15805 BISCAYNE BLVD STE 210 North Miami Beach—Florida 33160 Phone (786) 916-6546 alioskar@ganemconsultingeng.com



STRUCTURAL INSPECTION REPORT



August 9th, 2021

250 174TH St SUNNY ISLES FL. 33160

PREPARED BY
GANEM CONSULTING ENGINEERING
ALIOSKAR GANEM PE.
LIC. 74745



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FOREWORD

I Alioskar Ganem was contracted to perform a visual inspection of the building located at 250 174th St. Sunny Isles, Fl. 33160 and, based on such evaluation, describe the findings and provide proper recommendations.

INTRODUCTION

The visual inspection of the building in reference took place on Monday August 09th and Wednesday August 11th, 2021, was performed by Mr. Alioskar Ganem P.E. The main objective of the inspection was to perform a visual observation of all the Structural Components of the building above referenced, and take pictures 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, also to check all the existing conditions to ensure that all its components were built following the minimum standards of the Florida Building Code.

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OBSERVATION, EVALUATION AND RECOMENDATIONS

Existing building under the typical building code methods applied at the moment of the construction, that mean masonry framing wall, concrete ground slab, concrete intermediate slabs, and roof slabs, and precast joist. Every accessible area from the exterior and interior was evaluated (see Exhibit 1). Pictures were taken to record and show all components of the residence, because of the inspection we found different areas that are affected by the corrosion and lack of maintenance including but not limited to walls, beams, eyebrow, and slab, these conditions will be explained in further detail on the following items (please see pictures attached).

As a main reference we noticed a big spalled area below the pool slab. Which could be caused by the lack of the maintenance of the slab. Causing the water leak and the Prescence of chlorine at the slab. Also, along the garage building we found spalled concrete at the columns, beams, and slab. All these conditions must be taken in consideration in order to avoid any further damage.

We concluded that the building is SAFE for its current use, but a short-term plan must be implemented at once to address and remedy all items heretofore mentioned to avoid any future structural damage or unsafe condition in the near future. Also, for the slab area below the pool and each beam that holds such structural element, must be immediately supported using shoring with a minimum resistance of 9,000 lb per post and a minimum separation of 4ft between post. This condition will allow to minimize the impact of the damage of the concrete elements. Also as a manner of initial recommendations we are presenting at the back of these report a copy of the typical details that must be presented at the respective permit of concrete restoration plans (see reparation procedures details)

If you have any question, please do not hesitate to let me know

Alioskar Ganem P.E.

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

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 (08/09/21 and 08/11/21). 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

This inspection report is an instrument of professional service and is the property of Alioskar Ganem P.E. and is intended for the customer's sole use and information. Any reproduction of this report or use by other parties without prior written permission is prohibited.

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

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EXHIBIT 1 (GRAPHICAL REFERENCE)

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VISUAL INSPECTION REPORT

RP#1

Location: Concrete Joist East Ramp **Type of Reparation:** Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#2

Location: Concrete Joist (Spot 239)

Type of Reparation: Spalled concrete and honeycomb

Status: Spalled Concrete

Inspection Date: 08-09-2021



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RP#3

Location: Edge spot 239

Type of Reparation: Edge repair

Status: Spalled Concrete Inspection Date: 08-09-2021



RP#4

Location: 234

Type of Reparation: Spalled concrete edge repair, rebar exposure at the bottom

Status: Spalled Concrete

Inspection Date: 08-09-2021





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RP#5

Location: Concrete Joist (220)

Type of Reparation: Spalled Concrete

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#6

Location: 2nd level Slab below toilets (spots 302-306)

Type of Reparation: Spalled Concrete



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RP#7

Location: Concrete Joist (Driveway front of 307)

Type of Reparation: Hairline Crack

Status: Spalled Concrete **Inspection Date:** 08-09-2021

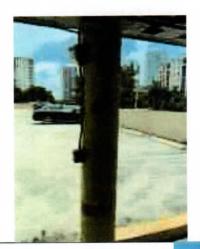


RP#8

Location: Slab above 255

Type of Reparation: Full Concrete repair and column





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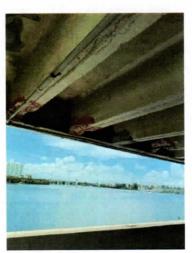
RP#9

Location: Concrete Joist and column at parking #456

Type of Reparation: Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-09-2021





RP#10

Location: Concrete Joist above parking # 455

Type of Reparation: Spalled Concrete



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RP#11

Location: Slab above parking # 450
Type of Reparation: Full Concrete

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#12

Location: edge at parking # 442 and 446

Type of Reparation: Edge Repair



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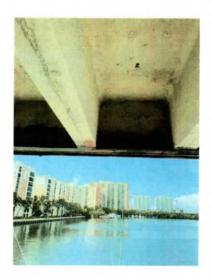


RP#13

Location: slab above parking #441

Type of Reparation: Spalled concrete on Joist and edge Repair

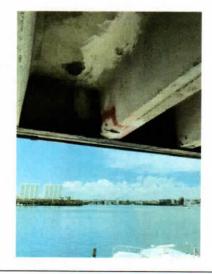
Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#14

Location: slab above parking #438

Type of Reparation: Spalled concrete on joist and edge



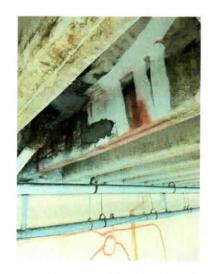
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RP#15 & RP#16

Location: Driveway at parking #438
Type of Reparation: Joist Repair

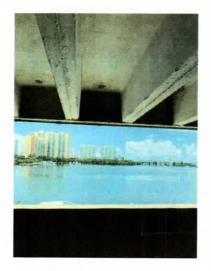
Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#17

Location: slab edge at parking #434

Type of Reparation: Edge Repair



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RP#18

Location: Slab above parking #433

Type of Reparation: Full Concrete Repair

Status: Spalled Concrete Inspection Date: 08-09-2021



RP#19

Location: Slab above parking #431 **Type of Reparation:** Full Concrete



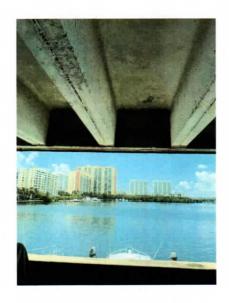
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RP#20

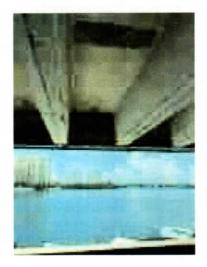
Location: Edge at parking # 429
Type of Reparation: Edge Repair

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#21

Location: Edge parking #427
Type of Reparation: Edge Repair



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RP#22

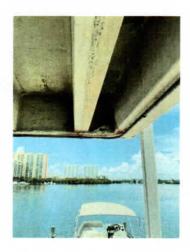
Location: Edge parking #424 **Type of Reparation:** Edge Repair

Status: Spalled Concrete Inspection Date: 08-09-2021



RP#23

Location: Edge at parking # 420
Type of Reparation: Edge Repair



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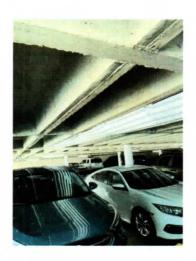


RP#24

Location: Slab above parking # 362 to 408

Type of Reparation: Slab repair

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#25

Location: Column parking # 359 **Type of Reparation:** Column Repair



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RP#26

Location: Column parking # 359 **Type of Reparation:** Column Repair

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#27

Location: 2nd Floor Slab parking # 319 - 318

Type of Reparation: Joint Repair

Status: Spalled Concrete y expansion joint to be replaced

Inspection Date: 08-09-2021







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RP#28

Location: Driveway at 314-315

Type of Reparation: Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#29

Location: Driveway at 314-315

Type of Reparation: Spalled concrete



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RP#30

Location: Ground Floor above parking # 64-65

Type of Reparation: Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-09-2021



RP#31

Location: Ground floor parking # 60-61 **Type of Reparation:** Honeycombs



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RP#32

Location: Ground floor parking # 56-59 **Type of Reparation:** Honeycombs

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#33

Location: Ground floor, Driveway at parking #59-58 and 53-52 **Type of Reparation:** Spalled concrete with rebars exposure





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RP#34

Location: Ground floor parking # 48-49 **Type of Reparation:** rebars exposure

Status: Spalled Concrete
Inspection Date: 08-11-2021



RP#35

Location: 2nd Floor Slab parking # 40-41 and 35-34

Type of Reparation: crack repair







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RP#36

Location: Ground Floor parking # 32-33; #30-31 and 28-29

Type of Reparation: concrete cracks Repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021





RP#37

Location: Ground Floor parking # 24-25 **Type of Reparation:** Spalled concrete





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RP#38

Location: Ground Floor Driveway parking # 23-22

Type of Reparation: Honeycombs

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#39

Location: Ground floor Driveway, east side

Type of Reparation: Spalled concrete



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RP#40

Location: Ground Floor parking #6

Type of Reparation: Spalled concrete on column

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#41

Location: Ground Floor, Driveway at parking # 6

Type of Reparation: Full slab repair



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RP#42

Location: Ground Floor parking # 6 **Type of Reparation:** Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#43

Location: Ground Floor parking # 240 **Type of Reparation:** Spalled concrete



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RP#44

Location: Ground Floor parking # 164 **Type of Reparation:** Exposed rebar

Status: Spalled Concrete Inspection Date: 08-11-2021



RP#45

Location: Ground Floor parking # 240 **Type of Reparation:** Column repair

Status: Finished

Inspection Date: 08-11-2021



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RP#46

Location: Ground Floor parking # 155

Type of Reparation: Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-11-2021





RP#47

Location: Ground Floor, driveway at the parking # 175-176 and # 178

Type of Reparation: Spalled Parking





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RP#48

Location: Ground Floor parking # 225 **Type of Reparation:** Honeycomb

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#49

Location: Ground Floor Driveway at parking # 164

Type of Reparation: Exposed rebar



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RP#50

Location: Ground Floor parking # 182

Type of Reparation: Exposed rebar

Status:

Inspection Date: 08-11-2021



RP#51

Location: Ground Floor parking # 185

Type of Reparation: Spalled concrete and joint repair



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RP#52

Location: Ground Floor parking # 186 **Type of Reparation:** Crack repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#53

Location: Ground Floor parking # 186 **Type of Reparation:** Column repair

Status: Finished

Inspection Date: 08-11-2021



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RP#54

Location: Ground Floor parking # 213 **Type of Reparation:** Honeycombs

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#55

Location: Ground Floor parking # 211 **Type of Reparation:** Sunken pavement

Status: Inadequate repair **Inspection Date:** 08-11-2021



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RP#56

Location: Ground Floor parking # 196 **Type of Reparation:** Honeycomb

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#57

Location: Ground Floor parking # 205 **Type of Reparation:** Edge repair



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RP#58

Location: Ground Floor parking # 201-202 and driveway at parking # 202-203

Type of Reparation: Crack repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021





RP#59

Location: Ground Floor driveway at parking # 126

Type of Reparation: Crack repair



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RP#60

Location: Ground Floor, Driveway at parking # 18

Type of Reparation: Spalled concrete

Status: Spalled Concrete Inspection Date: 08-11-2021



RP#61

Location: Ground Floor parking # 115 **Type of Reparation:** Spalled concrete



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RP#62

Location: Ground Floor below south ramp

Type of Reparation: Honeycombs with rebar exposure

Status: Spalled Concrete
Inspection Date: 08-11-2021



RP#63

Location: Ground Floor parking # 110

Type of Reparation: Spalled concrete on beam



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RP#64

Location: Ground Floor parking # 130 Type of Reparation: Spalled concrete

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#65

Location: Ground Floor parking # 98-99 **Type of Reparation:** Spalled Concrete

Status: Spalled Concrete

Inspection Date: 08-11-2021



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RP#66

Location: Ground Floor Driveway at parking # 136

Type of Reparation: Crack repair

Status: Finished

Inspection Date: 08-11-2021



RP#67

Location: Ground Floor parking # 77-79

Type of Reparation: Joint repair



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RP#68

Location: 2nd Floor Driveway front main door **Type of Reparation**: Crack repair on joist

Status: Spalled Concrete

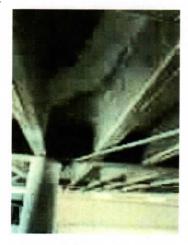
Inspection Date: 08-11-2021



RP#69

Location: 2nd Floor Driveway at parking # 303

Type of Reparation: Crack repair



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RP#70

Location: 2nd Floor parking # 300

Type of Reparation: Honeycomb with rebar exposure

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#71

Location: 2nd Floor parking # 285-286 **Type of Reparation:** Crack repair



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RP#72

Location: 2nd Floor parking # 282-280 **Type of Reparation:** Full slab repair

Status: Spalled Concrete
Inspection Date: 08-11-2021



RP#73

Location: 2nd Floor parking # 277-278 **Type of Reparation:** Edge Repair

Status: Spalled Concrete

Inspection Date: 08-11-2021



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RP#74

Location: 2nd Floor Driveway east side **Type of Reparation:** Full Crack repair

Status: Spalled Concrete Inspection Date: 08-11-2021



RP#75

Location: 2nd Floor east side

Type of Reparation: Crack repair on slab



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RP#76

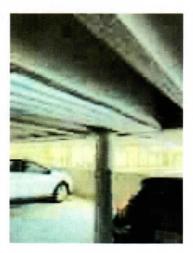
Location: 2nd Floor Driveway at parking # 453 **Type of Reparation:** Crack repair on joist

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#77

Location: 2nd Floor parking # 450 **Type of Reparation:** Slab Repair



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RP#78

Location: 2nd Floor parking #443 **Type of Reparation:** Exposed rebar

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#79

Location: 2nd Floor Parking #440 441

Type of Reparation: Spalled concrete and edge repair



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RP#80

Location: 2nd Floor Driveway front parking # 438 439

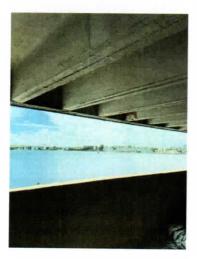
Type of Reparation: Crack repair on joist

Status: Spalled Concrete
Inspection Date: 08-11-2021



RP#81

Location: 2nd Floor parking # 438 **Type of Reparation:** Spalled concrete



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RP#82

Location: 2nd Floor Driveway front parking # 438

Type of Reparation: Crack repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#83

Location: 2nd Floor Driveway front pool equipment room **Type of Reparation:** Spalled concrete, rebars exposure



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RP#84

Location: 2nd Floor Driveway front of pool equipment room

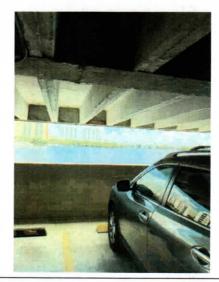
Type of Reparation: Joint Repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#85

Location: 2nd Floor parking # 435 434 **Type of Reparation:** Edge repair



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RP#86

Location: 2nd Floor parking # 433

Type of Reparation: Crack repair on joist

Status: Spalled Concrete Inspection Date: 08-11-2021



RP#87

Location: 2nd Floor parking # 431

Type of Reparation: Leaking crack repair



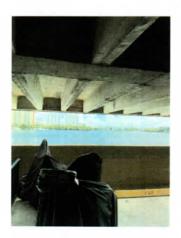
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RP#88

Location: 2nd Floor parking # 429 430 **Type of Reparation:** Edge repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021

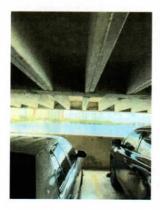


RP#89

Location: 2nd Floor parking # 427, parking #424

Type of Reparation: Edge repair





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RP#90

Location: 2nd Floor parking # 431 and driveway westside

Type of Reparation: Edge repair

Status: Spalled Concrete
Inspection Date: 08-11-2021





RP#91

Location: 2nd Floor parking # 347 346 **Type of Reparation:** Column repair



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RP#92

Location: 2nd Floor parking # 359 **Type of Reparation:** Column repair

Status: Spalled Concrete Inspection Date: 08-11-2021



RP#93

Location: 2nd Floor driveway parking # 339 338

Type of Reparation: Crack repair



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RP#94

Location: 2nd Floor parking # 367 368 **Type of Reparation:** Leaking cracks repair

Status: Spalled Concrete **Inspection Date:** 08-11-2021



RP#95

Location: 2nd Floor parking # 325 324 **Type of Reparation:** Crack repair



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RP#96

Location: 2nd Floor Driveway front of main door

Type of Reparation: Cracks repair

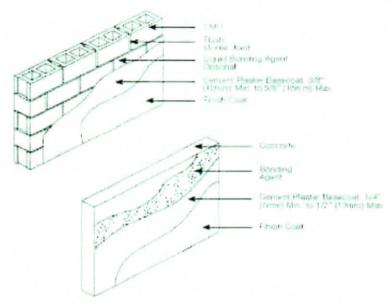


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REPARATION PROCEDURES

REPAIR #1 – STUCCO

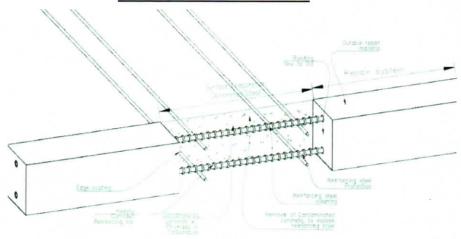


- All bases should be straight and in-line with no variation greater than 1/4 inch in 10 feet. Surfaces must be cleaned and inspected for any substance that will act as a bond-breaker.
- 2. Concrete masonry units must be fully grouted, "open textured" with joints cut flush, not tooled. Substrates should be fully cured, dry and carrying the design dead load prior to the application of the plaster.
- A surface-applied bonding agent conforming to ASTM C 932 may be used to insure a
 good chemical bond and equalize suction pressure throughout the entire face of the
 masonry.
- 4. Cast-in-place concrete provides sufficient abrasion for a proper mechanical bond with the stucco. The stucco contractor must verify the type of bond breaker used prior to direct applying basecoat. Sodium silicate bond breakers will dissipate and can be plastered without lath, however, petroleum, oil or paraffin based bond breakers do not dissipate and good bond cannot be guaranteed. Apply metal lath when form oil, paint or other bond breaking material is present.

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REPAIR # 2 - EDGE REPAIR



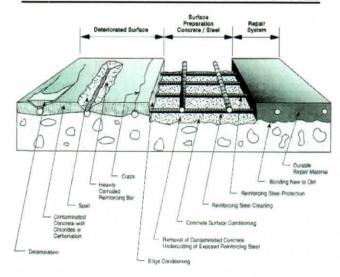
BALCONY EDGE REPAIR

- Sound the concrete to locate defective areas and mark the perimeter of the repair. Layout should have polygonal shapes. The exact limits of the areas have to be approved by the Special Inspector.
- 2. Saw-cut the perimeter of the repair area ½ in. depth maximum to avoid damaging reinforcement bars and feather edges.
- 3. The Engineer shall calculate the proper post shoring elements and their location before removing the damaged concrete.
- Remove unsound concrete (all weak, damaged and easily removable concrete should be chipped away)
 with either 15 lb. or 30 lb. chipping hammer. A hammer larger than a 30 lb. may cause damage to the
 substrate and reinforcement bars.
- 5. If exposed rebars are corroded, they must be thoroughly cleaned using mechanical abrasion, until no sign of corrosion is present, then protected (coated) with corrosion inhibitor. If corrosion has reduced the cross section of the steel to less than 75% of its original diameter, the affected bars should be removed and replaced in accordance with the requirements of ACI 318.
- 6. Install the form work with additional post shoring.
- 7. After the reinforcement repair, the cavity and the rebars shall be coated with the bonding agent and the corrosion inhibitor. This coat cannot remain without being filled with concrete for more than 24 hours. The Special Inspector will make certain that this time is appropriate before the pouring. Vibration of the mortar is recommended during application. Concrete mortar used for repairs should have compressive strength not less than 4000 psi and a water-cement ratio (w/c) not higher than 0.40 (ACI E706).
- 8. The Special Inspector shall determine the length of time that the post shoring and the form have to remain before they can be removed.

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REPAIR #3 - PARTIAL DEPTH SPALL

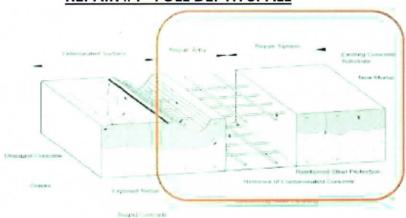


- Sound the concrete to locate defective areas and mark the perimeter of the repair. Layout should have polygonal shapes. The exact limits of the areas have to be approved by the Special Inspector.
- 2. Sawcut the perimeter of the repair area ½ in. depth maximum to avoid damaging reinforcement bars and feather edges.
- Remove unsound concrete (all weak, damaged and easily removable concrete should be chipped away) with either 15 lb. or 30 lb. chipping hammer. A hammer larger than a 30 lb. may cause damage to the substrate and reinforcement bars.
- 4. If exposed rebars are corroded, concrete surrounding the bar should be fully removed to ¼ in. min. clearance and the rebars thoroughly cleaned using mechanical abrasion, until no sign of corrosion is present, then protected (coated) with corrosion inhibitor. If corrosion has reduced the cross section of the steel to less than 75% of its original diameter, the affected bars should be removed and replaced in accordance with the requirements of ACI 318.
- 5. After the reinforcement repair, the cavity and the rebars shall be coated with the bonding agent and the corrosion inhibitor. This coat cannot remain without being filled with concrete for more than 24 hours. The Special Inspector will make certain that this time is appropriate before the pouring. Vibration of the mortar is recommended during application. Concrete mortar used for repairs should have compressive strength not less than 4000 psi and a water-cement ratio (w/c) not higher than 0.40 (ACI E706).

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REPAIR #4 - FULL DEPTH SPALL

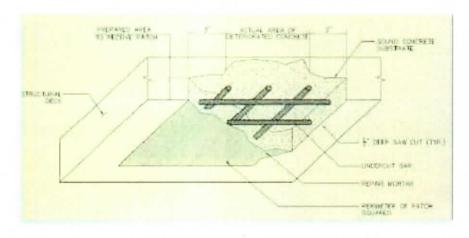


- 1. Sound the concrete to locate defective areas and mark the perimeter of the repair. Layout should have polygonal shapes. The exact limits of the areas have to be approved by the Special Inspector.
- 2. Saw-cut the perimeter of the repair area ½ in. depth maximum to avoid damaging reinforcement bars and feather edges.
- 3. The Engineer shall calculate the proper post shoring elements and their location before removing the damaged concrete.
- Remove unsound concrete (all weak, damaged and easily removable concrete should be chipped away)
 with either 15 lb. or 30 lb. chipping hammer. A hammer larger than a 30 lb. may cause damage to the
 substrate and reinforcement bars.
- 5. If exposed rebars are corroded, they must be thoroughly cleaned using mechanical abrasion, until no sign of corrosion is present, then protected (coated) with corrosion inhibitor. If corrosion has reduced the cross section of the steel to less than 75% of its original diameter, the affected bars should be removed and replaced in accordance with the requirements of ACI 318.
- Install the form work with additional post shoring.
- 7. After the reinforcement repair, the cavity and the rebars shall be coated with the bonding agent and the corrosion inhibitor. This coat cannot remain without being filled with concrete for more than 24 hours. The Special Inspector will make certain that this time is appropriate before the pouring. Vibration of the mortar is recommended during application. Concrete mortar used for repairs should have compressive strength not less than 4000 psi and a water-cement ratio (w/c) not higher than 0.40 (ACI E706).
- 8. The Special Inspector shall determine the length of time that the post shoring and the form have to remain before they can be removed.

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REPAIR #5 - OVERHEAD



- 1. Sound the concrete to locate defective areas and mark the perimeter of the repair. The exact limits of the areas have to be approved by the Special Inspector.
- 2. Saw-cut the perimeter of the repair area ½ in. depth maximum to avoid damaging reinforcement bars and feather edges.
- Remove unsound concrete (all weak, damaged and easily removable concrete should be chipped away) with a 15 lb chipping hammer.
- 4. If exposed rebars are corroded, they must be thoroughly cleaned using mechanical abrasion, until no sign of corrosion is present, then protected (coated) with corrosion inhibitor. If corrosion has reduced the cross section of the steel to less than 80% of its original diameter, the affected bars should be removed and replaced in accordance with the requirements of ACI 546-14 section 5.4.
- 5. After the reinforcement repair, the cavity and the rebars shall be coated with the bonding agent and the corrosion inhibitor. This coat cannot remain without being filled with concrete for more than 24 hours. The Special Inspector will make certain that this time is appropriate before start applying the new mortar.

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REPAIR #6 - COLUMN / BEAM SPALL

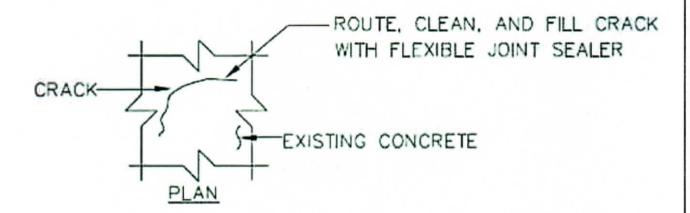


- Sound the concrete to locate defective areas and mark the perimeter of the repair. Layout should have polygonal shapes. The exact limits of the areas have to be approved by the Special Inspector.
 - 2. Sawcut the perimeter of the repair area $\frac{1}{2}$ in. depth maximum to avoid damaging reinforcement bars and feather edges.
- 3. The Engineer shall calculate the proper post shoring elements and their location before removing the damaged concrete.
- Remove unsound concrete (all weak, damaged and easily removable concrete should be chipped away) with either 15 lb. or 30 lb. chipping hammer. A hammer larger than a 30 lb. may cause damage to the substrate and reinforcement.
- 5. If exposed rebars are corroded, concrete surrounding the bar should be fully removed to ¼ in. min. clearance and thoroughly cleaned using mechanical abrasion, until no sign of corrosion is present, then protected (coated) with corrosion inhibitor. If corrosion has reduced the cross section of the steel to less than 75% of its original diameter, the affected bars should be removed and replaced in accordance with the requirements of ACI 318.
- Install the formwork securely attached to exposed concrete.
- 7. After the reinforcement repair, the cavity and the rebars shall be coated with the bonding agent and the corrosion inhibitor. This coat cannot remain without being filled with concrete more than 24 hours. The Special Inspector will make certain that this time is appropriate. Vibration is recommended during application. Concrete mortar used for repairs should have compressive strength not less than 4000 psi. and water-cement ratio (w/c) not more than 0.40 (ACI E706).
 - 8. The Special Inspector shall determine the length of time that the post shoring and the form have to remain before they can be removed.

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REPAIR #7 – HAIRLINE CRACKS



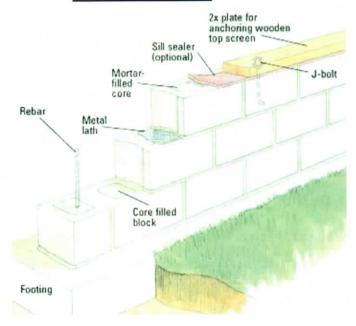
REPAIR PROCEDURE:

- 1. CAREFULLY ROUTE OUT THE CRACK WITH THE CORRECT ROUTE CHASER. 2. VACUUM CLEAN AND DRY THE CRACK
- 3. FILL WITH APPROVED MATERIAL (See Approved Materials on the Bid Package Invitation, PART 2 PRODUCTS). Example: SIKADUR 35, Hi-Mod LV or similar.
- 4. APPLY AS PER MANUFACTURER'S INSTRUCTIONS.

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REPAIR #9 - WALL



Concrete block masonry construction shall conform to Section 303-4 of the Standard Specifications.

Blocks shall be cut accurately to fit all plumbing ducts, openings, electrical work, and all voids slushed full.

Mortar joints shall conform to Section 303-4.1.2 of the Standard Specifications.

Where walls are to receive plaster, the joints should be struck flush. Where certain joints are to be concealed under paint, these joints shall be filled flush and then sacked to produce a dense surface without sheen.

Reinforcing bars shall conform to Section 303-4.1.3 of the Standard Specifications.

Vertical bars shall be held in position at top and bottom and at intervals not exceeding 192 diameters (8 feet for #4 re-bars) of the reinforcement. When a foundation dowel does not line up with vertical core to be reinforced, it shall not be bent over, but shall be grouted into a core in direct vertical alignment, even though it is in an adjacent cell to the vertical wall reinforcing.