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EVALUATION REPORT

For Project located at: 7801 ATLANTIC WAY. MIAMI BEACH, FLORIDA. 33141

ALIOSKAR GANEM
LICENSE
No. 74745
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Alioskar Ganem Osorio
Digitally signed by Alioskar Ganem Osorio
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FOREWORD

I, Alioskar Ganem, PE for the state of Florida, license: 74745, was contracted to prepare an evaluation report of the current conditions of the building located at 7801 Atlantic Way, Miami Beach Fl 3314. The report will consist of two mayor components, first component will address FEMA evaluation and the existing home conditions as it pertains to the 100-year flood guidelines. Second component will address the structural integrity of the building based on site visit and studies conducted.

DISCLAIMER

The information and implications provided in this report are based on studies performed to determine the structural integrity of the building. To identify areas of concerns and provide a recommendation for the building.
This report represents an accurate representation of the present conditions of the building as per the studies conducted above, no destructive or environmental testing was performed. Further exhaustive studies may need to be conducted to determine the real state of any concealed components.

INTRODUCTION

The inspection of the building in reference (See Exhibit 1 for graphical representation), located at 7801 Atlantic Way, Miami Beach Fl 33141, took place on Wednesday February 22nd, 2023, and was performed by Mr. Alioskar Ganem P.E. The main objective of the inspection was to identify general areas and critical details of the building components that may compromise the integrity of the Structure and represent a hazard to the users of this property. The following report examines the strength and viability of the structure from the slab to the roof.

OBSERVATION, EVALUATION AND RECOMMENDATIONS

The existing building is consistent with the typical construction methods applied in 1935, including the foundation, Masonry Framing wall, concrete ground slab, roof, and concrete framing. Every crack concrete beam was evaluated at the building (see Exhibit 1). To measure the concrete strength of every structural member a sclerometer test was performed. Pictures were taken in the critical areas.

COMPONENT I: FEMA EVALUATION

Building location:

Location: 7801 ATLANTIC WAY. MIAMI BEACH, FLORIDA. 33141
folio number: 02-3202-004-0230
Year Built: 1935

Zoning District: RS-3
Flood zone X/AE
flood map: 12086C0326L,
Base flood elevation +8.00
Existing house elevation: +13.00
Elevation based on the 100-year flood: +18.20- (FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION)

Full legal description:
ALTOS DEL MAR NO 1 PB 31-40
LOT 6 BLK 5
& PORT LYING EAST & ADJACENT WEST
OF EROSION LINE PER PB 105-62
LOT SIZE 16000 SQ FT M/L

Existing Building conditions:

The House foundation: Elevated Crawl space. Based on photo evidence the existing building has flood vents.

Mechanical/Electrical equipment location:
All mechanical equipment, although above flood elevation, are located at exterior ground level.

Number of Floors of residence: 2 floors.

Construction type: Concrete block structure (CBS)l unreinforced, patio concrete slab.

Building square footage: 2,542 sf
Building living area: 2,109 sf.

1. SLAB

The FEMA guidelines for the area provide that the first habitable space must be positioned at 18'-0" NGVD However, the existing structure currently has the first habitable space located at 13'-0". Conversely, according to the Florida Department of Environmental Protection (FDEP), considering the projected 100-year flood scenario, they require that the first habitable space to be elevated to 18.2'. Therefore, the existing habitable space does not comply by approximately 5'. In addition, the slab was not constructed to withstand the hydrostatic loads of the required elevations.

As stated in the FDEP guidelines:
"The one-hundred-year storm elevation requirements for habitable structures located seaward of the coastal construction control line ensure that the lowest horizontal structural member of the building is placed at an elevation above the predicted breaking wave crest."[1]

Indeed, elevating the floor to the recommended 18.2' level as suggested by the FDEP would require significant modifications to the existing structure. Given that the habitable space is currently at 13.0'. Raising it to the recommended level would necessitate a complete rebuilding of the home. This would involve a comprehensive design overhaul of a structure originally constructed in 1935, which has already withstood years of exposure to wind and water conditions.

The implications of such modifications are extensive and the existing structure will likely not withstand the requirements of an increase in elevation. To comply with the required elevation, the second floor slab would also need to be elevated, requiring substantial structural changes. The structural integrity of the second floor would not withstand removal of the existing first floor slab and masonry walls within the 18' NGVD elevation, which would have to be replaced with breakaway walls. Essentially, this would entail constructing a new home.

Furthermore, all equipment and piping layouts would need to be reconfigured and protected to reach above the 18.2' level, adding further complexity and costs to the project. Such a comprehensive overhaul presents practical challenges and is mostly not feasible considering the age and condition of the existing structure.

When confronted with conflicting codes or regulations, it is indeed considered best practice for architects and engineers to adhere to the most stringent requirements. The primary responsibility of architects and engineers is to design structures that prioritize the safety, health, and welfare of the users. By following the most rigorous standards, they ensure that the building meets or exceeds the necessary safety measures,

[1] *One-Hundred-Year Storm Elevation Requirements for Habitable Structures Located Seaward of a Coastal Construction Control Line ELEVATION CERTIFICATE AND INSTRUCTIONS, prepared by Florida Department of Environmental protection, Division of Water Resource Management, Published November 1999 (reformatted May 2017)*

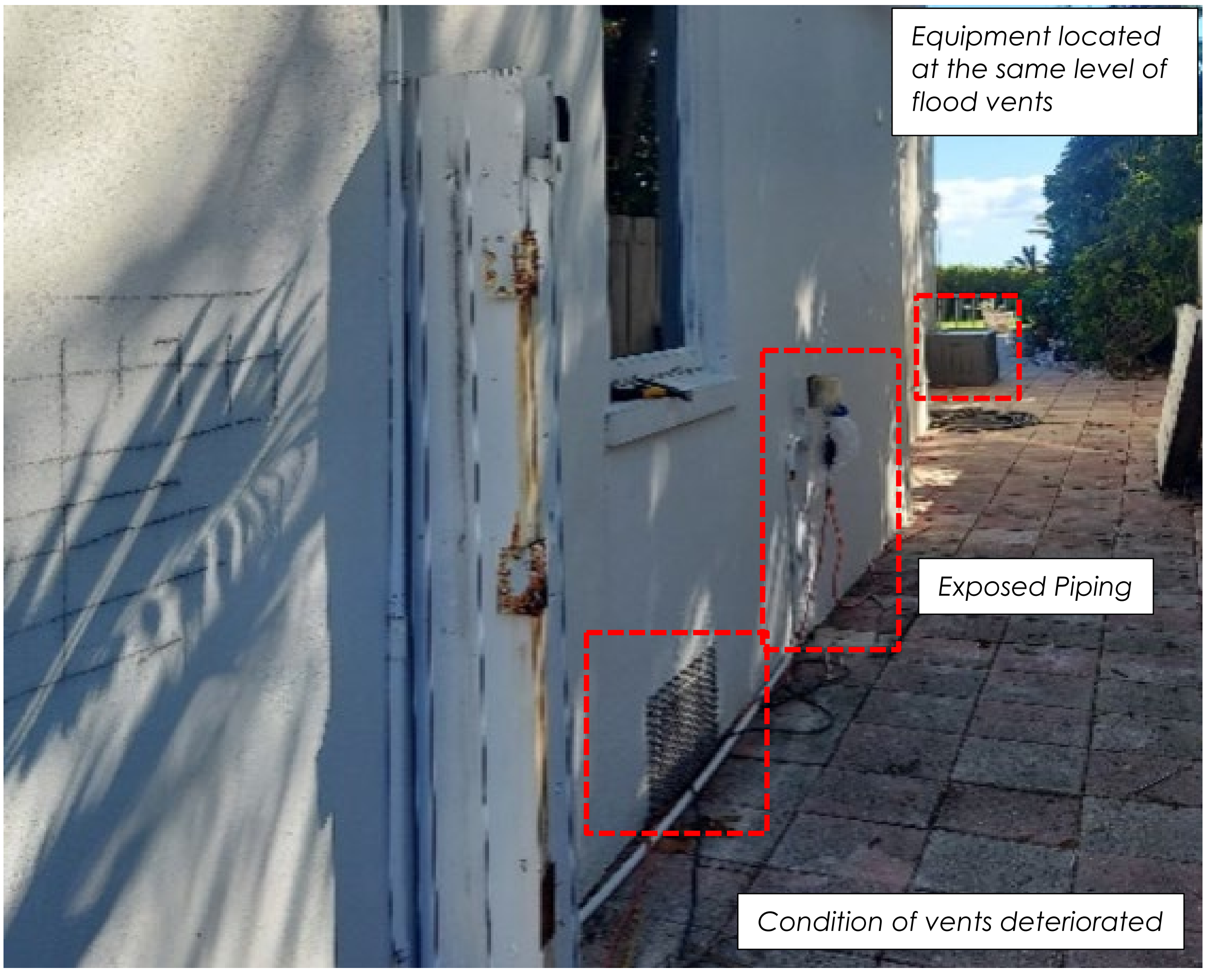
providing a secure environment for its occupants. Therefore, in situations where multiple codes apply, it is advisable to prioritize the strictest code to uphold the highest level of safety.

A. *FLOOD VENTS*

The current design incorporates flood vents below the recommended 18.2' level and below the slab, which is problematic. Flood vents are openings intended to enable the free flow of water during a flood, reducing the pressure on a building's walls and minimizing structural damage. However, since the habitable space of the building was constructed below the current recommended level, the absence of breakaway walls and the use of flood vents will result in damage to the masonry walls from the wave crest. Electrical equipment and piping below the recommended 18.2' create a hazardous environment, such equipment per code should always be designed above the flood elevation. It is the architect and engineer's responsibility to ensure the safety of occupants, and in this case, demolishing the structure should be considered as an option to provide a safer environment.

Figure 1, below, shows the dangerous existing infrastructure. The existing flood vents are in poor condition and are not considered resilient for the preservation of the home in the event of a major storm or flood. Figure 1 also shows the improper location of a/c equipment and the exposed piping from the slab.

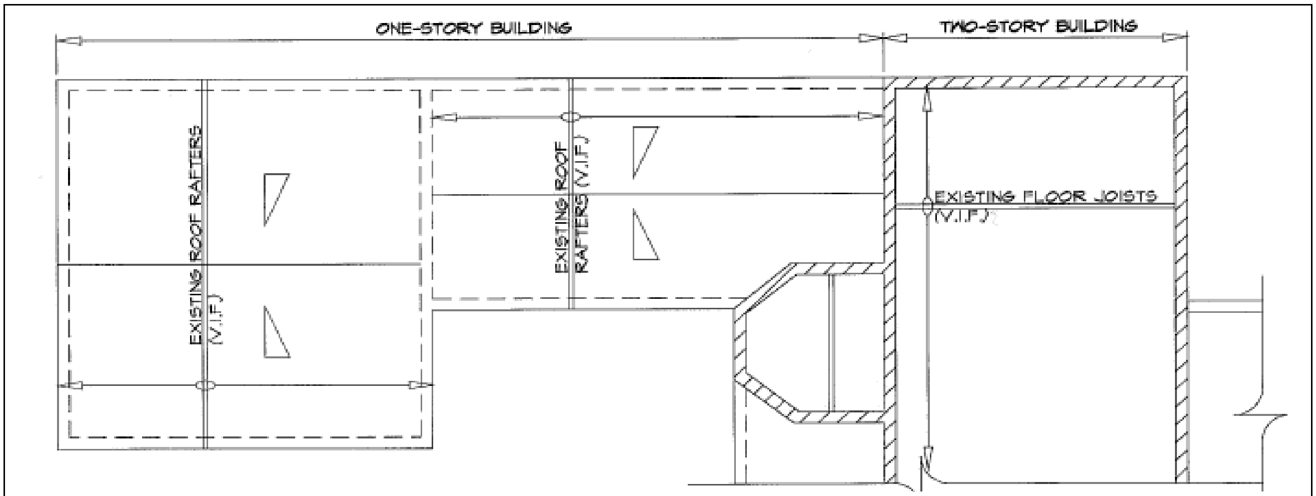
Figure 1.


Equipment located at the same level of flood vents
Exposed Piping
Condition of vents deteriorated

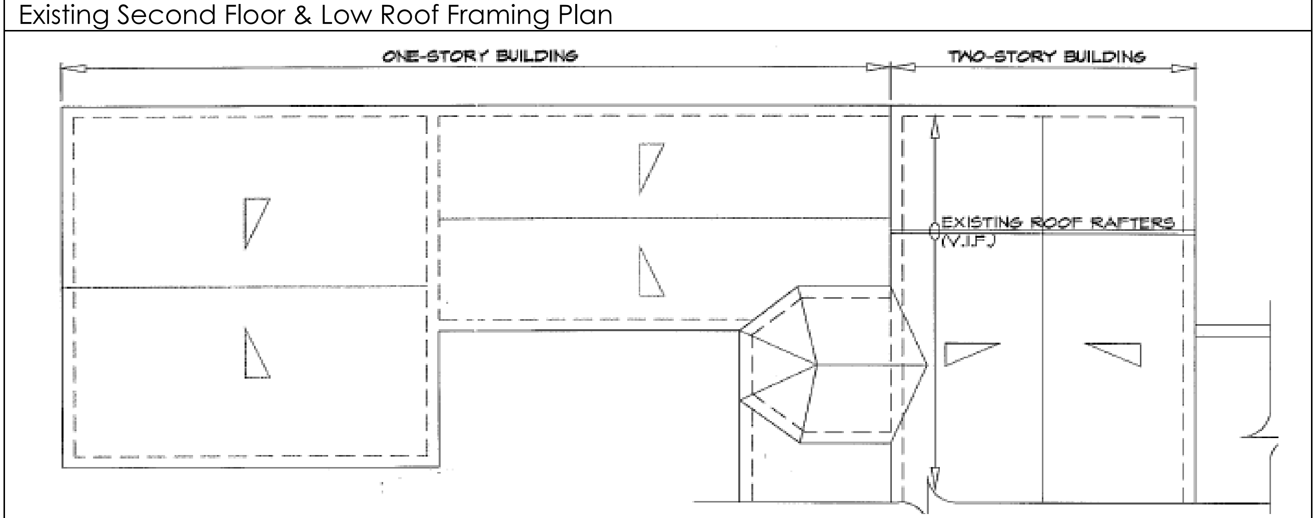
B. STRUCTURAL SYSTEM

The existing building consists of a two-story residential home. The existing Structural System is composed of masonry walls, with concrete beams and columns acting as load-bearing elements in the open areas and critical structural zones. See Figure 2 below. The load-bearing diaphragm of the second level consists of joists and roof rafters as part of the composition of the structural system of the home.

Figure 2.



Existing Second Floor & Low Roof Framing Plan



Existing Roof Framing Plan

C. FOUNDATION

According to the evaluation criteria of the Florida Department of Environmental Protection (FDEP), the recommended floor elevation for the residence is advised to be 18.2'. However, the current floor elevation stands at 13.0'. It is not feasible to modify the entire structural system of the house to raise the elevation of the home due to limitations with the foundation system.

Performance of foundations exposed to flooding is specified in American Society of Civil Engineers (ASCE) 24. Soil characteristics and underlying strata, including soil consolidation, expansion or movement, erosion and scour, and subsidence must be considered, as applicable.

Since the foundation system is not known, the following scenarios can be considered to evaluate the current conditions of the structure.

Scenario 1: Shallow Foundations
Foundation System considered in previous structural analysis dated Dec 2014.

> *"C1.5.3.1 Geotechnical Considerations Foundation design should be based on an accurate identification of underlying soil and rock properties at the site of a proposed structure. Although not required by many floodplain management ordinances or other applicable construction standards, geotechnical investigations should be conducted at any construction site in a flood hazard area where available geotechnical data are insufficient for design purposes. Foundation design should take into account all potential impacts of soil saturation (especially during conditions of long duration flooding), consolidation, movement, expansion, and erosion, including the effects of long-term erosion that may occur at a site."*

As the level of flooding increases, the duration of the flooding also extends, leading to detrimental modifications to the original design parameters established in the soil study for foundation design. The ground floor being 5' below the recommended habitable space usage further exacerbates the conditions, ultimately compromising the structure.

> *C1.5.3.3 Foundation Walls and Wall Footings Use of foundation walls below the minimum elevations specified by Table 2-1 is permitted only where the walls and wall footings are designed and constructed to resist flood-related forces acting on those walls so as not to jeopardize the stability or integrity of the building or structure. In most instances, use of load bearing walls in flood hazard areas susceptible to high velocity flow, high velocity wave action, or other destructive flood forces will likely result in significant damage to or total destruction of a structure during design flood conditions. Load bearing foundation walls designed and constructed to withstand such loads may not be the most cost-effective solution, especially for construction less than three stories above the DFE. Foundation walls that enclose areas below elevated buildings, also called solid perimeter walls or crawlspace foundations, must meet design specifications in Section 2.7 for flood openings. Solid perimeter wall foundations that are filled with engineered compacted fill that is topped with a slab (stem-wall foundations) are not subject to the specifications of Section 2.7. Where foundation walls do not form enclosures, it is recommended*

that the walls be oriented parallel to the direction of flood flow. This will reduce hydrodynamic loads, debris impact loads, and other flood-related loads that will act during design flood conditions."

Based on the provided information, it is clear that the current foundation system is inadequate for flood-prone areas. The increasing water level brings about greater pressure. Consequently, the existing foundations are unable to withstand the additional pressure caused by a 5' disparity between the ground elevation (13') and the recommended flood elevation (18.2') for a 100-year flood, as advised by the FDEP. Furthermore, since the house was constructed in 1935, the original design did not account for the cumulative impact of flooding over time, resulting in structural compromise.

Scenario 2: Foundations on Piles

Further analysis presents a scenario that the foundation system consists of piles, ACSE 24 asks for some requirements that should be considered in the design and that may not have been met.

"4.5.6.1 Pile Capacity Piles shall be designed to carry the loads imposed by the combinations of loads in Section 1.6.2 and to withstand installation forces. The minimum flexural resistance of the pile shall not be less than the design axial load on the pile times an eccentricity of 10% of the equivalent pile diameter. The minimum required lateral resistance of an individual pile shall be at least 5% of the axial load on the pile."

Increasing the weight of the building would increase the axial load on the pile, therefore, the minimum bending moment that should be considered for the design.

"4.5.6.2 Capacity of the Supporting Soils Soil values pertaining to friction, end bearing resistance, and settlement of single piles and pile groups shall be based on the geotechnical characteristics of the soil as required by Section 1.5.3.1. For piles spaced more than three pile diameters apart, measured center to center, the diameter of the soil that shall be assumed reacting laterally on each pile shall have a maximum equivalent diameter equal to three times the diameter of the pile."

Increasing the weight of the building would increase the axial load on the pile, therefore the existing length and diameter of the pile must be insufficient to develop the frictional capacity required to adequately support and transmit the loads in the foundation ground. A similar analysis is applied to ensure the lateral stability and bending requirements of the pile.

"4.5.6.3 Minimum Penetration Pile penetration into acceptable bearing strata shall be a minimum depth sufficient to allow distribution of the pile load to the supporting soils, including a consideration for reduction in soils because of the effects of local scour and erosion in accordance with Section 4.5.3."

An elevated flood level will have consequential impacts on the foundation ground, including increased erosion, greater scour, loss of bearing capacity, and more. It is likely that these effects were not taken into consideration during the original design, which poses a risk to the structural stability of the building. In Coastal A Zones, ASCE 24-14 specifically emphasizes the necessity of accounting for local scour and erosion in the design process.

Based on either of the foregoing scenarios, it is clear that the existing structure is not resilient and not compliant with today's flood standards and criteria. Also, the existing slab, flood vents, and foundation were constructed in such a way that it cannot withstand the renovations to come into compliance.

2. WALLS

The existing Masonry walls are a construction system in which the walls of the building perform a structural function, using masonry units arranged in a way that is self-supporting and load-bearing. The walls will evenly distribute the load to the foundation and later into the ground. Stacked in layers, the blocks are connected by a binder (mortar) that influence the mechanical properties of the wall that resist active forces. The system is designed to act as a support system to the building itself. Currently the walls are of concrete block structure (CBS), but without reinforcement. The Florida Building Code has updated its design requirements. Now the building must consider and meet the requirements for high velocity hurricane zones (HVHZ), which must withstand wind speeds of 175 miles per hour. The concrete block reinforcement requirement is mandatory in 2020 FBC which states in excerpt 2103.4 "Metal Reinforcement and Accessories: "Metal reinforcement and accessories shall comply with article 2.4 of TMS 602". Special steel reinforcement requirements are established in sections 2107.2-Lap Splices for reinforcing bars in tension or compression; 2108.4- Development of Bar Reinforcement in Tension or Compression."

The blocks without structural reinforcement are not capable of resisting the pressures due to the effects of hurricane winds, so in the event of a hurricane, the walls will fail.

Considering the proximity of the residence to flood-prone areas, NFIP (National Flood Insurance Program) and ASCE 24-16 guidelines call for the incorporation of breakaway walls as an essential part of the design solution.

ASCE Code 24-16 states the following:

> *"4.6 ENCLOSED AREAS BELOW DESIGN FLOOD ELEVATION. Enclosed areas below the DFE shall be permitted only where all of the following conditions are met: 1. Enclosure walls shall be designed and constructed in accordance with Section 4.6.1 and Section 4.6.2; 2. Enclosed areas shall be used solely for parking of vehicles, building access, or storage; and 3. Where stairways are located inside enclosed areas with breakaway walls, exterior doors shall be required at the entry at the top of the stairs."*
>
> *"4.6.1 Breakaway Walls Breakaway walls and other similar non load bearing elements, including open-wood lattice work and insect screening, shall be designed, and constructed to fail under base flood or lesser conditions, without imparting additional flood loads to the foundation or superstructure and without producing debris damage to the structure or adjacent structures.*

Breakaway walls and their connections shall be designed in accordance with the requirements of Section 5.3.3 of ASCE 7 Minimum Design Loads for Buildings and Other Structures (ASCE/SEI 2010). Attendant utilities and equipment shall not be mounted on, pass through, or be located along breakaway walls."

"4.6.2 Openings in Breakaway Walls Openings to allow for the automatic entry and exit of floodwaters during design flood conditions shall be installed in breakaway walls. The minimum total net area of the openings shall meet the requirements of Section 2.7.2.1 or Section 2.7.2.2 and shall be installed in accordance with Section 2.7.3"

The purpose of these breakaway walls are to detach from the main structure during flooding, enabling the passage of water in and out without jeopardizing the integrity of the building. The current building has flood vents, which are not consistent with the foregoing ASCE Code provisions.

The current structural composition of the building makes it impossible to modify the masonry walls to breakaway walls, since in this system it is not possible to demolish large sections of wall without damaging the integrity of the structure, independent wall sections are not suitable for resist design loads. **This system will resist the additional loads to which they will be exposed until their collapse, since they will not be able to withstand the dynamic pressures produced by the effect of water under a flood or storm**.

3. CONCRETE BEAMS AND COLUMNS

The current building support system includes concrete beams and columns to support loads at the opening of the exterior walls and open spaces within the residence.

As part of the evaluation of the existing structure, to produce evidence to determine if it will function safely during its residual useful life, non-destructive tests were carried out to determine the concrete resistance to verify compliance with the durability requirements of Florida Building Code.

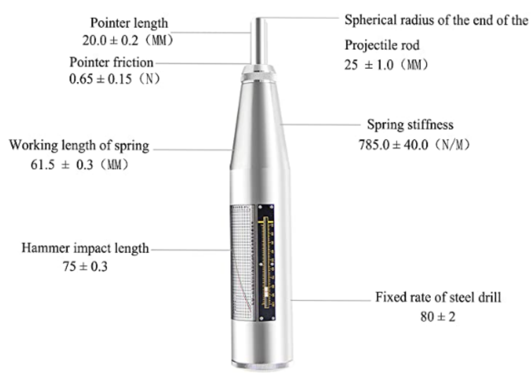
According 2020 FBC-excerpt 1904.1, Structural Concrete shall conform to the durability requirements of ACI 318. A concrete exposed to external source of chlorides from seawater (or spray from this zone) is classified as C2 class-Exposure Categories (ACI 318, Table 4.2.1). Based on the exposure class, concrete strength (f'c) shall comply with 5000 pounds per square inches (psi) as minimum and water per cement (w/c) ratio of 0.40 (ACI 318, Table 4.3.1).

Structural Test Performace

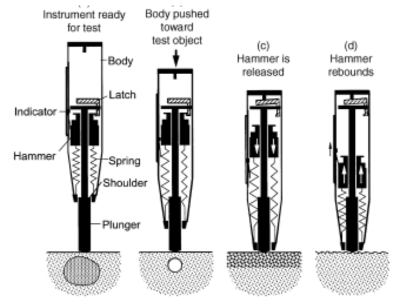
Test Type: Non-Destructive Testing
Standards: ASTM C805: Standard Method for Rebound Number of Hardened
ACI 228.1R: In-place Methods to Estimate Concrete Strength
Instrument: Sclerometer

Purpose: Measures the hardness of a surface. Allows checking the uniformity of the concrete by reading the rebound number; with which the resistance of concrete is estimated.
MEASURING INSTRUMENT: CONCRETE REBOUND HAMMER TESTER

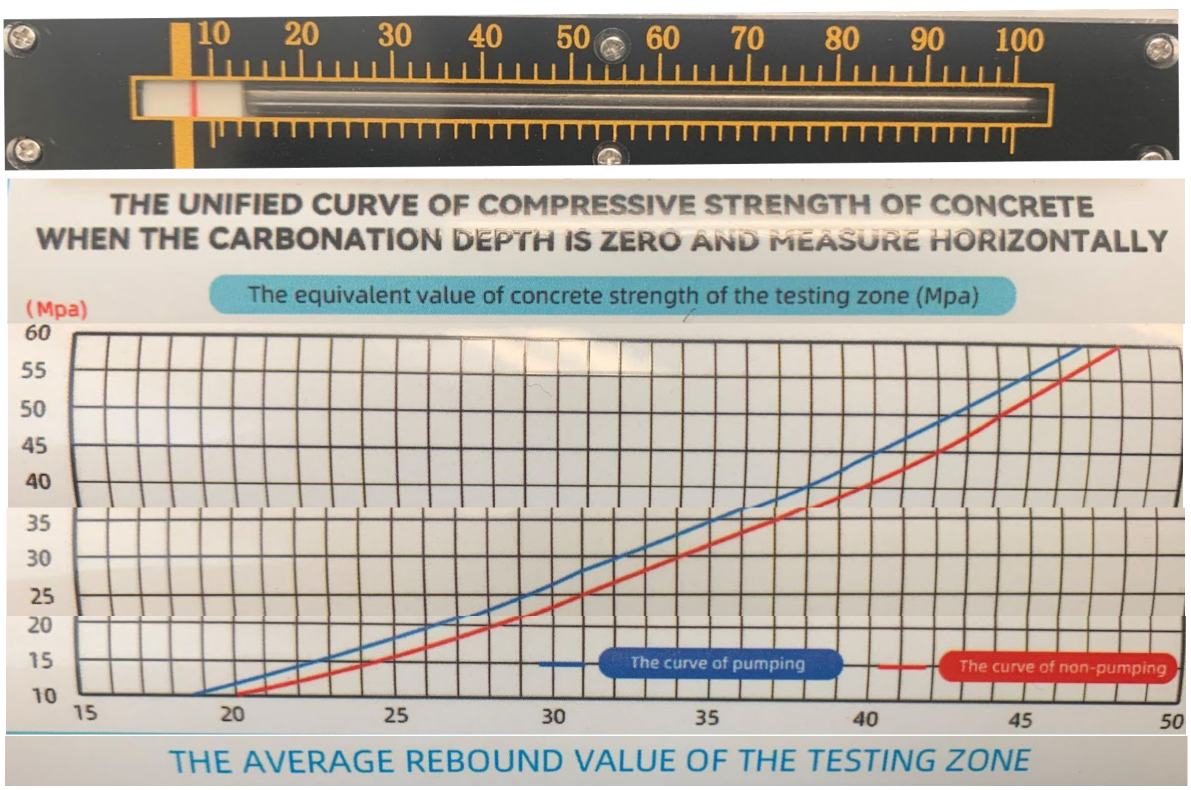
- BRAND: NEWTRY
- MODEL: HT-225
- MEASURE RANGE: 10-60 Mpa

Instrument Parameters	Instrument parts
	

Operation - Procedure	
	1. Hold the rod against the surface of concrete, press the instrument lightly, release the button, extend the rod when the pressure is relaxed hang the hook on the hammer. 2. Make the axis of the instrument perpendicular to the surface of concrete and apply pressure slowly and evenly. After the hammer is decoupled and impacted, the hammer rebounds and moves the pointer back to a certain position. 3. Make de movement of the instrument continue to stand against to the concrete surface to read and record the rebound value. If the condition is not conducive to reading, press the button, lock the movement and move the instrument to another place to read. 4. Gradually decompress the instrument so that the projectile bar extends from the instrument to be used next time.

Main Technical Specification	
1. Nominal kinetic energy (Standard impact energy): 2.207 J (0.225 kgfm) 2. Mean value of steel-anvil rating: 80+/-2 3. Overall dimension: □60x280 mm 4. Weight: 1 kg 5. Test thickness: < 700 mm	 *Fig. 2.2—Schematic to illustrate operation of the rebound hammer.* Source: ACI 228.1R

Resistance Concrete Calculation



Schematic Graph for calculation of concrete resistance
Source: instrument-photographs

Procedure:

1. Read the "Average Rebound Value of the Testing Zone" on the axis of the X-Axis.
2. Move vertical-up and intersect the blue-curve.
3. Move horizontal-left and read the Concrete Strength Value [Mpa]

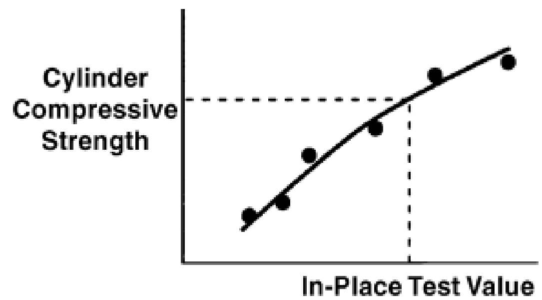
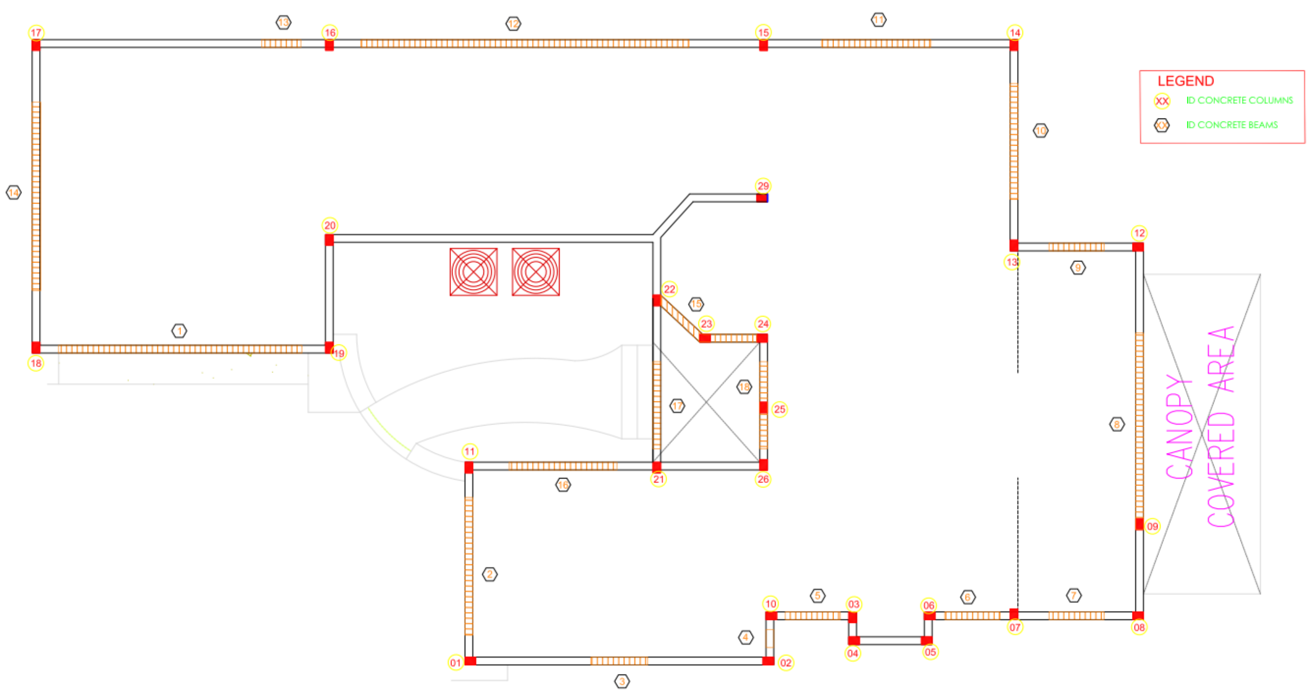
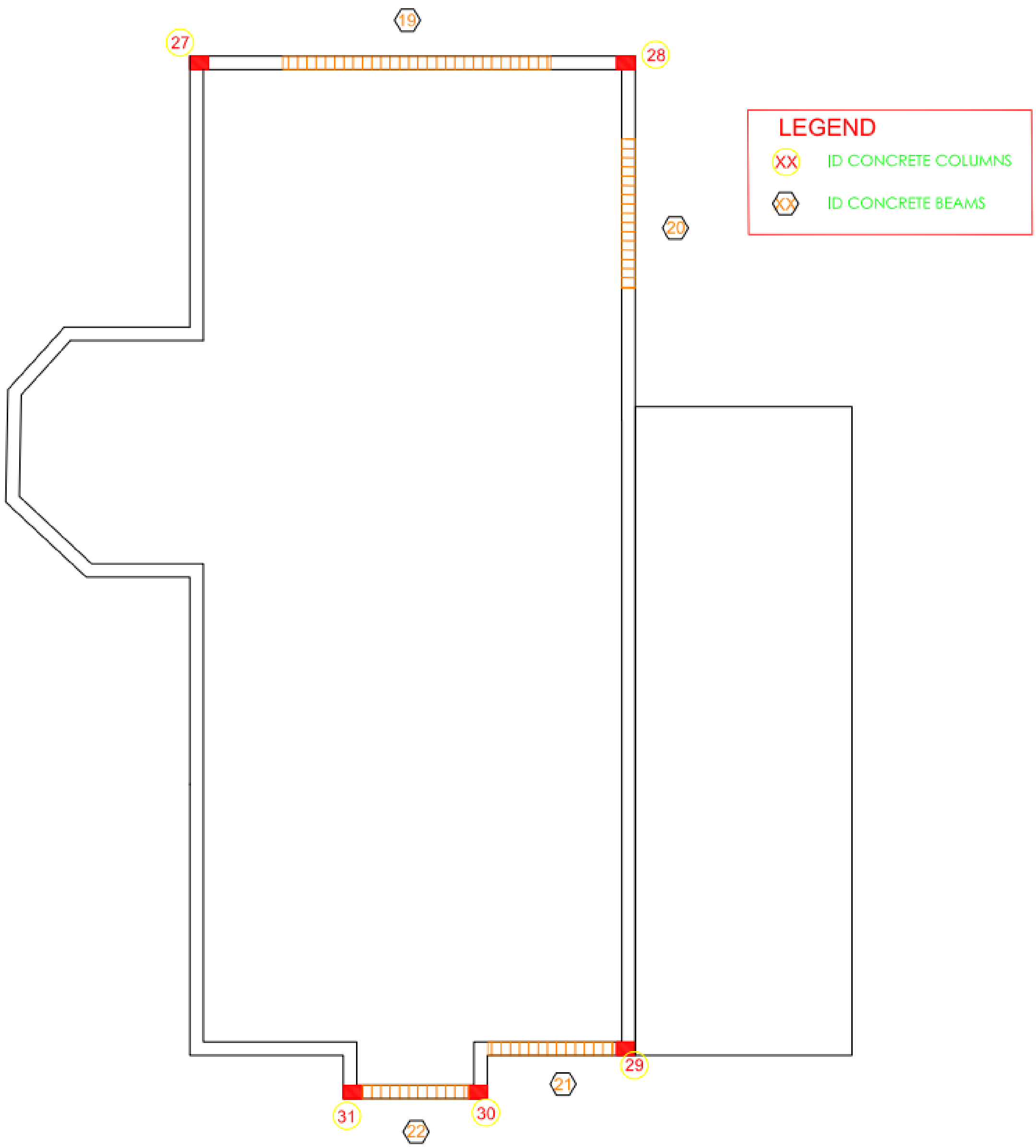


Fig. 2.1—Schematic of relationship between cylinder compressive strength and in-place test value.

Source: ACI 228.1R




19
27
28
LEGEND
XX
ID CONCRETE COLUMNS
XX
ID CONCRETE BEAMS
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29
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31
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22

SCLEROMETER TEST RESULTS FOR CONCRETE BEAMS

POINT	***MEASURES***			***AVERAGE***	***CONCRETE f'c (Mpa)***	***CONCRETE f'c (psi)***
SECOND LEVEL BEAMS						
1	34	36	36	35.34	35	5077
2	27	26	25	26.00	19	2756
3	26	26	30	27.34	23	3336
4	32	30	35	32.34	30	4352
5	34	28	32	31.34	29	4207
6	32	33	31	32.00	29	4207
7	30	29	30	29.67	26	3771
8	29	31	32	30.67	27	3917
9	30	34	32	32.00	29	4207
10	36	36	36	36.00	36	5222
11	18	16	18	17.34	FAIL	FAIL
12	24	24	25	24.34	16	2321
13	24	24	26	24.67	17	2466
14	26	28	28	27.34	23	3336
15	27	29	28	28.00	23	3336
16	30	30	28	29.34	25	3626
17	26	26	27	26.34	20	2901
18	26	32	26	28.00	23	3336
ROOF LEVEL BEAMS						
19	25	25	26	25.34	19	2756
20	22	26	26	24.67	18	2611
21	28	28	28	28.00	23	3336
22	27	28	26	27.00	21	3046

SCLEROMETER TEST RESULTS FOR CONCRETE COLUMNS

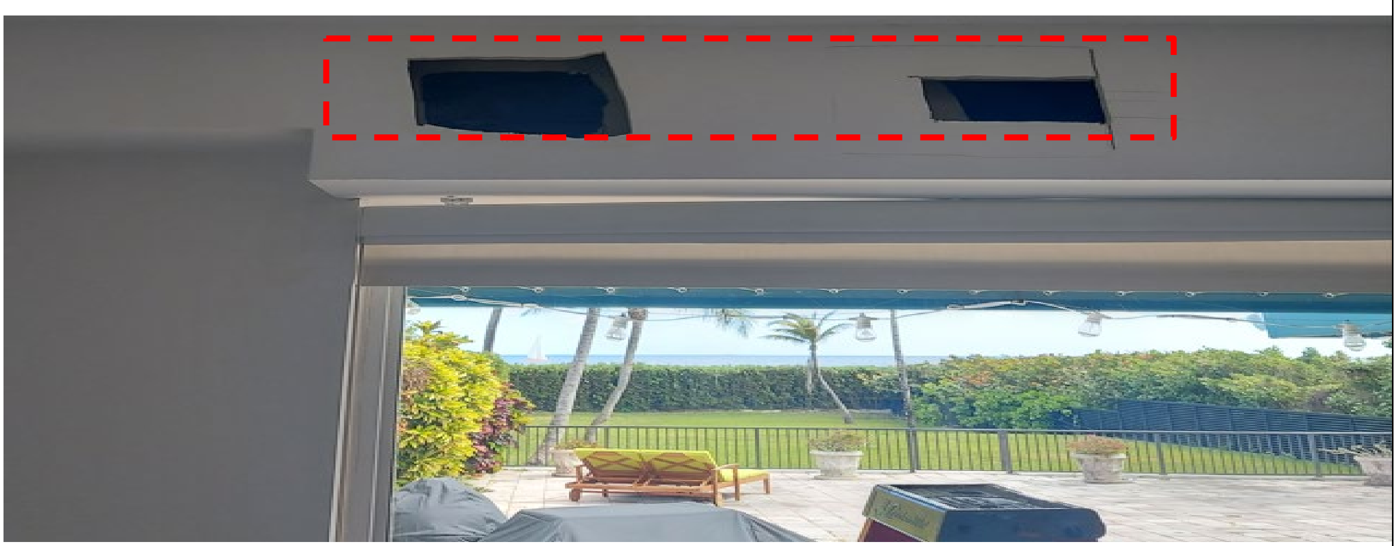
POINT	MEASURES			AVERAGE	CONCRETE f'c (Mpa)	CONCRETE f'c (psi)
GROUND LEVEL COLUMNS						
1	29	29	28	28.67	24	3481
2	29	30	29	29.34	26	3771
3	25	26	27	26.00	19	2756
4	38	38	35	37.00	38	5512
5	34	35	35	34.67	34	4932
6	35	41	39	38.34	41	5947
7	21	22	22	21.67	14	2031
8	32	29	29	30.00	26	3771
9	31	30	31	30.67	27	3917
10	30	30	30	30.00	26	3771
11	28	28	26	27.34	23	3336
12	35	35	36	35.34	35	5077
13	29	28	31	29.34	25	3626
14	31	31	32	31.34	29	4207
15	30	30	29	29.67	26	3771
16	28	28	29	28.34	24	3481
17	28	28	30	28.67	24	3481
18	30	29	32	30.34	27	3917
19	31	30	32	31.00	28	4062
20	25	28	28	27.00	21	3046
21	30	32	28	30.00	26	3771
22	31	32	32	31.67	29	4207
23	22	24	24	23.34	16	2321
24	30	30	29	29.67	26	3771
25	26	28	28	27.34	23	3336
26	34	36	32	34.00	33	4787
27	33	34	32	33.00	31	4497
28	26	28	28	27.34	23	3336
29	31	34	31	32.00	29	4207
30	27	28	26	27.00	21	3046
31	32	30	30	30.67	27	3917

ANALYSIS OF THE RESULTS

Based on the structural compression capacity obtained from the test carried out the less than average results determined that the home is compromised to resist future loads, safely and without danger of collapse. Moreover, with the water-cement ratio used to produce a concrete with an f'c of 3000 psi, it is not possible to achieve a water-cement ratio equal to 0.40 required by ACI, to ensure the durability of the structure. The highlighted results above indicate all of the noncompliant samples. Of the 31 test averages, only 5 complied with the minimum standard required pursuant to ACI 318, Table 4.3.1. The one "FAIL" in the results indicates that there was no resistance, and the compression capacity could not be determined.

As a result of the visual inspection, cracks were observed in bearing elements of reinforced concrete. See Figure 3 below. This is produced as a consequence of the increase in volume of the reinforcing steel produced by an oxidation state. Sulfates attack concrete, forming expansive compounds that cause cracking. Chlorides, if they reach the rebars, cause its corrosion. The cracking caused by sulfates facilitates the penetration of chlorides and the corrosion of the reinforcement. Once the concrete cracks, the integrity and design capacity of the structural element are not guaranteed.

Figure 3. Cracking of the concrete in Main beam due to sulphation of the concrete and oxidation of the reinforcing steel



Cracking of the concrete in Main beam due to sulphation of the concrete and oxidation of the reinforcing steel

4. ROOF

The design codes used for the structural analysis of buildings are constantly updated, based on research to make houses increasingly safe to resist imposed or eventual loads. The 2020 Florida Building Code requires the use of ASCE 7-16. In particular, the ASCE 7-16 code that establishes Minimum Design Loads and Associated Criteria for Buildings and Other Structures, has incorporated into each version more stringent wind requirements.

For example:
The ASCE 7-16 has several significant changes from 2010: Enclosure Classification; Basic Wind Speed; Ground elevation above Sea Level; Edge Zones; Rooftop Equipment; Design Wind loads; Wind loads on Rooftop Solar Panels; Design Wind Pressures Component Cladding Loads on roofs with h <= 60 ft; Attached canopies on buildings with h <= 60 ft; Tornado Limitations.

The ASCE 7-22 has significant changes to the wind loading design provisions from 2016, that will affect building design: Changes to the basic wind speed maps; Change to the Wind-borne Debris Region (WBDR); Changes to the component and cladding external pressure coefficients (GCp) for roofs of buildings with roof slopes greater than 7°.

Evolution of the Wind Codes

Year	Overview	UBC	IBC
ANSI A58.1-1955	Initial wind design standard		-
ANSI A58.1-1972	Quantum Leap in Sophistication, but plagued with ambiguities	1979	-
ANSI A58.1-1982	Fixed Issues with 1972 document	1982, 1985, 1988	-
ASCE7-88	ASCE took over maintenance of standard with few changes from '82	1991, 1994, 1997	-
ASCE7-93	No Changes Made	-	-
ASCE7-95	Significant update: 3-Second Gusts, topographic effects, wind-induced torsions, simplified procedure for buildings under 60 ft	-	-
ASCE7-98	Wind Speed Map updated, Wind Directionality Factor Added, Exp. C&D definitions changed, procedures defined, glazing protection added	-	2000
ASCE7-02	Minor Updates	-	2003
ASCE7-05	Surface Roughness Added to help better define Exposure Categories, Other Minor Updates	-	2006 2009
ASCE7-10	Wind Map Changes, Reorganization	-	2012 2015
ASCE7-16	Wind Map changes, new factors, zone changes, tornado guidelines		2018

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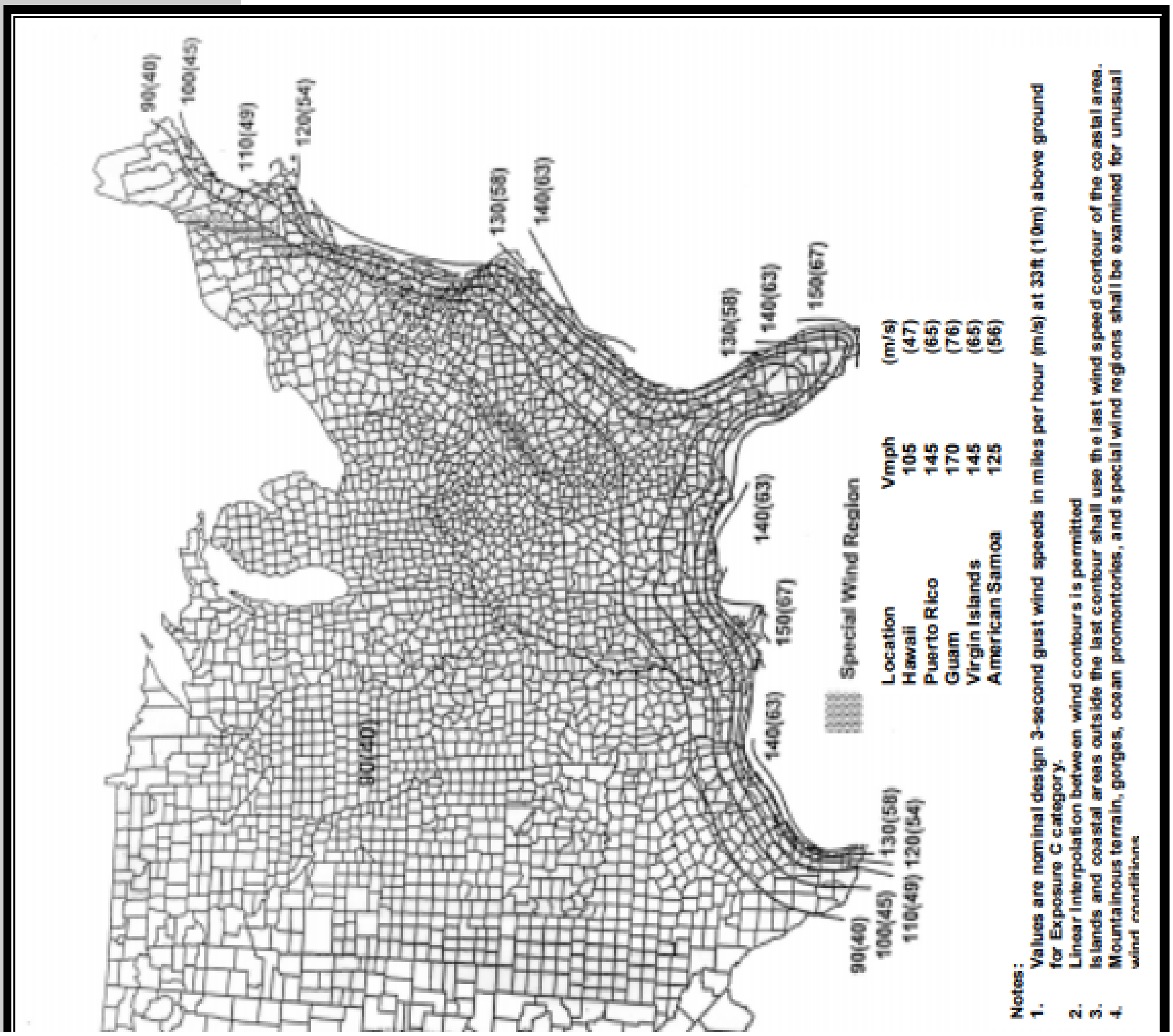
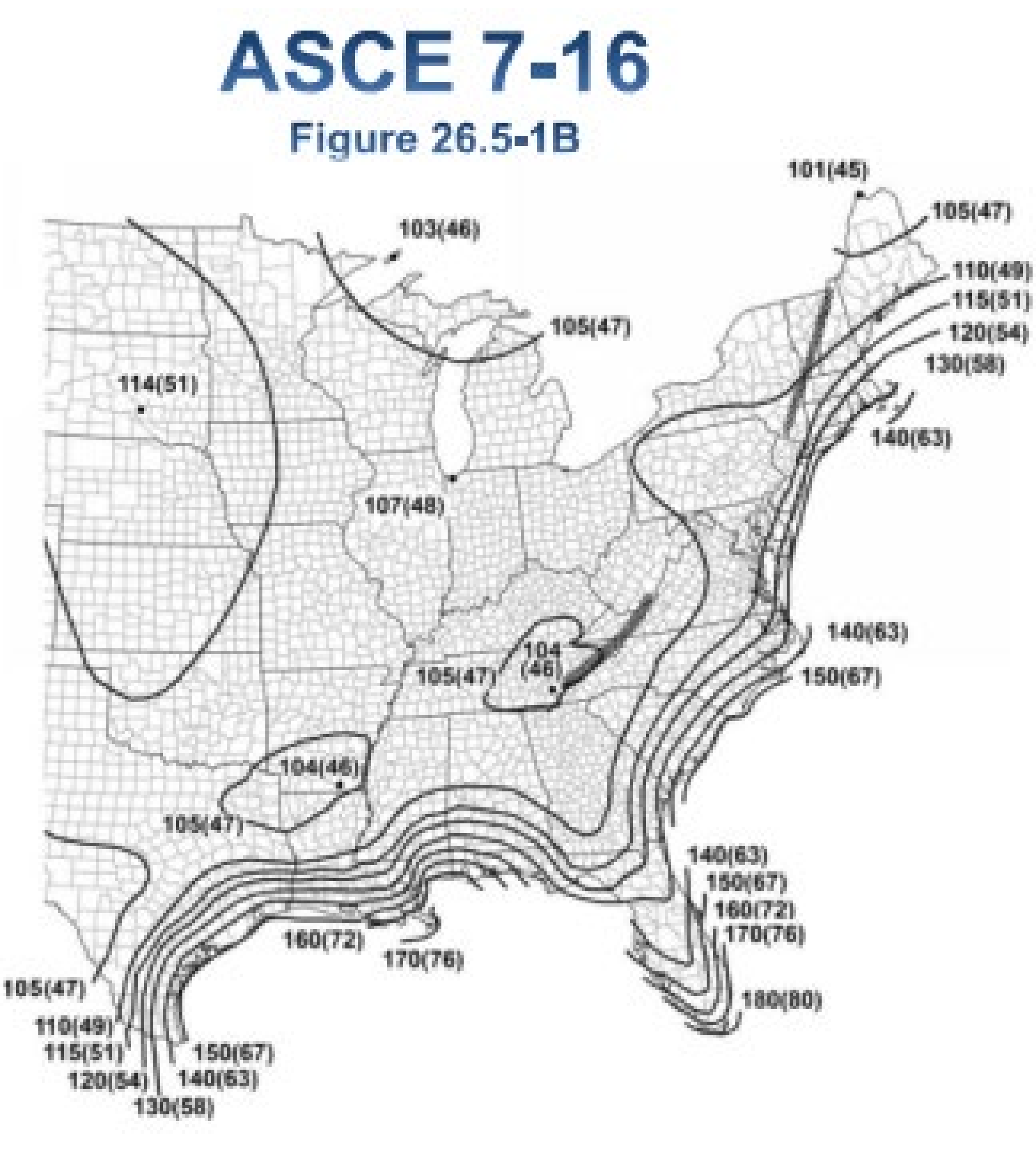
From 1998 to 2016, the basic wind speed to be considered in the design increased by 20%

FIGURE 3.2 ***Basic Design Wind Speed Map from ASCE 7-98***



V = 150 mph (Miami Area)



V = 175 mph (Miami Area)

Due to the above, the structural analysis of the existing house did not consider design parameters that are mandatory in the current code. The existing roof is approximately 21-years old. Therefore, the age of the roof predates the requirements of the current code. Even when additional ties could be included in the roof deck to make it resistant to design wind pressures, the masonry walls are not reinforced, so there is no transmission of forces to the foundations that guarantee resistance to uplift loads. The roof does not have gutters or downspouts, causing runoff in unintended locations.

The current structural system is not considered adequate to resist forces from hurricanes.

5. CONCLUSION

From a structural perspective, the current state of the building reveals numerous issues that render its restoration impossible to meet regulatory standards.

- The existing foundation system, whatever it may be (considered in the possible scenarios discussed above), are not adequate to support the new loads and hydrodynamic pressures if there was any possibility to raise the home.

- The existing structural system on the first level is not suitable for flood events.
  It is not possible to remove all masonry walls without damaging the structural integrity of the building. Therefore, it is not possible to consider breakaway walls for the first floor.

- The existing masonry walls, without reinforcing steel, are not capable of supporting lateral loads due to hurricane events or flood pressures.
  Existing flood openings, designed to reduce pressure on the walls, are located at the bottom of the exterior walls. These cannot be moved upwards as there would be a flood in the interior area of the house, causing an electrical risk.

- The compressive stress of the concrete obtained for the different bearing elements (beams and columns) averaged 3-3.5 ksi. ACI-318 requires a minimum strength of 5 ksi, with a water-cement ratio of 0.40.
  It is not possible to increase the strength of hardened concrete to achieve a compressive strength equal to 5000 psi required by the 2020 Florida Building Code.

- The existing roof structure is not adequate to withstand the forces of hurricanes. If tie beams were introduced, the walls are not reinforced, therefore the improvement would needless.

Based on the results obtained from the tests carried out, a total demolition of the structure is recommended.

Violation of any code failure status means a complete code violation and it is not possible to bring the existing structure into compliance.

Implementing a comprehensive renovation by raising the elevation of all floors in the building is not feasible. Such an approach would necessitate the complete demolition and reconstruction of the entire structural system. The following items would need to be considered:

- Demolish and rebuild a foundation system suitable for the new loads.
- Demolish the first-floor walls and change the support system to a beam and column framing system.
- Build new walls on the first level that meet the breakaways wall requirement.
- Demolish the existing concrete beams, to rebuild them in a new elevation.
- Demolish existing concrete columns. Adapting or rebuilding them to fit the new elevation is not an option, since the existing section would not meet the required mechanical resistance to compression.
- Demolish the diaphragm of the second level and rebuild it at the new level.
- Demolish the entire structural system of the second level and roof to rebuild them at the new required level.

Additionally, the reconfiguration of the entire electrical and mechanical system: ancillary services and equipment must be at or above the required elevations or must be specifically designed, constructed, and installed to prevent flood waters from entering or accumulating within components.

Final Assessment

Codes dictated by FEMA, FDEP and ASCE 24 have become more stringent over the years to account for the new studies and evaluation of the damage that 100 year flood can cause. The house built in 1935 did not require to meet at the time the conditions that today are required for new construction. The property is in a vulnerable location, directly exposed to elements. It is not possible to remodel the house to be in compliance with the foregoing regulations and be resilient to sea level rise and flooding. Therefore, new construction is required.

EXHIBIT 1
(GRAPHICAL REFERENCE)

Stucco repair areas at facades

West facade

South façade

South façade

East façade

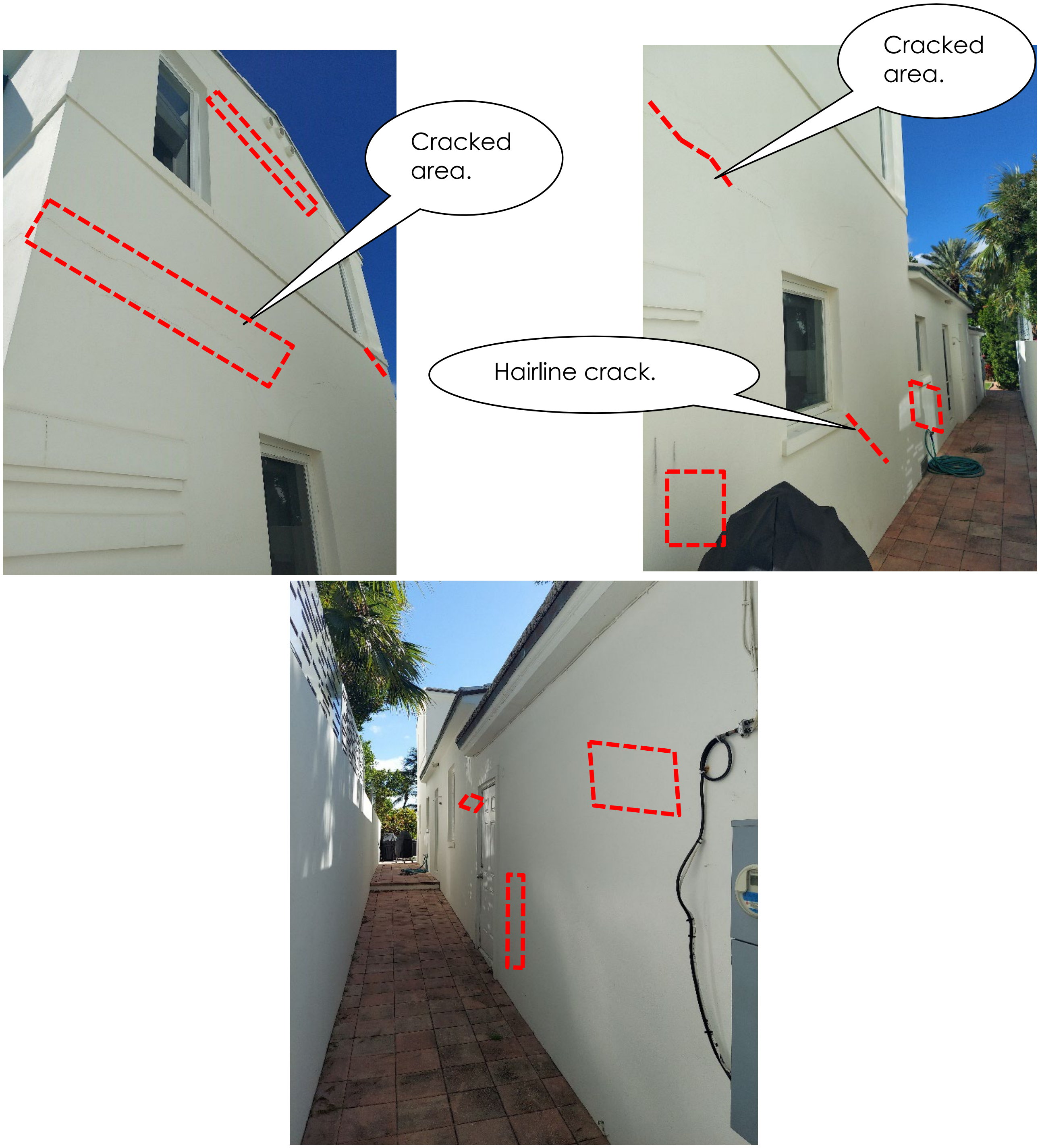
East side

Stucco in poor condition

Cracked beam.

East side

North façade

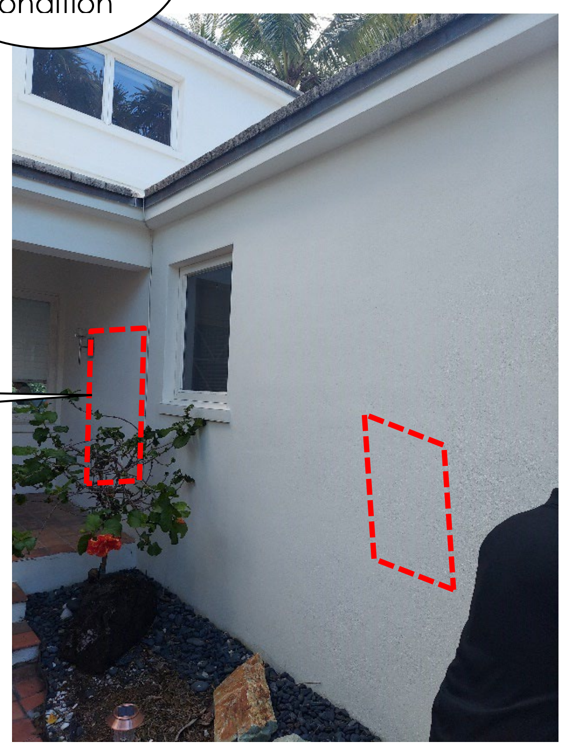

Cracked area.
Cracked area.
Hairline crack.

Stucco in poor condition

West side

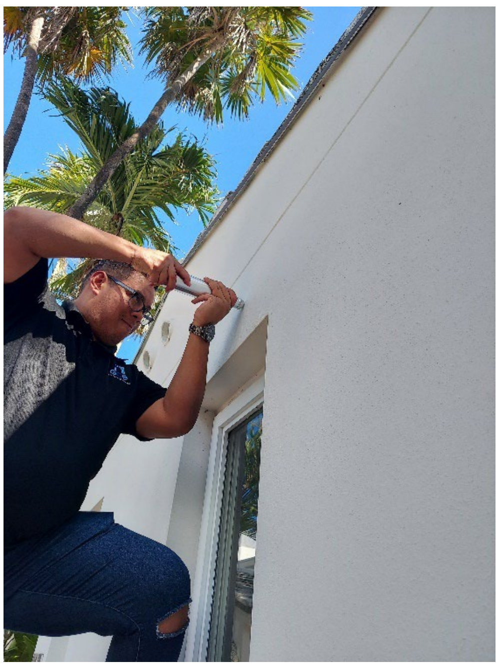
Main entrance

Stucco in poor condition

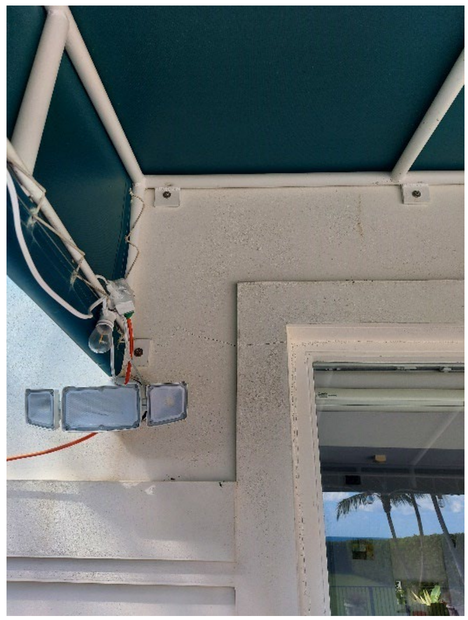


Stucco in poor condition

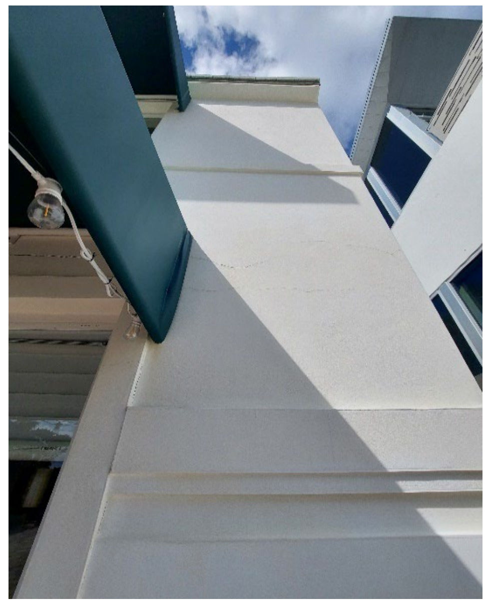
Sclerometer test



Façade stucco condition

Cracked beam, east side.

This is not a Code Compliance Inspection. Further Inspections conducted by City of Miami Beach Building Department may be necessary.

Alioskar Ganem P.E.
F.L Reg. P.E # 74745

This inspection is made on the basis of what is readily accessible and visible. No attempt was made to uncover, remove or expose hidden areas. This report does not constitute a guarantee of any kind. It is only an inspection report of the current and existing conditions of the property inspected. Alioskar Ganem P.E. will be liable for the findings or lack of the findings of this inspection report. This report is not an attempt to bid on any of the areas needing repairs and or replacement. LIABILITY OF THIS REPORT IS LIMITED TO THE COST OF THE INSPECTION REPORT. This inspection report is the professional opinion of the individual conducting the inspection. Future function of any of the elements inspected is not guaranteed in any way by this report. Acceptance of this report shall constitute agreement of these conditions.

In our opinion, the subject property is generally in fair condition, based on the age* and above noted comments, and assuming that normal and proper construction methods and/or updates or repairs were employed where hidden. This assumes that recommendations or comments made in this report are properly performed, repaired or checked by qualified and/or licensed contractors. Firm quotations should be obtained from licensed contractors for repairs to any of the above items. If you have any questions or need further assistance, please write us.

* Due to the age/condition of the subject property a detailed list of deficiencies and /or needed repairs are beyond the scope of this inspection, and as such are considered part of the regular necessary maintenance of older buildings. This inspection can only determine the visual physical and operational conditions of this property on the day of the inspection (07/16/21 and 07/19/21) . This inspection report is not warranted or guaranteed in any way.

Since I am not licensed pest control operators, I cannot and do not specifically address the presence of wood destroying organisms (including mold or fungus), insects (including termites), or any other pest activity, or identify damages caused by them. It is recommended that a licensed pest control company be employed to inspect for termites, pests, or any other wood destroying organisms, and/or any related material damages.

This report is the expressed opinion of Alioskar Ganem P.E. only and does not bind any party to make any repairs or replacements. This report can only include visible elements and conditions and does not purport to cover inaccessible areas or hidden damages. This report does not intend to replace, supersede, or include the contents of a formal disclosure statement, and it is recommended that a property disclosure statement be obtained for your information

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Thank you for this opportunity of being of service to you, please do not hesitate to contact us if you have any further questions.