

Port Orange, Florida 32127 Christopher B. Longman, P.E., SI Ltd. FL License No. 82452

November 27, 2024 *Revised (Final) December 18, 2024*



November 27, 2024 Revised December 18, 2024 Project No: 24-1405

Errol By The Sea Condominium Association 4501 South Atlantic Avenue New Smyrna Beach, FL 32169

Attention: Condominium Board of Directors

Subject: Phase 1 Milestone Inspection Report Errol By The Sea Condominium 4501 South Atlantic Avenue, New Smyrna Beach, FL 32169

Dear Ladies and Gentlemen of the Board of Directors,

United Engineering Consultants, Inc. (UEC) is pleased to submit this report following our structural condition inspection of the Errol By The Sea Condominium located in New Smyrna Beach, Florida. This study was performed in accordance with the state mandated Phase 1 Milestone Inspection (FS 553.899 - Mandatory structural inspections for condominium and cooperative buildings). This report includes our findings and recommendations.

I. EXECUTIVE SUMMARY

The buildings are generally in fair structural condition. <u>There was no significant structural deterioration</u> <u>identified and a Phase 2 inspection is not recommended</u>. A substantial amount of concrete spalling damage was identified at the exterior of the structures, which is common for an older oceanfront concrete building. Damage was identified at the walkway, balcony and exterior wall elevations; however, the highest frequency of damage was at the walkways. Repairs are recommended to address the damaged areas noted in this report.

The primary cause of the concrete damage appears to be the corrosion of embedded reinforcing steel. The Errol By The Sea Condominium is located in a highly corrosive environment. Battling the effects of corrosion is an on-going effort that will require routine maintenance. The key to prolonging the life of a concrete structure in a coastal environment is keeping the concrete dry to prevent moisture and salt ions from penetrating the embedded steel. A waterproofing program is in-place to protect the structure, and maintenance is recommended to maintain the waterproof envelope.

II. STRUCTURAL DESCRIPTION

The Errol By The Sea Condominium is a 5-story condominium building located with direct oceanfront exposure. The building complex has a general "V" shape and includes 130 condominium units. Open air walkway corridors provide access to the condominium units. There are 5 stairwells and 3 elevators located at the walkway elevation. Each unit has an individual private balcony that is accessed through a sliding glass door. Common area storage rooms and mechanical rooms are located on the walkways. A free-standing single-story club house, office and maintenance shop is located at the Northwest section of the complex.

Original construction plans by Architect George A. Tuttle, Jr. were reviewed. The building structure is constructed of 6 inch thick prestressed hollow core concrete slabs with a reinforced topping that bears

on supporting columns, beams and load bearing CMU masonry walls. The slabs are specified with a concrete topping that is reinforced with a welded wire mesh and is 2-1/4 inch thick at the interior and 1-1/2 inch thick at the exterior. Reinforced concrete beams are constructed at the bottom edge of the walkway and balcony slabs and run parallel with the slab edges. The stairwell landing slabs are poured in place slabs and the stair tread slabs are a composite system with a steel framing.

The foundation is specified with a reinforced concrete spread footing below the load carrying walls and columns. Auger cast piles and concrete grade beams are specified at the Easternmost buildings (01-03 and 024-026 stacks). A retaining wall is constructed along the East oceanfront property line.

The exterior walls are constructed of CMU masonry and are finished with a painted stucco veneer. The topside of the exterior walkway and balcony slabs are finished with a decorative cementitious finish over a reported polyurethane waterproof coating. Aluminum guardrails are installed on the topside of the slab near the slab edge at the walkways and balconies. The guardrails are installed with surface mounted base plates and expansion anchors.

The plans show the condominium building roof structure is a flat roof with a roof covering installed over light weight concrete on a prestressed hollow core slab deck. Wood framed mansards are constructed above the top floor balconies and the window stacks at the balcony elevation of the building. The mansards have a metal panel roof system.

The sliding glass doors and windows varied in age and materials. Both PVC and aluminum products were observed. Many of the fenestrations appear to have been replaced since original construction.

It is our understanding that there have been multiple projects to repair and maintain the structure in the past and more recently, the Association has contracted to have smaller scale repair projects completed on an annual basis.



Figure 1: General building layout

III. INVESTIGATION METHODOLOGY

Representatives from United Engineering Consultants performed the field inspection on October 8 and 22, 2024. The survey was performed by State of Florida registered Professional Engineers Christopher Longman, P.E. and Timothy Snook, P.E. The Phase 1 Milestone Inspection process included

comprehensive visual observations of all accessible habitable and non-habitable areas, including the major structural components. The inspection at the Errol By The Sea Condominium included all balconies, walkways, unit interiors and common area rooms. Entry to units was accompanied by a representative from the Association to access the interior of the units and balconies. All units were accessed, with the exception of Units 202, 213 and 422. The inspection focused on determining the general condition of the structure and identifying significant structural deterioration, which is defined as the following per the state statue:

"Significant structural deterioration" means substantial structural distress or substantial structural weakness that negatively affects a building's general structural condition and integrity. The term does not include surface imperfections such as cracks, distortion, sagging, deflections, misalignment, signs of leakage, or peeling of finishes unless the licensed engineer or architect performing the phase one or phase two inspection determines that surface imperfections are a sign of substantial structural deterioration.

This study was not performed to evaluate the (original) structural design or code compliancy of the structure, but rather evaluate the condition of the existing elements. This study was focused on the building structure only and did not include a condition assessment of the individual windows and doors, roof system or mechanical, plumbing or electrical systems.

IV. SUMMARY OF MATERIAL FINDINGS

The following sections provide a comprehensive description of our findings and recommendations. Our observations are further depicted in the photographs in Appendix "A". Supporting data can be found Appendix "B".

Elevated Slabs: The elevated slabs were in good condition at the interior of the buildings and fair to poor condition at the exterior of the buildings. Many locations of concrete spalling damage were identified on the top, bottom and edge of the walkway and balcony slabs. Most areas were small in size per location (1-6 square feet), however; some larger areas were detected. Areas of topside spalling damage that were greater than 50 square feet in area were identified on the walkways near Units 523 (stairwell corridor), 519/518, 503, 323 (stairwell corridor), 323, 203 (stairwell corridor) and at the balconies of Units 425 and 418.

Large areas of overhead ceiling spalling damage were identified on the walkways near Units 213 (bridge), 401, 501 and 513. These locations may require full replacement of the overhead slab plank. Several larger area overhead spall repairs at the 5th floor level may require penetration through the roof system to be able to cast new concrete.

Location	Slab Topside Spalling, Square Feet	Slab Ceiling Spalling, Square Feet	Slab Edge Spalling, Cubic Feet			
Balcony	300	240	10			
Walkway	1465	750	85			

Figure 2: Location summary of slab spalling damage

An area of spalling in need of immediate repair was identified on the 3rd floor walkway near the stairwell between the 014 and 013 unit stacks. An overhead spall was significantly cracked and is a hazard for falling debris.

Building Walls and Columns: Cracking and concrete spalling damage was identified at the balcony and walkway elevation walls and columns. We estimated a total of approximately 405 cubic feet of wall and column damage. There was about 32% more spalling damage at the balcony elevation walls compared to the walkways. Many units had spalling damage on the bottom of the wall or the header adjacent to the sliding glass door. We estimated 34 units had damage adjacent to the sliding glass door and may require the door to be removed to make repairs. There were 52 window openings on the balcony side of the building with concrete damage around the opening, including the concrete sills.

At the walkway elevation, many of the columns located at the slab edge had spalling damage at the base of the column. Spalling damage was detected around swing door openings at several storage rooms and may require the door to be removed to make repairs. The average size of the spall at both walkway and balcony elevations was around 1-2 cubic feet in volume.

Beams: Spalling damage was identified at the walkway and balcony beams. The beams along the slab edge at the balconies had approximately 55 cubic feet of damage. At the walkways, spalling damage was identified at both the beam along the slab edge and the beam supporting the walkway slabs. In total, there was approximately 195 cubic feet of beam damage.

<u>Stairwells</u>: The metal framing at the stairwells was exhibiting light rust on the underside of the stair structural framing and on the topside of the stair tread nosing.

Foundation: The foundation was not accessible for the inspection. No structurally significant cracking was observed at the ground floor walls and columns.

<u>Waterproofing</u>: The waterproofing program is in good to fair condition. The vertical wall surfaces generally appeared to be in good condition with minimal stucco cracking. The waterproof coatings on the elevated slabs are in good condition condition, except where cracking is occurring on the top of the slabs. The sealants around windows and doors were in varying condition from good to poor. Oxidizing aluminum on the windows and doors were causing sealant failure at some locations. There is a significant amount of white color sealant applied to cracks on the exterior of the building, presumably a temporary repair to stop moisture ingress until concrete repairs can be made.

The expansion joint sealants at the walkways were commonly failing in adhesion. Rust spots, caused by ferrous metals at the surface of the paint finish, were observed at the balcony and walkway elevations.

<u>**Guardrails</u>**: The aluminum guardrails are in good condition. Very light oxidation below the finish has started but generally the finish is in good condition.</u>

<u>Windows and Sliding Glass Doors</u>: The condition of the windows and sliding glass doors varied significantly from new to poor condition. Some openings exhibited significant finish failure and severe oxidation of the aluminum frames.

V. DISCUSSIONS

Concrete spalling and cracking are caused by the expansion of reinforcing steel in the concrete when it corrodes. Corrosion is a slow process. It takes many years to start, but the rate of corrosion increases exponentially with time. As the steel corrodes, the cross-sectional area of the rebar expands and ultimately fractures the concrete. Corrosion of steel cannot be stopped, but it can be slowed and managed by proper protection activities and mitigation strategies. The most effective actions you can take to maintain the structure is to keep the concrete dry and isolate dissimilar metals. Concrete is a porous material which allows water and salt ions to penetrate to the embedded steel. We keep concrete dry and protected with properly sealed joints, waterproof coatings, paint and good quality

sliding glass doors and windows.

In simplified terms, the repair of concrete spalling is performed by excavating the concrete (jackhammering) to remove all fractured concrete and to expose all rusted reinforcing steel. The International Concrete Repair Institute has published guidelines that specify excavation geometry requirements and recommendations for preparing and re-casting the concrete. Depending on the condition of the exposed steel and considering the purpose of the steel, further excavation can sometimes be required to allow for new steel to be lap spliced to supplement diminished steel.

Where spalling extends below or behind a sliding glass door or window, removal of the fenestration may be required to make a proper concrete repair. There may be instances where the spalling stops at the frame and the fenestration would not be required to be removed. If the fenestration is removed, a temporary wood partition wall would be constructed in the unit, about 3 - 4 feet back from the opening, to provide protection to the interior.

Stopping water ingress is critical to slowing the corrosion process within the concrete. The exterior of the door and window frames are oxidizing at many units which manifests itself as pitting in the aluminum. A sealant will not properly bond to oxidizing aluminum, meaning sealing the door and stopping water intrusion will require frequent maintenance to the sealants.

The deck coating system currently applied is recommended to waterproof the topside of the slab. The polyurethane membrane is flexible to accommodate slab movement from thermal expansion and contraction. The full coating system will be required to be repaired where it is removed for concrete repair. Once all repairs are made, a final re-coat of acrylic topcoat can be applied to improve the aesthetics of the finish.

VI. CONCLUSIONS

We did not identify any evidence of substantial structural deterioration to any of the building components. Based on our findings, we are in the professional engineering opinion that the building is structurally sound and safe to occupy. A Phase II of the milestone inspection is not required.

We recommend the following areas of concrete damage be repaired in the next 12 months:

Walkway:

- Overhead beam near Unit 526
- Outside wall corner at Unit 526
- Overhead slab near Unit 525
- Overhead slab near Unit 513
- Overhead beam near Units 511/512
- Overhead slab and beam near Unit 424/425
- · Overhead slab near Unit 301
- · Overhead beam near Unit 301
- Overhead slab near Unit 313
- · Overhead slab near Unit 314 elevator corridor
- Overhead slab near Unit 224/225
- · Overhead beam near Unit 225
- · Overhead slab near Unit 126
- Building wall corner near Unit 126
- · Column at mailroom

Balcony:

- Wall between Units 509-510
- · Overhead slab Unit 410
- · Overhead slab Unit 420
- · Overhead slab Unit 422
- · Overhead beam Unit 318
- · Overhead slab Unit 301
- Overhead slab (X2) Unit 302
- Overhead slab Unit 102
- · Overhead beam Unit 114

The balance of damage identified should be repaired in the next 24 months. The Owner should monitor the exterior of the structure for potential fall hazards prior to starting construction. The repairs should be performed by a Licensed General Contractors who specializes in structural concrete repair. The repairs should also be inspected by an Engineer.

The spalling repair may require windows and sliding glass doors to be removed. Depending on the age, condition and code compliancy of the window or door, re-installation of the fenestration may be feasible. The Association should generally encourage Owners to update older windows and doors in an effort to prevent moisture intrusion and to protect the structure.

The sealant around windows and sliding glass doors should be replaced. Concrete repairs will likely remove or damage sections of the coating. Where the coating is breached, new polyurethane deck coating should be re-applied to achieve a continuous waterproof system on the top of the slabs.

The expansion joint sealants should be replaced with a flexible polyurethane sealant.

The metal framing at the stairwells should continue to be maintained. Areas of rust should be cleaned and painted for projection.

The paint manufacturer should be consulted for recommendations for painting the building. Typically, the manufacturer will specify a conditioner/primer and a coat of acrylic latex finish paint.

VII. REPORT LIMITATIONS

The proposed study is limited to accessible areas. Hidden defects may exist that were not in accessible areas or were covered by stucco or other finishes. The Association understands and agrees that UEC is specifically not liable for the discovery of hidden defects. UEC also reserves the right to change our opinion should new information be brought to our attention.

VIII. CLOSURE

Attached as enclosures are photographs of typical conditions observed (Appendix A) and a tabulation of the concrete damage (Appendix B).

This report is property of United Engineering Consultants and was prepared for the exclusive use of the Condominium Board of Directors as an instrument reflecting the services provided as detailed in our proposal. No other warranty is expressed or implied. The unauthorized use of this report for any purpose or by any third party is at the user's own risk.

Thank you for providing us the opportunity to work with you on this project.

Sincerely, UNITED ENGINEERING CONSULTANTS, INC.

Christopher B. Longman, P.E., SI Ltd. Project Engineer Florida State License No. 82452



This item has been electronically signed and sealed by Christopher B. Longman using a digital signature and date. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

APPENDIX A

PHOTOGRAPHS



Photograph #1 – East elevation aerial photograph



Photograph #2 – North elevation aerial photograph



Photograph #3 – South elevation aerial photograph



Photograph #4 – Typical walkway elevation



Photograph #5 – Typical balcony elevation



Photograph #6 – Typical walkway corridor



Photograph #7 – Typical elevator and stairwell corridor



Photograph #8 – Typical stairwell



Photograph #9: Typical balcony layout



Photograph #10 – Typical guardrail installation



Photograph #11 – Spalling damage above balcony sliding glass door (Unit 524)



Photograph #12 – Spalling damage at balcony wall and light fixture (Unit 521)



Photograph #13 – Cracking at window opening walls (Unit 522)



Photograph #14 – Cracking at window opening wall and sill (Unit 517)



Photograph #15 – Spalling damage about sliding glass door (Unit 509)



Photograph #16 – Spalling damage at balcony beam (Unit 409)



Photograph #17 – Spalling damage at balcony beam (Unit 411)



Photograph #18 – Spalling damage at wall adjacent to window (Unit 423)



Photograph #19 – Spalling damage above sliding glass door and behind storm shutter (Unit 426)



Photograph #20 – Spalling damage on balcony beam (Unit 323)



Photograph #21 – Spalling damage on balcony beam (Unit 307)



Photograph #22 – Spalling damage on window sill (Unit 215)



Photograph #23 – Typical balcony elevation window stack with cracking



Photograph #24 – Spalling damage inside 4th floor storage room



Photograph #25 – Spalling damage at top of slab near 5th floor elevator



Photograph #26 – Spalling damage on walkway beam (Near Unit 515)



Photograph #27 – Typical cracked stucco on walkway column adjacent to guardrail



Photograph #28 – Cracking on topside of walkway slab (near Unit 519)



Photograph #29 – Spalling damage on wall adjacent to walkway window (Unit 501)



Photograph #30 – Spalling damage on walkway beam (near Unit 415)



Photograph #31 – Overhead ceiling spalling damage near storage closet "3W" recommended for immediate action.



Photograph #32 – Cracking on the topside of the walkway slab (3rd floor)



Photograph #33– Typical mild rusting at stairwell metal framing



Photograph #34 – Failed sealant at oxidized sliding glass door frame (Unit 524)



Photograph #35 – Failing sliding glass door finish (Unit 508)



Photograph #36 – Failed sliding glass door finish and deteriorated sealant (Unit 224)



Photograph #37 – Typical failed expansion joint sealant

APPENDIX B

SUPPORTING DATA

4240 South Ridgewood Avenue, Suite 4, Port Orange, Florida 32127 • (386) 256-7684 • office@unitedengineeringconsultants.com Certificate of Authorization No. 6607

Spall Matrix: Errol By The Sea, New Smyrna Beach														
Balconies														
Unit	Slab Topside Spalling, Square Foot	Slab Topside Spalling, Minimum	Slab Ceiling Spalling, Square Foot	Slab Ceiling Spalling, Minimum	Slab Edge Spalling, Cubic Foot	Slab Edge Spalling, Minimum	Column/Wall Spalling, Cubic Foot	Column/Wall Spalling, Minimum	Beam Spalling, Cubic Foot	Beam Spalling, Minimum	Header, Cubic Foot	Header Spalling, Minimum	Window sill, Linear Foot	Rust Spots, Each
501							5						8	
401			16				3	1		1				
201							5					2		
101							1	-						
Subtotal 502	0	0	16	0	0	0	14	2	0	1	0	2	8	0
402	6						6				2			
302	25		20				2							
102			10								1			
Subtotal	31	0	30	0	0	0	15	2	0	0	3	0	0	0
403		1					2	1		1				
303							2	1						
203	4	1					5		2	1				
Subtotal	4	2	0	0	0	0	10	3	2	2	0	0	0	0
504							1	2						
404		1					2	1			1	1		
204									2		2	-		
104	_		<u> </u>				_	_	_		_	_		<u> </u>
Subtotal 505	U	1	Ű	U	U	U	3	3	2	U	3	1	U	U
405							1							
305				1			4		1					
105				1			2		2					
Subtotal	0	0	0	2	0	0	7	0	3	0	0	0	0	0
506							1	1						2
306														
206					1		2	4	1	1				
Subtotal	0	0	0	0	1	0	3	2	1	1	0	0	0	2
507							1							
407									1				6	
207				1	1									
107			<u>,</u>					<u>,</u>						
508	0	0	U	1	1	U	2	0	1	U	U	U	6	U
408							6							
308								4					2	
108							2	1	1					
Subtotal	0	0	0	0	0	0	10	1	1	0	0	0	2	0
509							1	1	1		1		2	
309														
209				1	1		4							
Subtotal	0	0	0	1	1	0	5	1	1	0	1	0	2	0
510							5							
310			4		2		3	1		2		1		
210														
110 Subtotal	0	0	4	1	2	0	2	1	0	2	0	٥	n	n
511	, ,	, 	•		-			·	, , , , , , , , , , , , , , , , , , ,	-	,		<u> </u>	<u> </u>
411								2	3					
211														
111			-			-		-						-
Subtotal 512	0	0	0	0	0	0	0	2	3	0	0	0	0	0
412							3			1				
312		1												
112				1			1							
Subtotal	0	1	0	2	0	0	6	0	0	1	0	0	0	0
513							25	1						
313			3				2.0			1				
213														
113 Subtotal	0	0	3	0	0	0	2.5	2	0	1	0	0	0	0
						-		-				-	-	

Balconies Continued														
Unit	Slab Topside Spalling, Square Foot	Slab Topside Spalling, Minimum	Slab Ceiling Spalling, Square Foot	Slab Ceiling Spalling, Minimum	Slab Edge Spalling, Cubic Foot	Slab Edge Spalling, Minimum	Column/Wall Spalling, Cubic Foot	Column/Wall Spalling, Minimum	Beam Spalling, Cubic Foot	Beam Spalling, Minimum	Header, CF	Header Spiling, Minimum	Window sill, LF	Rust Spots, Each
514								2					6	
414							2							
314	4			1			1						ļ!	
214			3					-	6					1
Subtotal	4	0	3	1	0	0	3	2	6	0	0	0	6	1
515							3						6	
415								1						
315	-		4	1		1	1	-						
215	6								1				0	
Subtotal	6	0	4	1	0	1	4	1	1	0	0	0	12	0
516							2							
416														
316	8		16				1		1	2				
116			10				1			1				
Subtotal	8	0	16	0	0	0	5	0	1	3	0	0	0	0
517													6	
417							2			2			'	
217		1			1		2	1						
117							1							
Subtotal	0	1	0	0	1	0	5	1	0	2	0	0	6	0
518							10	2						
418	80						5		2	1			6	
218								1	1			l	6	
118													-	
Subtotal	80	0	0	0	0	0	15	2	3	1	0	0	12	0
519	4			1			1							
319							1							
219							2		1					
119 Outstatel										1				
Subtotal 520	4	U	U	1	0	0	8	1	1	1	U	U		0
420			12				4			3	2	1		1
320								1						
220				1					1				6	
Subtotal	0	0	12	1	0	0	12	2	1	3	2	1	6	1
521						-	7		-	-			2	1
421	8		4						1					
321							1			4				
121				1			•		1				0	3
Subtotal	8	0	4	1	0	0	8	0	2	1	0	0	8	4
522							6	1						
422													'	
222					1		2	1					┝────┦	
122							4							
Subtotal	0	0	0	0	1	0	12	2	0	0	0	0	0	0
523		1					4 F							
423	12						5		2				<u>├</u> ───┤	
223							4		1					
123							7		1					
Subtotal	12	1	0	0	0	0	20	0	4	0	0	0	0	0
424	18					1	2	1	3		3 1		<u> </u>	
324	8		24	1			4							
224							1							1
124 Subtatal	26		24	4	<u> </u>	4	4	4	2	1				1
525	20	U	24		U	1	4	1	5	1	4	U	J	1
425	60			2						1				
325	32		8				2						6	
225			16	4			F		2	1		1	'	
Subtotal	92	0	ათ 59	3	0	0	5 11	1	3	2	0	1	6	1
526	6						4	<u> </u>	l Ť		-	· · · · · ·		· ·
426							1	1	1		2			
326		1	^		~		2	1						
126	4		30		3	1	4			1				
Subtotal	10	1	33	0	3	0	13	2	1	1	2	0	0	0
TOTAL	285	7	208	16	10	2	214.5	33	42	23	15	5	74	11

Walkways														
Floor	Slab Topside Spalling, Square Foot	Slab Topside Spalling, Minimum	Slab Ceiling Spalling, Square Foot	Slab Ceiling Spalling, Minimum	Slab Edge Spalling, Cubic Foot	Slab Edge Spalling, Minimum	Column/Wall Spalling, Cubic Foot	Column/Wall Spalling, Minimum	Beam Spalling, Cubic Foot	Beam Spalling, Minimum	Header Spalling, Cubic Foot	Window Sill, Linear Foot	Rust Spots, Each	Slab Full Depth, Cubic Foot
5	376	7	162	8	8	15	50	5	24	31	3		25	247
4	362	10	199	10	13	2	65	6	32.5	35	2	6	33	
3	460	8	101	6	19		23	2	22.5	9			14	
2	203	6	157	6	28	10	11	6	27	21	3		10	35
1			52	9			15	2	32.5	16			2	
ΤΟΤΑΙ	1401	31	671	39	68	27	164	21	138 5	112	8	6	84	282

END OF REPORT