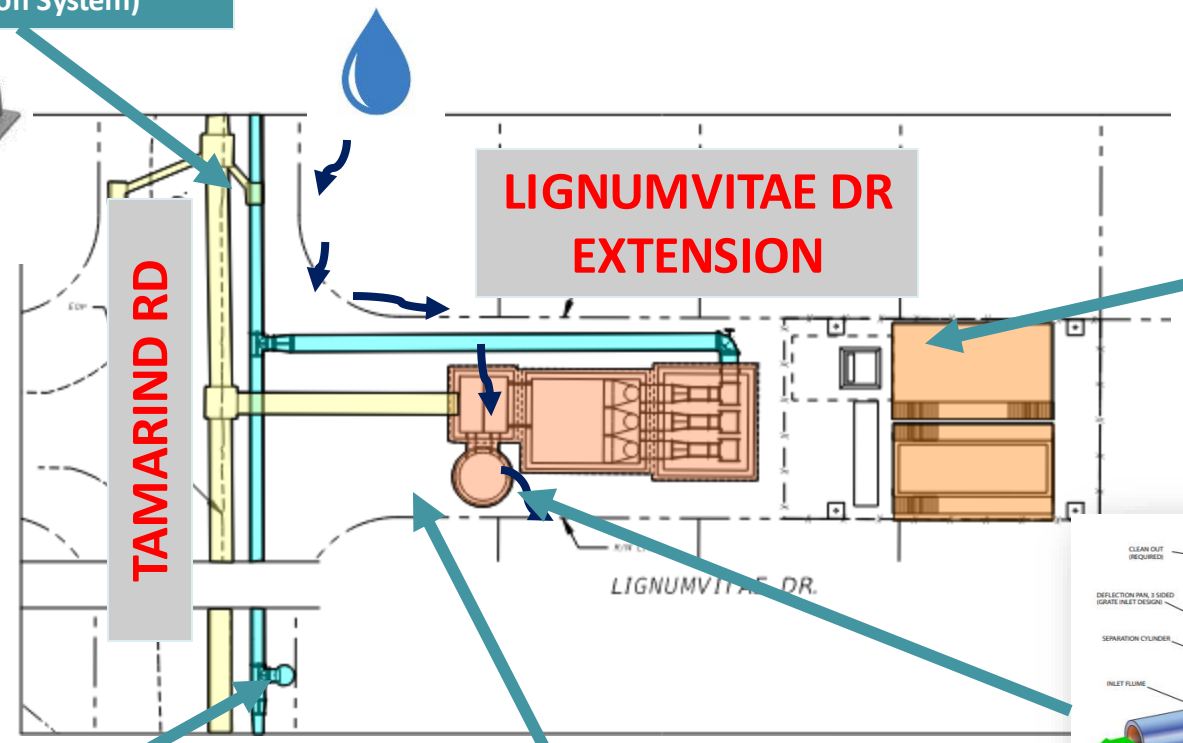
MONROE COUNTY FLORIDA

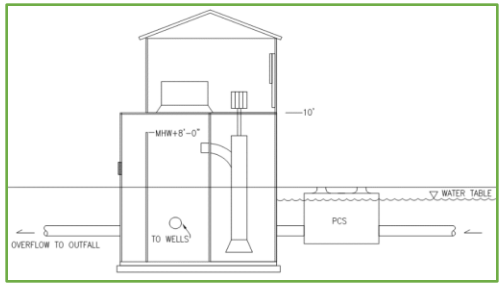


Engineered Stormwater Management System

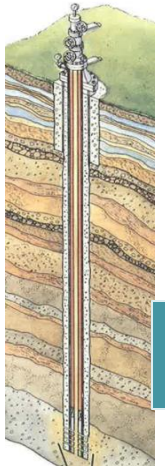
MONROE COUNTY FLORIDA

Catch Basins / Inlets (Gravity Collection System)



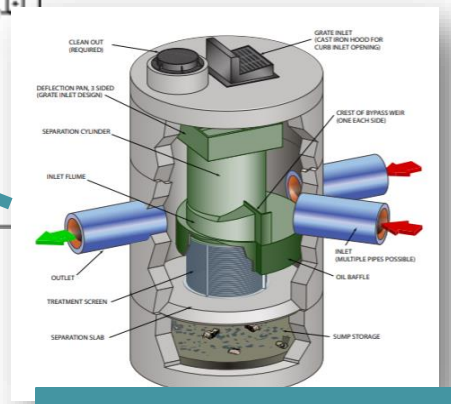


Pump Station and Backup Generator



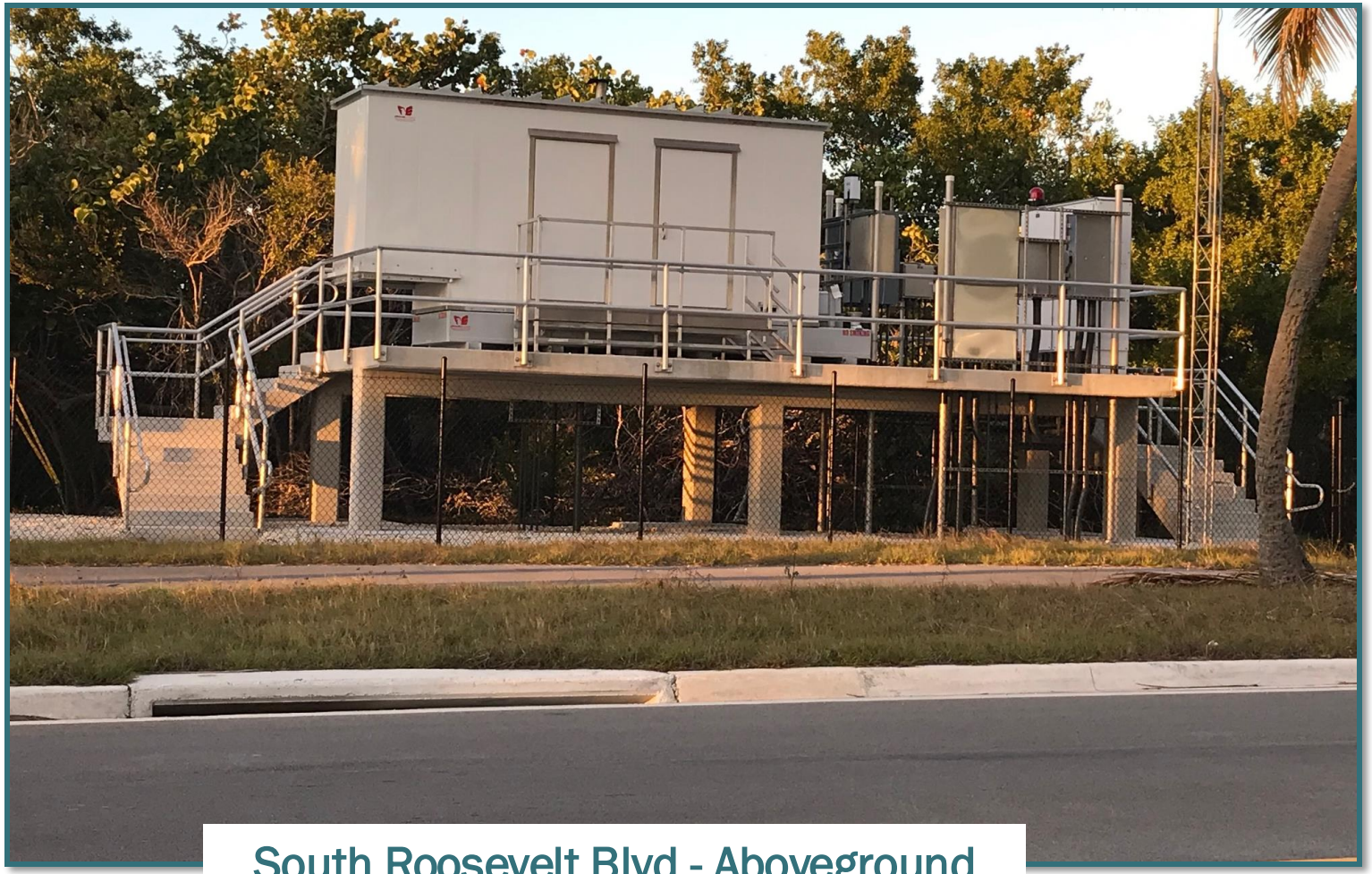
Injection Wells

Pump Station Area



Hydrodynamic Separator

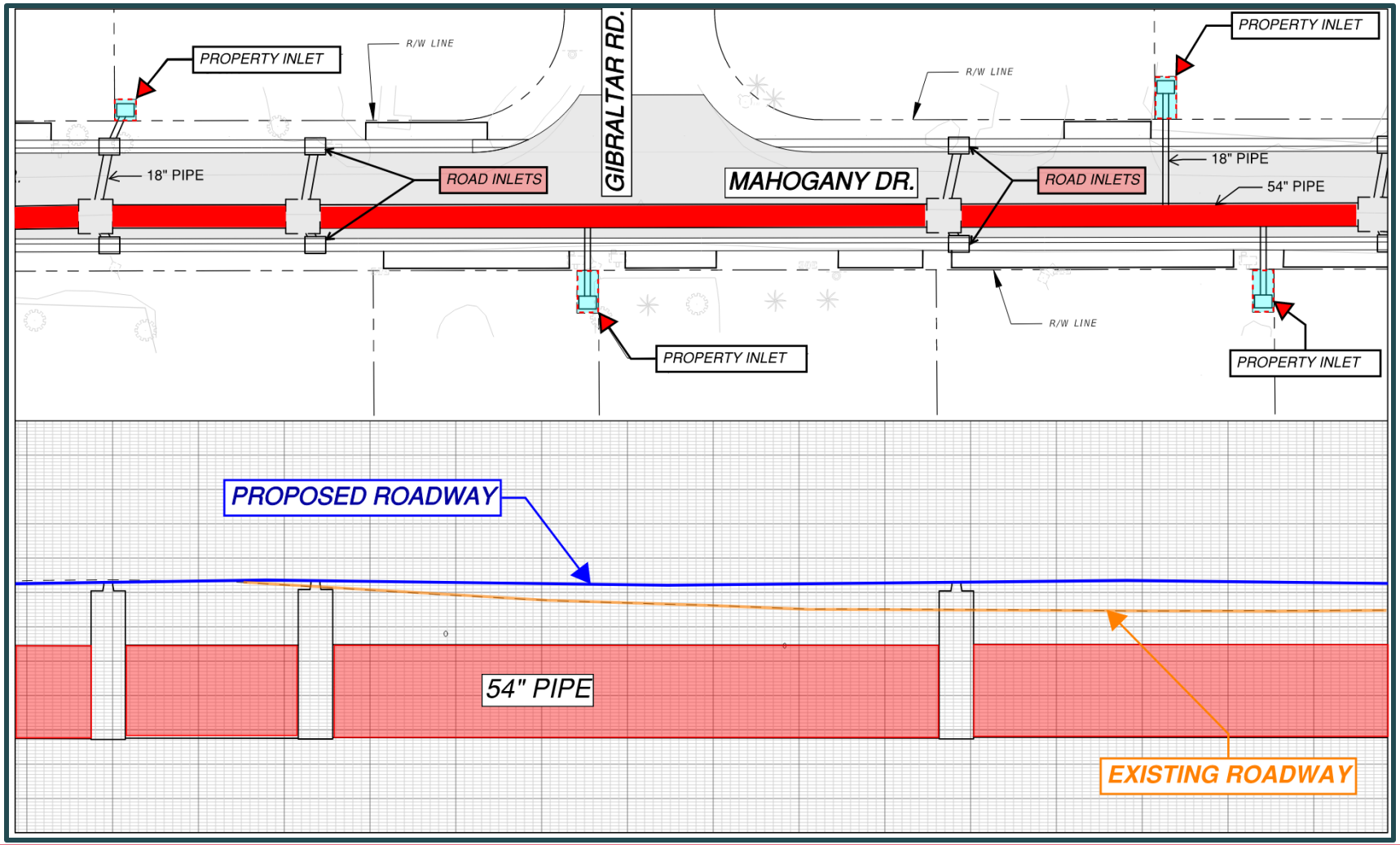
Pump Station



South Roosevelt Blvd - Aboveground

Twin Lakes - Underground

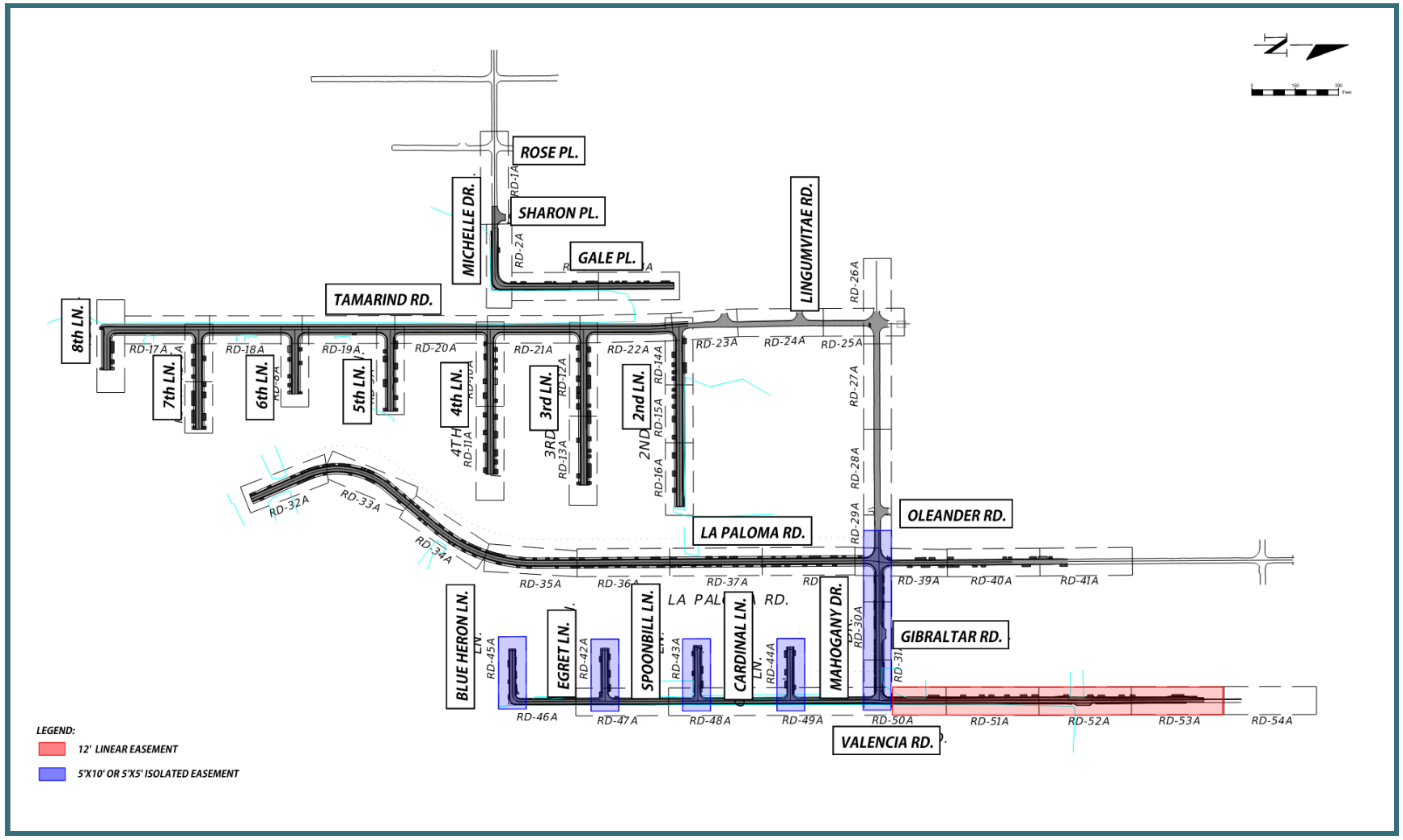
Drainage Plan & Profile



MONROE COUNTY FLORIDA

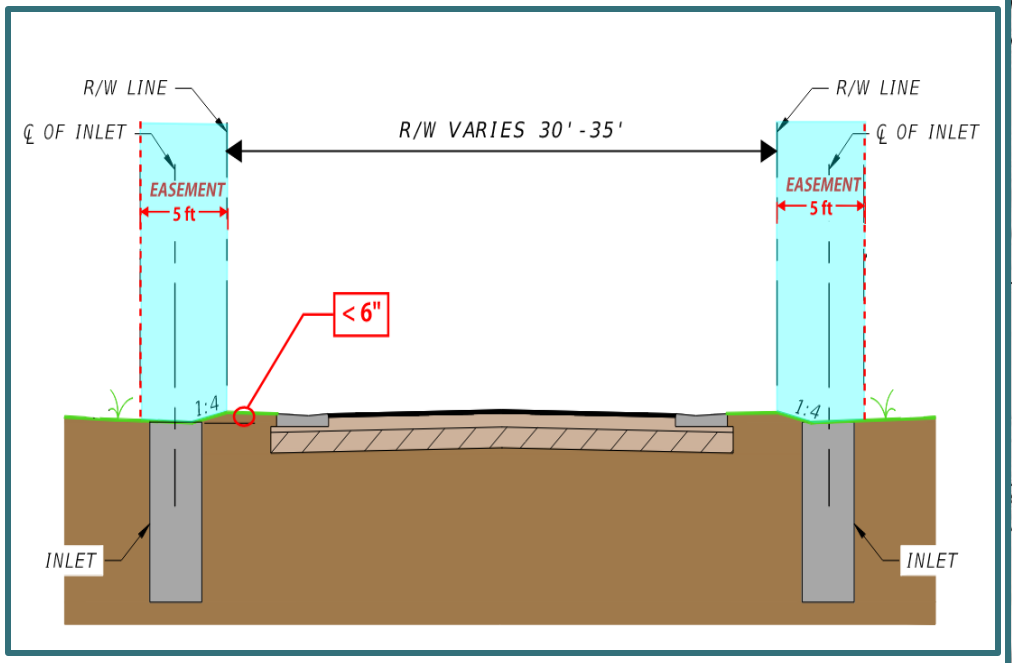
Private Property Easements

Easement Requirements

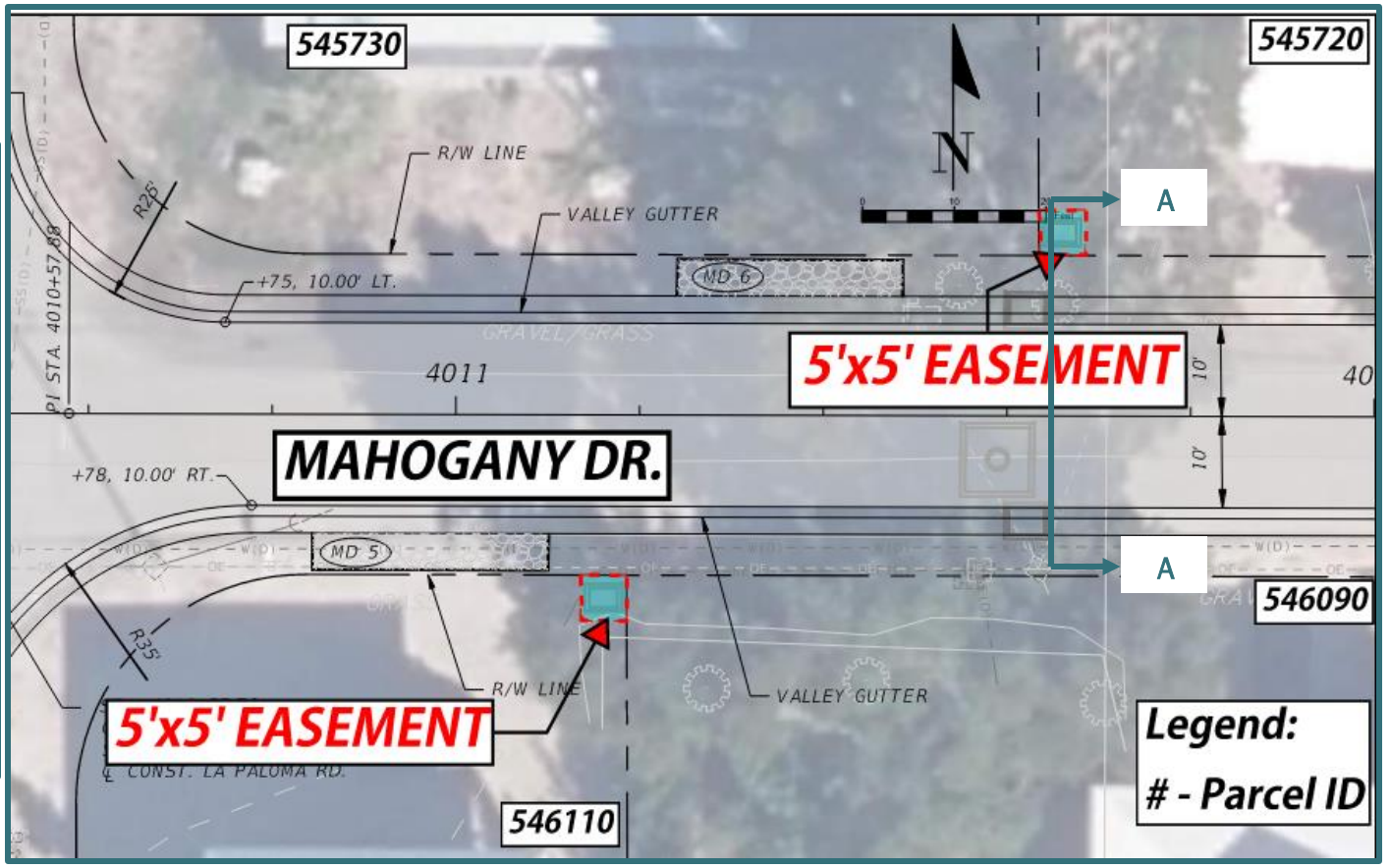


Easement Requirements – 5’x5’

- Where elevation difference is **less than 6”, a 5’x5’ easement is required**

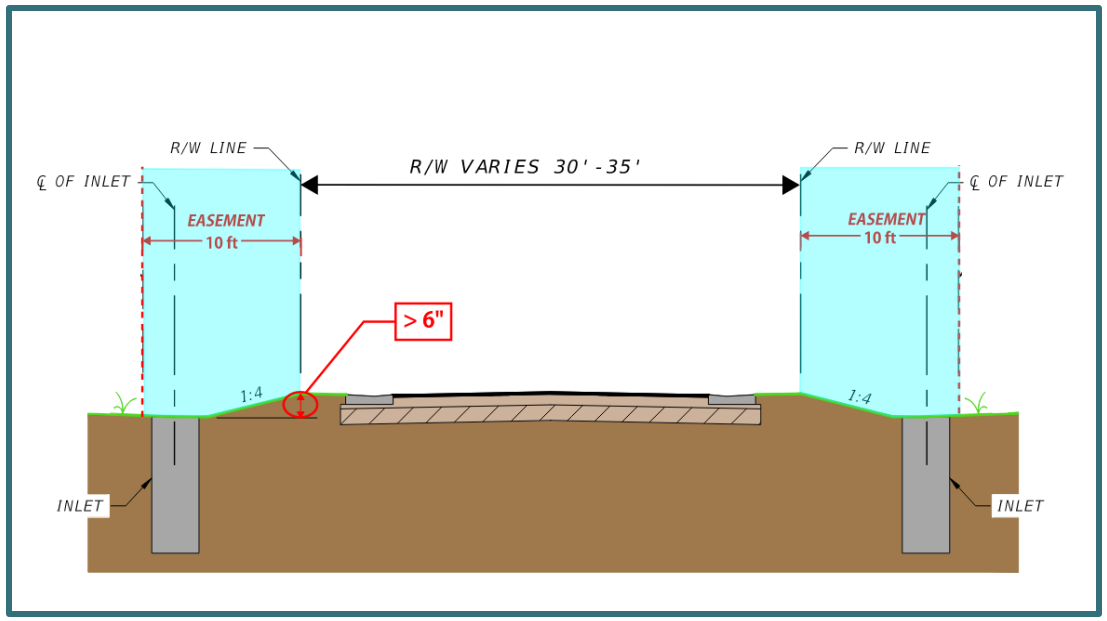


Section A-A

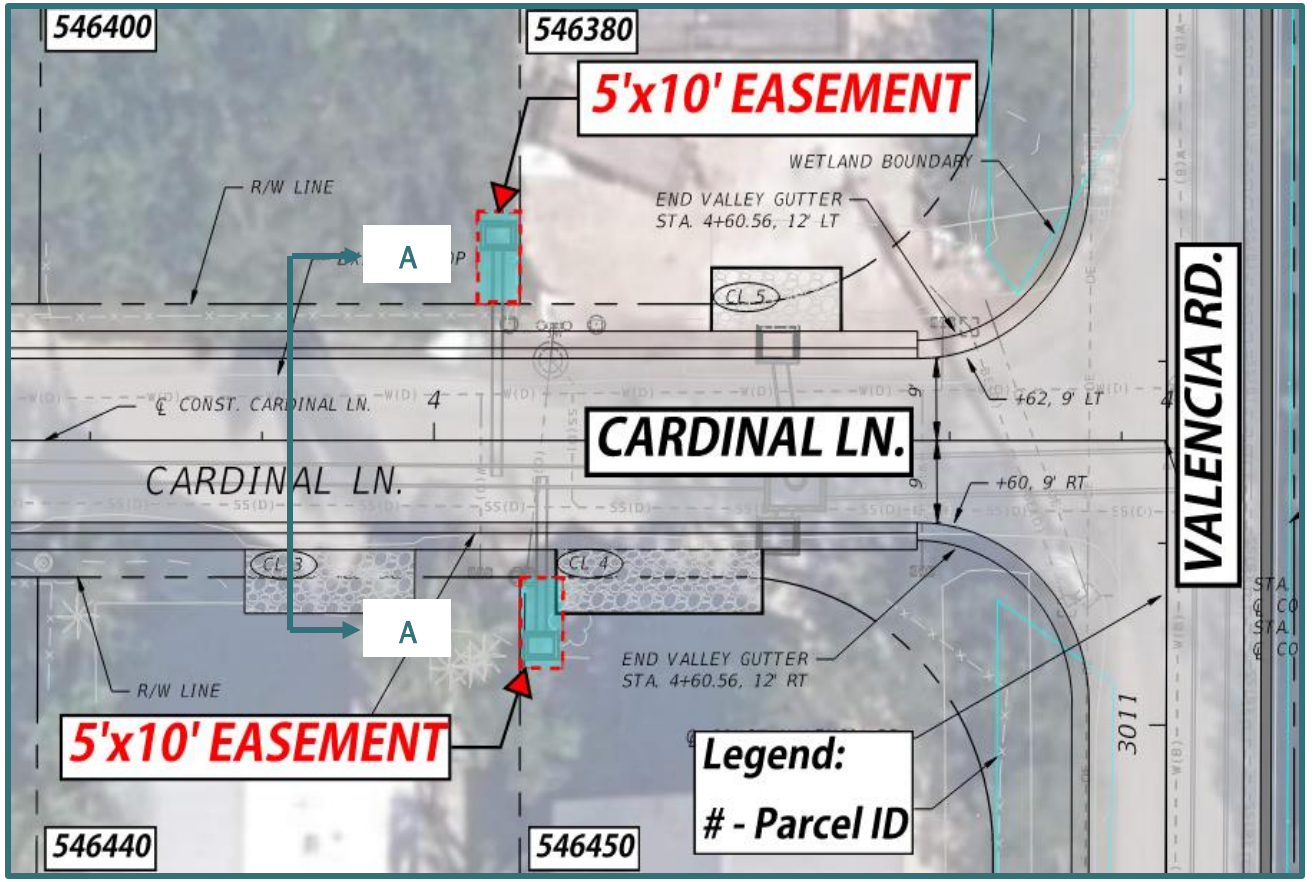


Easement Requirements – 5’x10’

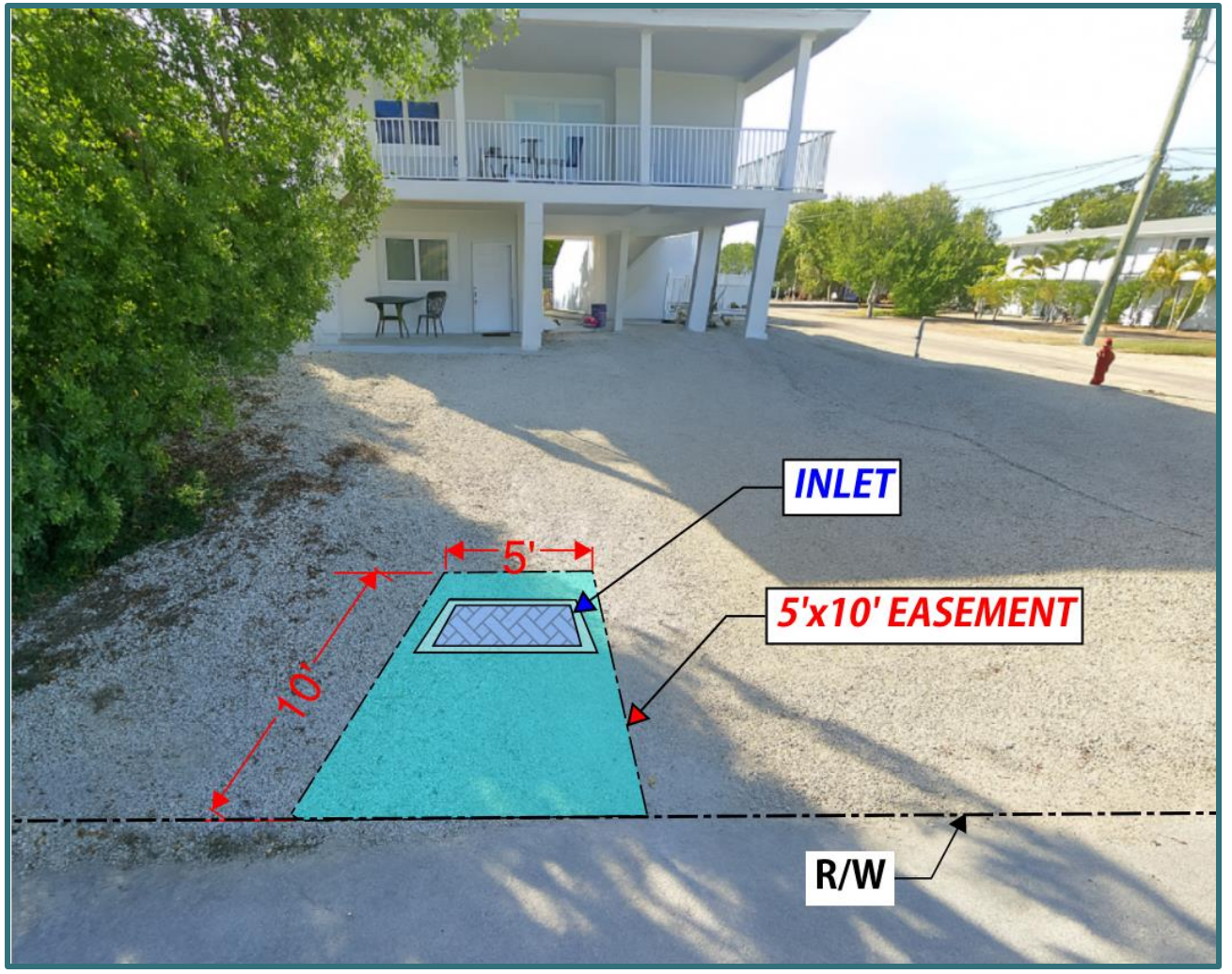
- Where elevation difference is **greater than 6”, a 10’x5’ easement** required at the following:



Section A-A



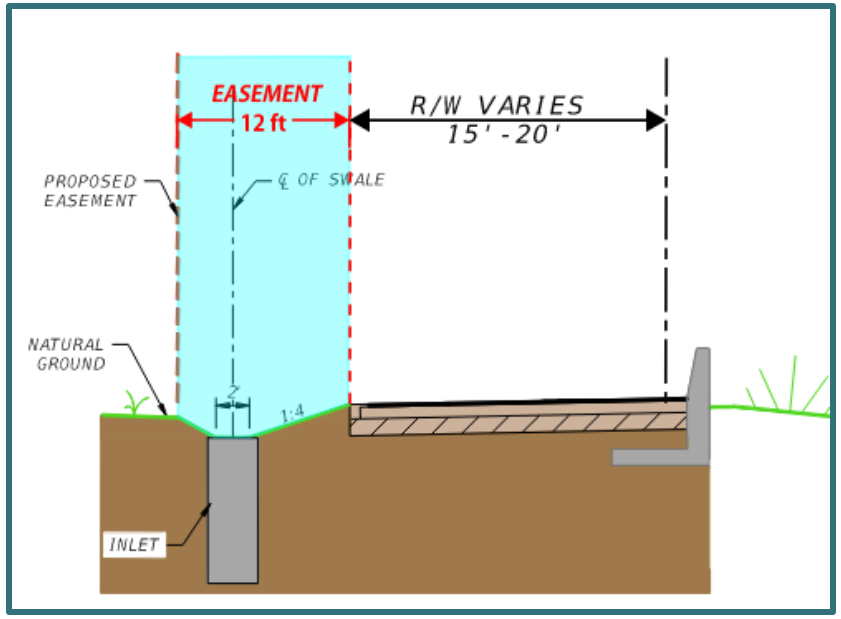
Property drainage inlets



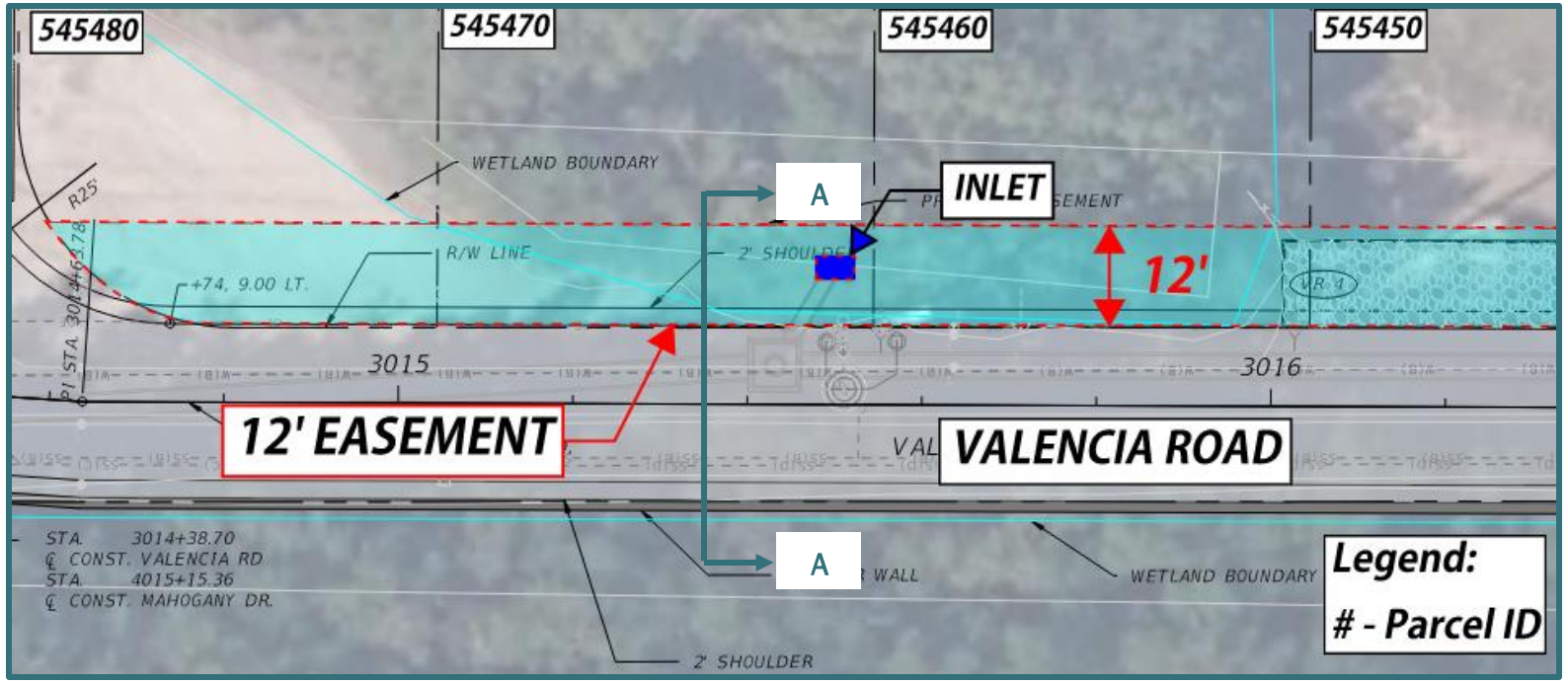
Easement Requirements – 12’ linear

A **linear 12’ easement** required along Valencia Road

- **North** of Mahogany Dr.



Section A-A



Easements – Utility relocation

Valencia Road

MONROE COUNTY FLORIDA

Permitting

Permits are Needed for Road Projects

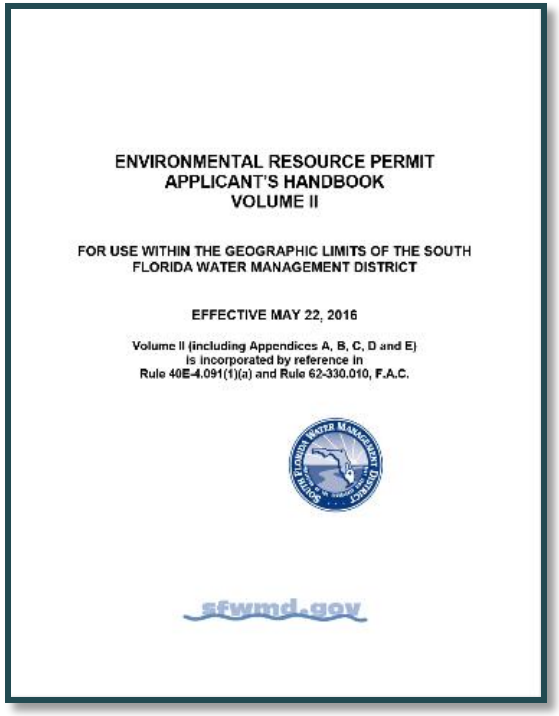
Meetings and coordination with environmental regulatory agencies during the design phase such as:

- **Environmental Resource Permit** – South Florida Water Management District (SFWMD)
- **Construction/Clearance Permit for Class V Well** – Florida Department of Environmental Protection (FDEP)
- **404 Dredge & Fill Permit** – U.S. Army Corps of Engineers (USACE)
- **Building Permits** – Monroe County Building Department

Why are Permits Needed and What is Required

MONROE COUNTY FLORIDA

- Performance based evaluation, i.e. each project (any road modification) needs to be evaluated to determine drainage parameters **so as to not cause adverse impacts to surrounding properties.**
- Evaluate water movement, land use and soil conditions such as developed properties, vacant properties, pavement, grass, rock affect the movement of the rainfall across the project area that gets incorporated into the Hydraulic models.
- Groundwater table conditions (King Tide and Sea Level Rise) to determine water storage capacity below the ground
- Rainfall storm events to be evaluated (500-year, 100-year and 25-year, 3 day and 5-year and 2-year, 1 day)


ENVIRONMENTAL RESOURCE PERMIT
APPLICANT'S HANDBOOK
VOLUME II

FOR USE WITHIN THE GEOGRAPHIC LIMITS OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT

EFFECTIVE MAY 22, 2016

Volume II (including Appendices A, B, C, D and E) is incorporated by reference in Rule 40E-4.091(1)(a) and Rule 62-330.010, F.A.C.

sfwmd.gov

MONROE COUNTY FLORIDA

Benefits

Project Benefits

MONROE COUNTY FLORIDA

- Proactively addresses drainage and road conditions that will worsen as flooding impacts increase.
- Makes community roads more resilient to future impacts
- Preserves and improves long term access to homes
- Reduces/eliminates standing water on roads
- Increases value of homes and desirability of community
- Level of grant funding is significant; may not be available in the future.

MONROE COUNTY FLORIDA

Funding

Capital Construction Cost and Funding

- Florida Department of Environmental Protection (FDEP) Resilient Florida - $14,859,975
- Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) Phase II – $36,644,277*
- HMGP Phase II funds will be available upon completion of the design and successful FEMA benefit cost analysis outcome.
- **Total Potential Grant Funding - $51,504,252**
- **Current Construction Estimate Approximately $50,500,000**
- BOCC decided individuals who are benefitting from the project will fund any potential shortfall; residents will vote on whether to proceed when final costs are known.

Annual O&M Assessment

- The Annual Operations & Maintenance to be paid by residents benefitting from the project through a Municipal Services Benefit Unit (MSBU) and covers:
  - Electrical costs to operate the pumps
  - Repairs to Mechanical Equipment
  - Routine Maintenance Costs - labor, equipment
  - Replacement of Mechanical Equipment when it wears out

  It does not cover usual routine road maintenance

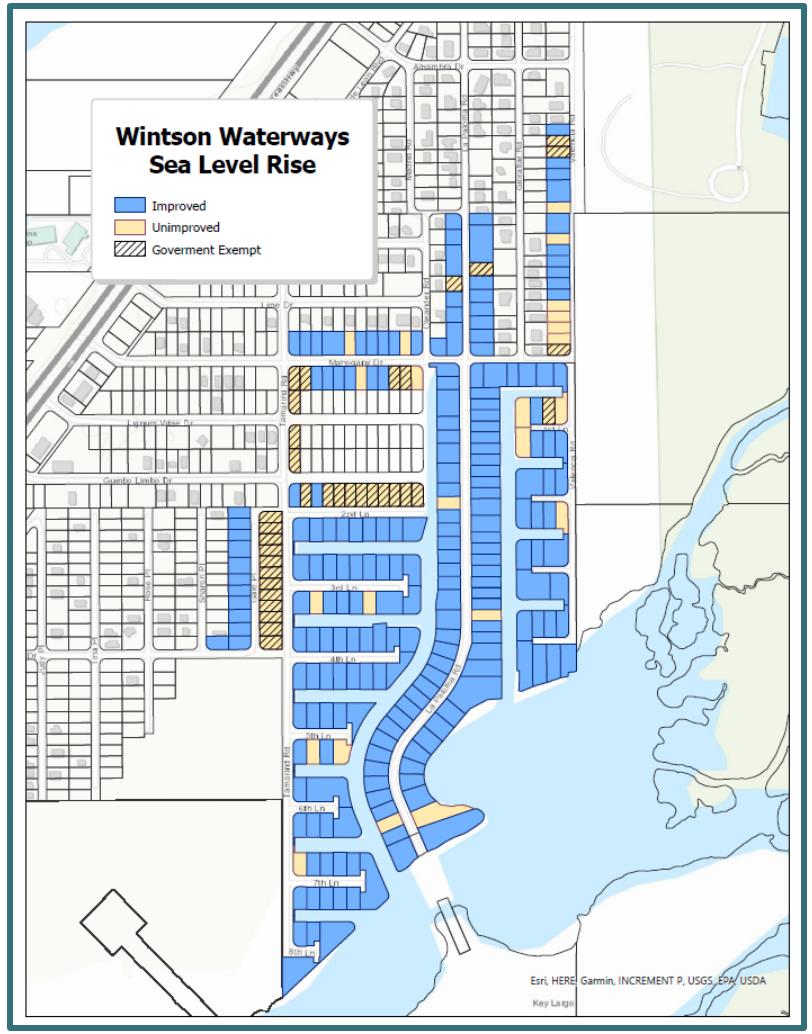
Assessment Development

Develop Apportionment Methodology

- Identify Benefit Area and numbered parcels
- Vacant parcels are assessed
- Vacant government conservation lots are not assessed

Determine Annual Assessment Revenue Requirements

- Operation and Maintenance Costs – 5% of mechanical equipment costs is standard guidance
- Annual costs to develop assessment for tax roll and administrative costs



Winston Waterways Estimated O&M

- Project area has 239 parcels
- Estimated Annual Revenue Requirement:
  - 5% Mechanical Equipment Cost: $382,500
  - Annual Administrative cost: $64,776
  - Total Annual Cost: $447,276

- Estimated monthly assessment per parcel: $156.00
- Individuals within project area will vote whether to proceed

MONROE COUNTY FLORIDA

What's Next?

What's Next...

Complete 90% design plans and permit applications; submit to SFWMD, FDEP and USACOE

Prepare easement documents for property owner signature and finalize design plans.

Submit 100% design plans to FDEM and FEMA for approval and Benefit Cost Analysis to secure construction grant funds.

County to advertise for construction bids

Residents vote on whether to proceed with construction

MONROE COUNTY FLORIDA

Questions?

Straw Poll Survey

MONROE COUNTY FLORIDA