



[REDACTED] Condominium Association, Inc.

Sarasota, FL 34234

[REDACTED]@gmail.com

Jul 3, 2024

Attention: [REDACTED] President

Regarding: [REDACTED] Condominium Structural Assessment
4.24-[REDACTED]

Mr. [REDACTED]

Dynamic Engineering Design & Inspection (Dynamic) performed a limited structural assessment at your request for [REDACTED] Condominium Association, Inc. ([REDACTED]). This report and its attachments contain the results of our assessment.

1. Purpose and Scope

The purpose of this assessment was to confirm the existing conditions, determine the structural load carrying capacity of the drop beam at the balcony slab edge, and provide preliminary recommendations for the structural reinforcement of the balcony beam, if required, to allow installation of hurricane rated sliding glass doors at the balcony edge.

The scope included a review of provided documents, interviews with available personnel, documentation of existing conditions after destructive investigation, and limited structural analysis.



2. Description & Background

██████████ Condominium consists of 2-story concrete and concrete masonry buildings. Based on the limited information available, Dynamic assumes that the floors and balconies are composite slabs, assumed to be Epicore. The buildings are over 40 years old.

Sliding glass doors have been installed on some of the second floor balconies and ██████████ of the condominium board, requested a structural analysis of the existing conditions to determine if the balcony beams can support these doors.

3. Documents Reviewed

Dynamic reviewed limited sections from the following documents:

- Structural drawings, circa 1978, prepared by ██████████ and Nalven

4. Interviews Performed

Additional information regarding the buildings and their history was provided by ██████████.

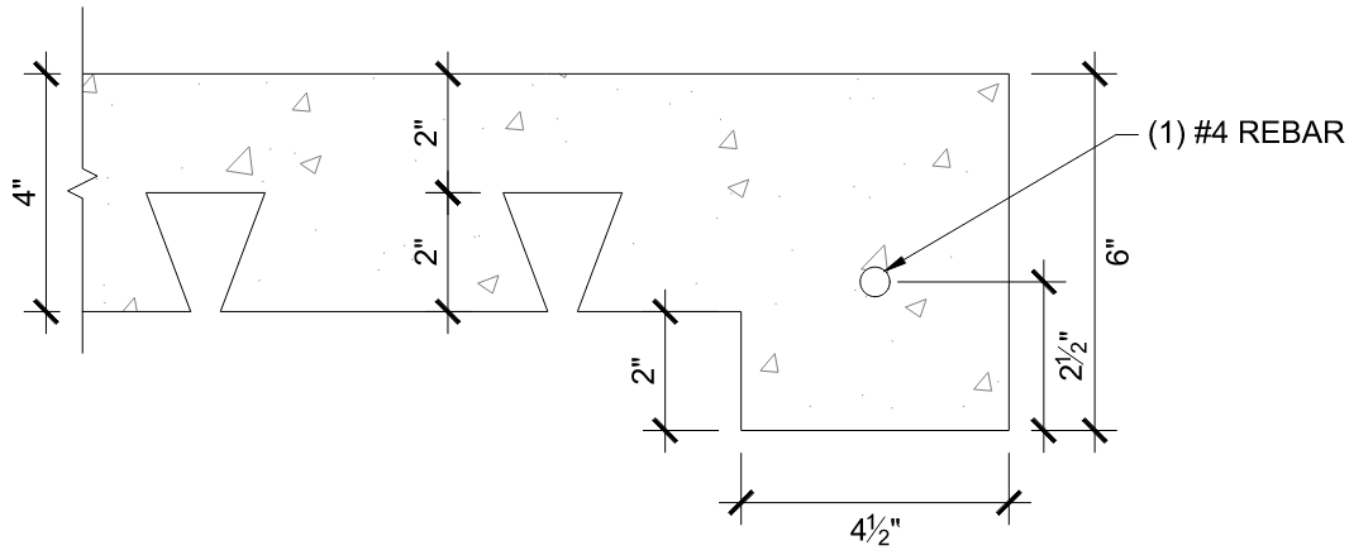
5. Observations

- Sliding glass doors have been installed at some of the edges of the balconies.
- Some of the balconies sag near the midspan.

6. Destructive Investigation

Concrete was removed from the slab edges of the balconies of units 4641, 4521, and 4543 ██████████ to determine existing conditions. The investigation revealed that the existing drop beam is 4.5 inches wide and 6 inches deep, with a #4 reinforcing steel bar 2.5 inches from the bottom of the beam. The balcony slab is a composite slab, assumed to be Epicore, and is 2 inches deep with a 2-inch topping slab. Please refer to the image below, and See Exhibits B, C, and D.





During the destructive investigation, Dynamic observed corrosion on the Epicore metal and corrosion on the reinforcing steel bar in the beam.

7. Limited Structural Analysis

Based on our limited structural analysis of the existing conditions without the sliding glass door installed above the beam, the beam has sufficient shear and moment capacity, but fails in long term deflection. See Exhibit A.

Considering the additional weight of the sliding glass door, the beam is over capacity in shear, moment and deflection. See Exhibit A.

8. Conclusions and Recommendations

Based on our assessment and analysis, sliding glass doors should not be installed at the edge of the balcony without reinforcing the beam.

Balconies that have had a sliding glass door installed should be temporarily shored until permanent reinforcement can be installed.

The beam can be reinforced with a steel 2x2x3/8 steel angle and a steel column at the midpoint.



Dynamic recommends developing a standard set of construction documents for the installation of hurricane-rated assemblies at the slab edges for unit owners to use for permitting and construction. Multiple recommendations for installation will be given to create a standard protocol for unit owners who want to enclose their lanai.

9. Limitations

This report has been prepared exclusively for Longwater Chase and its authorized representatives. No other person or entity may rely upon this report without written authorization from Dynamic.

The standard of care and skill for the services provided by Dynamic is consistent with the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Dynamic makes no warranties, express or implied, in connection with any services provided by Dynamic.

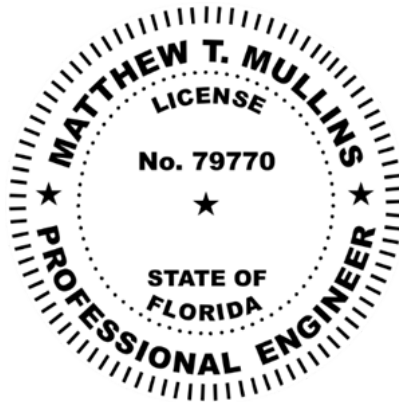
This analysis is limited to areas that were readily accessible and visible at the time of our site visit. Any areas of the facility that were concealed, inaccessible or not readily visible at the time of the site visit are not included. Unless explicitly stated in this report, extrapolations should not be made from the observations or opinions provided in this report.

The conclusions and recommendations offered in this report are based in part upon information gathered from the documents reviewed and interviews performed. While reasonable efforts were made to verify the existing conditions as reported, verifying the veracity of this information is beyond this scope of service.

The opinions in this report are based on information gathered from the documents reviewed, interviews performed, and site observations. Dynamic should be allowed to review any additional information that is discovered after the issuance of this report and determine if the original opinions should be revised.



We appreciate the opportunity to provide this assessment. Should you have any questions regarding this report, please do not hesitate to contact me.



Matthew Mullins, PE
RRC, RRO, CCS, CCCA
President
941-212-0398
mtmullins@dyneng.online
05/25/24

This item has been digitally signed and sealed by Matthew T. Mullins, PE on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Exhibit A: Beam Analysis

Exhibit B: 4543 [REDACTED] Photo Exhibits

Exhibit C: 4521 [REDACTED] Photo Exhibits

Exhibit D: 4641 [REDACTED] Photo Exhibits





Client:		Date:	Jun 28, 2024
Author:	Matthew Mullins	Job #:	4.24-0019
Project:	██████████	Subject:	Member Schedule

	Calculation	Member	Quantity	Comments
180%	Drop Beam - Original Conditions	3000 psi Concrete Beams	0.088 yd ³	
732%	Drop Beam - with Sliding Glass Door	3000 psi Concrete Beams	0.088 yd ³	



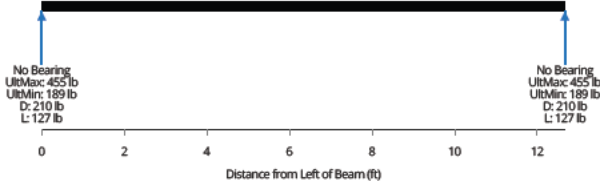
Client:		Date:	Jun 28, 2024
Author:	Matthew Mullins	Job #:	4,24
Project:		Subject:	Drop Beam - Original Conditions
References:	ACI 318-19		

FAIL

Summary

55%	Positive Moment Capacity	$\phi M_n^+ = 2640 \text{ lb} \cdot \text{ft}$
38%	Shear Capacity	$\phi V_n = 1200 \text{ lb}$
51%	Critical Live / Short-Term Deflection	$\delta_{ST} = -0.215 \text{ in}$
	Critical Live / Short-Term Deflection Ratio	$(L/)\delta_{ST} = 707$
180%	Critical Long-Term Deflection	$\delta_{LT} = -1.14 \text{ in}$
	Critical Long-Term Deflection Ratio	$(L/)\delta_{LT} = 133$

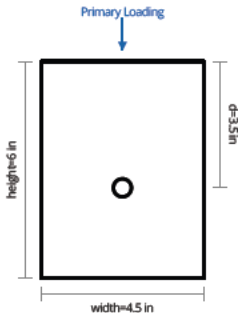
Reactions:



Key Properties

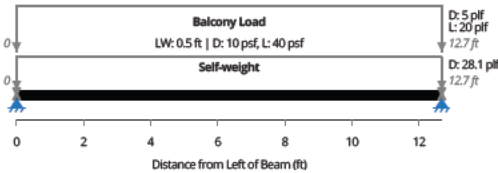
Cross-Section Height	$h = 6 \text{ in}$
Cross-Section Width	$b = 4.5 \text{ in}$
Total Length	$L = 12.7 \text{ ft}$
Concrete Strength	$f'_c = 3000 \text{ psi}$
Concrete Weight Classification	Normalweight
Reinforcement Strength	$f_y = 60\,000 \text{ psi}$
Concrete Cover	$\text{cover} = 1.5 \text{ in}$

Longitudinal Reinforcement at Midspan (Positive Moment Regions)



Total Reinforcement Area $A_s^+ = 0.196 \text{ in}^2$

Loads



Design Criteria

Design Code for Load Combinations $\text{code} = \text{International Building Code (IBC) 2021}$

Member Properties

Gross Area of Cross-section	$A_g = 27 \text{ in}^2$
Volume of Concrete	$Vol_c = 0.088 \text{ yd}^3$
Concrete Modulus of Elasticity	$E_c = 3\,320\,000 \text{ psi}$
Gross Moment of Inertia	$I_g = 81 \text{ in}^4$

Bending Capacity - Positive Moment (ACI 318-19, CI 22.3)

Neutral Axis Depth	$c^+ = 1.21 \text{ in}$
Strain At Extreme Tension Steel	$\epsilon_t = 0.00569$
Factored Flexural Strength	$\phi M_n^+ = 2640 \text{ lb} \cdot \text{ft}$

Shear Strength at Supports (ACI 318-19, CI 22.5)

Concrete Shear Strength	$V_c = 1600 \text{ lb}$
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Serviceability Requirements (ACI 318-19, CI 24)

Cracking Moment	$M_{\sigma} = 924 \text{ lb} \cdot \text{ft}$
Cracked Moment of Inertia - Positive Bending	$I_{\sigma}^+ = 11.6 \text{ in}^4$
Effective Service Moment of Inertia	$I_e = 16.2 \text{ in}^4$

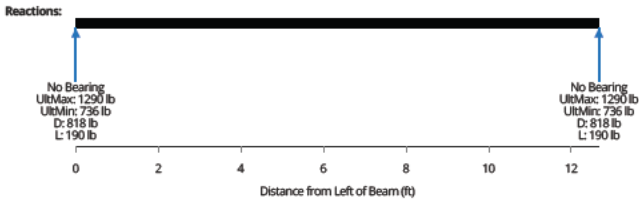
Comments



Client:		Date:	Jun 28, 2024
Author:	Matthew Mullins	Job #:	
Project:		Subject:	Drop Beam - with Sliding Glass Door FAIL
References:	ACI 318-19		

Summary

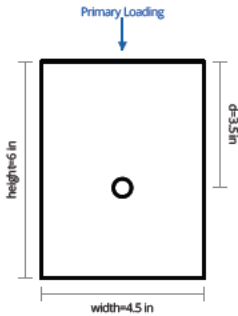
154%	Positive Moment Capacity	$\phi M_n^+ = 2640 \text{ lb} \cdot \text{ft}$
107%	Shear Capacity	$\phi V_n = 1200 \text{ lb}$
104%	Critical Live / Short-Term Deflection	$\delta_{ST} = -0.437 \text{ in}$
	Critical Live / Short-Term Deflection Ratio	$(L/\delta)_{ST} = 348$
732%	Critical Long-Term Deflection	$\delta_{LT} = -4.64 \text{ in}$
	Critical Long-Term Deflection Ratio	$(L/\delta)_{LT} = 32.8$



Key Properties

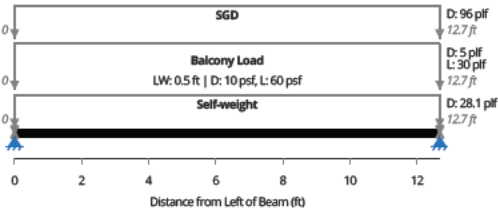
Cross-Section Height	$h = 6 \text{ in}$
Cross-Section Width	$b = 4.5 \text{ in}$
Total Length	$L = 12.7 \text{ ft}$
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Concrete Weight Classification	Normalweight
Reinforcement Strength	$f_y = 60\,000 \text{ psi}$
Concrete Cover	$\text{cover} = 1.5 \text{ in}$

Longitudinal Reinforcement at Midspan (Positive Moment Regions)



Total Reinforcement Area $A_s^+ = 0.196 \text{ in}^2$

Loads



Design Criteria

Design Code for Load Combinations	$\text{code} = \text{International Building Code (IBC) 2021}$
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Member Properties

Gross Area of Cross-section	$A_g = 27 \text{ in}^2$
Volume of Concrete	$Vol_c = 0.088 \text{ yd}^3$
Concrete Modulus of Elasticity	$E_c = 3\,320\,000 \text{ psi}$
Gross Moment of Inertia	$I_g = 81 \text{ in}^4$

Bending Capacity - Positive Moment (ACI 318-19, CI 22.3)

Neutral Axis Depth	$c^+ = 1.21 \text{ in}$
Strain At Extreme Tension Steel	$\epsilon_t = 0.00569$
Factored Flexural Strength	$\phi M_n^+ = 2640 \text{ lb} \cdot \text{ft}$

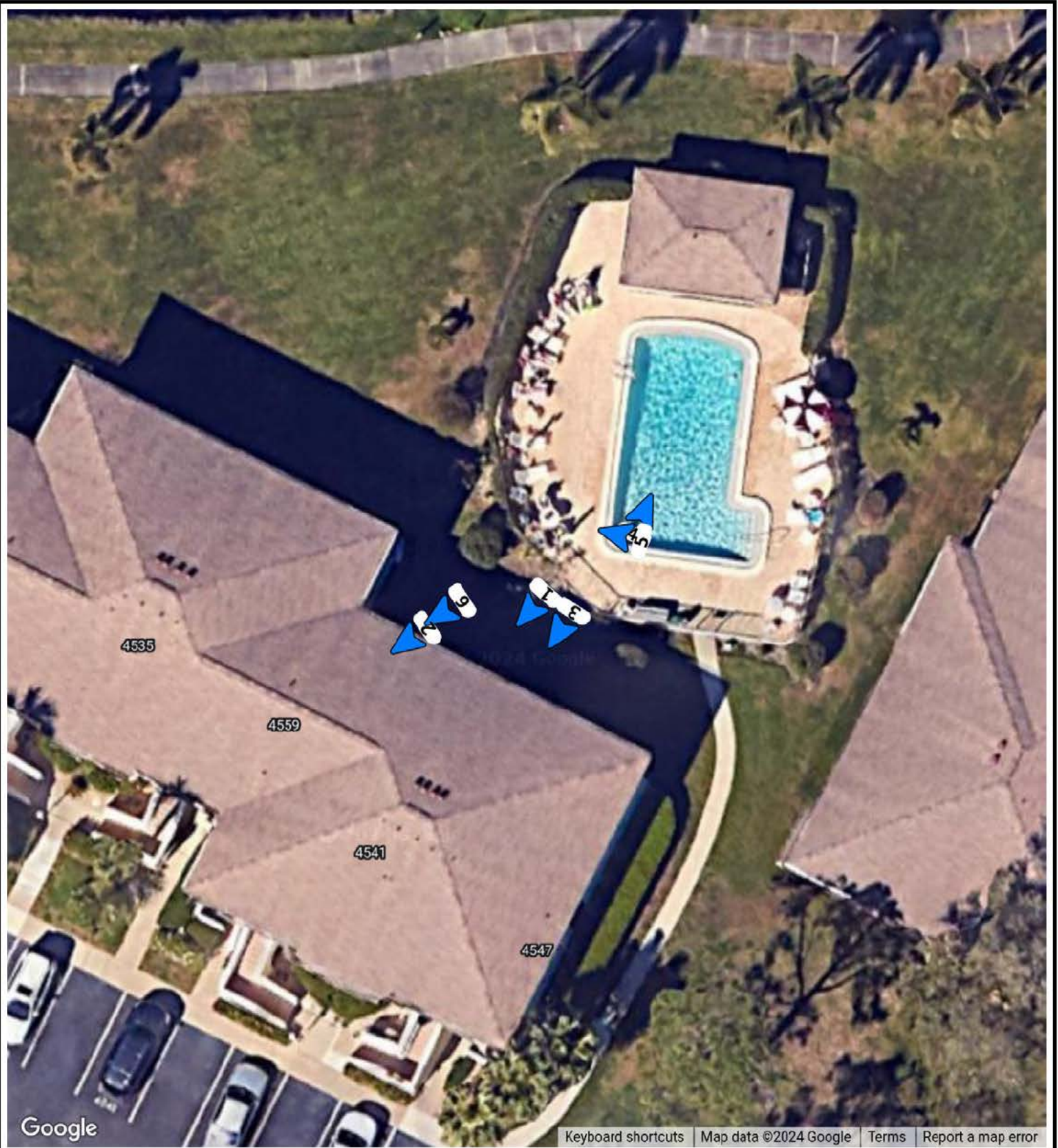
Shear Strength at Supports (ACI 318-19, CI 22.5)

Concrete Shear Strength	$V_c = 1600 \text{ lb}$
-------------------------	-------------------------

Serviceability Requirements (ACI 318-19, CI 24)

Cracking Moment	$M_{cr} = 924 \text{ lb} \cdot \text{ft}$
Cracked Moment of Inertia - Positive Bending	$I_{cr}^+ = 11.6 \text{ in}^4$
Effective Service Moment of Inertia	$I_e = 12 \text{ in}^4$

Comments



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Project Name: ██████████ Condominium Structural Assessment

Project Location: ██████████ Sarasota, FL 34234, USA

Client: ██████████

Project Code: 4.24-██████

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 1 of 4



Media 1: Unit overview

Lat: 27.36224

Long: -82.47440

Bearing: SW

Date Taken: 06/20/2024

Weather: Overcast

Taken By: Emerson Chapelle

Tags: 4543



Media 2: Demolition of slab edge

Lat: 27.36222

Long: -82.47446

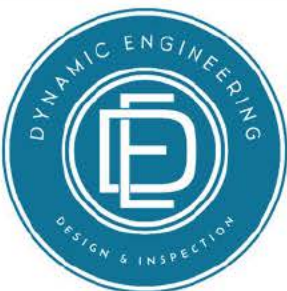
Bearing: SW

Date Taken: 06/20/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4543



Project Name: ██████████ Condominium Structural Assessment

Project Location: ██████████ Sarasota, FL 34234, USA

Client: ██████████

Project Code: 4.24 ██████████

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 2 of 4



Media 3: Demolition of slab edge

Lat: 27.36223

Long: -82.47439

Bearing: SW

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4543



Media 4: Existing lathe over furring strip

Lat: 27.36228

Long: -82.47435

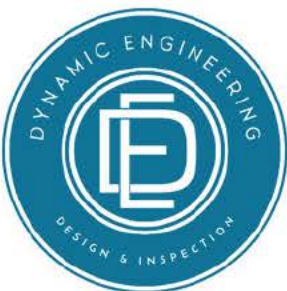
Bearing: NE

Date Taken: 06/20/2024

Weather: Overcast

Taken By: Emerson Chapelle

Tags: 4543



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED], FL 34234, USA

Client: Longwater Chase

Project Code: 4.24 [REDACTED]

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 3 of 4



Media 5: Steel reinforcement micrometer measurement

Lat: 27.36227

Long: -82.47436

Bearing: W

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4543



Media 6: Slab edge depth measurement

Lat: 27.36224

Long: -82.47444

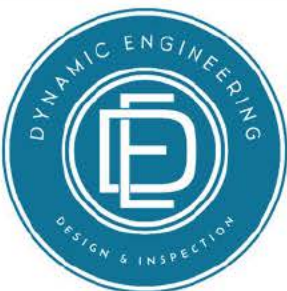
Bearing: SW

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4543



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED], FL 34234, USA

Client: [REDACTED]

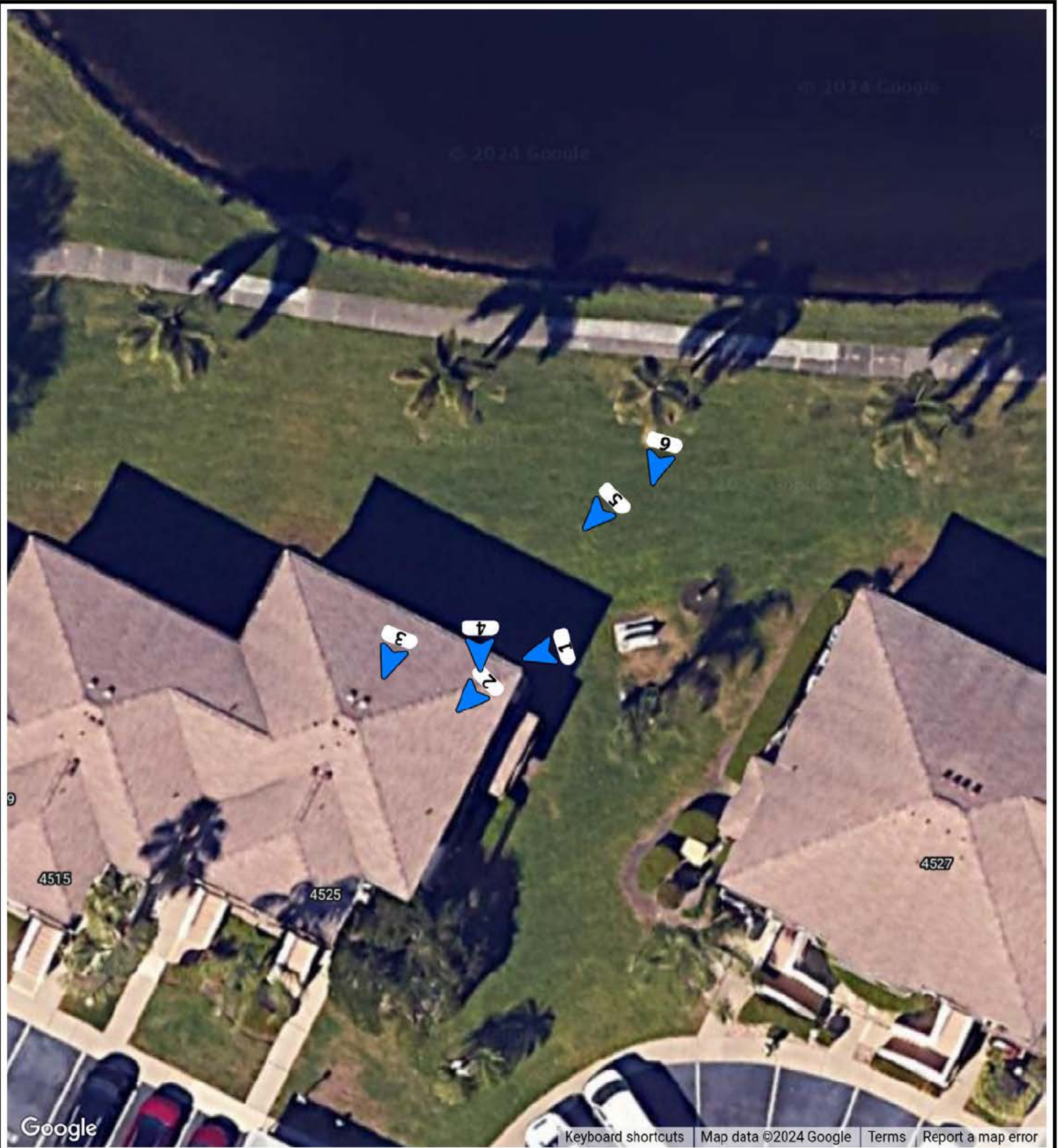
Project Code: 4.24-[REDACTED]

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 4 of 4



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Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED], FL 34234, USA

Client: [REDACTED]

Project Code: 4.24-[REDACTED]

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 1 of 4



Media 1: Unit overview

Lat: 27.36234

Long: -82.47494

Bearing: W

Date Taken: 05/31/2024

Weather: Sunny

Taken By: Emerson Chapelle

Tags: 4521



Media 2: Slab edge view

Lat: 27.36232

Long: -82.47498

Bearing: SW

Date Taken: 05/31/2024

Weather: Sunny

Taken By: Emerson Chapelle

Tags: 4521



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED], FL 34234, USA

Client: [REDACTED]

Project Code: 4.24 [REDACTED]

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 2 of 4



Media 3: Slab edge damaged
concrete removed

Lat: 27.36234

Long: -82.47501

Bearing: S

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4521



Media 4: Steel reinforcement
depth

Lat: 27.36235

Long: -82.47497

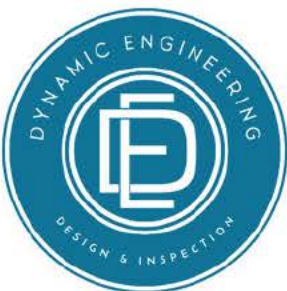
Bearing: S

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4521



Project Name: [REDACTED] Structural Assessment

Project Location: [REDACTED], FL 34234, USA

Client: Longwater Chase

Project Code: 4.24-[REDACTED]

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 3 of 4



Media 5: Epicore depth in slab edge

Lat: 27.36240

Long: -82.47491

Bearing: SW

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4521



Media 6: Micrometer reading of steel reinforcement

Lat: 27.36243

Long: -82.47488

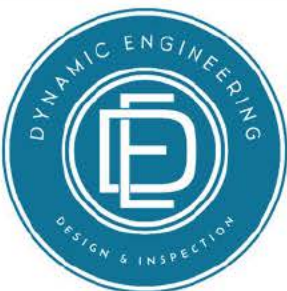
Bearing: S

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4521



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED], FL 34234, USA

Client: [REDACTED]

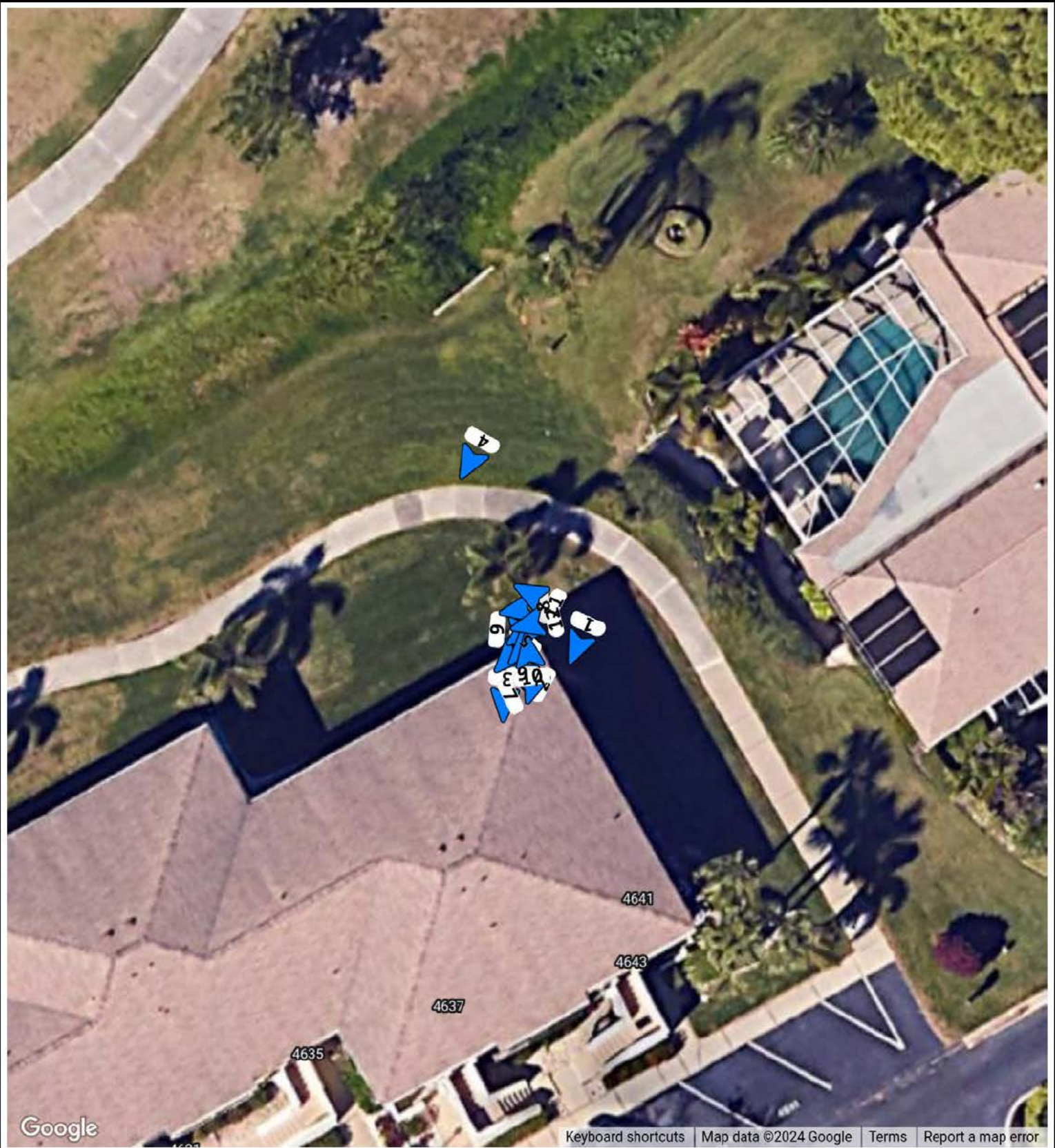
Project Code: 4.24-[REDACTED]

Preparer: EMC

Reviewer: MTM

Report Date: 2024-06-28

Page Number: 4 of 4



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Project Name: [REDACTED] Condominium Structural Assessment	
Project Location: [REDACTED], FL 34234, USA	
Client: Longwater Chase	Project Code: [REDACTED]
[REDACTED]	[REDACTED]
Report Date: 2024-06-26	Page Number: 1 of 7



Media 1: 4641 Longwater Chase

Lat: 27.36284

Long: -82.47322

Bearing: SW

Date Taken: 06/20/2024

Weather: Overcast

Taken By: Emerson Chapelle

Tags: 4641



Media 2: Existing condition
at underside of balcony

Lat: 27.36283

Long: -82.47325

Bearing: NW

Date Taken: 05/31/2024

Weather: Sunny

Taken By: Emerson Chapelle

Tags: 4641



Project Name: ██████████ Condominium Structural Assessment

Project Location: ██████████ Sarasota, FL 34234, USA

Client: ██████████

Project Code: 4.24 ██████████

Preparer: Emerson Chapelle

Reviewer: Matthew Mullins

Report Date: 2024-06-26

Page Number: 2 of 7



Media 3: Existing condition
at balcony slab edge

Lat: 27.36282

Long: -82.47326

Bearing: S

Date Taken: 05/31/2024

Weather: Sunny

Taken By: Emerson Chapelle

Tags:



Media 4: Exposed underside of
balcony showing Epicore
decking.

Lat: 27.36292

Long: -82.47328

Bearing: SW

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4641



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED] FL 34234, USA

Client: [REDACTED]

Project Code: 4.24-[REDACTED]

Preparer: Emerson Chapelle

Reviewer: Matthew Mullins

Report Date: 2024-06-26

Page Number: 3 of 7



Media 5: Opened slab edge face showing rebar chair.

Lat: 27.36284

Long: -82.47326

Bearing: SW

Date Taken: 06/20/2024

Weather: Overcast

Taken By: Emerson Chapelle

Tags: 4641



Media 6: Epicore decking showing signs of corrosion at the edge.

Lat: 27.36285

Long: -82.47325

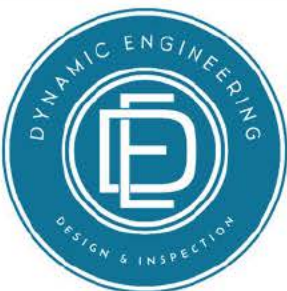
Bearing: E

Date Taken: 06/20/2024

Weather: Overcast

Taken By: Emerson Chapelle

Tags: 4641



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED] FL 34234, USA

Client: [REDACTED]

Project Code: 4.24-0 [REDACTED]

Preparer: Emerson Chapelle

Reviewer: Matthew Mullins

Report Date: 2024-06-26

Page Number: 4 of 7



Media 7: Width of Epicore panels

Lat: 27.36283

Long: -82.47325

Bearing: NE

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4641



Media 8: Depth of Epicore panels.

Lat: 27.36286

Long: -82.47325

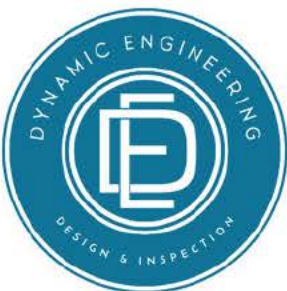
Bearing: W

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4641



Project Name: [REDACTED] Condominium Structural Assessment

Project Location: [REDACTED] FL 34234, USA

Client: [REDACTED]

Project Code: 4.24 [REDACTED]

Preparer: Emerson Chapelle

Reviewer: Matthew Mullins

Report Date: 2024-06-26

Page Number: 5 of 7



Media 9: Depth of potential drop beam to edge of cementitious stucco material.

Lat: 27.36284

Long: -82.47325

Bearing: N

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4641



Media 10: Depth of drop beam to Epicore decking.

Lat: 27.36284

Long: -82.47325

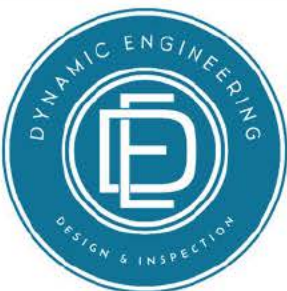
Bearing: N

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: No Tag



Project Name: [REDACTED] Condominium Structural Assessment

Project [REDACTED] [REDACTED] Sarasota, FL 34234, USA

Client: [REDACTED]

Project Code: 4.24 [REDACTED]

Preparer: Emerson Chapelle

Reviewer: Matthew Mullins

Report Date: 2024-06-26

Page Number: 6 of 7



Media 11: Width of drop beam on interior of unit at screen cage.

Lat: 27.36286

Long: -82.47324

Bearing: NW

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4641



Media 12: Width of drop beam at exterior of screen cage.

Lat: 27.36285

Long: -82.47325

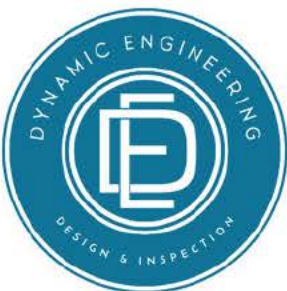
Bearing: W

Date Taken: 06/24/2024

Weather: Patchy rain possible

Taken By: Emerson Chapelle

Tags: 4641



Project Name: ██████████ Condominium Structural Assessment

Project Location: ██████████ Sarasota, FL 34234, USA

Client: ██████████

Project Code: 4.24-████████

Preparer: Emerson Chapelle

Reviewer: Matthew Mullins

Report Date: 2024-06-26

Page Number: 7 of 7