
STRUCTURAL ASSESSMENT

3809 NE 170th Street,
North Miami Beach, FL 33160
Project Number: 223510

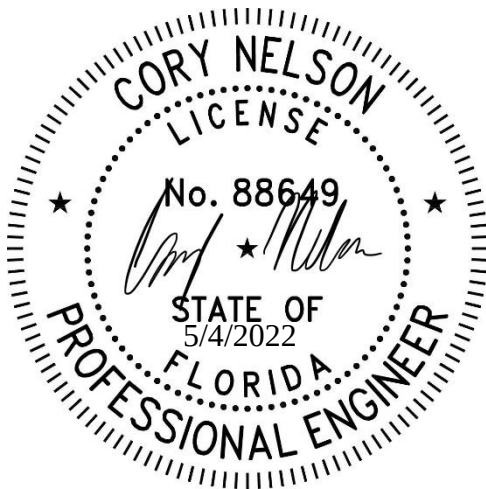
Inspection Report

DATE OF INSPECTION:

April 28, 2022

PREPARED BY:

Cory Nelson, PE



GREEN COASTAL ENGINEERING

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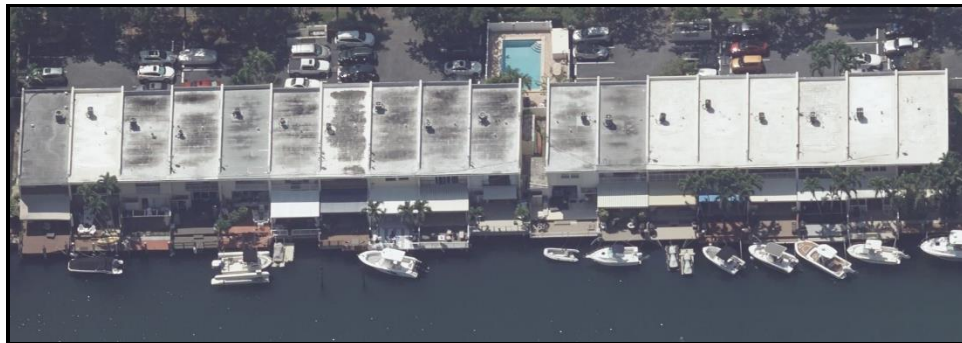


1. INTRODUCTION

Green Coastal Engineering (GCE) is pleased to submit this **Structural Assessment Report** for the structural assessment of the seawall and docks located at 3809 NE 170th Street, North Miami Beach. This assessment was performed by Cory Nelson, PE utilizing an Underwater Remotely Operated Vehicle as well as a visual inspection of all elements above the water line. The assessment was performed on April 27th, 2022. The project site consists of the following items:

1. Approximately 400-ft of shoreline stabilized by a seawall consisting of concrete T-piles, pre-cast wall panels, and a poured in place concrete cap.
2. A sheet pile concrete and a cement bag footer were installed along the base of the seawall. These items are installed to stabilize and protect the base of the seawall against undermining.
3. Timber docks of varying sizes and constriction methods were installed at each unit. Docks were framed over seawalls, preventing a full visual assessment of the seawall caps.

Observations and conclusions derived from our assessment are noted in the sections below.



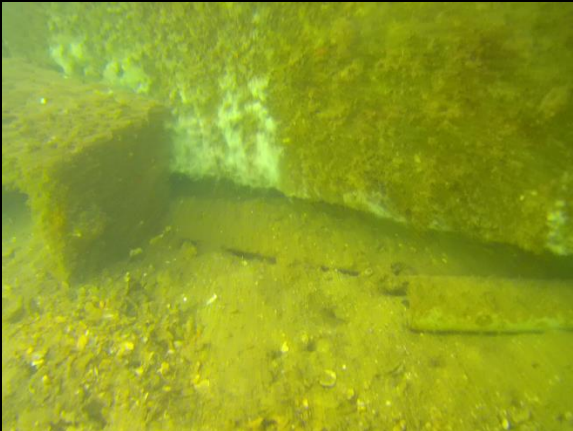
Site Photo

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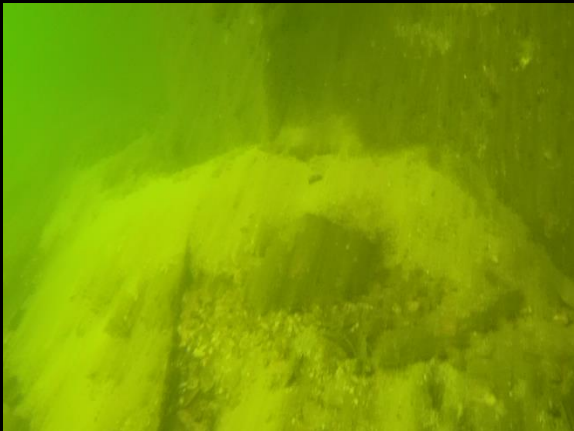


2. OBSERVATIONS AND RECOMMENDATIONS

Photograph	Observations and Recommendations
	<u>Item 1</u> Observation: Undermining was observed along an estimated 150-ft length of seawall (top and center photo), as evident by the visible gap between the seawall and mudline. An estimated 250-ft length of seawall base was protected by a sheet pile footer or a cement bag footer (bottom photo). These items are used to prevent undermining and soil erosion underneath the seawall. The installed locations of the sheet pile and cement bag footers are intermittent. Recommendation: A sheet pile footer should be installed to stop soil erosion and undermining along unprotected areas of seawall.
	
	

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Photograph	Observations and Recommendations
	<u>Item 2</u> Observation: Active signs of soil erosion were observed in at least three locations along unprotected areas of seawall. This is evident by the visible piles of sand accumulating at the base of the seawall between seawall panels and T-piles. Recommendation: A sheet pile footer should be installed to stop soil erosion and undermining along unprotected areas of seawall. Additionally, the joints between the piles and wall panels should be sealed with an underwater grout to prevent erosion through the seawall. See Section 6 of this report for a diagram of the seawall components and facilitation of soil erosion.
	
	

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Photograph	Observations and Recommendations
	<u>Item 3</u> Observation: The existing cement bag footer installed at the base of the seawall to combat soil erosion and undermining is not adequately working, as evident by the gap between the bottom of the seawall and the mudline. Recommendation: An estimated 20-ft length of cement bag footers should be removed and replaced with a new sheet pile footer.
	
NO PHOTO	

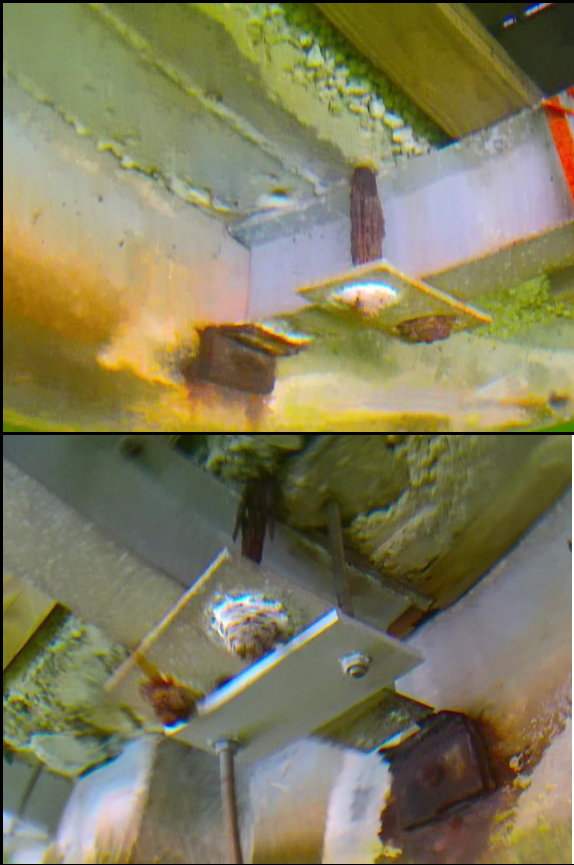
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Photograph	Observations and Recommendations
	<u>Item 4</u> Observation: Surface corrosion and honeycombing (the separation of concrete aggregate and the binding cement mortar), are common along the underside of the seawall cap throughout the entire property. If the condition of the seawall cap is not maintained, deterioration can accelerate and compromise the structural integrity of the seawall. Recommendation: Repair all honeycombing and surface corrosion per the typical repair procedures described at the end of this report.

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Photograph	Observations and Recommendations
	<u>Item 5</u> Observation: A timber dock pile at 3839 is severely deteriorated below the waterline. Recommendation: Replace deteriorated timber pile with a new pile.
	<u>Item 6</u> Observation: The dock at 3831 has severely corroded bolted connections on the steel beams connecting to the underside of the seawall cap. Recommendation: All corroded steel connections should be replaced with new hardware of equal size and stainless-steel grade.

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3. EXECUTIVE SUMMARY

3.1. Seawall

3.1.1. The seawall is in overall fair condition.

3.1.2. The seawall cap is in poor condition and requires repair work as described in Item 4.

Cost estimate for concrete restoration of seawall cap: \$15,000

3.1.3. An estimated length of 170-ft of new sheet pile footer should be installed to prevent further undermining and soil erosion along the seawall.

Cost estimate for a new sheet pile footer: \$35,000

4. CONDITIONS AND ASSUMPTIONS

4.1. GCE's findings and report are based on engineering judgment following typical industry standards.

4.2. This report is not intended or to be used as a guarantee or warranty.

4.3. GCE's observations are based on current conditions and no estimate of deterioration rate could be determined. Therefore, any time frames provided within this report should be adjusted if conditions change.

4.4. GCE shall not be held liable for any damage or loss resulting from the failure of inspected structures.

4.5. In providing estimates of probable construction cost, the Client understands that GCE has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing, and that GCE's estimates of probable construction costs are made on the basis of professional judgment and experience. GCE makes no warranty, express or implied, that the bids or the negotiated cost of the Project will not vary from GCE's estimate of probable construction cost.

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5. TYPICAL REPAIR PROCEDURES

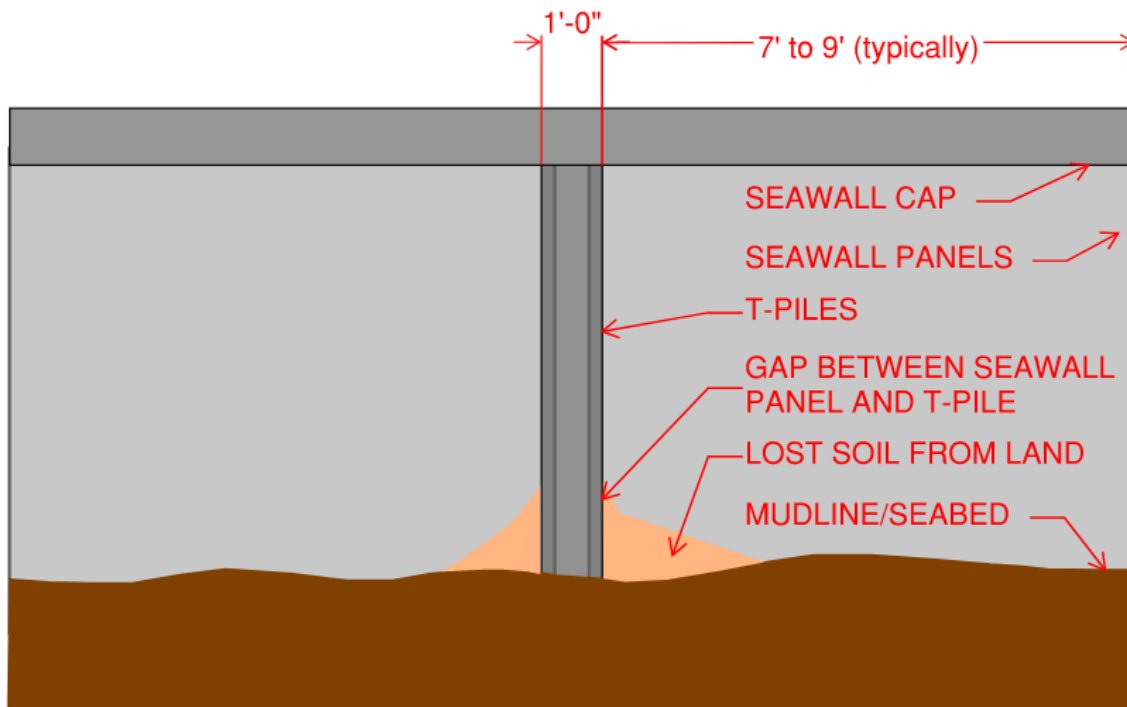
5.1. Repair of Honeycombing

- 1: Chip away all unsound and honeycombed concrete.
- 2: Patch all areas of chipped concrete with a 6-ksi non-shrink grout.

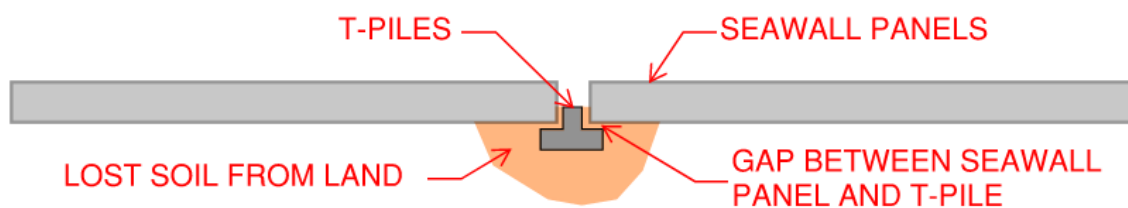
5.2. Repair of surface corrosion:

- 1: Chip away concrete in exposed area
- 2: Sandblast all corroded steel to remove all traces of corrosion and loose material.
- 3: Pressure wash steel and concrete to remove all traces of residual material.
- 4: Patch all areas of exposed steel and spalled concrete with a 6-ksi non-shrink grout.
- 5: Paint patched areas with at least two layers of a concrete waterproofing sealer.

6. SEAWALL DIAGRAM



FRONT VIEW OF SEAWALL



TOP VIEW OF SEAWALL