



# St. Joseph Anchors Way High Water Flood Mitigation Public Meeting

July 31, 2024



# AGENDA

- Project Area
- Flooding Concerns/Causes
- Analysis
- Alternatives
- Questions/Comments

# Project Area

- Anchors Way from N Wayne Street to Island Pointe Marina
  - Approximately 0.5 Miles
- Only access road to:
  - Several marinas/boat storage
  - Residential at South end
  - Waste water treatment plant





# Anchors Way - Road Flooding Concerns

- Road flooding limits access
  - Emergency vehicles
  - Treatment plant staff
  - Residents and business owners
  - Safety



# Anchors Way – Flooding Causes

1. Limited existing storm sewer
2. Entirely within floodplain
3. High groundwater table
4. High Great Lakes levels
5. Wind induced lake level increase

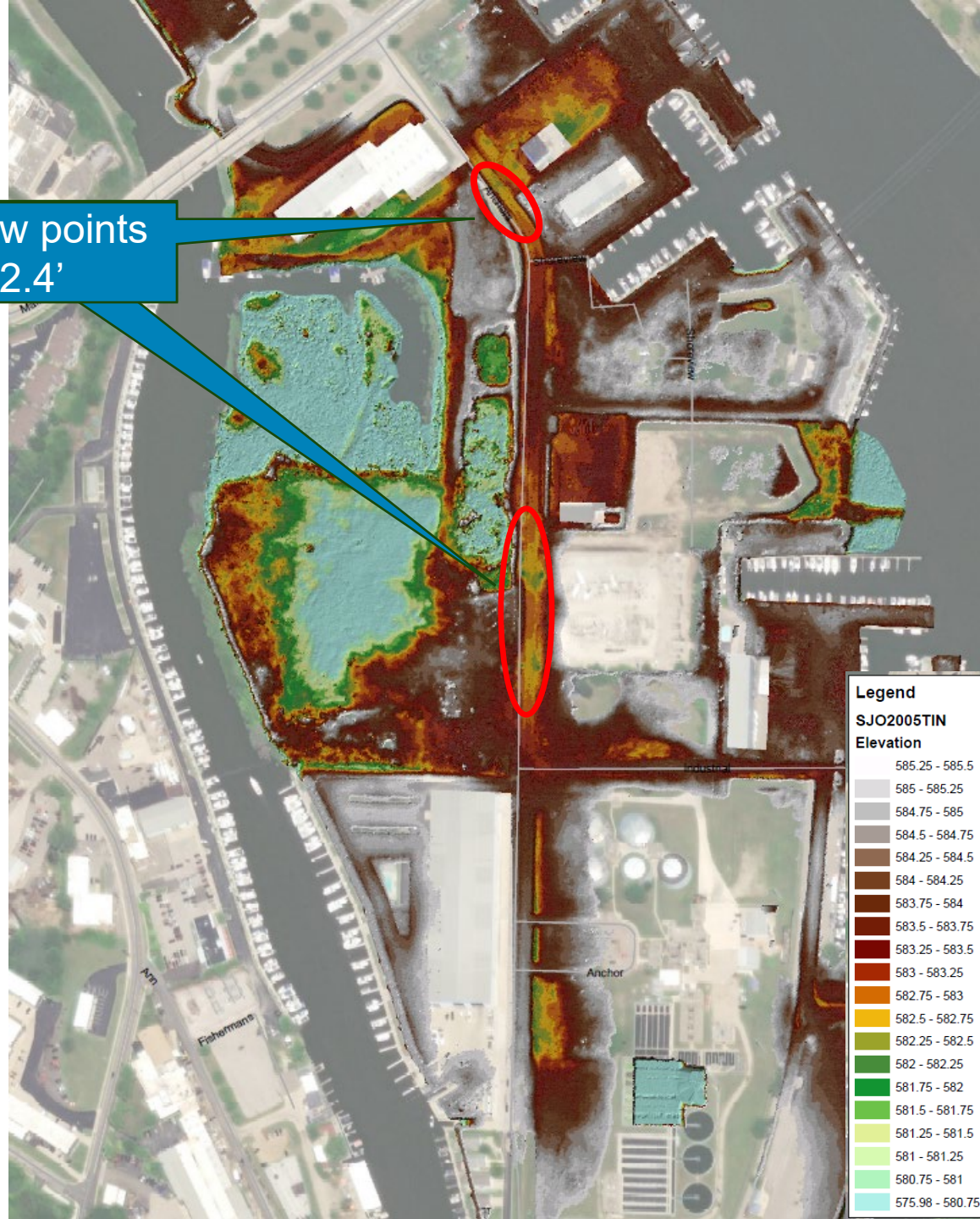




# Analysis Elevation Map

- The entire island is low relative to surrounding water levels
- There are two notable low areas on Anchors Way
- Road low areas are below high Great Lake levels

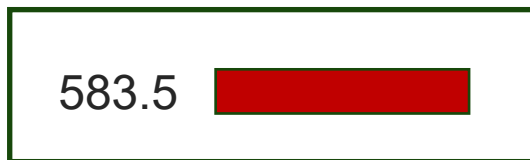
Low points  
582.4'





# Lake Inundation Analysis

- St. Joseph River levels are tied directly to Lake Michigan
- Map shows flooded areas below elevation 583.5
- There is no positive drainage for roadway low points during high lake levels



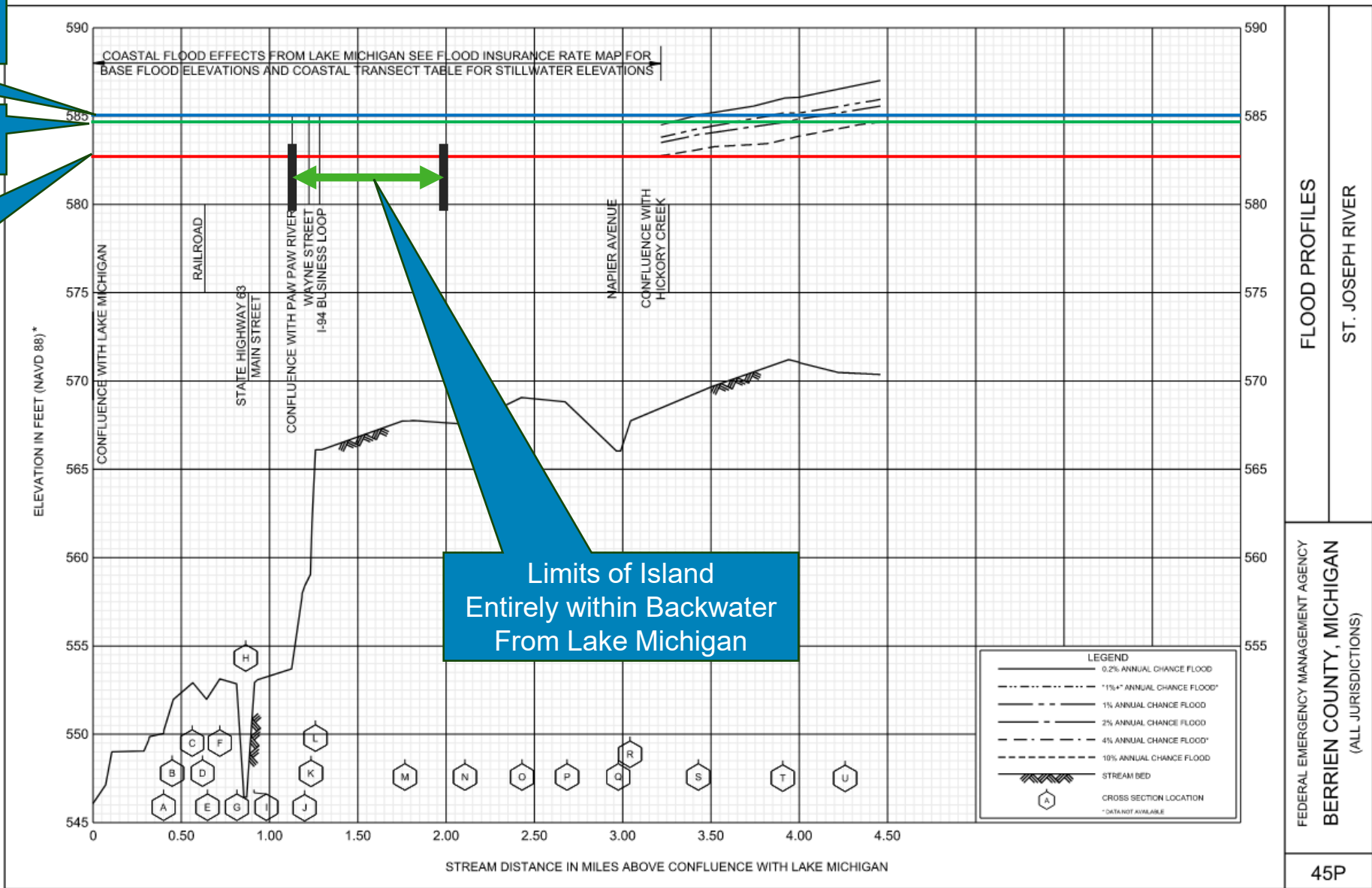
# Lake Michigan 100-Year Level Compared to FIS

\* Elevations upstream of this profile are shown in vertical datum NGVD29

FEMA 100yr Level 585.0

Log Pierson Type III 584.73

Minimum Existing Road Elevation 582.75





# High Great Lake Level Effects

High Lake Level

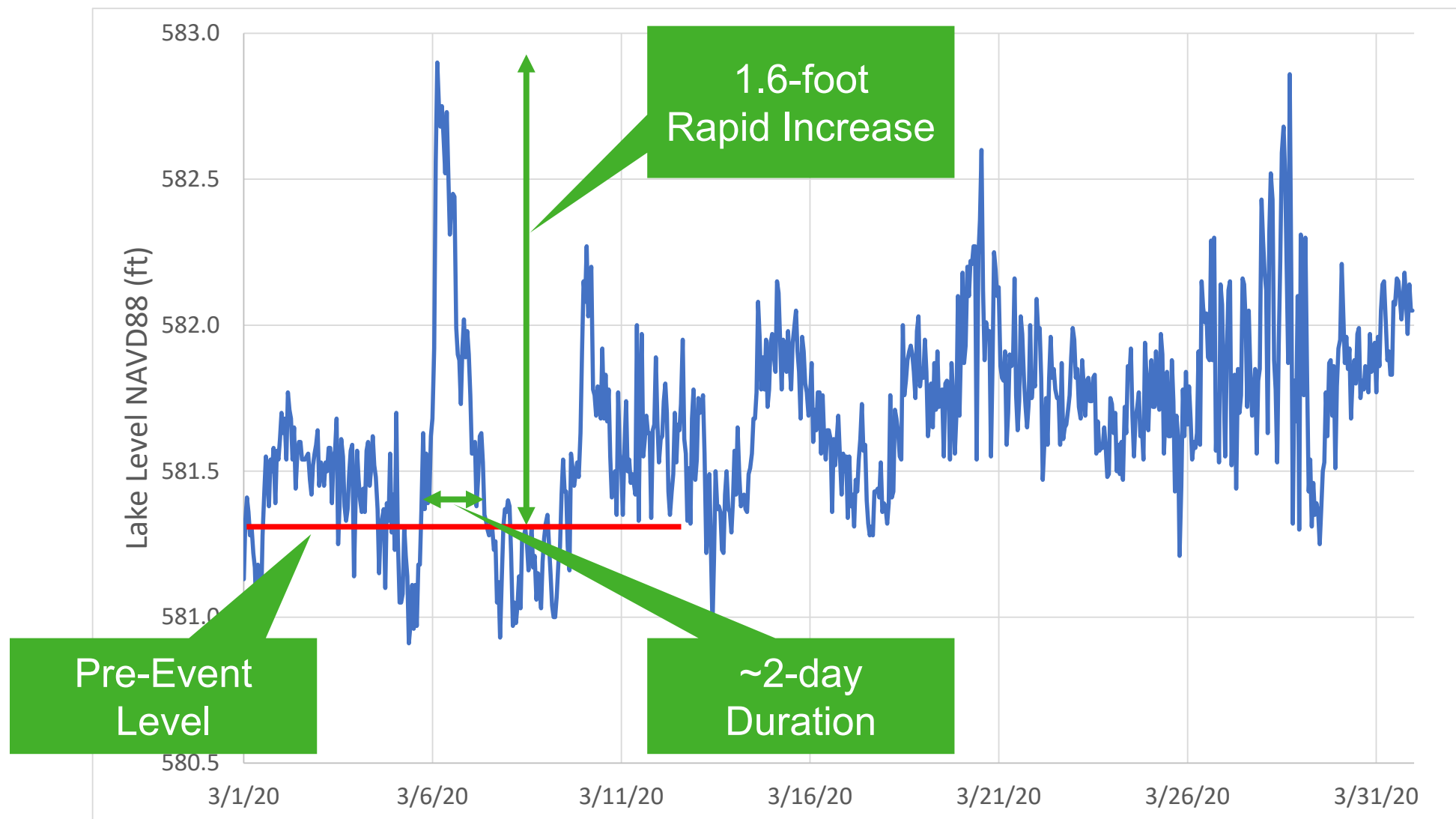


High Lake Level With Wind



# Lake Level Wind Impacts

## March 6, 2020 Event

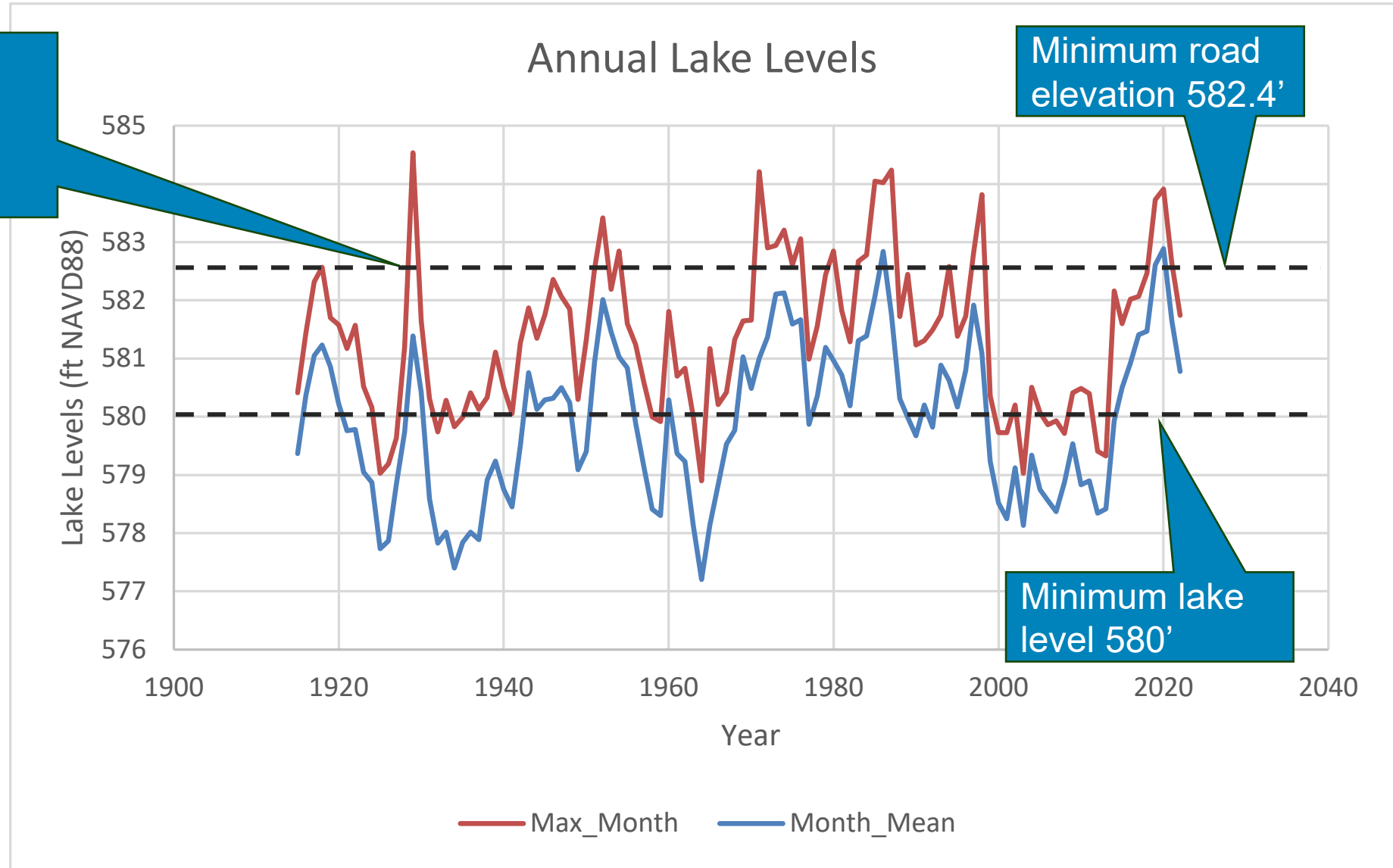




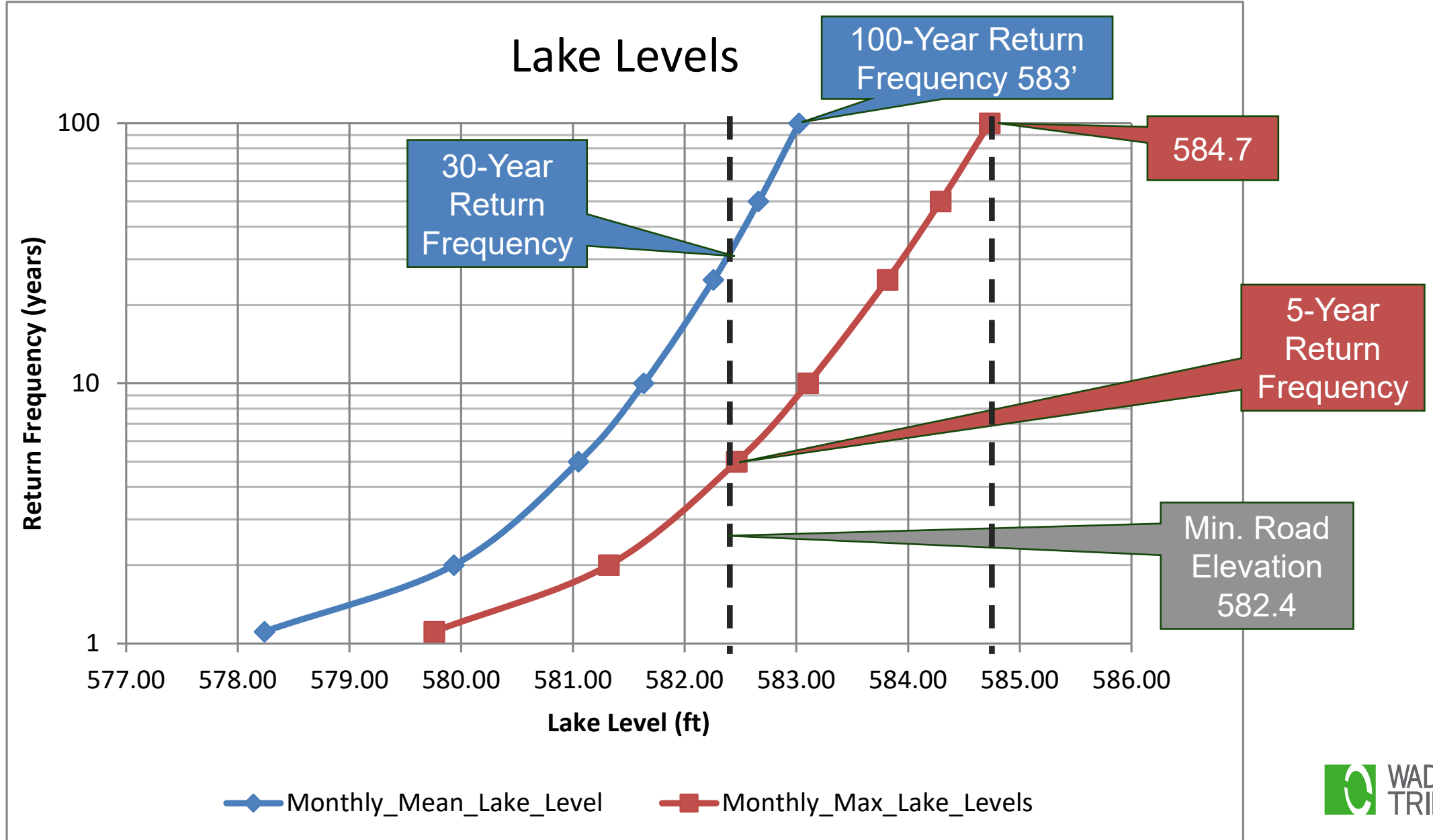
# Lake Level Analysis

1929 Example  
 Max Month 584.54'  
 Max Mean Month 581.39'  
 Delta = 3.15'

Maximum month levels assumed to be associated with temporary wind induced increases in lake level



# Lake Level Analysis (Log Pierson Type III)

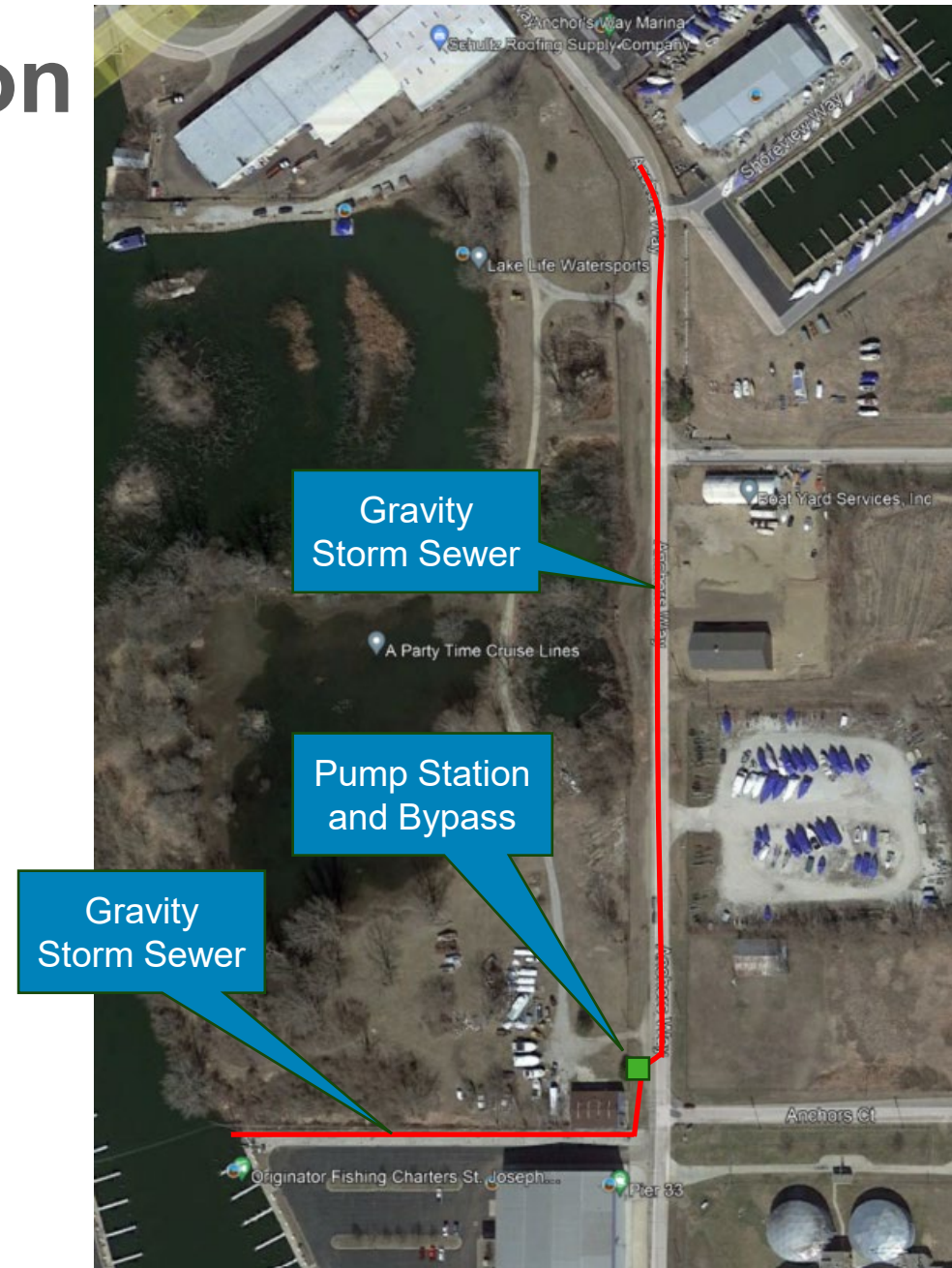




# Alternative 1: Pump Station

Includes:

1. Gravity sewer
2. Ditching
3. Pump station
4. Protection up to lake level of 583.25 (start of overland flow)
5. ~10-year level of service including wind impacts



# Alternative 1: Pump Station

- Estimate: \$1,420,000
- All flow is conveyed to a south pump station/diversion chamber
- Under low lake level conditions, the pump station is bypassed, and flow is diverted to Morrison Channel (gravity)
- Under high lake level, the pump station is activated (pumped)
- The entire system remains surcharged under most lake levels
- Surface ditches can act as storage buffers during peak of extreme events





# Alternative 2: Raise Roadway

Includes:

1. New higher road
2. Storm sewer
3. Pump station
4. Protection up to lake level of 584.5 (~100yr level of service including wind impacts)



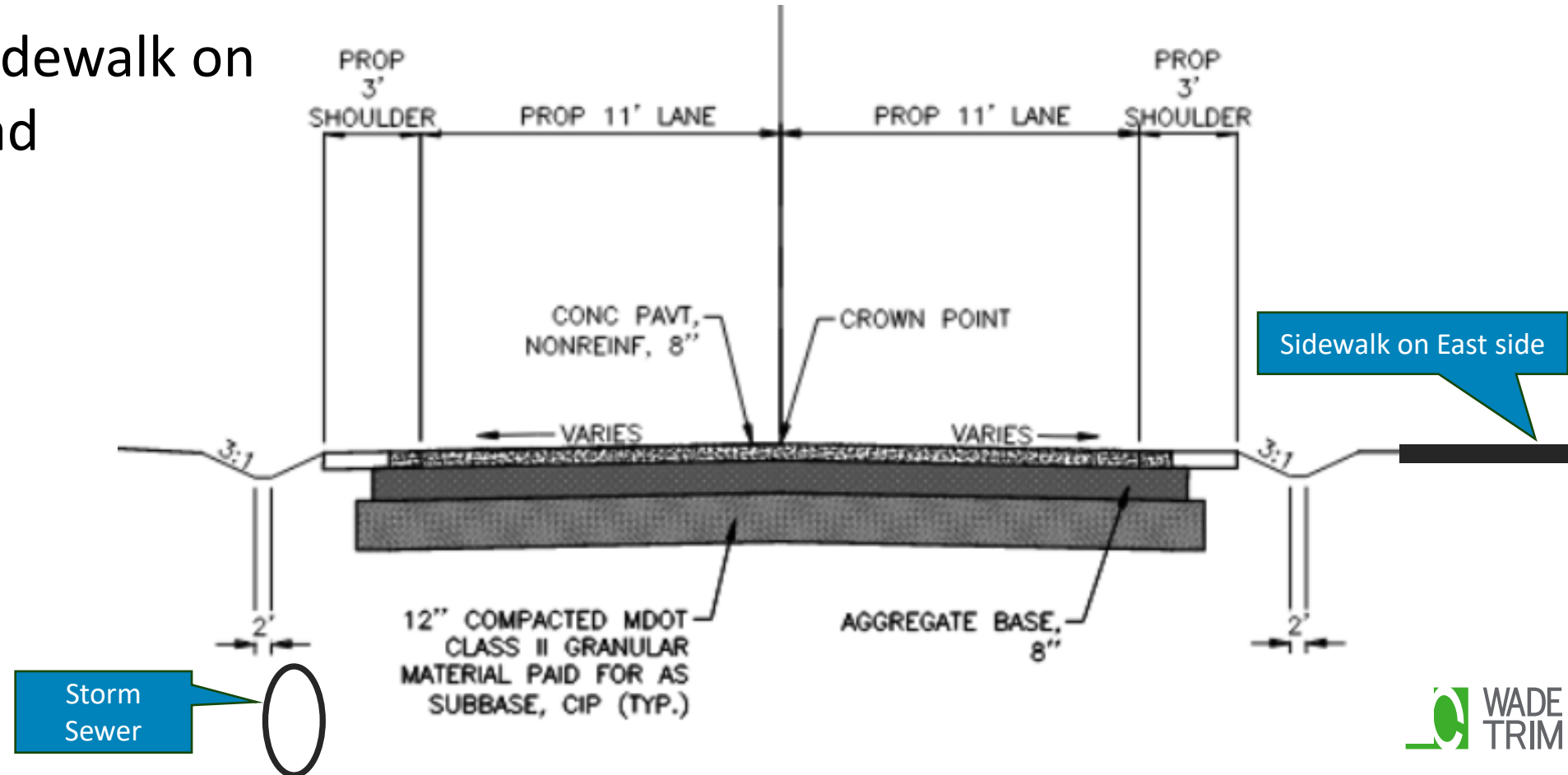
# Alternative 2: Raise Roadway

- Estimate: \$1,568,000
- Increase elevation of roadway above 584 to 585 feet
- Areas around roadway can drain toward pump station and lake
- New stormwater conveyance system
- Smaller diversion chamber/stormwater pump station
- Ditches east and west of Anchors Way for storage/conveyance



# Alternative 2: Proposed Cross Section

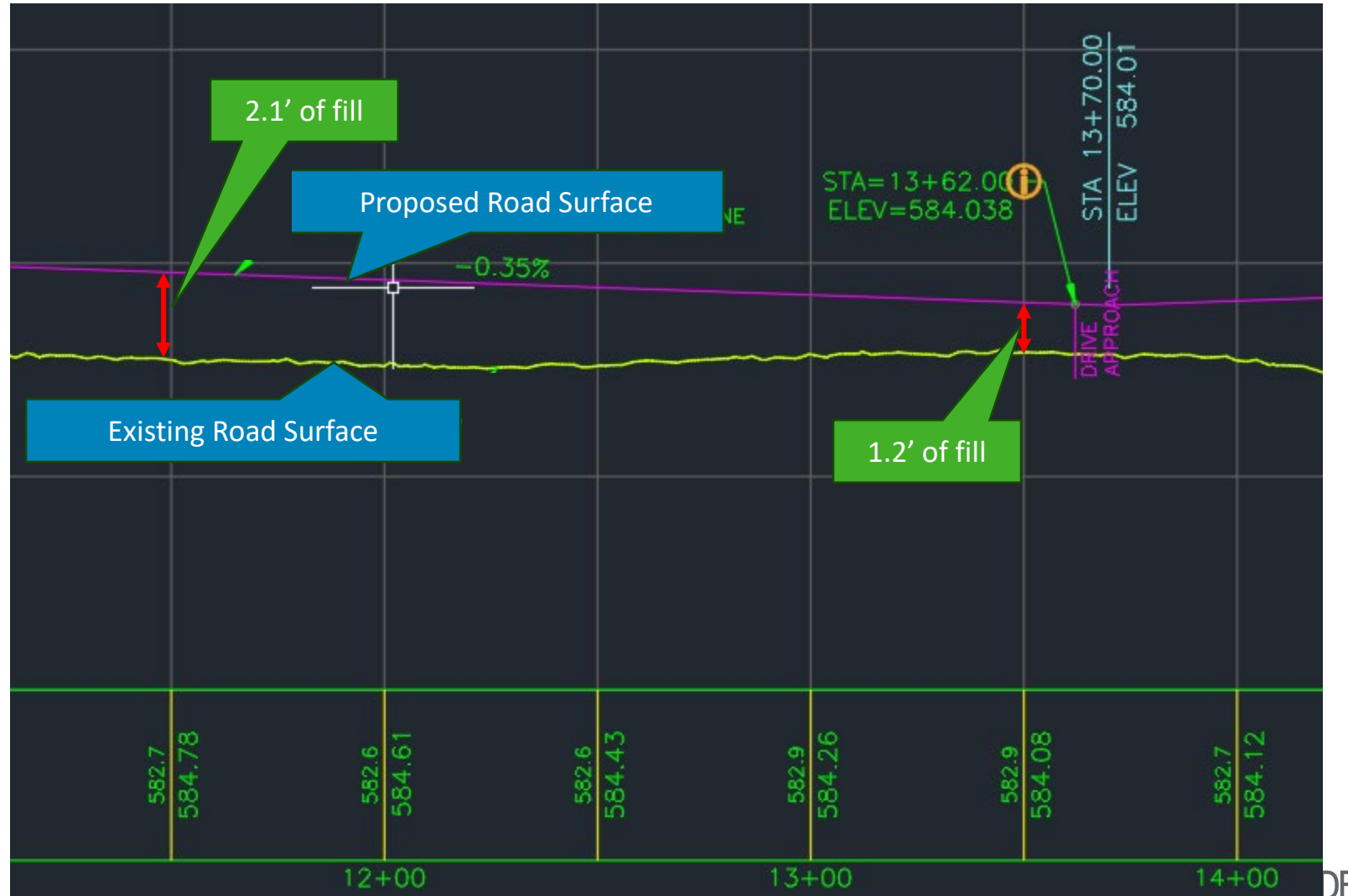
1. Concrete pavement section
2. 11-ft lanes
3. 3-ft shoulders
4. 5-ft concrete sidewalk on east side of road



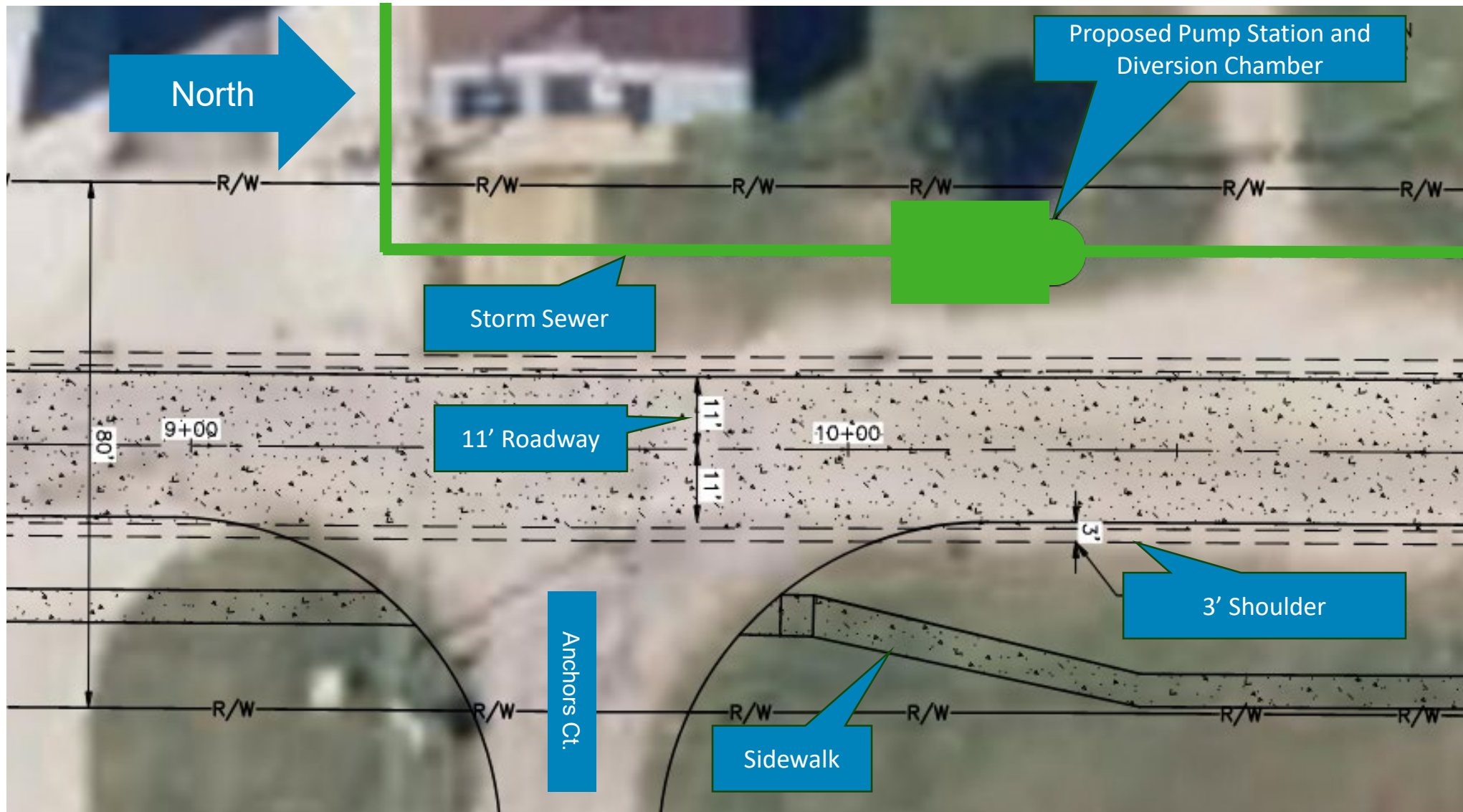


# Alternative 2: Proposed Vertical Alignment

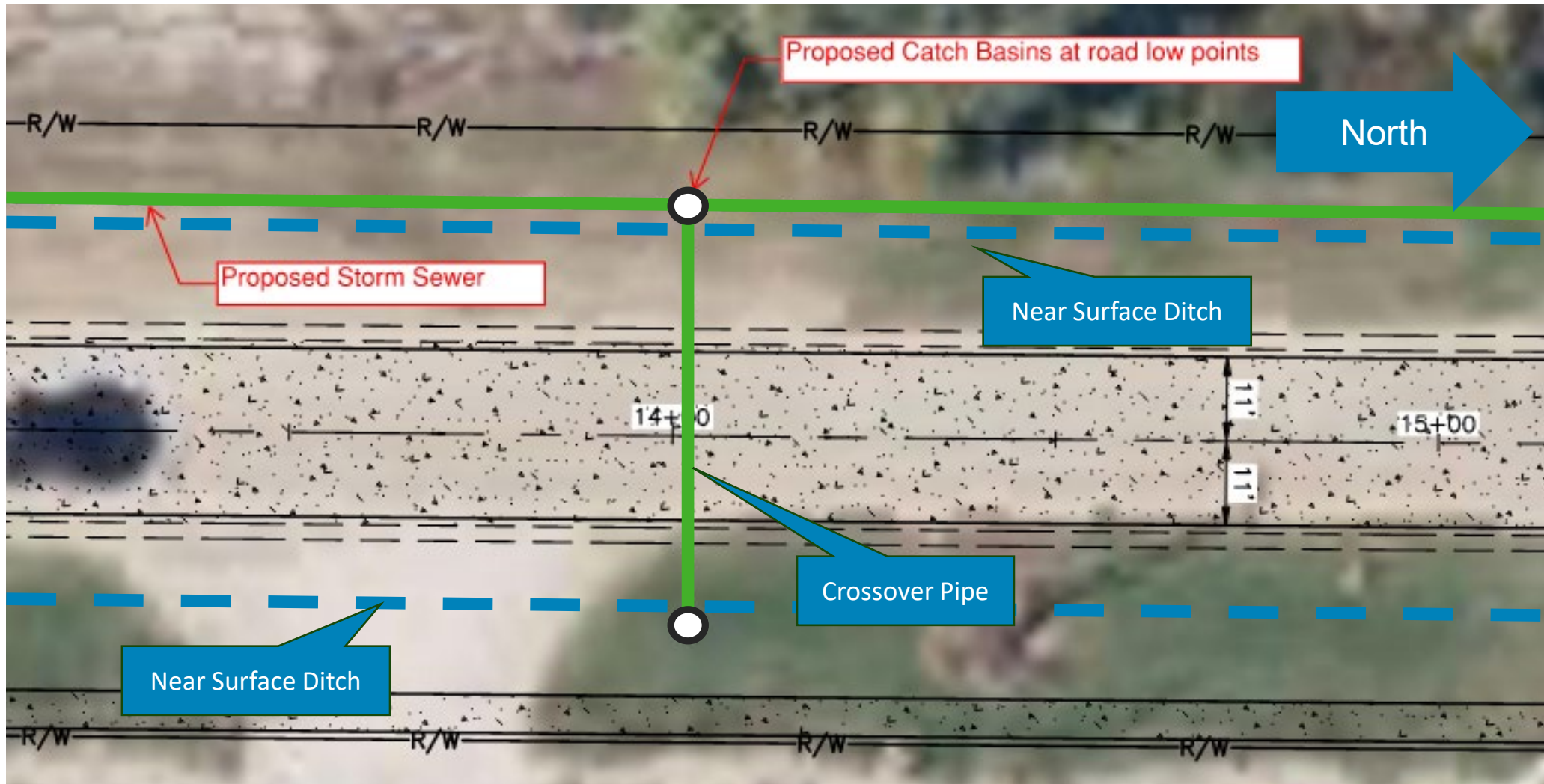
1. Max. Elevation 585-ft
2. Min. Elevation 584-ft
3. 3 low points to accommodate drainage improvements



# Alternative 2: Proposed Roadway Plan



# Alternative 2: Proposed Storm Sewer on West Side of Road

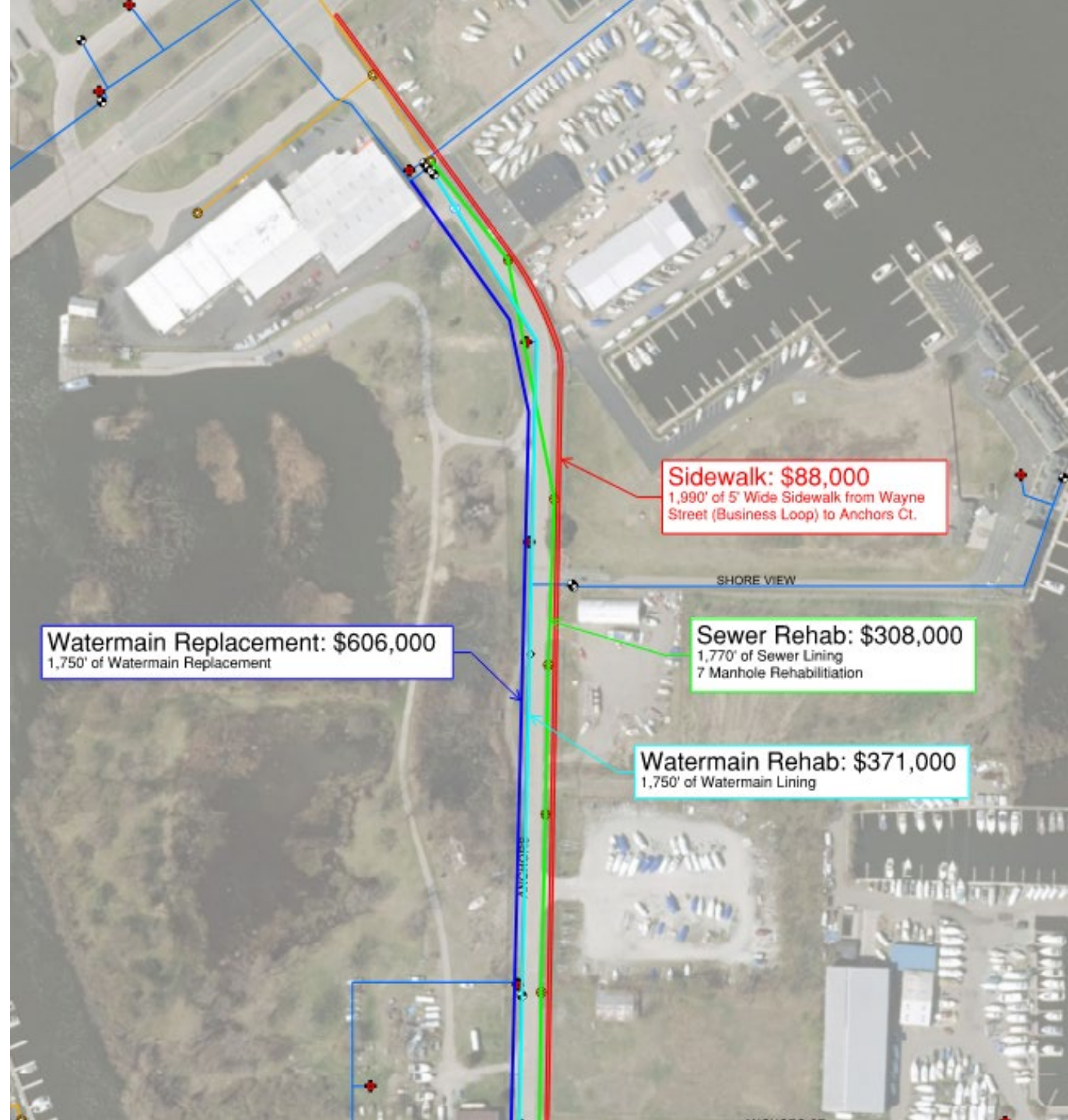




# Alternative 2: Potential Public Utility Improvements

During road construction there is an opportunity to improve local utilities

1. Water System Improvement Options
  - Replace - \$606,000
  - Rehabilitate via lining - \$371,000
2. Sanitary System Improvements
  - \$308,000
  - Line sewers
  - Line manholes
3. Addition of a Sidewalk (common to Alt 1)
  - \$88,000
4. Roadway improvements could be expanded to the North and South of the areas shown



## Alternative 2: Driveway/Approach Impacts

- 12 driveways will be impacted
- Anchors Ct. approach
- Target slope is 8% or less
- Temporary grading permits may be required from property owners

### Legend

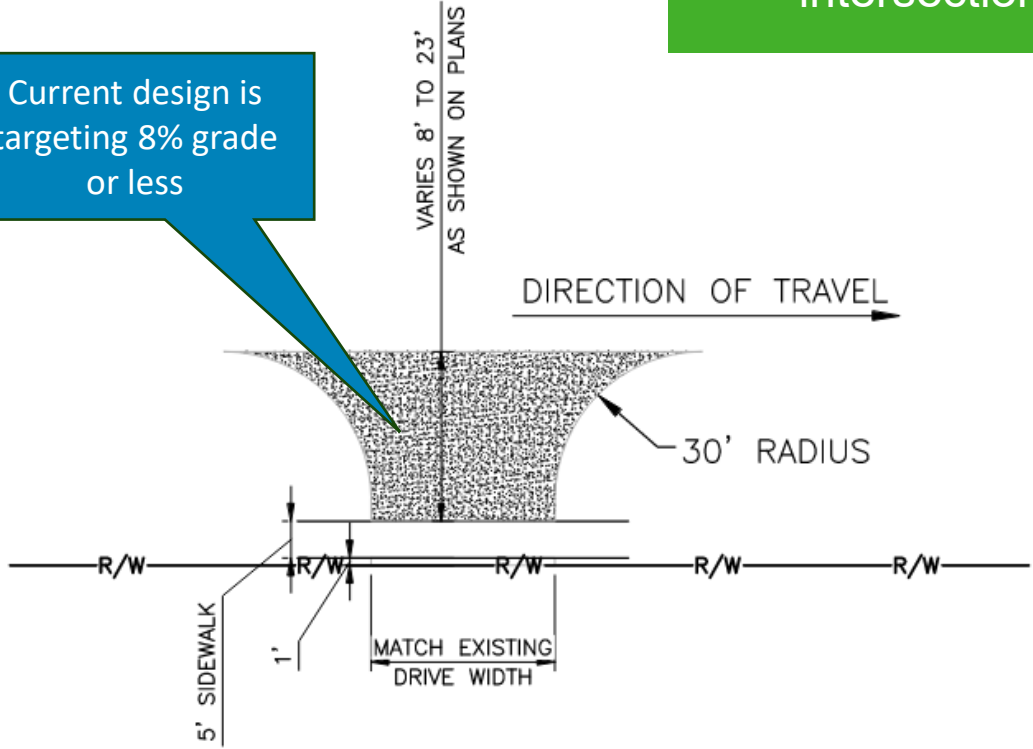
- driveways
- approach



# Alternative 2: Typical Driveway Replacement Details

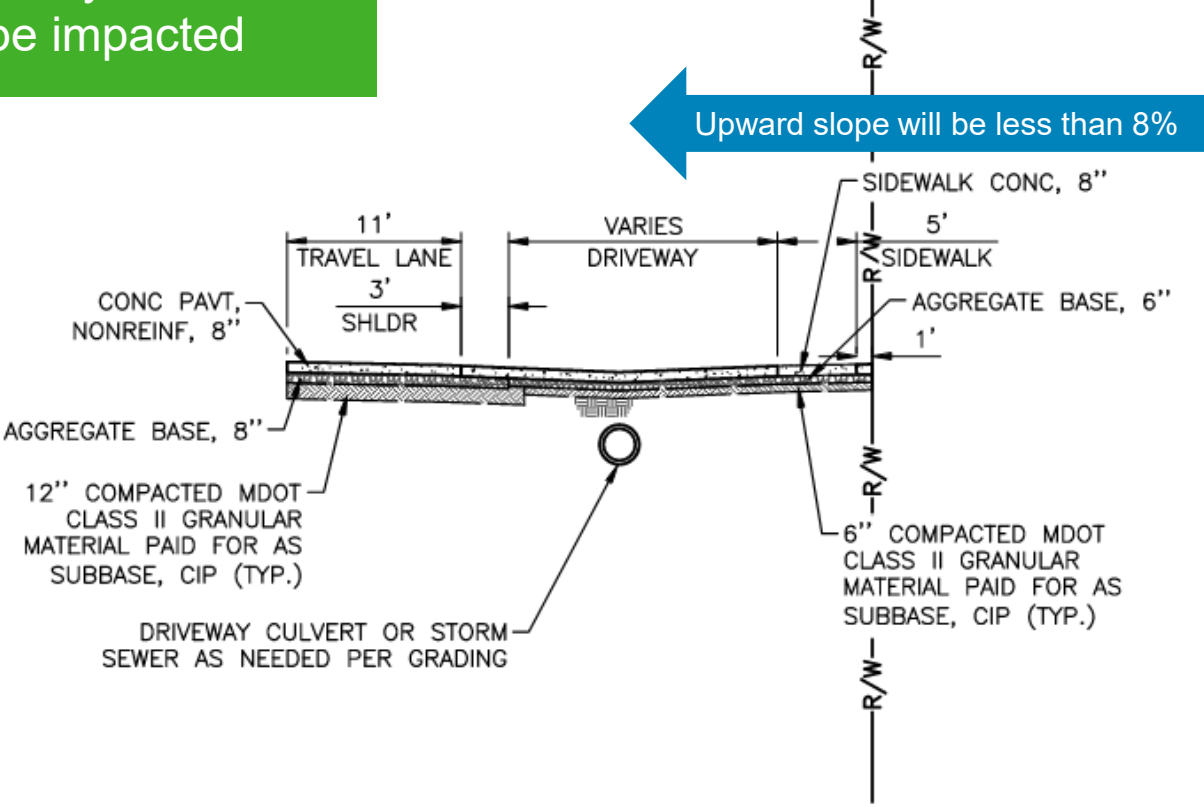
Approximately 13 driveways and road intersections will be impacted

Current design is targeting 8% grade or less



COMMERCIAL DRIVEWAY DETAIL  
PLAN VIEW

Upward slope will be less than 8%



COMMERCIAL DRIVEWAY DETAIL  
SECTION VIEW



# Questions/Comments