Grove Park Canal Retaining Wall Assessment

May 5, 2025

Overview

- Purpose and Description
- Field Visit Findings
- Recommendations

Purpose and Description

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- Evaluate the existing Grove Park Canal Access (GPCA) Retaining Walls and provide recommendations to maintain safe use
- The GPCA was constructed in 2021 to provide access to and from the Lewes & Rehoboth Canal
- GPCA Layout:
  - Main Walkway: switchback concrete walkway supported by a series of MSE walls
  - Dock Access: composite boardwalk supported by helical piles leading to the floating dock.
  - Kayak Storage: MSE wall system around a kayak storage area adjacent to the north boardwalk landing
- MSE Wall Components:
  - Mesa Retaining Wall Systems Modular Block Units
    - Tensar Uniaxial Geogrid Reinforcing Straps
    - Stabilized aggregate backfill

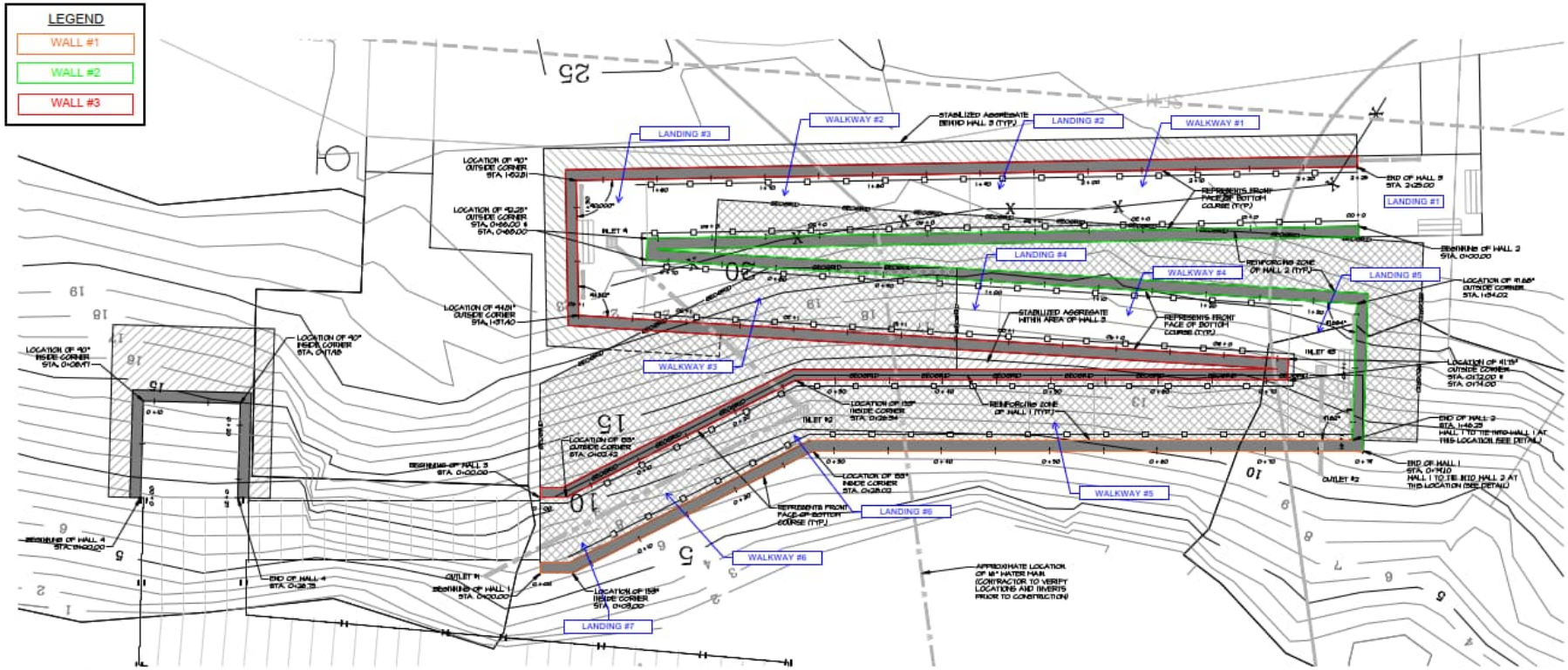
Documents Reviewed

Documents Available for Review

- GPCA For-Bid Drawings and Specifications
- GPCA Closeout Documents
  - Material Submittals and As-built Plans
- Site Photos from May 2022 and December 2024
- 2024 Geotechnical Analysis (by Stable Ground In-situ, LLC)
  - Report concluded that the ‘slope is unstable under the existing condition plus experiencing water affectation at the toe due to high and low tide process.’
  - Recommendation: stabilize the existing walls by placing geotextile and riprap at the toe of the slope, along with continual monitoring of the slope and existing cracks.

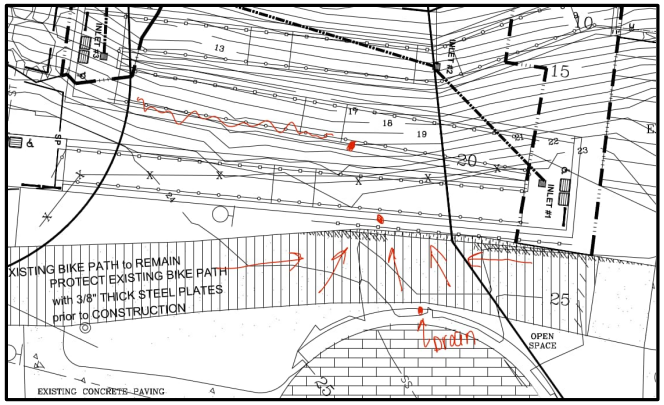
Field Visit Findings

Wall Layout Plan



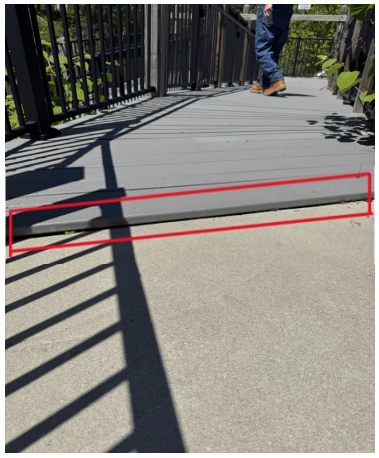
Field Visit Findings

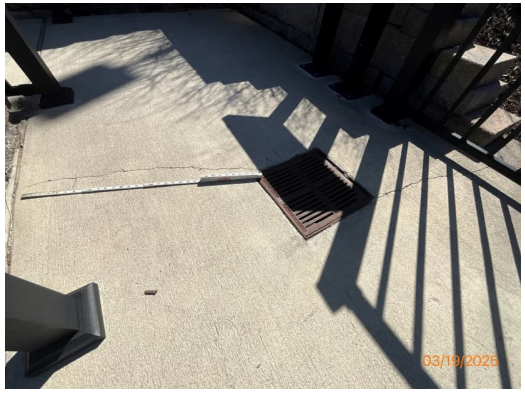
- Moisture staining along the bottom half of Wall #3 adjacent to Walkway #1 and Walkway #2.
- Backfill loss/erosion that can be probed along the northeast most end of Wall #3.
- Bike path and Rehoboth Museum drainage is directed towards the retaining wall.



Field Visit Findings (Cont.)

- At the transition from the walkway to the boardwalk, the concrete walkway exhibits differential settlement up to 1 1/4” high with respect to the boardwalk decking.
- Weephole on the east wall of Walkway #4 exhibits loss of fill and a missing cover.
- The west wall of Walkway #1 is rotated up to five degrees (5°) towards the canal and exhibits sagging up to 1” ± at this location.
- There is a full-width (6’-0”) x up to 3/16” wide transverse crack in the concrete walkway around Inlet #3. Outlet pipe not observed during field visit.





Field Visit Findings (Cont.)

- Stair-stepping separation of the MBW blocks with vertical gaps up to 7/8” wide that can be probed up to 1’-0” deep at the south end of Wall #1 (Canal side).
  - At this location, the gravel foundation can be probed up to 8” deep and the ground embedment varies and does not meet the 1’-0” embedment standard.
- At the transition from the access ramp to the composite boardwalk there is a drainage pipe that is not shown on the Contract Plans but shown on as-builts.

Recommendations

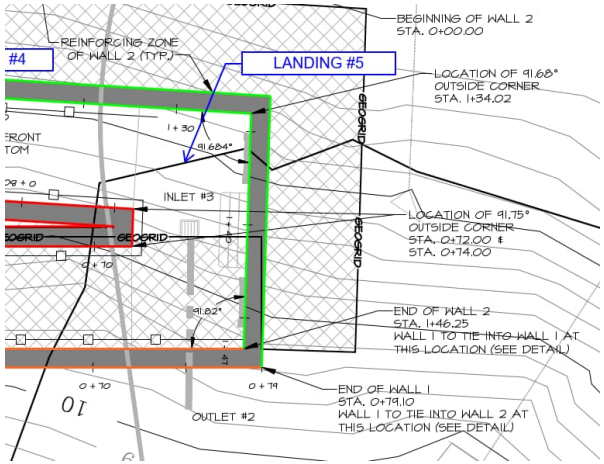
Monitoring and Maintenance

Immediate Rehabilitation (~$295,000):

- Continued monitoring specifically at the wall locations experiencing stair-stepping and/or bowing/sagging (~12-month duration)
- Identify/verify location of Inlet #3 outlet pipe and determine if repairs are necessary
- Consult with geotechnical engineer to ensure slope is stable enough for safe use of the GPCA and install Class R6 Riprap with reinforcing at the base of the wall (in concurrence with 2024 Geotech Report recommendations)
- Install ramp for smooth transition from concrete walkway to boardwalk

Short-Term Rehabilitation (~$43,500):

- Regrade area/divert drainage at the top of the wall
- Seal cracks in the concrete walkway adjacent to Inlet #3



Removal and Replacement (Option 1)

- Complete removal (including, but not limited to the ramp walkway, walls, backfill, riprap, boardwalk/gangway, and floating dock)
- Redesign of retaining walls, including geotechnical analysis for slope stability
- Replacement of current riprap system and improvements/reinforcement of the slope for proper stabilization
- Approximate Cost: $1,890,000

Removal and Slope Stabilization (Option 2)

- Complete removal (including, but not limited to the ramp walkway, walls, backfill, riprap, boardwalk/gangway, and floating dock)
- Large amounts of backfill required to stabilize the slope
- Replacement of current riprap system and major grading efforts, with consideration to drainage from the bike path/museum and adjacent roadway that will be required for slope stability
- Approximate Cost: $1,001,000

Conclusions

- The GPCA Retaining Wall System exhibits substantial evidence of differential settlement
  - From a structural standpoint, the GPCA is available to be open to the public
    - A geotechnical engineer should be consulted to ensure the slope is stable for reopening in its current state
- Cost Summary:
  - Monitoring and Maintenance:
    - Immediate: $295,000 | Short-Term: $43,500
  - Removal and Replacement (Option 1): $1,890,000
  - Removal and Slope Stabilization (Option 2): $1,001,000

Thank You

CITY OF REHOBOTH Beach

WALLACE MONTGOMERY