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Structural damage at Florida Cando Complex – An Overview

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***Abstract:** In this paper the structural damage at Florida complex is being discussed. Inspite of an early report by engineering consultant, giving evidence of possible structural damage and necessity of repairs required, the delay in repair works resulted in a catastrophic collapse of the building in the middle of the night. The study on this collapse of the building opens the discussion on timely actions to be taken during the construction as well as maintenance of the buildings.*
***Keywords:** Structural damage, collapse, deteriorating, repair, corrosion, water seepage.*

I. INTRODUCTION

Champlain towers south, in Miami, Florida, built in 1981, collapsed on June 24, 2021. The buildings were L shaped with 12 stories. The architectural consultants were William M. Friedman and Architects, Structural engineer were Breiterman Jurado, main contractor were Nattel Construction.

The project was new construction in surfside since 1970's, when Miami Dade County introduced moratorium on new development. Investigation revealed main cause is long term degradation of reinforced concrete structural support in the ground level parking garage, due to water seepage which led to corrosion.

II. 2018 ENGINEERS REPORT

In 2018, a consultant found alarming evidence of major structural damage to the concrete slab below the pool deck, there were cracks in columns, beams and walls of the parking garage. The chief consulting engineer Frank Morabito warned that the deck was not having sufficient slope to drain water.

The following points were noted in the report:

1) Interior flooding during hurricanes due infiltration of water through faulty sealant in windows and sliding doors.
2) The consultant observed that almost all the balconies have damaged or cracked floor tiles.
3) The concrete slab edges of balconies were spalling or cracking, which is leading to water infiltration and causing corrosion to the reinforcement.
4) Almost all the balconies soffits were showing deterioration of painted surfaces.
5) There was infiltration of water through almost all the windows and glass facade due to ageing sealants.
6) The consultant found non existence of window cleaning suspension hooks.
7) The consultant examined the Roof and found no adverse damage, except for few cracks in parapet walls and some roofing damage.
8) The main issue which the consultant found that the entrance drive, pool deck waterproofing is laid on a flat surface. There is no slope to drain water. The water has to get evaporated. This is major error during construction.
9) The consultant found that replacing the existing waterproofing will be extremely expensive.
10) Abundant cracking and spalling of varying degrees were observed in columns, beams and walls.
11) The consultant found that many of the previous repairs were falling apart and require immediate repairs.

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III.DELAY IN REPAIR WORK

The consultant report helped shape plans for a multimillion dollar repair project that was set to get underway soon. But more than two and a half years after warning by consultant, the building suffered a catastrophic collapse.

In early 2021, the president of the condominium association warned residents that the damage in the parking area had got worse and repairs needed to be done immediately.

Jean Wodnicki told residents the concrete deterioration was accelerating and the roof situation was also much worse.

Morabito Consultants have said that the time of the collapse, roof repairs were under way but concrete restoration had not yet begun. Some people believe it is possible that vibrations from the recent construction of the adjacent 18-storey tower block, may have caused some ground movement. Champlain Towers South residents raised concerns in 2019 that they had felt movement and shaking during the construction work.

IV.LEGAL ACTION

A lawsuit was filed by a resident of the building against the Champlain Towers South Condominium Association, seeking $5 million in damages. On July 2, the Champlain Towers South condominium board issued a statement to the press following a judges decision directing receiver to release emergency assistance funds to the residents of the building.

V. CONCLUSIONS

Adequate care should be taken during construction of multistoried buildings. Exposure of buildings to water, especially sea water has adverse effect on the integrity of structure. Proper waterproofing should be done for all exposed structures. Every five years there should be complete inspection and certification by the competent authority. Proper cover should be provided to the rebar. Adequate soil investigation should be done for proper foundation design.

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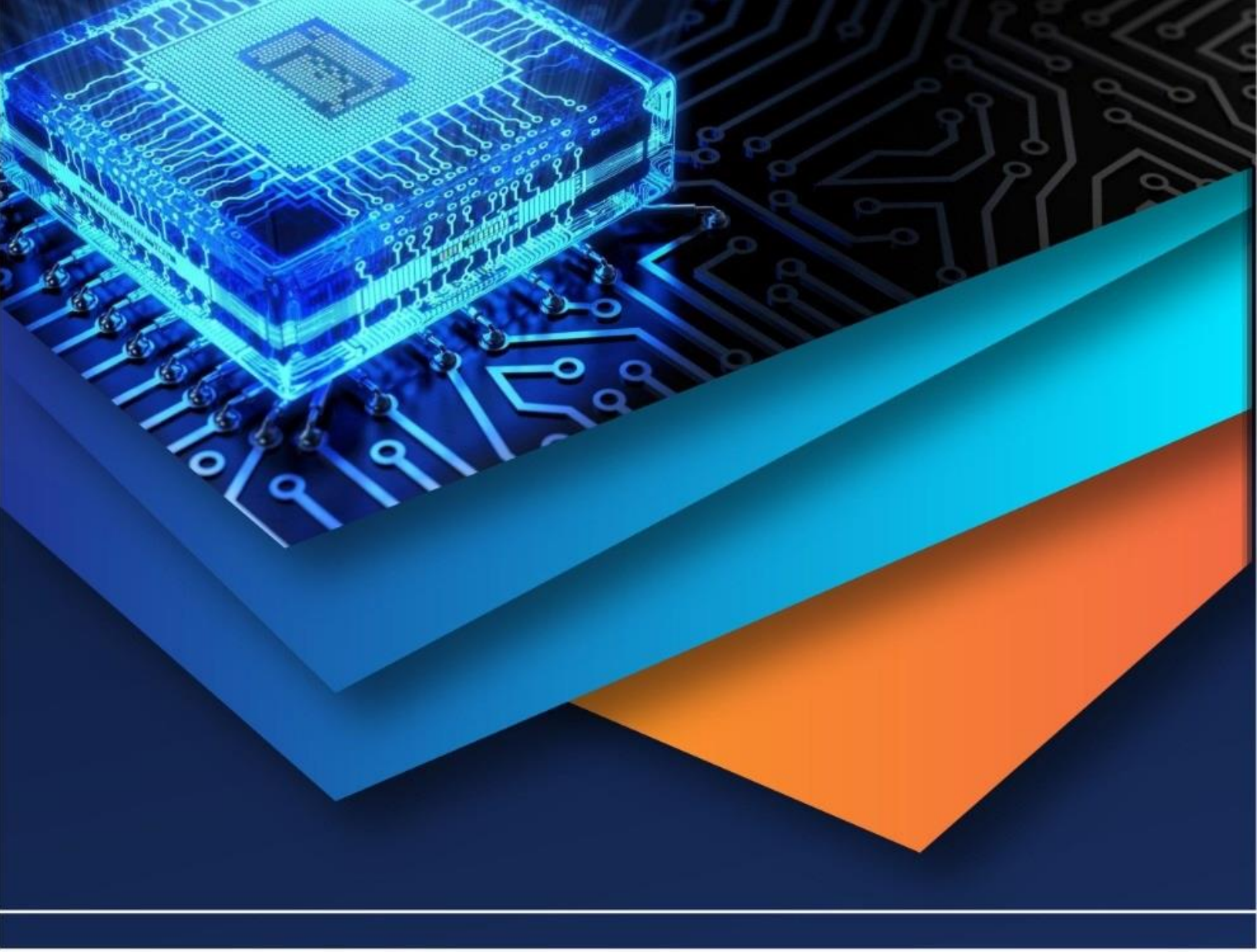

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