

# MIAMIBEACH RISING ABOVE

PROJECT LOCATION



## Assessment of 269 Palm Flooding during Tropical Storm Alex

Land Use and Sustainability Committee

September 28, 2022

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# Palm Island Flood Mitigation Results

Palm Island 316 South Coconut Ln

- Palm Island had a history of flooding problems due to
  - Low ground elevation
  - Low soil permeability
  - Undersized drainage infrastructure



Tides: 1.4 ft NAVD | 10/17/12

**BEFORE**



Tides: 1.88 ft NAVD | 10/15/19

**AFTER**



# Palm Island Flood Mitigation Results

Palm Island 303 North Coconut Ln



**BEFORE**

Tides: 1.4 ft NAVD | 10/17/12



## Completed Improvements (2016-2018)

- ✓ Elevated Roadways
- ✓ New Stormwater Collection System
- ✓ Two (2) new triplex pump stations
- ✓ Backflow prevention on outfalls

**AFTER**

Tides: 1.88 ft NAVD | 10/15/19



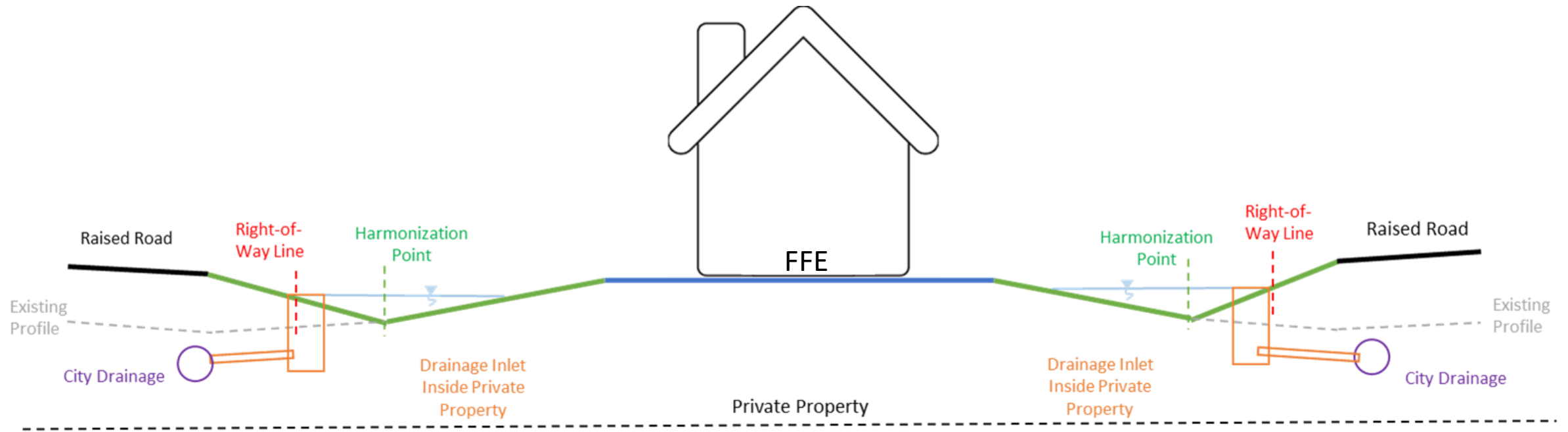
# Road Raising and Harmonization

## • Drainage Directive

- Harmonization License Agreements were required for the City to perform any harmonization effort within private property.
- If the Finish Floor Elevation (FFE) was at or below the NEW crown of road, a private property was able to receive a drainage connection.
- Properties that elected to connect to the City's system had to obtain a building permit.
- Properties that did not sign harmonization agreement were harmonized at the ROW Line.
- Special harmonization efforts were made on a case-by-case basis as needed and as agreed upon with the property owner.



# Road Raising and Harmonization Typical Section



# 269 Palm

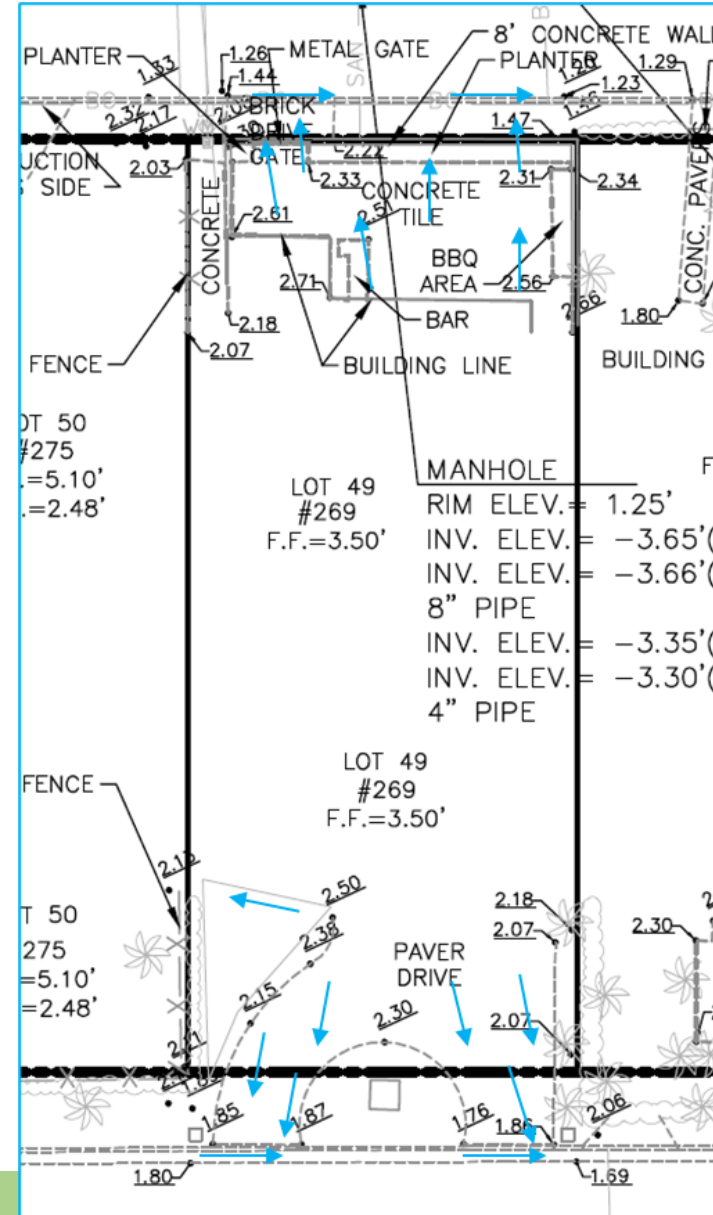
- Single lot between two roads
- Raised roads on both sides of property
- 90% impervious property (excluding ROW)





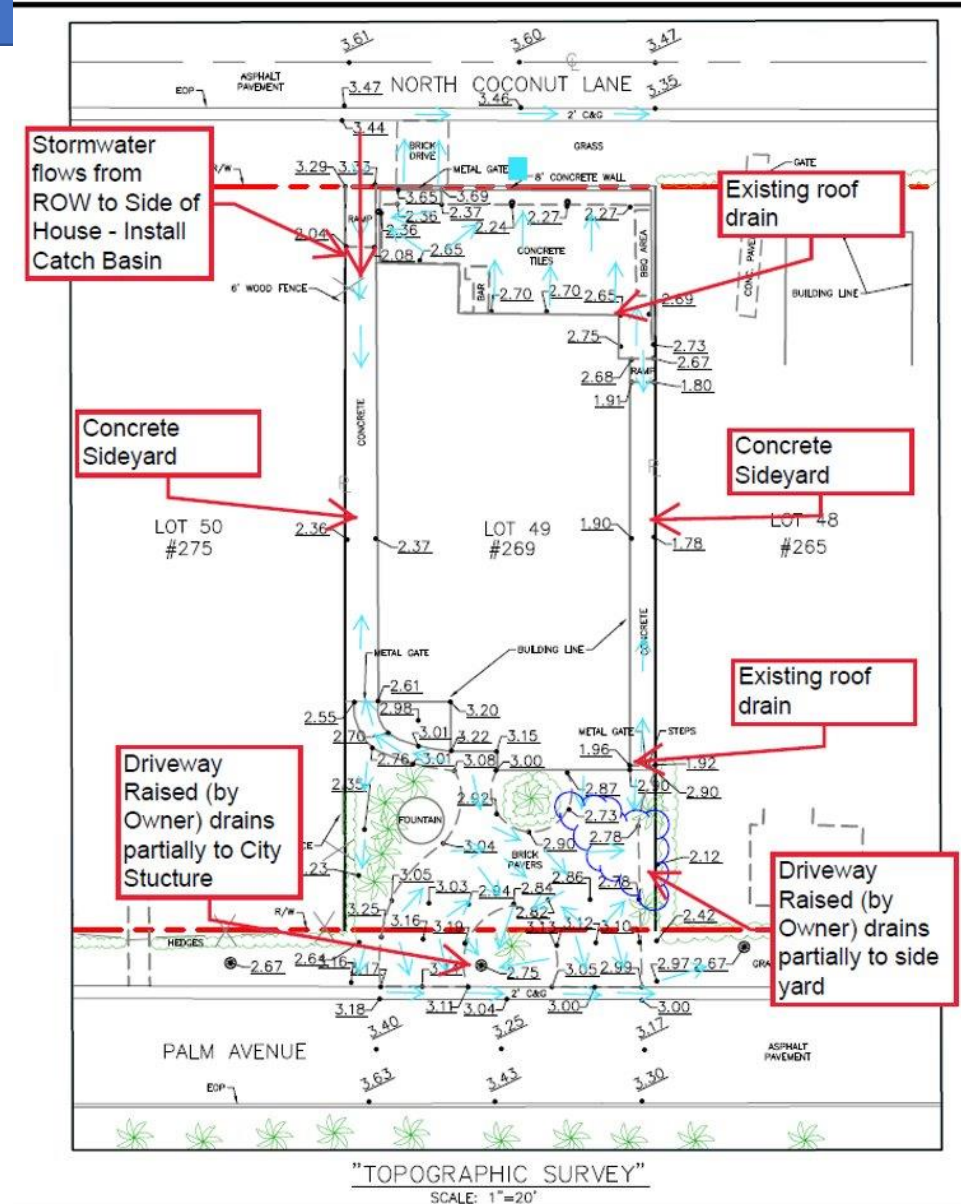
# Prior to Road Raising - 269 Palm

- Front of Property: Stormwater from property flows into right-of-way
- Back of Property: stormwater drains to right-of-way via drains in concrete wall



## After Road Raising - 269 Palm

- Roads Raised to a minimum of 3.00 ft NAVD adjacent to property (about + 1.6 ft)
- Resident Raised Driveway
- Front of Property: water sheet flows away from the right-of-way line to both the road and private property
  - Driveway partially sheet flows to the east side lot and partially sheet flows to the inlet installed within the swale area in ROW
- Back of Property: stormwater drains to City stormwater system via drains in concrete wall, to a stormwater structure north of concrete wall





# 269 Driveway Raising



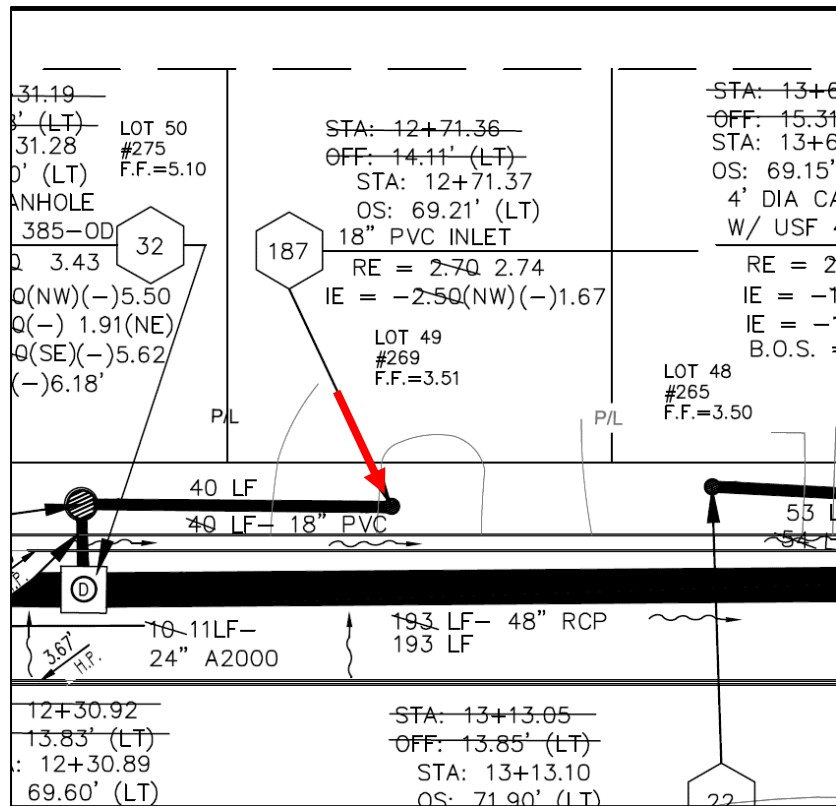
Construction Impacts to driveway due to road raising and harmonization September 4, 2018



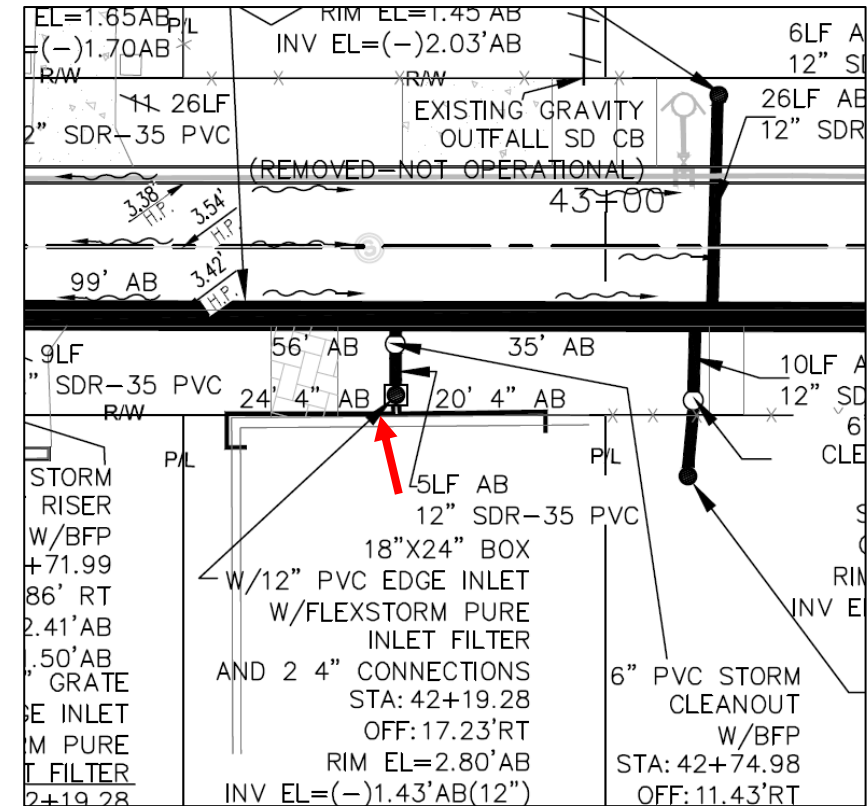
Site Visit August 10, 2022

# Drainage Improvements- 269 Palm

- Front of Property: Stormwater Inlet in Swale Area at low point to capture water

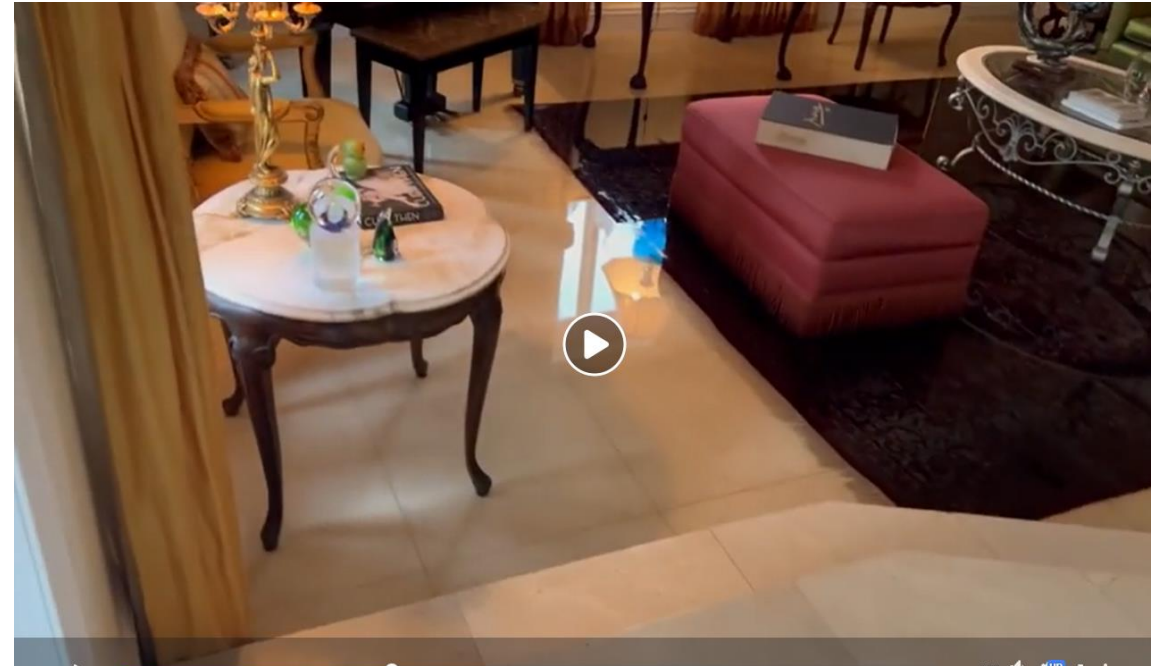


- Back of Property: 4" drain pipes in concrete wall, connected to a drainage structure





# 269 Palm on June 4<sup>th</sup>, 2022 – Tropical Storm Alex



- **>100 Year Storm:** 12" of rain in less than 24 hours, with intensity over 4.3 inches per hour
- Private property flooded on east and west sides of properties
- Flooding internal to house in locations with lower floors

# Recommended Solutions for 269 Palm

Flooding Problem / Contribution	Solution	Responsible Party
Partial stormwater sheet flow from ROW on northwest side ramp -, possibly contributing to flooding on west side lot	<b>1) Stormwater collection point to be installed at the ramp landing to collect stormwater sheet flowing from ROW.</b>	City
Stormwater sheet flow from building roof, driveway, and backyard contributing to flooding on sides	<b>2) Remove concrete slabs from both sides and install sod to increase permeable area and improve stormwater percolation. 269 Palm is grandfathered in and does not meet Miami Beach Building Code. The building code requires 30% of front lot and 70% of rear lot be sodded or landscaped.</b>	Property Owner
Stormwater seeping into the house from side concrete slabs during heavy rainfall	<b>3) Proposed to raise sunken floor elevations.</b>	Property Owner

Note: As PW Engineering coordinates with the EOR to address solution #1 above, additional or more detailed/refined solutions may be implemented.



# Public Works, Engineering Investigations

1. Site Visit with Property Owner (8/10/22)
2. Launch City Surveyors to collect additional elevation data (8/17/22)
3. Processed data (August 2022)
4. Provide recommendations for solutions (September 2022)
5. Complete design (2 months)
6. Submit for Class II DERM Permit
7. DERM Permit (3-6 months)

# Lessons Learned for Future Road Raising Projects

- Consider houses that have tiered floor elevations – ensure that **lowest elevation of house is considered if different than FFE**.
- Carefully verify and educate property owners that **drainage grades are maintained in private property to allow sheet flow to be captured** by the yard drains provided.
- Obtain **elevation data at the Right-of-Way line at more frequent intervals** to get an understanding of sheet flow to better strategize placement of drainage structures needed for harmonization.