

---

**STRUCTURAL INTEGRITY RESERVE STUDY**  
FOR  
**WILLOUGHBY CRESCENT**  
940 SE WILLOUGHBY TRACE  
STUART, FLORIDA 34994

PREPARED FOR:

WILLOUGHBY CRESCENT CONDOMINIUM ASSOCIATION, INC.  
920 c/o  
~~940~~ SE WILLOUGHBY TRACE  
STUART, FLORIDA 34994

PREPARED BY: CARTER A. NELSON, R.S., E.I.T.  
SCOTT C. BERNARD, M.S., P.E.  
RON MAGGARD, P.G.



5001 N NEBRASKA AVE.  
SUITE A  
TAMPA, FLORIDA 33603

OCTOBER 2024



## TABLE OF CONTENTS

---

<b>I. STRUCTURAL INTEGRITY RESERVE STUDY DETERMINATION.....</b>	<b>1</b>
A. Methodology and Assumptions.....	1
B. Summary of Replacement Reserve Needs .....	3
1. Technical Definitions .....	3
C. Executive Summary .....	5
D. Replacement Reserve Requirements .....	6
<b>II. RESERVE CASH FLOW ANALYSIS .....</b>	<b>7</b>
A. Introduction.....	7
1. Formula.....	8
2. Definitions.....	8
B. Projected Cash Flow Graph and Chart.....	8
C. Recommendations and Conclusions.....	9
<b>DISCLOSURES.....</b>	<b>11</b>
<b>BIOGRAPHY .....</b>	<b>12</b>
<b>LIMITATION OF RESPONSIBILITY.....</b>	<b>13</b>
<b>GLOSSARY OF TERMS.....</b>	<b>15</b>
<b>BIBLIOGRAPHY .....</b>	<b>16</b>
<b>PHOTOGRAPHS.....</b>	<b>17</b>

## **I. STRUCTURAL INTEGRITY RESERVE STUDY DETERMINATION**

### **A. METHODOLOGY AND ASSUMPTIONS**

A Structural Integrity Reserve Study (SIRS) is a report giving an estimate of the amount of money that must be put aside to replace or restore structural elements of the building(s) that will require replacement before the community's use expires. Per the Florida Statute Title XXXIII, Chapter 553, Section 899 and in conformance with the scope of work specified in SB 4-D & SB 154 – Building Safety, Dated May 26, 2022, and all other executed amendments to SB 4-D & SB 154, revisions Dated May 04, 2023, and, signed by the governor on June 09, 2023, passed by the state as per the date of this report, this includes the following components: Roof, load bearing walls and other primary structural members, fireproofing & fire safety, common area plumbing, common area electrical systems, exterior painting & waterproofing, and windows/exterior doors if the Association is responsible, as well as any other items that have deferred maintenance expense or replacement cost that exceeds \$10,000 and the failure to replace or maintain such time negatively affects the previously listed components.

The commonly accepted guidelines, as established by the previously mentioned governing statutes, the Community Associations Institute, and our engineering judgment and experience have been used as a basis for the reserve schedule in this report. The schedule, when implemented in conjunction with a well-planned preventive maintenance program, will provide adequate funds for the replacement of the community's SIRS elements as they reach the end of their useful lives or are experiencing deferred maintenance. In order to ensure that this schedule remains current, a reassessment of the existing condition and replacement costs for each item is necessary at regular intervals as recommended within the report. Updating the schedule, reduction of the useful lives, and inflation of the replacement costs may be executed with the benefit of re-inspection. The schedule must also be adjusted as common elements are added or modified.

It is important to note that a reserve item is a SIRS component that will require repair or replacement on a recurring basis using a similar cost item. If an upgrade is necessitated due to a cost change or other extraordinary reason, the cost over and above the replacement cost is considered to be a capital improvement rather than a capital replacement. Capital

improvements should not be funded from the reserves. After it has been upgraded, the item will then become part of the reserve schedule.

Method of Accounting

The Method used in the Structural Integrity Reserve Study is the “Cash Flow” Method and the funding plan utilized is the Baseline Funding. The goal of this funding method is to keep the reserve cash balance above zero. This means that while each individual component may not be fully funded, the reserve balance does not drop below zero during the projected period.

Level of Service

The SIRS inventory was established based on information provided by the association’s representative, field measurements, and/or drawing take-offs.

## B. SUMMARY OF REPLACEMENT RESERVE NEEDS

### 1. TECHNICAL DEFINITIONS

This page is a summary of each of the different categories within the detailed schedule. It shows the total dollar amounts for each category and is based on the full funding of each item.

The Following are descriptions of the different variables, which are shown on the reserve schedule in the order in which they appear.

#### Description

This column on the schedule lists all of the components for which we recommend that reserves be accumulated. The basis for the selection of these items includes:

- Review of the governing documents regarding the common and limited common elements.
- Review of all available maintenance contracts.
- The type of component and its anticipated full useful life and condition.
- A review of applicable statutes dealing with reserve requirements.

#### Quantity

The quantities that are used as a basis for this report are calculated from field measurements and drawings that have been supplied to Ray Engineering, Inc. Ray Engineering, Inc. has not made extensive as-built measurements, and the quantities used are based primarily on the reference materials provided.

#### Unit Cost

The construction and replacement costs used in this report are based primarily on the various publications written by the R.S. Means Company and the construction-related experience of Ray Engineering. The publications are listed in the Bibliography.

### Reserve Requirements Present Dollars

This is calculated by multiplying the “quantity” by the “unit costs”.

### Existing Reserve Fund

This is an allocation of the total existing reserve funds to the individual line items using a weighing factor which is based on the total “reserve requirement present dollars”, the “estimated remaining life”, and other factors. An existing balance was submitted to Ray Engineering, Inc. This balance was used in developing our SIRS.

### Estimated Useful Life

The useful life values that are part of this report come from a variety of sources, some of which are listed in the Bibliography. In order to ensure that all items attain their anticipated useful lives, it is imperative that a well-planned maintenance schedule be adhered to. If an existing item is replaced with an upgraded product, the estimated remaining life has been listed for the new product.

### Estimated Remaining Life

The estimated remaining life is based on both the age of the component and the results of the field inspections conducted in June 2024.

### Annual Reserve Funding

The reserve requirement present value was converted to the future value for the time in which each replacement will occur. A 3.5% compounded inflation rate has been assumed. The future value was then converted to an annual reserve fund value. The arithmetic calculations and formulas are indicated later in this report.

C. EXECUTIVE SUMMARY

Willoughby Crescent includes one condominium building located in Stuart, Florida. The property was approximately 16 years old at the time of our site visit. The residential structure was constructed as a three-story, reinforced concrete structure, supporting perimeter strip footings along load bearing and shear walls. The roofs appear to be a hip roof, consisting of wood-framed trusses. It should be noted that we were not provided access to the roof attic to inspect the framing; however, we did not observe visible structural issues that would require entry into the attic spaces. Based on our visual inspection and experience with construction methods, the buildings do not appear to be a post-tension or pre-tensioned structure, in addition, we did not encounter evidence to warrant testing to confirm. The exterior of the building consists of stucco veneer finishes, enclosed balconies along the rear elevations, open breezeways with a railing along the front elevation, two stairwells, and an elevator area.

The most abundant issues we observed at the property were the surface cracking of the paint covered stucco surfaces of the residential structure and presented as relatively normal for a building of this type of age and construction. Many of the other issues observed in this report are typical and should be repaired per the schedule as they have already exceeded the normal maintenance schedule timing.

This SIRS is prepared for the fiscal year starting January 1, 2025. It is our recommendation that the annual contribution be \$53,000 from 2025 - 2035, then increased to \$235,000 in 2036 -2039, to afford multiple large projects in a short amount of time. After 2039, the annual contribution can then be reduced back to \$53,000 for the remainder of the reserve study. This is equivalent to \$3,533 and \$15,66 per year, per residential unit. For a review of the funding requirements for the next 20 years, please refer to the “Cost and Funding Recap” included as a part of this report.

D. REPLACEMENT RESERVE REQUIREMENTS

**SCHEDULE I**

Exterior/Interior Building

**SCHEDULE II**

Electrical /Plumbing/Fire Safety

---

**YEAR-BY-YEAR FUNDING RECAP - ALL ITEMS**

**COST AND FUNDING RECAP**

**ITEMIZED PROJECT COSTS BY YEAR**





PROJECT NAME	WILLOUGHBY CRESCENT
INFLATION RATE	3.50%
YIELD ON RESERVE FUNDS	0.00%
BEGINNING YEAR OF FUNDING	2025
PLANNING HORIZON	30 yrs

PRINTED ON: 7/31/2024 14:54

RESERVE EXPENDITURES

COMPONENT DESCRIPTION	UNITS	UNIT QUANTITY	UNIT COST	TOTAL COST	ESTIMATED UNPL. EST.	ESTIMATED REMAINING EST.	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031				
<b>IMPERVIOUS ROOF BUILDING MAINTENANCE ITEMS</b>																											
Roofing - Membrane - Replacement	S.F.	14,289	\$20.00	\$285,780.00	33	13																					
Flat Roof - Replacement	S.F.	3,423	\$30.00	\$102,690.00	20	5																		\$593,052			
Roofing Membrane - Repairs As Needed	Allow	1	\$10,000.00	\$10,000.00	20	0						\$138,781.1															
Flashing & Downspouts - Repairs As Needed	Allow	1	\$7,500.00	\$7,500.00	20	0																					
Roofing Membrane - Aircrete Deck	S.F.	13,743	\$8.50	\$116,815.50	10	4					\$80,569.8		\$7,217.4												\$113,469.1		
Structural Cracking - Removal and Repair	S.F.	3,500	\$75.00	\$262,500.00	25	8																					
														\$11,520.8													
<b>TOTAL IMPERVIOUS ROOF BUILDING MAINTENANCE ITEMS</b>							60	60	60	60	168,370	\$138,781	\$11,511	60	\$115,211	60	60	60	60	60	60	60	60	\$593,059	\$113,469	60	60



**RESERVE EXPENDITURES**

COMPONENT DESCRIPTION INVENTORY				ESTIMATED	ESTIMATED	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041												
UNITS	UNIT	UNIT	TOTAL	EXPENSE	REMAINING																																							
QUANTITY	COUNTRY	CODE	AMOUNT																																									
<b>ELECTRICAL/MECHANICAL/PUMPING ITEMS</b>																																												
15	S.F.	18,400	\$1,200	\$18,400.00	17	0																																						
15	S.F.	18,400	\$3.00	\$55,200.00	49	11																																						
34	Unit	4	\$3,500.00	\$13,900.00	15	0																															\$181,593.3							
35	Align	1	\$30,000.00	\$30,000.00	15	0																																						
36	E.A.	4	\$1,500.00	\$6,000.00	10	11																															\$11,182.3							
<b>TOTAL ELECTRICAL/MECHANICAL/PUMPING ITEMS</b>																																												
<b>TOTAL</b>								\$11,560	50	50	\$9	\$9	\$50,891	50	\$44,976	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	\$31,511	\$50,891	\$118,311	\$44,976	10	10	10	\$35,455	\$194,945	\$18,710	50



FULLY FUNDED BALANCE EXTERIOR/INTERIOR BUILDING MAINTENANCE ITEMS DESCRIPTION SCHEDULE I															
	First Replacement			Second Replacement			Third Replacement			Fourth Replacement			Fifth Replacement		
	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced
1 Concrete Tile Roof - Replacement	2038	\$593,959	\$42426	2068			2098			2128			2158		
2 Flat Roof - Replacement	2030	\$138,781	\$23130	2050	\$276,145	\$13807	2070			2090			2110		
3 Concrete Tile Roof - Repairs As Needed	2031	\$12,293	\$1736	2051	\$24,460	\$1223	2071			2091			2111		
4 Gutters & Downspouts - Repairs As Needed	2031	\$9,219	\$1317	2051	\$18,345	\$917	2071			2091			2111		
5 Exteriors Stucco - Repair/Paint	2029	\$80,370	\$16074	2039	\$113,369	\$11337	2049	\$159,919	\$15992	2059			2069		
6 Driveway Coating - Remove and recoat	2033	\$115,221	\$12802	2058			2083			2108			2133		
7	2025	0		2025	0		2025	0		2025	0		2025	0	
8	2025	0		2025	0		2025	0		2025	0		2025	0	
9	2025	0		2025	0		2025	0		2025	0		2025	0	
10	2025	0		2025	0		2025	0		2025	0		2025	0	
11	2025	0		2025	0		2025	0		2025	0		2025	0	
12	2025	0		2025	0		2025	0		2025	0		2025	0	
13	2025	0		2025	0		2025	0		2025	0		2025	0	
14	2025	0		2025	0		2025	0		2025	0		2025	0	
15	2025	0		2025	0		2025	0		2025	0		2025	0	
16	2025	0		2025	0		2025	0		2025	0		2025	0	
17	2025	0		2025	0		2025	0		2025	0		2025	0	
18	2025	0		2025	0		2025	0		2025	0		2025	0	
19	2025	0		2025	0		2025	0		2025	0		2025	0	
20	2025	0		2025	0		2025	0		2025	0		2025	0	
21	2025	0		2025	0		2025	0		2025	0		2025	0	
22	2025	0		2025	0		2025	0		2025	0		2025	0	
23	2025	0		2025	0		2025	0		2025	0		2025	0	
24	2025	0		2025	0		2025	0		2025	0		2025	0	
25	2025	0		2025	0		2025	0		2025	0		2025	0	
26	2025	0		2025	0		2025	0		2025	0		2025	0	
27	2025	0		2025	0		2025	0		2025	0		2025	0	
28	2025	0		2025	0		2025	0		2025	0		2025	0	
29	2025	0		2025	0		2025	0		2025	0		2025	0	
30	2025	0		2025	0		2025	0		2025	0		2025	0	
31	2025	0		2025	0		2025	0		2025	0		2025	0	
32	2025	0		2025	0		2025	0		2025	0		2025	0	
33	2025	0		2025	0		2025	0		2025	0		2025	0	
34	2025	0		2025	0		2025	0		2025	0		2025	0	
35	2025	0		2025	0		2025	0		2025	0		2025	0	
36	2025	0		2025	0		2025	0		2025	0		2025	0	
37	2025	0		2025	0		2025	0		2025	0		2025	0	
38	2025	0		2025	0		2025	0		2025	0		2025	0	
39	2025	0		2025	0		2025	0		2025	0		2025	0	
40	2025	0		2025	0		2025	0		2025	0		2025	0	

FULLY FUNDED BALANCE ELECTRICAL/MECHANICAL/PLUMBING MAINTENANCE ITEMS DESCRIPTION SCHEDULE II															
	First Replacement			Second Replacement			Third Replacement			Fourth Replacement			Fifth Replacement		
	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced	Yr Replaced	Adjusted Cost if Inflation is 3.00%	Annual Funding Thru Yr Replaced
1	2027	\$63,560	\$20853	2042	\$104,809	\$6987	2057			2072			2087		
2	2039	\$283,595	\$18906	2079			2119			2159			2199		
3	2034	\$44,976	\$4498	2069			2104			2139			2174		
4	2032	\$50,891	\$6361	2067			2102			2137			2172		
5	2040	\$35,182	\$2199	2070			2100			2130			2160		
6	2025	0		2025	0		2025	0		2025	0		2025	0	
7	2025	0		2025	0		2025	0		2025	0		2025	0	
8	2025	0		2025	0		2025	0		2025	0		2025	0	
9	2025	0		2025	0		2025	0		2025	0		2025	0	
10	2025	0		2025	0		2025	0		2025	0		2025	0	
11	2025	0		2025	0		2025	0		2025	0		2025	0	
12	2025	0		2025	0		2025	0		2025	0		2025	0	
13	2025	0		2025	0		2025	0		2025	0		2025	0	
14	2025	0		2025	0		2025	0		2025	0		2025	0	
15	2025	0		2025	0		2025	0		2025	0		2025	0	
16	2025	0		2025	0		2025	0		2025	0		2025	0	
17	2025	0		2025	0		2025	0		2025	0		2025	0	
18	2025	0		2025	0		2025	0		2025	0		2025	0	
19	2025	0		2025	0		2025	0		2025	0		2025	0	
20	2025	0		2025	0		2025	0		2025	0		2025	0	
21	2025	0		2025	0		2025	0		2025	0		2025	0	
22	2025	0		2025	0		2025	0		2025	0		2025	0	
23	2025	0		2025	0		2025	0		2025	0		2025	0	
24	2025	0		2025	0		2025	0		2025	0		2025	0	
25	2025	0		2025	0		2025	0		2025	0		2025	0	
26	2025	0		2025	0		2025	0		2025	0		2025	0	
27	2025	0		2025	0		2025	0		2025	0		2025	0	
28	2025	0		2025	0		2025	0		2025	0		2025	0	
29	2025	0		2025	0		2025	0		2025	0		2025	0	
30	2025	0		2025	0		2025	0		2025	0		2025	0	
31	2025	0		2025	0		2025	0		2025	0		2025	0	
32	2025	0		2025	0		2025	0		2025	0		2025	0	
33	2025	0		2025	0		2025	0		2025	0		2025	0	
34	2025	0		2025	0		2025	0		2025	0		2025	0	
35	2025	0		2025	0		2025	0		2025	0		2025	0	
36	2025	0		2025	0		2025	0		2025	0		2025	0	
37	2025	0		2025	0		2025	0		2025	0		2025	0	
38	2025	0		2025	0		2025	0		2025	0		2025	0	
39	2025	0		2025	0		2025	0		2025	0		2025	0	
40	2025	0		2025	0		2025	0		2025	0		2025	0	

**WILLOUGHBY CRESCENT  
COST AND FUNDING RECAP  
EXISTING FUNDING**

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beginning Reserve Fund Balance	\$0	\$53,000	\$106,000	\$96,440	\$149,440	\$122,071	\$36,290	\$67,778	\$69,887	\$7,666	\$15,690	\$68,690	\$303,690	\$538,690	\$179,731
Recommended Annual Funding	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$235,000	\$235,000	\$235,000	\$235,000
Annual Interest	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Expenditures	\$0	\$0	\$62,560	\$0	\$80,370	\$138,781	\$21,512	\$50,891	\$115,221	\$44,976	\$0	\$0	\$0	\$593,959	\$396,965
Ending Reserve Balance	\$53,000	\$106,000	\$96,440	\$149,440	\$122,071	\$36,290	\$67,778	\$69,887	\$7,666	\$15,690	\$68,690	\$303,690	\$538,690	\$179,731	\$17,766

Inflation Rate: 3.50%  
Interest Rate: 0.00%

TOTAL UNITS: 15

ANNUAL CONTRIBUTION PER UNIT	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$15,667	\$15,667	\$15,667	\$15,667
MONTHLY CONTRIBUTION PER UNIT	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$1,305.56	\$1,305.56	\$1,305.56	\$1,305.56



**WILLOUGHBY CRESCENT  
COST AND FUNDING RECAP  
EXISTING FUNDING**

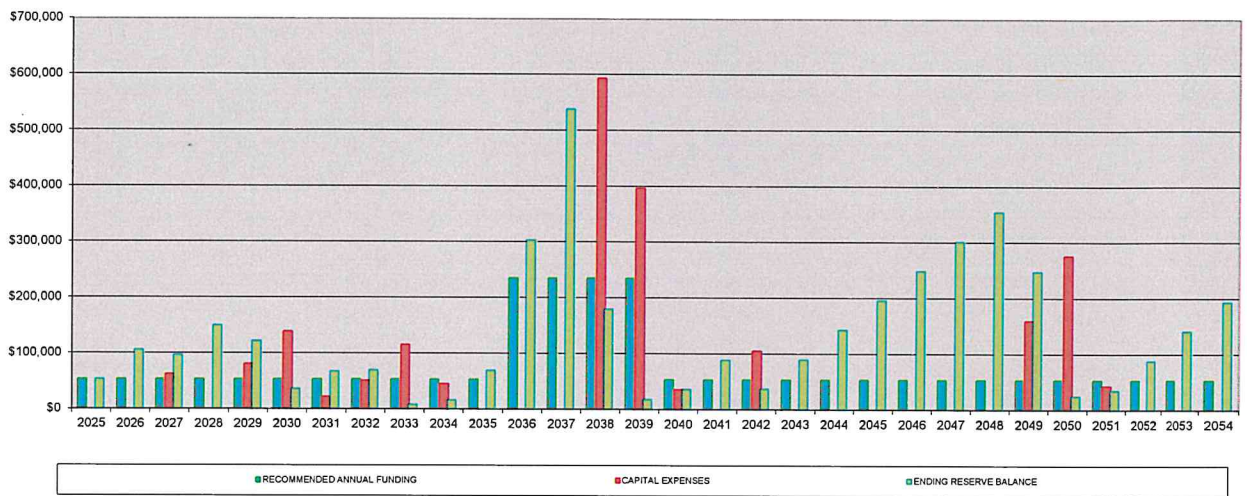
	2040 16	2041 17	2042 18	2043 19	2044 20	2045 21	2046 22	2047 23	2048 24	2049 25	2050 26	2051 27	2052 28	2053 29	2054 30
Beginning Reserve Fund Balance	\$17,766	\$35,584	\$88,584	\$36,775	\$89,775	\$142,775	\$195,775	\$248,775	\$301,775	\$354,775	\$247,856	\$24,711	\$34,907	\$87,907	\$140,907
Recommended Annual Funding	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000	\$53,000
Annual Interest	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Expenditures	\$35,182	\$0	\$104,809	\$0	\$0	\$0	\$0	\$0	\$0	\$159,919	\$276,145	\$42,804	\$0	\$0	\$0
Ending Reserve Balance	\$35,584	\$88,584	\$36,775	\$89,775	\$142,775	\$195,775	\$248,775	\$301,775	\$354,775	\$247,856	\$24,711	\$34,907	\$87,907	\$140,907	\$193,907

Inflation Rate: 3.50%  
Interest Rate: 0.00%

TOTAL UNITS: 15

ANNUAL CONTRIBUTION PER UNIT	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533	\$3,533
MONTHLY CONTRIBUTION PER UNIT	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44	\$294.44

**PROJECTED CASH FLOW - RECOMMENDED FUNDING**



**WILLOUGHBY CRESCENT**  
**ITEMIZED PROJECTED COST BY YEAR**

(Excluding Capital Improvements)

Life Safety System Equipment - Replace	\$62,560
<b>Total 2027 Expenditures</b>	<b>\$62,560</b>
Exteriors Stucco - Repair/Paint	\$80,370
<b>Total 2029 Expenditures</b>	<b>\$80,370</b>
Flat Roof - Replacement	\$138,781
<b>Total 2030 Expenditures</b>	<b>\$138,781</b>
Concrete Tile Roof - Repairs As Needed	\$12,293
Gutters & Downspouts -Repairs As Needed	\$9,219
<b>Total 2031 Expenditures</b>	<b>\$21,512</b>
Domestic Water Pumps/Lines - Repairs	\$50,891
<b>Total 2032 Expenditures</b>	<b>\$50,891</b>
Breezeway Coating - Remove and recoat	\$115,221
<b>Total 2033 Expenditures</b>	<b>\$115,221</b>
Fire Safety Stand Pipe - Replacement	\$44,976
<b>Total 2034 Expenditures</b>	<b>\$44,976</b>
Concrete Tile Roof - Replacement	\$593,959
<b>Total 2038 Expenditures</b>	<b>\$593,959</b>
Exteriors Stucco - Repair/Paint	\$113,369
Fire Sprinkler System - Replace	\$283,595
<b>Total 2039 Expenditures</b>	<b>\$396,965</b>
Electrical Panels/Breakers - Replace	\$35,182
<b>Total 2040 Expenditures</b>	<b>\$35,182</b>
Life Safety System Equipment - Replace	\$104,809
<b>Total 2042 Expenditures</b>	<b>\$104,809</b>
Exteriors Stucco - Repair/Paint	\$159,919
<b>Total 2049 Expenditures</b>	<b>\$159,919</b>
Flat Roof - Replacement	\$276,145
<b>Total 2050 Expenditures</b>	<b>\$276,145</b>
Concrete Tile Roof - Repairs As Needed	\$24,460
Gutters & Downspouts -Repairs As Needed	\$18,345
<b>Total 2051 Expenditures</b>	<b>\$42,804</b>
<b>Total Expenditures</b>	<b>\$2,124,093</b>

## II. RESERVE CASH FLOW ANALYSIS

### A. INTRODUCTION

The enclosed chart and graph contain a 30-year cash flow projection of the reserve requirements for the Association. The budget should be adjusted at the end of the 30-year period to readjust for changes in the remaining life, inflation, and current costs of replacements. This cash flow analysis is based on the assumption that all of the items that make up the schedule are fully funded. By this, we mean that each item will accumulate its full replacement cost during its life span. At the end of this life, each item would be replaced, and the funding would start aging for items with a long life. For items with a short useful life, the funding for the first replacement is budgeted in addition to future replacements due to the short life span. The future replacement funding is started in the first year; however, payments are less than the first replacement due to the extended time period allowed to accumulate funds. Taking all of the components that make up the reserve schedule, using this full funding analysis, there is typically an ongoing surplus in the reserve fund. This ensures that the Association will have a surplus at the end of the 30-year period. This is called the “pooling effect” and is represented by the upper line on the cash flow chart, which is designated as the “Net Cumulative Fund”. The “Net Cumulative Fund” is calculated by taking the existing amount in the reserve fund at the time the reserve schedule is prepared, adding to it the yearly contribution, and subtracting from it the annual expenditures.

The annual reserve funding required has been calculated by estimating the remaining useful service life based on the current condition, age, and all other known factors of each item description. The present value replacement cost was estimated by either past quotations or other listed methods of estimation. The present value replacement cost was then converted to future value using a 3.5% annual compounded inflation rate. The future cost was calculated for the projected time when replacements will be required.

The future cost was then broken down into annual installments while still considering the 3.5% compounded annual inflation rate. The monthly reserve funding was calculated by a further breakdown of the annual reserve funding required.

1. Formulas

The following economic formulas were used in our calculations:

<b>DISCOUNTING FACTOR</b>	<b>FUNCTIONAL NOTATION</b>	<b>FORMULA</b>
Single Payment Compound Amount	(F/P, i %, n)	$(1+i)^n$
Uniform Series Sinking Fund	(A/F, i %, n)	$i/[(1+i)^n-1]$

2. Definitions

Definitions of the above-mentioned terms are as follows:

<b>TERM</b>	<b>DEFINITION</b>
Single Payment Compound Amount	Conversion of present worth to future value
Uniform Series Sinking Fund	Conversion of future value to annual value
F	Future worth of item in $n$ years from present
P	Present Worth
A	Annual worth
I	Interest Rate (0.00% used)
N	# of years until each calculated replacement

The Association should update the reserve schedule a minimum of once every two years. It is especially important to update the schedule when using average contributions due to the fact that even a minor change in the estimated useful service life can have a significant impact on adequate funding.

The Association should review each of the individual line items that make up the reserve schedule to make sure that there is no overlap between what is indicated in the schedule and any other portion of the budget. For example, we may show on the reserve schedule the replacement of fencing, but at the same time, the Association may be replacing the fencing out of their operating budget. If duplication like this exists, the item should either be removed from the reserve schedule or the operation budget. It should not be funded in two different locations.

The Association should review the items on the schedule to ensure that their replacement is not covered under a maintenance contract. An example would be reserving for the replacement of mechanical equipment components while the Association has a maintenance contract for the item at the same time. The reserve schedule should be carefully reviewed to be sure that it does not fund the replacement of any portion of any item whose replacement is covered under a maintenance contract.

The Association should review the items on the schedule to be sure that they are all the Association's responsibility. As an example, if we have included site lighting on the reserve schedule, but at the same time the local municipality is responsible for the maintenance and repair of these connections, they should be removed from the schedule.

The Association should review the individual line items on the reserve schedule carefully to determine if a number of the smaller individual components can be consolidated into one line item that can be continuously funded.

For example, if there are five or six components with a total replacement cost of \$1,000 each, rather than reserving the full \$5,000 or \$6,000 for all of these items, the Association may want to consider funding all six components under one line item for a total of \$1,000. Should one of these six items have to be replaced, that line item would have to be brought current within a year or so after its expenditure. By doing this rather than

funding the full \$6,000, only a portion of the total would be funded. This would reduce the overall yearly contribution to reserves.

Depending on the size of the overall operating budget, the Association may decide that any line item of less than the given amount will be funded directly through the operating budget rather than through the reserve schedule. If this is the case, any item with the given value or less should be removed from the schedule. The schedule would then be footnoted accordingly.

## DISCLOSURES

Ray Engineering, Inc. does not have any other involvement with the association, which could result in actual or perceived conflicts of interest.

During our review of the property, visual review, and field measurements, as needed, of each common element were performed. No destructive testing or drawing take-offs were performed.

Material issues that, if not disclosed, would cause a distortion of the association's situation.

Information provided by the official representative of the association regarding financial, physical, quantity, or historical issues will be deemed reliable by the consultant.

The SIRS will be a reflection of information provided to the consultant and assembled for the association's use, not for the purpose of performing an audit, quality/forensic analyses, or background checks of historical records.

Ray Engineering, Inc. did not perform an audit of the current or past budgets of the association.

Information provided to Ray Engineering, Inc. by the association representative about reserve projects will be considered reliable. Any on-site inspection(s) by Ray Engineering, Inc. should not be considered a project audit or quality inspection.



## BIOGRAPHY

### **CARTER A. NELSON, E.I.T., R.S.**

#### **SENIOR ENGINEER**

---

Mr. Nelson received his Bachelor of Science degree in Civil Engineering from the University of Florida in May 2017. He has multiple certifications from the International Code Council, American Concrete Institute, and GASWCC, with a background in forensic testing. He provides civil/structural as well as construction-related consulting services/administration for public works, multi-family, single-family, and commercial property projects of costs above +\$1million. Mr. Nelson specializes in the structural design/analysis, as well as restoration of wood-framed, masonry, reinforced concrete (pre-cast/cast-in-place), and CFS (cold-form-steel) multi-story existing structures and new construction. In addition to engineering experience, Mr. Nelson also performs Property Condition Assessments and Capital Reserve Analyses and is a Reserve Specialist throughout the Southeast. Currently, Mr. Nelson is pursuing his Professional Engineering license in 2024 as well as his special inspector's certification by 2027.

### **SCOTT C. BERNARD, M.S., P.E.**

#### **CIVIL ENGINEER**

---

Mr. Bernard received his Bachelor of Science degree in Civil (Environmental) Engineering from Clarkson University in May 1997 and then received his professional engineering license (Civil Engineer) from Florida in 2006. Mr. Bernard completed his Master of Science in Civil (Structural) Engineering in May of 2007. From May of 1999 through today, Mr. Bernard's primary areas of practice include, but are not limited to, Forensic Geotechnical Engineering (Karstic Phenomenon), limited cause and origin investigations, and design of exposed heavy timber structural roof systems.

## LIMITATION OF RESPONSIBILITY

The report represents a statement of the physical condition of the common elements of the property based on our visual observation, professional analysis, and judgment. The report applies only to those portions of the property and/or items and equipment that were capable of being visually observed. Unless specifically stated otherwise, no intrusive testing was performed nor were any materials removed or excavations made for further inspection. Drawings and specifications were available only to the extent described in the report.

The following activities are not included in the scope and are excluded from the scope of the SIRS described in the National Reserve Study Standards:

- *Utilities* – The operating condition of any underground system or infrastructure; accessing manholes or utility pits; the SIRS does not include any infrastructure with an estimated useful life of more than 30 years unless specified otherwise in the report;
- *Structural Frame and Building Envelope* – Unless specifically defined in the proposal, entering crawl, attic, or confined space areas (however, the field observer will observe conditions to the extent easily visible from the point of access to the crawl or confined space if the access is at the exterior of the building or common space); determination of previous substructure flooding or water penetration unless easily visible or unless such information is provided;
- *Roofs* – Walking on pitched roofs or any roof areas that appear to be unsafe or roofs with no built-in access; determining roofing design criteria;
- *Plumbing* – Verifying the condition of any pipes underground, behind walls or ceilings; determining adequate pressure and flow rate, verifying pipe size, or verifying the point of discharge for underground systems;
- *HVAC* – Observation of fire connections, interiors of chimneys, flues, or boiler stacks, or tenant-owned or tenant-maintained equipment;
- *Electrical* – Removal of any electrical panels or device covers, except if removed by building staff; providing common equipment or tenant-owned equipment.
- *Vertical Transportation* – Examining of cable, shears, controllers, motors, inspection tags or entering elevator/escalator pits;
- *Life Safety/Fire Protection* – Determining NFPA hazard classifications; classifying or

testing fire rating of assemblies;

- Preparing engineering calculations to determine any system's components or equipment's adequacy or compliance with any specific or commonly accepted design requirements or building codes; preparing designs or specifications to remedy any physical deficiencies;
- Reporting on the presence or absence of pests or insects unless evidence of such presence is readily apparent during the field observer's walk-through survey, or such information is provided to the Consultant;
- Entering or accessing any area of the property deemed by the engineer to pose a threat to the safety of any individual or to the integrity of the building system or material;
- Providing an opinion on the operation of any system or component that is shut down or not properly operating;
- Evaluating any acoustical or insulating characteristics of the property;
- Providing an opinion on matters regarding the security and protection of its occupants or users;
- Providing an environmental assessment or opinion of the presence of any environmental issues such as asbestos, hazardous wastes, toxic materials, radon, or the location of designated wetlands, unless specifically defined within the scope of work;
- Any representations regarding the status of ADA Title III Compliance.

The report is not a compliance inspection or certification for past or present governmental codes or regulations of any kind. Any reference made to codes in this report is to assist in the identification of a specific problem.

## GLOSSARY OF TERMS

<u>Abbreviation</u>	<u>Definition</u>	<u>Abbreviation</u>	<u>Definition</u>
Allow.	Allowance	L.F.	Linear Foot
Avg.	Average	Lg.	Long Length
B.F.	Board Feet	L.S.	Lump Sum
Bit/Bitum.	Bituminous	Maint.	Maintenance
Bldg.	Building	Mat., Mat'l	Material
Brk.	Brick	Max	Maximum
Cal	Calculated	MBF	Thousand Board Feet
C.C.F.	Hundred Cubic Feet	M.C.F.	Thousand Cubic Feet
C.F.	Cubic Feet	Min.	Minimum
C.L.F.	Hundred Linear Feet	Misc.	Miscellaneous
Col.	Column	M.L.F.	Thousand Linear Feet
Conc.	Concrete	M.S.F.	Thousand Square Feet
Cont.	Continuous, continued	M.S.Y.	Thousand Square Yards
C.S.F.	Hundred Square Feet	NA	Not applicable/available
Cu. Ft.	Cubic Feet	No.	Number
C.Y.	Cubic Yard, 27 cubic feet	O.C.	On Center
DHW	Domestic Hot Water	P.E.	Professional Engineer
Diam.	Diameter	Ply.	Plywood
Ea.	Each	Pr.	Pair
Est.	Estimated	PVC	Polyvinyl Chloride
Ext.	Exterior	Pvmt.	Pavement
Fig.	Figure	Quan. Qty.	Quantity
Fin.	Finished	R.C.P.	Reinforced Concrete Pipe
Fixt	Fixture	Reinf.	Reinforced
Flr.	Floor	Req'd	Required
FRP	Fiberglass Reinforced Plastic	Sch., Sched.	Schedule
Ft.	Foot, Feet	S.F.	Square Foot
Galv.	Galvanized	Sq.	Square, 100 Square Feet
Ht.	Height	Std.	Standard
Htrs.	Heaters	Sys.	System
HVAC	Heating, Ventilation, A/C	S.Y.	Square Yard
HW	Hot Water	T&G	Tongue & Groove
In.	Inch	Th, Thk.	Thick
Int.	Interior	Tot.	Total
Inst.	Installation	Unfin.	Unfinished
Insul.	Insulation	V.C.T.	Vinyl Composition Tile
lb.	Pound	Vent.	Ventilator
		Yd.	Yard

## BIBLIOGRAPHY

Architectural Drawings  
by N/A

Declaration of Covenants, Conditions, and Restrictions  
by N/A

---

Site Work Cost Data  
by R.S. Means Company, Inc. & Historical Data

Mechanical Cost Data  
by R.S. Means Company, Inc. & Historical Data

Electrical Cost Data  
by R.S. Means Company, Inc. & Historical Data

Open Shop Cost Data  
by R.S. Means Company, Inc. & Historical Data

---

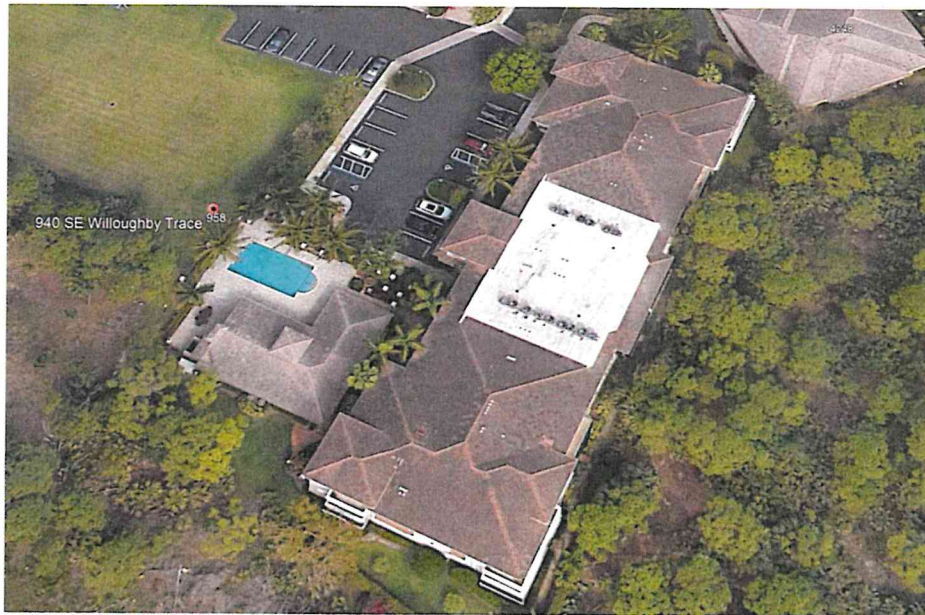
## **PHOTOGRAPHS**

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



1. View of the subject building.



2. Aerial view of the subject building.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



3. View of the parking garage entrance located at the northeast end of the building.



4. View of the rear of the building looking southwest.



WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



5. View of the parking garage.



6. View of the interior of the parking garage.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



7. View of the fire suppression system.



8. View of the electrical room.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



9. View of the elevator room.



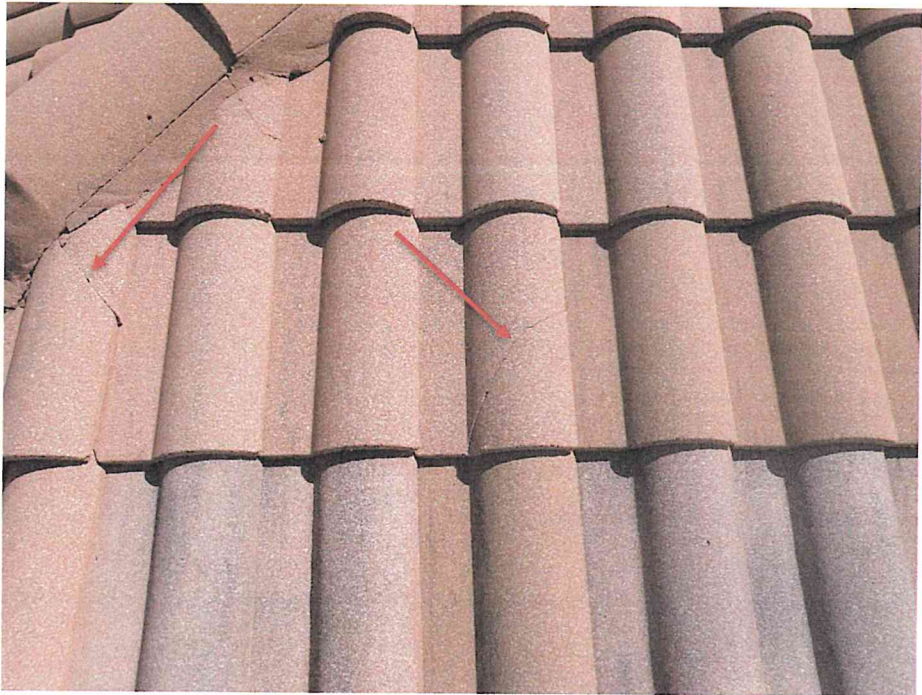
10. View of the roof systems looking southwest.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



11. View of a roof drain and vent pipe on the flat portion of the roof.



12. View of the broken roof tiles.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



13. View of the loose/dislodged roof tiles on the northeast end of the building.



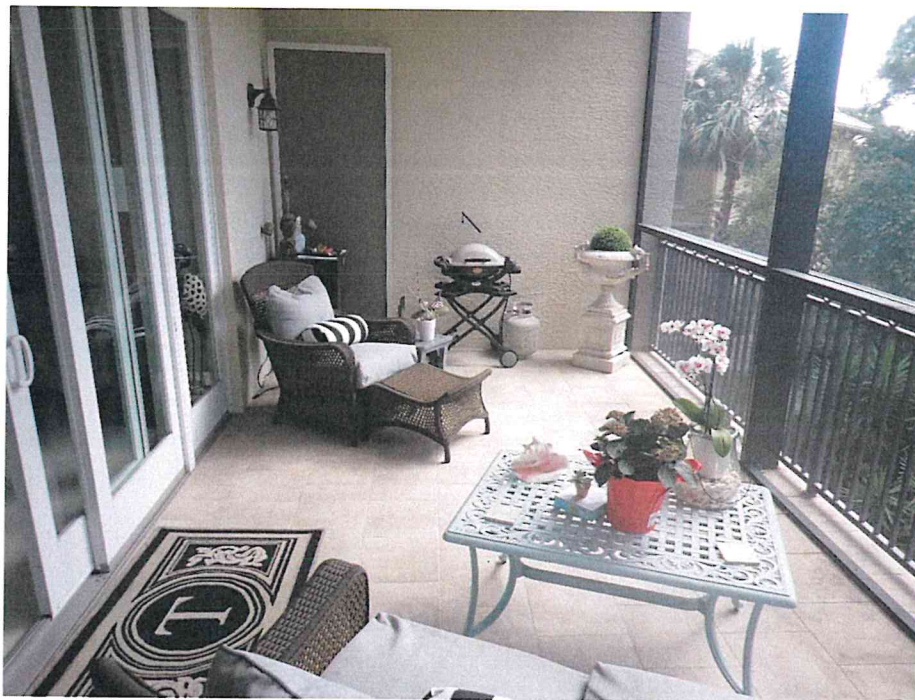
14. View of the typical tile-covered walkway.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



15. View of the 3<sup>rd</sup> floor elevator and roof access opening.



16. View of the typical tile-covered balcony.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



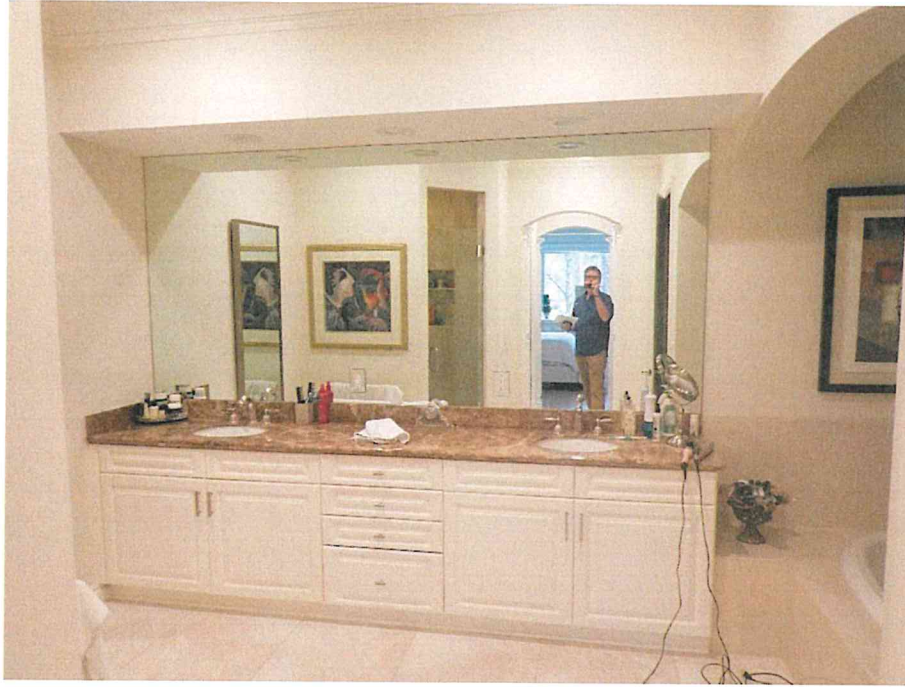
17. View of the typical recessed sprinkler head in the interior of the units.



18. View of a typical primary bedroom.

WILLOUGHBY CRESCENT CONDOMINIUMS  
STRUCTURAL INTEGRITY RESERVE STUDY

---



19. View of a typical primary bathroom.



20. View of the typical living room area.





[Ask Us \(http://myfloridalicense.custhelp.com/\)](http://myfloridalicense.custhelp.com/)

[Contact Us \(https://www2.myfloridalicense.com/contact-us/\)](https://www2.myfloridalicense.com/contact-us/)

[My Account \(https://www.myfloridalicense.com/datamart/mainMenuFLDBPR.do\)](https://www.myfloridalicense.com/datamart/mainMenuFLDBPR.do)



[\(https://www2.myfloridalicense.com/\)](https://www2.myfloridalicense.com/)



# CONDOMINIUMS AND COOPERATIVES – SIRS REPORTING



## Structural Integrity Reserve Study (SIRS) Reporting

Please follow the directions below to submit your association's required Structural Integrity Reserve Study to the Florida Department of Business and Professional Regulation (DBPR) Division of Condominiums, Timeshares, and Mobile Homes (CTMH). You can submit your SIRS by email, mail, or the online form below.

**Please** click here (<https://www2.myfloridalicense.com/lsc/documents/Entity-Project-Number-Guide.pdf>) **for a guide on how to locate your Project License Number and Condominium Association License (Managing Entity) Number.**

[Condominiums, T](#)

[Division Home \(](#)

[Structural Integ](https://www2.r reporting/)

[Building Reporti](#)

[Condominium C](#)



Online

Telephone: 850.488.1122

Facsimile: 850.921.5446

CONTACT US (<https://www2.myfloridalicense.com/contact-us/>)

---

## RESOURCES

**Open MyFlorida Business eGuide** (<https://openmyfloridabusiness.gov/eguide/>)

**FDACS A to Z Resource Guide** (<https://csapp.fdacs.gov/CSPublicApp/AZGuide/AZGuideSearch.aspx>)

**Emergency Bridge Loan** (<https://floridacommerce.my.site.com/RebuildFloridaBusinessLoanFund/s/>)

**Disclaimer** (<https://www2.myfloridalicense.com/disclaimer/>)

**Americans With Disabilities (ADA)** (<https://www2.myfloridalicense.com/accessibility/>)

**Privacy Statement** (<https://www2.myfloridalicense.com/privacy-policy/>)

**Hurricane Resources** (<https://www2.myfloridalicense.com/emergency/>)

## RESOURCES

**MyFlorida.gov** (<https://www.myflorida.com/>)

**Job Opportunities** (<https://jobs.myflorida.com/go/Department-of-Business-and-Professional-Regulation/2815000/> )

**Florida Has a Right To Know** (<https://floridahasarighttoknow.myflorida.com/>)

**Report State Fraud Waste & Abuse** (<https://www.flgov.com/eog/info/report>)

**Employ Florida** (<https://www.employflorida.com/vosnet/Default.aspx>)

**Florida Child Abuse Hotline** (<https://www.myflfamilies.com/services/abuse/abuse-hotline/how-report-abuse>)

**Human Trafficking** (<https://www.myflfamilies.com/services/abuse/human-trafficking>)

**Florida Disaster** (<https://www.floridadisaster.org/getaplan/>)

## MOBILE

 **dbpr** mobile app (<https://www2.myfloridalicense.com/mobile-app/>)