

FINAL STRUCTURAL REPORT

For

Lantana Oceanfront Condominiums
Building 3 - 1811 Florida A1A
Indian Harbour Beach, Florida 32937

Prepared by:



CIVIL ■ STRUCTURAL ■ SURVEYING ■ ENVIRONMENTAL

1835 20th Street ■ Vero Beach, FL 32960

772.569.0035 ■ Fax: 772.778.3617

www.mbveng.com

CA#3728

Engineer's Project # 20-0184
May 29, 2020

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1. Executive Summary

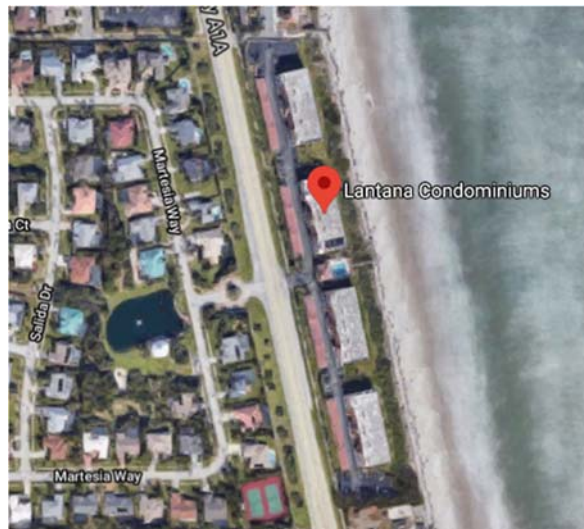
MBV Engineering, Inc. is pleased to submit this report following our directed, limited inspection and evaluation of the balconies of units 3201, 3202, 3205, 3206, 3303, 3305, 3306, 3401 and 3402 at Lantana Oceanfront Condominiums. This study was specifically requested to determine significances and extent of defects noted in the slabs, columns, and exterior walls at each unit balcony.

Representatives of MBV Engineering, Inc. inspected the above referenced unit balconies on Monday May 11, 2020.

2. Description of Structure

The Lantana Oceanfront Condominiums are located on Indian Harbor Beach, by Cocoa Beach, on SR A1A in Brevard County. The property consists of Four (4) 4-story residential building structures, detached parking/garage building structures, a recreation building structure and an in-ground pool. The front of the residential building structures faces the west. The buildings are rectangularly shaped. The buildings were originally constructed in the year 2,000.

We inspected nine (9) previously selected unit balconies in Building No. 3. The structural system for the elevated slabs is a Two-way flat concrete post-tension reinforced 6-inches thick floor slab and roof slab supported primarily on reinforced concrete columns; the exterior walls are infill masonry with stucco finishes. The building structure is supported on deep foundations.



3. Scope of Investigation and Limitations

The purpose of our inspection was to review the condition of the balcony slabs, columns and walls as they now stand, and to determine the elements which require structural (and/or cosmetic) repair.

Our visual and preliminary inspections are not expected to reveal elaborate defects, which are not evident by deterioration exposed to view or evident to the trained eye as the elements now stand. It must be understood the Engineer can only provide certification of the conditions of the elements within the limits of the inspection performed; whether the materials, sizes, dimensions and connections are structurally adequate or have weaknesses within and/or beyond the extent of the inspection performed, is out of the scope of this assessment.

MBV Engineering has followed industry standard recommendations and procedures to carry out the non-destructive inspection including the selective exploratory removal of the cementitious overlay/topping finishes covering the floor structure to expose the concrete floor surfaces, followed by a visual examination, acoustic sounding and recording of the members looking for signs of distress.

We marked with a red color crayon the floor surfaces that currently show signs of distress; some of these areas are confirmed active concrete slab spalling and some are suspect and will require further verification after the existing floor finishes are removed.

For this investigation, we were provided with a copy of the structural drawings, as designed by Gerding Engineering, revision 3, dated 02-18-1998. Our evaluation and recommendations are being done with emphasis on the framing layout, location and conditions of the post-tensioning system, as shown in those structural plans, directly affected or in the vicinity of the noted slab problem areas.

Multiple photographs were also taken throughout the inspection and some of these then used to create the photo log found in Appendix A.

The equipment used in this inspection were a digital camera, steel tape measure and a hammer.

4. Findings and Repair Recommendations

These balcony slabs are undergoing different stages and rate of deterioration within a particular slab and from one slab to another, ranging from incipient or minor concrete deterioration as evidenced by surface rust spots and nearly inaudible hollow sounding to severe deterioration due to heavy corrosion with obvious concrete spalling, cracking and exposed reinforcement.

Hollow sounding is an indication of concrete spalling, delamination or detached layers of concrete; it means the concrete is undergoing deterioration due to corrosion of the reinforcement.

A concrete restoration plan that can effectively repair the problems found and address the root causes will not only help reduce the rate of concrete deterioration but will delay their future recurrence.

Due to the inherent catastrophic failure potential from ruptured tendons from abuse or neglect, particular care, attention and prompt actions should be implemented with post-tensioned reinforced slab systems.

The following are the noted damages (and our recommended repairs) per each unit.:

- **Unit 3201**
 - Evident concrete slab spalling with exposed corroded rebar and PT tendons in both the banded and uniform directions. Column grid line A and 5 thru 7.
 - Several evident slab concrete spall and hollow sounding floor area locations including the north side slab edge are aligned over the 1st group of banded tendons. Column grid line A.

- Depending on the actual anchorage proximity within the Six (6) tendons of the 1st group of banded tendons along the column grid line A, it is very likely that all of the tendons in the group will require de-tensioning / re-tensioning to allow the slab repairs. Also, there are “mirror” damages noted in the south unit balcony 3206. This means that the entire length of these banded tendons will require de-tensioning (from the building north and south end) thus requiring the full continuous safe shoring, to the ground floor, of all the 2nd floor balconies.
 - An apparent slab concrete spall in front of the 12x24 concrete column along grid line B will likely impact the banded group of eight (8) tendons along grid line B. Also, there are “mirror” and extensive slab spalling in the south end unit balcony 3206 along the same grid line B.
 - There are 2 options to proceed with the repairs located along column grid line B, one involves the full length de-tensioning / re-tensioning of the banded tendon group (from the north end of the building to the south end of the building) with full safe shoring (to the ground floor) along the impacted 2nd floor areas in all the units to allow the simultaneous repairs in both of the end units. The other option is to de-tension / re-tension only one end unit at a time with the temporary tendon lock-off being placed inside that unit and only shoring that unit. Then proceed to the de-tensioning / re-tensioning of the same banded group of tendons at the opposite end unit with the temporary lock-off inside that unit.
 - A number of uniform tendons may be impacted along the balcony slab (and will require de-tensioning / re-tensioning to allow the slab concrete repairs) if located directly over the possible slab spalling/repair areas. Some of these uniform direction tendons (E-W direction) will require their temporary lock-offs inside the units.
 - 1 Column spall/damage location by grid lines B and 2.
 - For more information see attached finding drawings.
- **Unit 3202:**
 - None observed.
 - For more information see attached finding drawings.
 - **Unit 3205:**
 - Observed nine (9) slab hollow sounding locations. The majority of these areas are directly aligned with the banded group of tendons along column grid line A.
 - A number of uniform tendons may be impacted (and will require de-tensioning / re-tensioning to allow the slab concrete repairs) if located directly over the possible slab spalling/repair areas. It is possible that some of these uniform direction tendons (E-W direction) will require their temporary lock-offs inside the units.
 - For more information see attached finding drawings.
 - **Unit 3206:**
 - As noted for unit 3201, a number of possible slab spalling locations are found along the 1st group of banded tendons along column grid line A. This means that the entire length of these banded tendons will be de-tensioned (from the building north end to the building south end) thus requiring the full continuous safe shoring, to the ground floor, of all the 2nd floor balconies.

- Similar to unit 3201, apparent extensive slab concrete spalls in front of the 12x24 concrete column along grid line B will likely impact the banded group of eight (8) tendons along grid line B.
- There are 2 options to proceed with the repairs located along column grid line B, one involves the full length de-tensioning / re-tensioning of the banded tendon group (from the north end of the building to the south end of the building) with full safe shoring (to the ground floor) along the impacted 2nd floor areas in all the units to allow the simultaneous repairs in both of the end units. The other option is to de-tension / re-tension only one end unit at a time with the temporary tendon lock-off being placed inside that unit and only shoring that unit. Then proceed to the de-tensioning / re-tensioning of the same banded group of tendons at the opposite end unit with the temporary lock-off inside that unit.
- A number of uniform tendons may be impacted (and will require de-tensioning / re-tensioning to allow the slab concrete repairs) if located directly over the possible slab spalling/repair areas. Some of these uniform direction tendons (E-W direction) will require their temporary lock-offs inside the units.
- For more information see attached finding drawings.

- **Unit 3303:**
 - 4 Slab Concrete spall locations. The majority of these areas are directly aligned with the banded group of tendons along column grid line A.
 - A number of uniform tendons may be impacted (and will require de-tensioning / re-tensioning to allow the slab concrete repairs) if located directly over the possible slab spalling/repair areas. It is possible that some of these uniform direction tendons (E-W direction) will require their temporary lock-offs inside the units.
 - For more information see attached finding drawings.

- **Unit 3305:**
 - 3 Concrete spall locations. The majority of these areas are directly aligned with the banded group of tendons along column grid line A.
 - A number of uniform tendons may be impacted (and will require de-tensioning / re-tensioning to allow the slab concrete repairs) if located directly over the possible slab spalling/repair areas. It is possible that some of these uniform direction tendons (E-W direction) will require their temporary lock-offs inside the units.
 - For more information see attached finding drawings.

- **Unit 3306:**
 - A number of possible slab spalling locations are found along the 1st group of banded tendons along column grid line A. It is strongly recommended that the opposite end unit balcony 3301 be inspected to determine the presence of slab damages. If there are similar location damages in unit 3301, this means that the entire length of these banded tendons will be de-tensioned (from the building north end to the building south end) thus requiring the full continuous safe shoring, to the ground floor, of all the 3rd floor balconies.
 - Again, unit 3301 should be inspected to determine the presence of similar location slab damages along column grid line B. If there are damages in 3301 then these will likely impact the banded group of eight (8) tendons along grid line B.

- If the damages in unit 3301 are confirmed then it follows the same recommendation given to unit 3201 and 3206 with the 2 repair options. Otherwise, proceed to repair unit 3306 by de-tensioning / re-tensioning the banded group of (8) tendons by locking-off inside the unit.
- A number of uniform tendons may be impacted (and will require de-tensioning / re-tensioning to allow the slab concrete repairs) if located directly over the possible slab spalling/repair areas. Some of these uniform direction tendons (E-W direction) will require their temporary lock-offs inside the units.
- For more information see attached finding drawings.

- **Unit 3401:**
 - Small single hollow sounding slab/topping area by north side.
 - For more information see attached finding drawings.

- **Unit 3402:**
 - (3) small hollow sounding slab/topping areas near the north SGD. It should be verified if these are actual concrete slab spalling.
 - For more information see attached finding drawings.

5. **Conclusions**

A concrete restoration process should be implemented to properly repair the observed damages following the guidelines of the ICRI (International Concrete Repair Institute, Inc.) and the PTI (Post-Tensioning Institute).

ICRI methodology requires unsound concrete to be removed; affected reinforcement exposed until at least 4 to 6 inches of clean steel is encountered. The exposed steel will then be abrasively cleaned in order to remove the chlorides attached to it. Corroded steel tends to lose cross-section area and will need supplements if a threshold is reached.

Concrete is then redone with corrosion inhibitors and low water cement ratios; the reinforcement is treated/coated with corrosion inhibitors after being thoroughly cleaned and an adequate waterproofing system is installed on all horizontal and vertical concrete slab surfaces. Migrating corrosion inhibitors should be applied to the concrete surfaces that are not receiving a waterproofing system. As a part of the waterproofing system, we also recommend the application of an adequate slab edge treatment against the concrete walls and at the vertical perimeter in order to properly seal and waterproof the balcony edges. Also, the slab slope will need to be reviewed to ensure proper drainage away from the unit.

The cracks on the concrete should be epoxy injected in order to repair the structural capacity of the affected elements.

We do not recommend the use of elastomeric paints on the exterior surfaces.

The significant levels of damage observed on some of the slabs seem premature as the building is just 20 years old but are consistent with the location of the buildings due to their proximity to the ocean.

Lantana Oceanfront Condominiums

Project # 20-0184

May 29, 2020

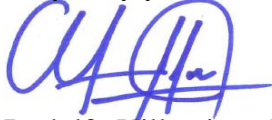
The Board should consider initiating a repair project to address as many of the repairs as can be afforded. These repairs should address the immediate damage and are aimed at taking preventative measures to slow the rates of corrosion; including waterproofing before covering the floors with acrylic paint.

Once repairs are complete, a reserve analysis and future maintenance plan should be completed to minimize the cost of future repairs and lessen the impact to the owners. MBV Engineering, Inc. can assist in this effort to protect their investment.

We feel by using the proposed methods of repair, in addition to other measures recommended by Vector Corrosion Services, it will be able to efficiently mitigate the damages to the structure and adequately ensure that the strength of the members is not exceeded by the design loads.

Should you have any questions regarding the above subject, please do not hesitate to contact our office.

Very truly yours,

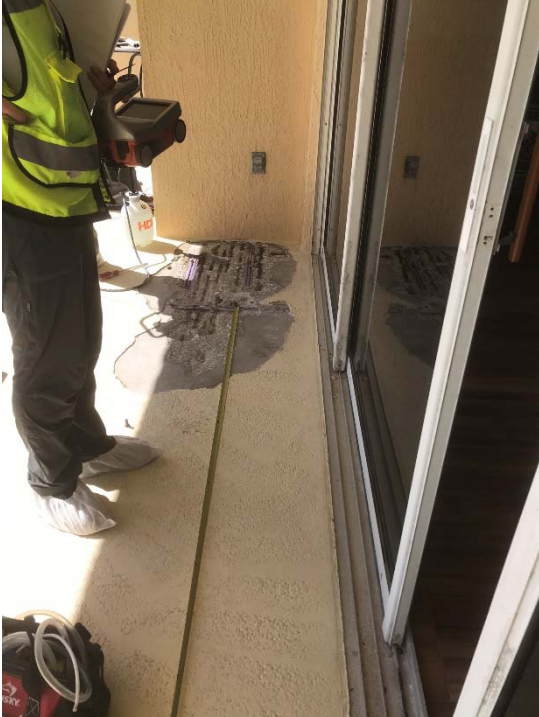
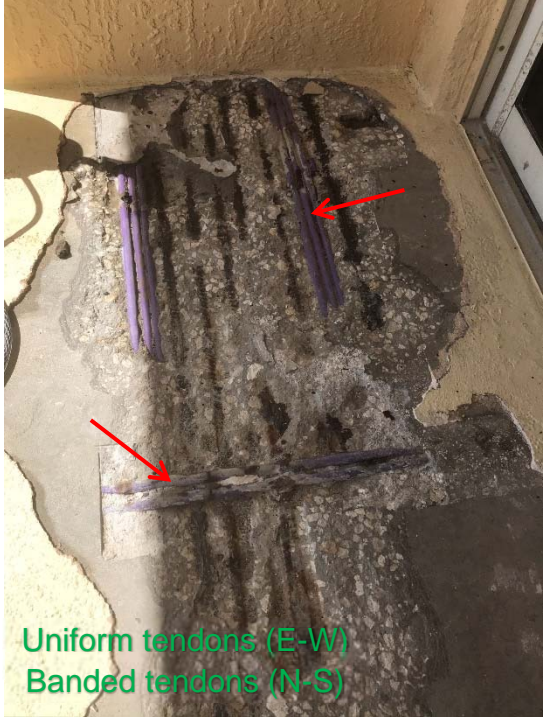


Rodolfo Villamizar, P.E.

FL PE# 61000

RV/jt

Appendix A

Picture No.: 1, 2	DESCRIPTION: Unit 3201: Concrete slab spalling with exposed rebar and post tension tendons (Banded tendons N-S orientation; Uniform tendons E-W orientation)
	 <p>Uniform tendons (E-W) Banded tendons (N-S)</p>

Picture No.: 3, 4	DESCRIPTION: Unit 3201: Concrete slab and column spalling (marked with red crayon).
	

Picture No.: 5	DESCRIPTION: Unit 3402: Verified slab concrete spall.
	

Picture No.: 6	DESCRIPTION: Unit 3303: Hollow sounding slab area.
	

Picture No.: 7	DESCRIPTION: Unit 3305: Previous repair area is hollow sounding – failed repair.
 A photograph showing a close-up of a light-colored concrete balcony floor. A red arrow points to a specific area on the floor that appears to be a failed repair or a hollow-sounding area. The floor is adjacent to a window with a white frame.	

Picture No.: 8, 9	DESCRIPTION: Unit 3306: Concrete slab hollow sounding locations.
 Two side-by-side photographs of a balcony floor. The left photograph shows a long view of the balcony with a red arrow pointing to a hollow-sounding area. The right photograph is a closer view of the same area, with a red arrow pointing to a specific hollow-sounding location. The floor is light-colored and shows signs of wear and discoloration.	

Picture No.: 10,11 DESCRIPTION: Unit 3206: Concrete slab hollow sounding locations.



Picture No.: 12,13 DESCRIPTION: Unit 3206: Concrete slab hollow sounding locations.



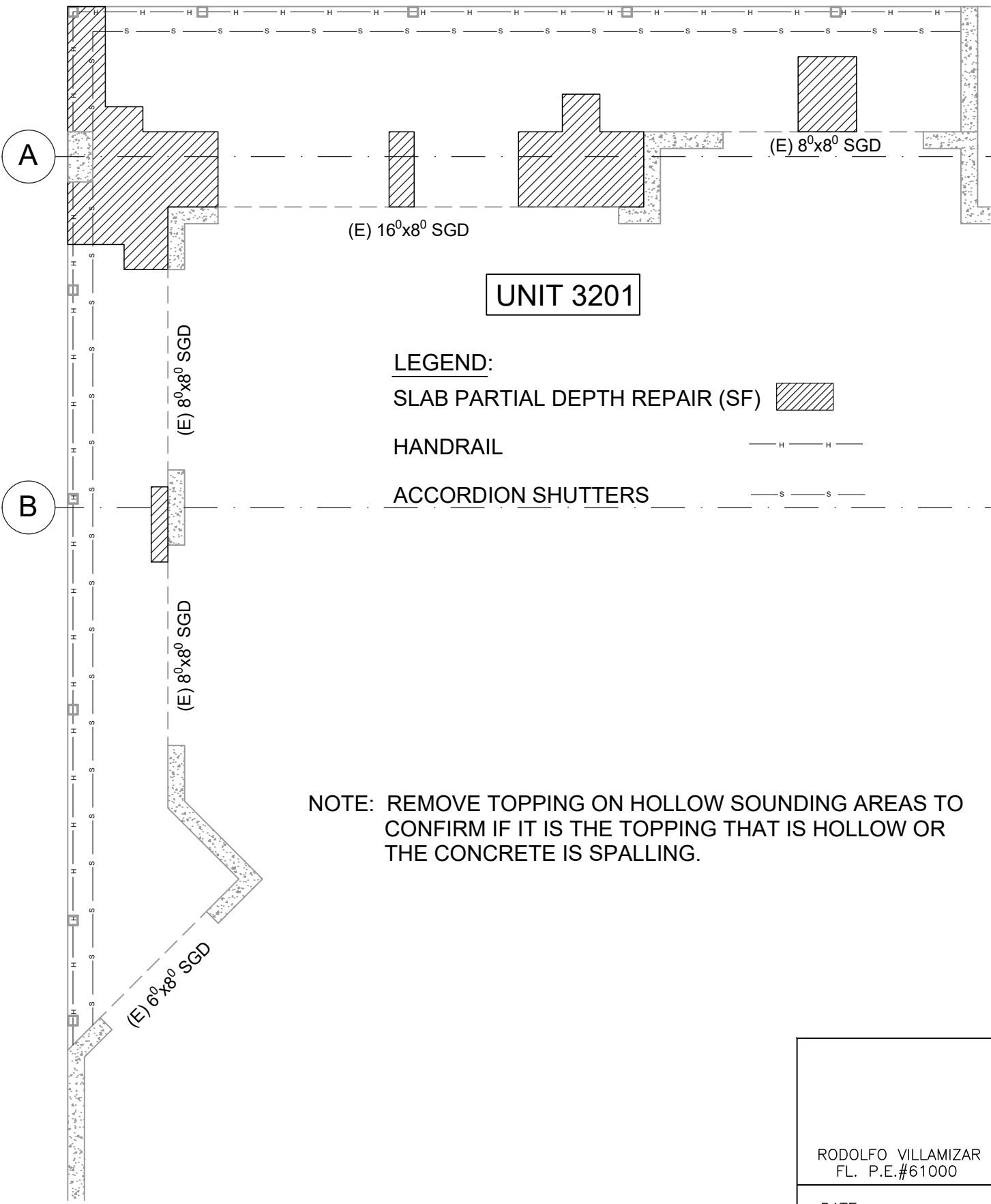
Picture No.: 14,15	DESCRIPTION: Unit 3306: Concrete edge spalling visible from overhead of 3206.
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Picture No.: 16	DESCRIPTION: Unit 3205: Concrete slab hollow sounding locations.
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Appendix B



UNIT 3201

LEGEND:

SLAB PARTIAL DEPTH REPAIR (SF) 

HANDRAIL 

ACCORDION SHUTTERS 

NOTE: REMOVE TOPPING ON HOLLOW SOUNDING AREAS TO CONFIRM IF IT IS THE TOPPING THAT IS HOLLOW OR THE CONCRETE IS SPALLING.

RODOLFO VILLAMIZAR
FL. P.E.#61000

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BALCONY INSPECTION
1811 A1A
INDIAN HARBOUR BEACH, FL

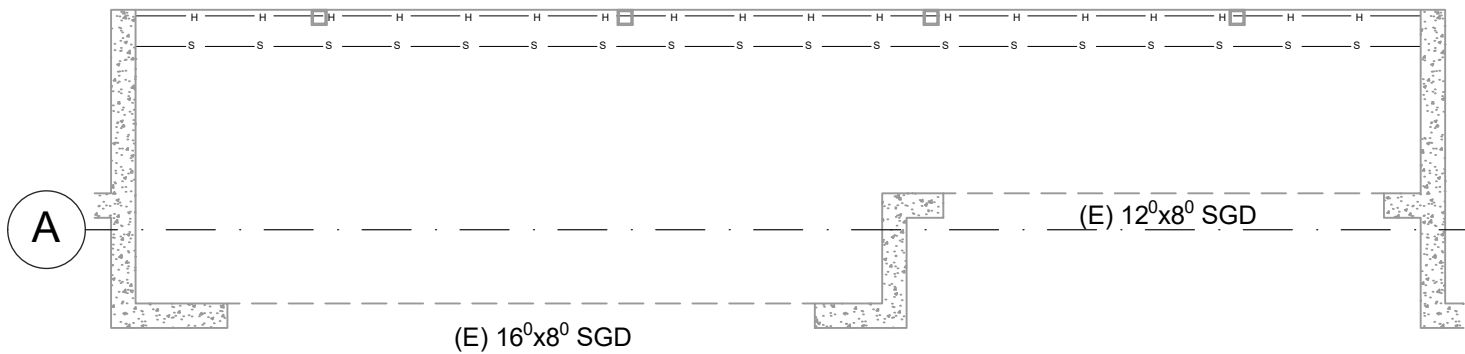
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MBV
ENGINEERING, INC.
MOIA BOWLES VILLAMIZAR & ASSOCIATES
CONSULTING ENGINEERING CA #3728

1835 - 20TH STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3617

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FT. PIERCE, FL - PH (772) 468-9055

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UNIT 3202

LEGEND:

HANDRAIL — H — H —

ACCORDION SHUTTERS — S — S —

NOTE: REMOVE TOPPING ON HOLLOW SOUNDING AREAS TO CONFIRM IF IT IS THE TOPPING THAT IS HOLLOW OR THE CONCRETE IS SPALLING.

RODOLFO VILLAMIZAR
FL. P.E.#61000

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BALCONY INSPECTION
1811 A1A
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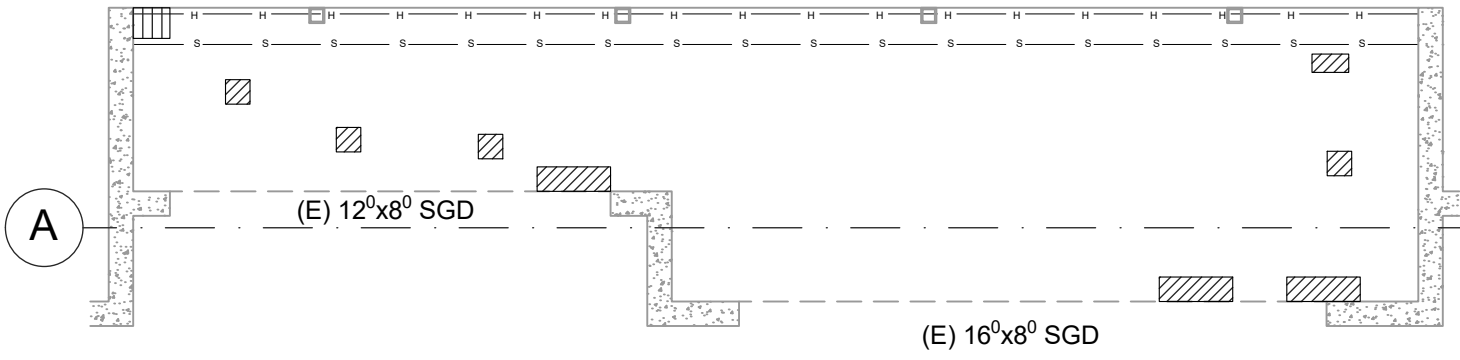
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CONSULTING ENGINEERING CA #3728

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VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3617

MELBOURNE, FL - PH (321) 253-1510
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UNIT 3205

LEGEND:

SLAB PARTIAL DEPTH REPAIR (SF)

SLAB EDGE REPAIR (UP TO 1' WIDE) (LF)

HANDRAIL — H — H —

ACCORDION SHUTTERS — S — S —

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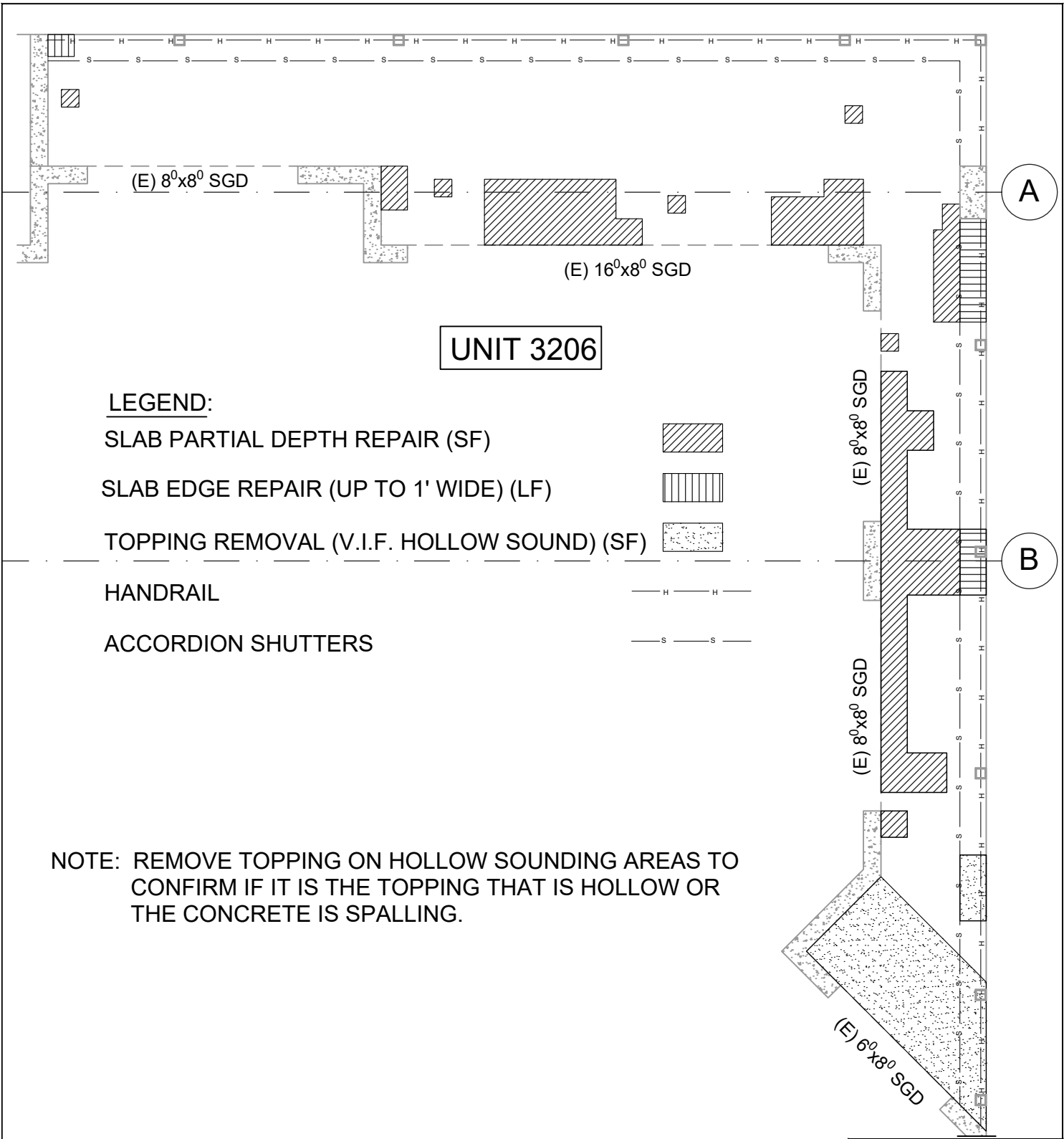
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CONSULTING ENGINEERING CA #3728

1835 - 20TH STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3617

MELBOURNE, FL - PH (321) 253-1510
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UNIT 3206

LEGEND:

- SLAB PARTIAL DEPTH REPAIR (SF)
- SLAB EDGE REPAIR (UP TO 1' WIDE) (LF)
- TOPPING REMOVAL (V.I.F. HOLLOW SOUND) (SF)
- HANDRAIL
- ACCORDION SHUTTERS

NOTE: REMOVE TOPPING ON HOLLOW SOUNDING AREAS TO CONFIRM IF IT IS THE TOPPING THAT IS HOLLOW OR THE CONCRETE IS SPALLING.

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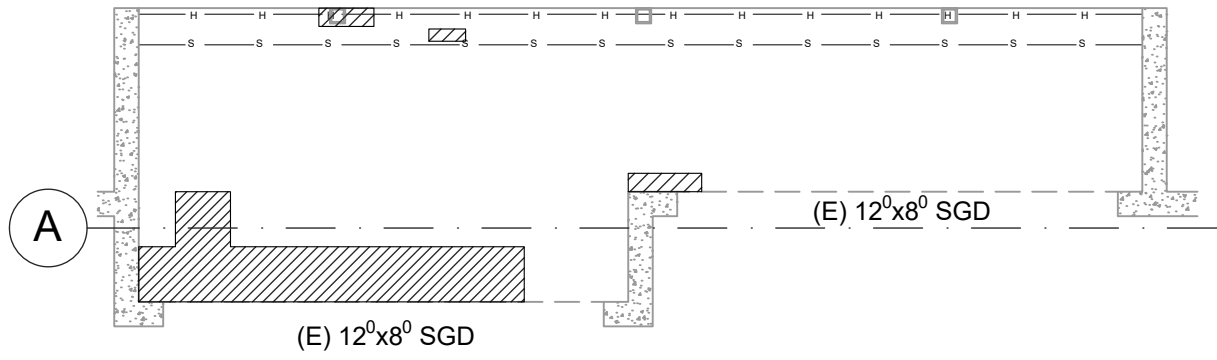
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PH. (772) 569-0035
FX. (772) 778-3617

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FT. PIERCE, FL - PH (772) 468-9055

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UNIT 3303

LEGEND:

SLAB PARTIAL DEPTH REPAIR (SF) 

HANDRAIL 

ACCORDION SHUTTERS 

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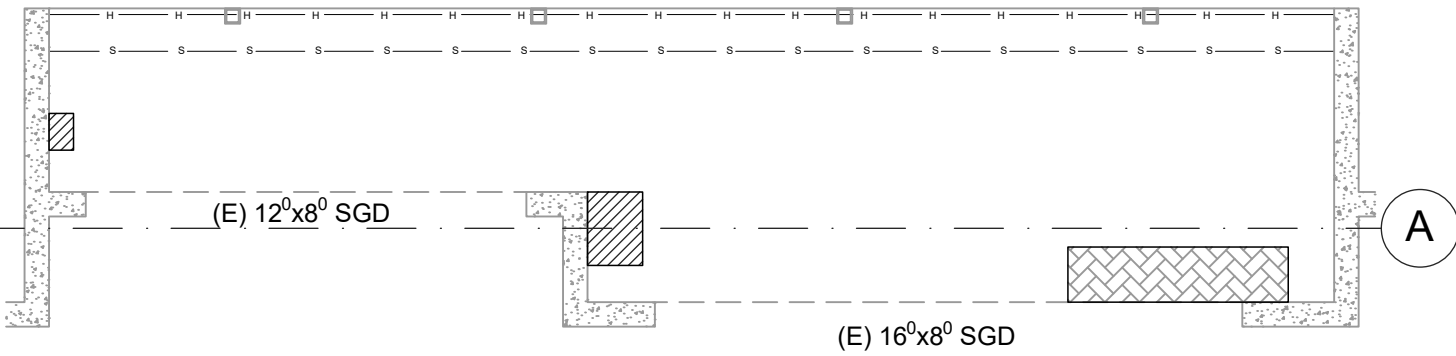
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1835 - 20TH STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3617

MELBOURNE, FL - PH (321) 253-1510
FT. PIERCE, FL - PH (772) 468-9055

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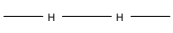


UNIT 3305

LEGEND:

SLAB PARTIAL DEPTH REPAIR (SF) 

OLD FAILED REPAIRS (SF) 

HANDRAIL 

ACCORDION SHUTTERS 

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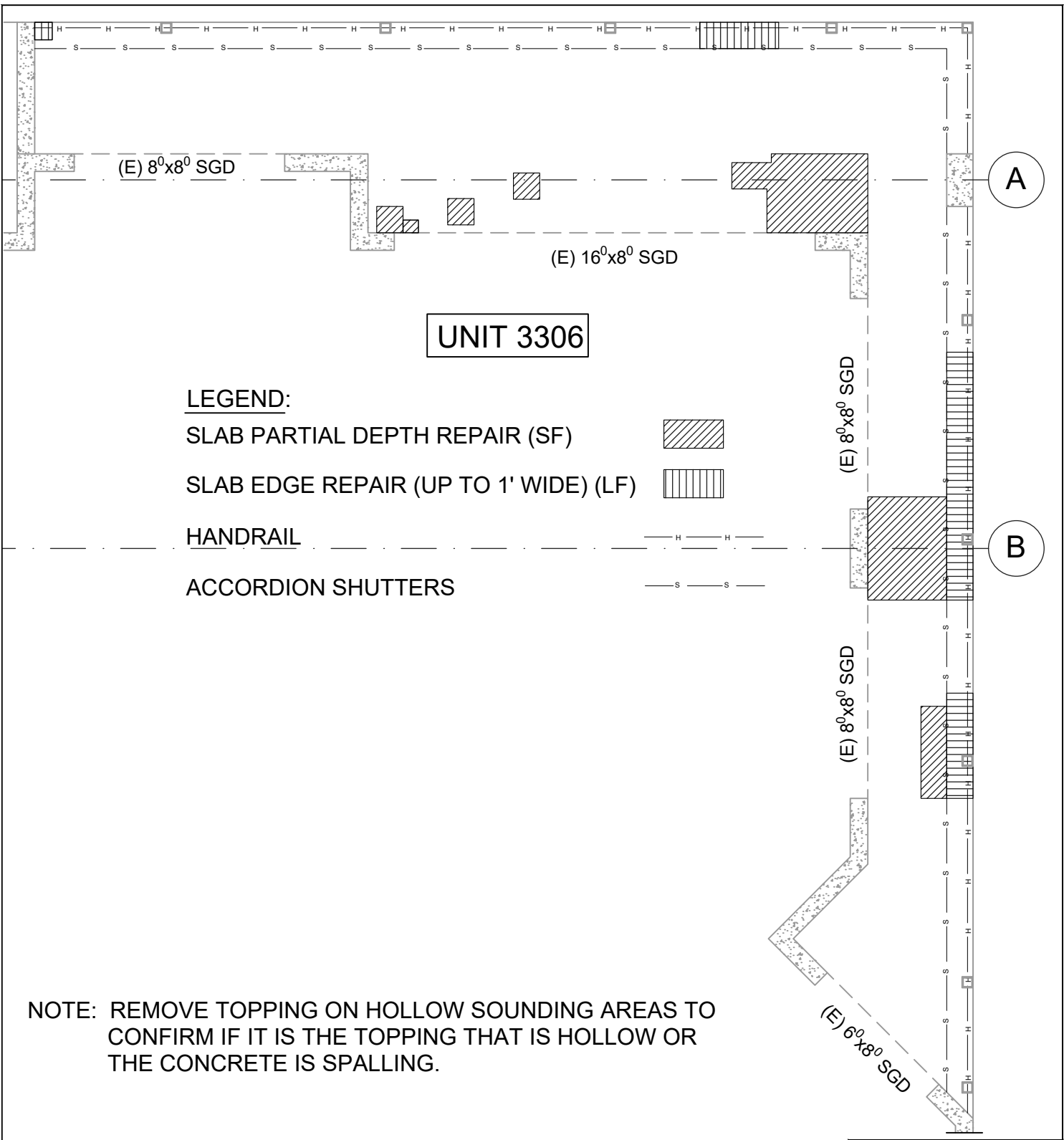
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CONSULTING ENGINEERING CA #3728

1835 - 20TH STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3617

MELBOURNE, FL - PH (321) 253-1510
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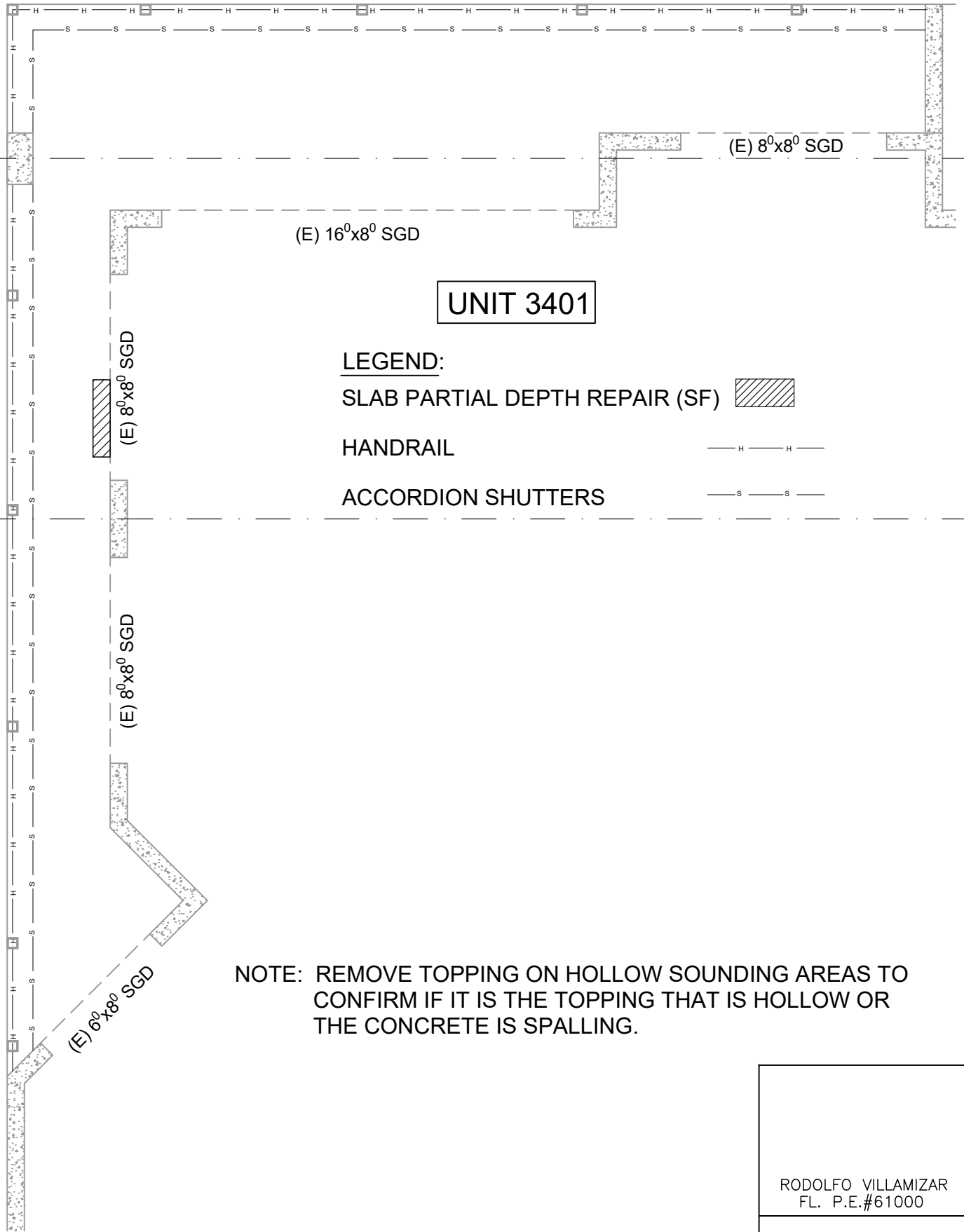
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PH. (772) 569-0035
FX. (772) 778-3617

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A

B



UNIT 3401

LEGEND:
 SLAB PARTIAL DEPTH REPAIR (SF) 
 HANDRAIL — H — H —
 ACCORDION SHUTTERS — S — S —

NOTE: REMOVE TOPPING ON HOLLOW SOUNDING AREAS TO CONFIRM IF IT IS THE TOPPING THAT IS HOLLOW OR THE CONCRETE IS SPALLING.

RODOLFO VILLAMIZAR
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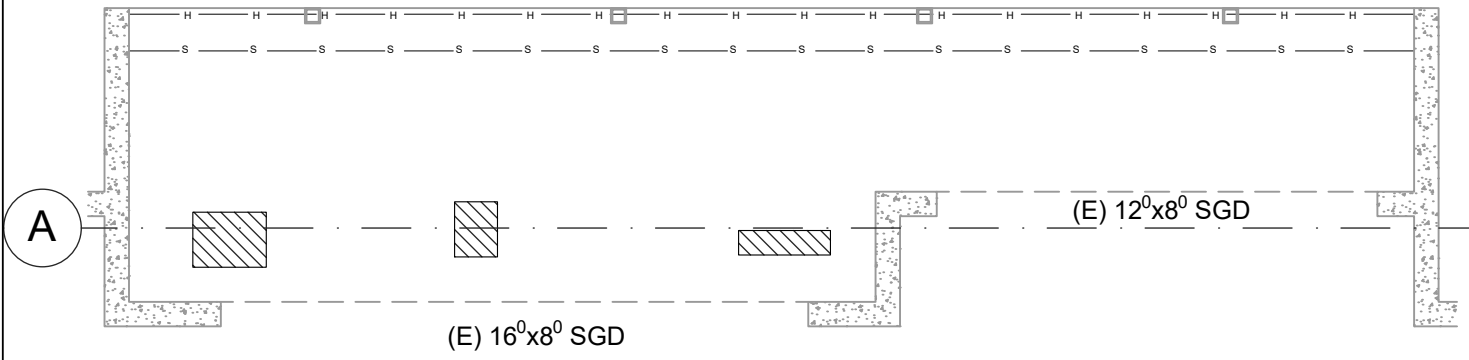
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UNIT 3402

LEGEND:

HOLLOW SOUNDING LOCATIONS (SF)

HANDRAIL

ACCORDION SHUTTERS

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RODOLFO VILLAMIZAR
FL. P.E.#61000

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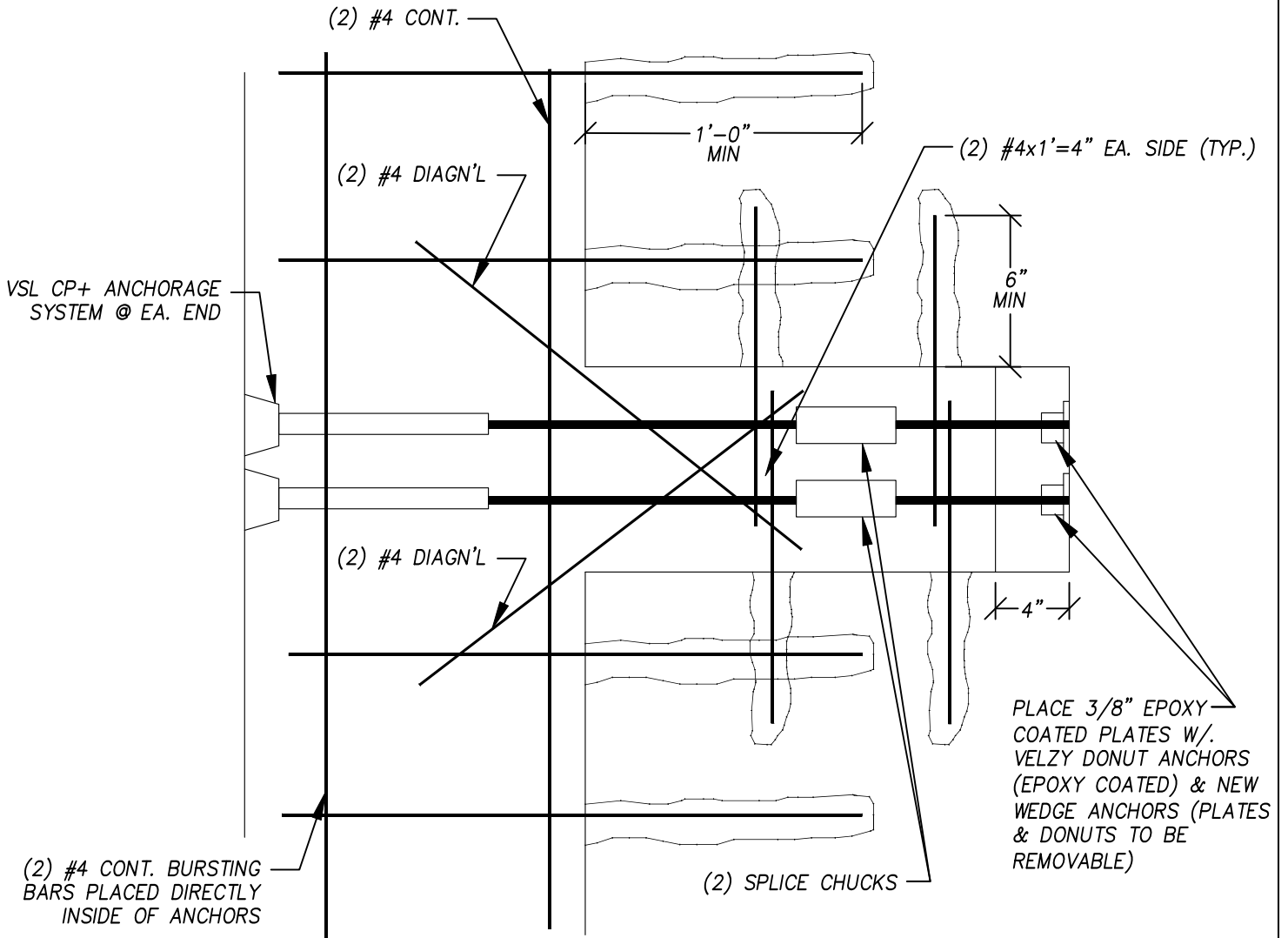
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MOIA BOWLES VILLAMIZAR & ASSOCIATES
CONSULTING ENGINEERING CA #3728

1835 - 20TH STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
FX. (772) 778-3617

MELBOURNE, FL - PH (321) 253-1510
FT. PIERCE, FL - PH (772) 468-9055

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CABLE REPAIR



RODOLFO VILLAMIZAR
 FL. P.E.#61000
 DATE:

LANTANA
CONDOMINIUM
BALCONY INSPECTION
 1811 A1A
 INDIAN HARBOUR BEACH, FL

DETAILS


ENGINEERING, INC.
MOIA BOWLES VILLAMIZAR & ASSOCIATES
 CONSULTING ENGINEERING CA #3728

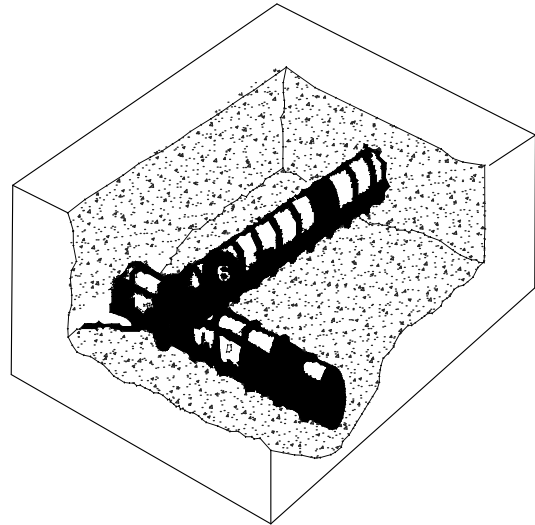
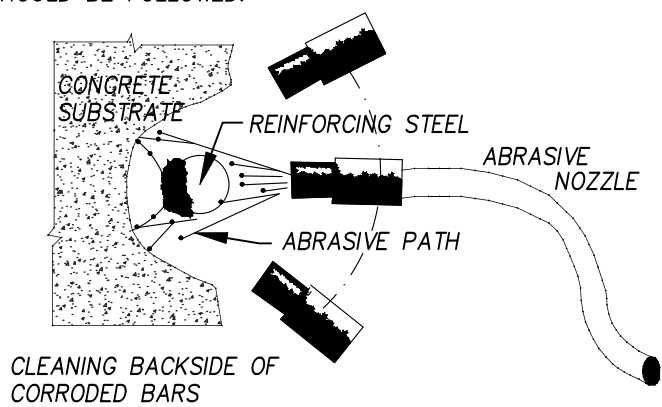
1835 - 20TH STREET
 VERO BEACH, FL 32960
 PH. (772) 569-0035
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 MELBOURNE, FL - PH (321) 253-1510
 FT. PIERCE, FL - PH (772) 468-9055

JOB NO. 20-0184
DESIGNED JT
DRAWN AER
CHECKED RV
DATE MAY 2020
SHEET 10 OF 18

CLEANING AND REPAIR OF REINFORCING STEEL

CLEANING OF REINFORCING STEEL

ALL HEAVY CORROSION AND SCALE SHOULD BE REMOVED FROM THE BAR AS NECESSARY TO PROMOTE MAXIMUM BOND OF REPLACEMENT MATERIAL. OIL FREE ABRASIVE BLAST IS THE PREFERRED METHOD. A TIGHTLY BONDED LIGHT RUST BUILD-UP ON THE SURFACE IS USUALLY NOT DETRIMENTAL TO BOND, UNLESS A PROTECTIVE COATING IS BEING APPLIED TO THE BAR SURFACE, IN WHICH CASE THE COATING MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION SHOULD BE FOLLOWED.

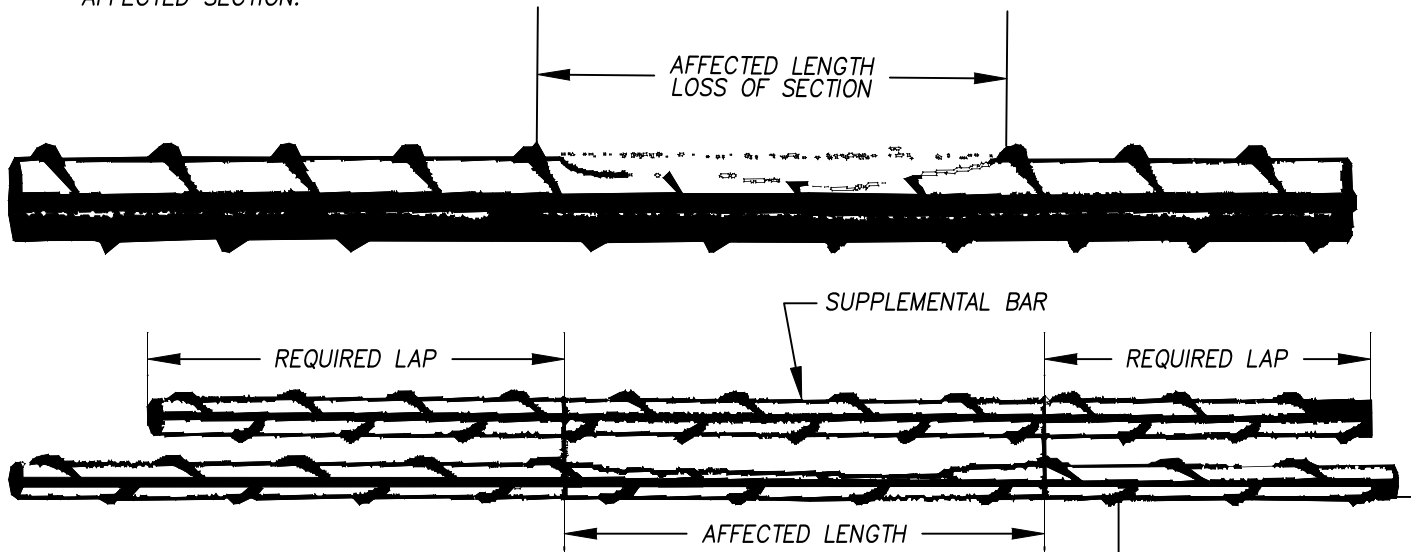


REPAIR OF REINFORCING STEEL DUE TO LOSS OF SECTION

IF REINFORCING STEEL HAS LOST SIGNIFICANT CROSS SECTION, A STRUCTURAL ENGINEER SHOULD BE CONSULTED. IF REPAIRS ARE REQUIRED TO THE REINFORCING STEEL, ONE OF THE FOLLOWING REPAIR METHODS SHOULD BE USED:

- * COMPLETE BAR REPLACEMENT, OR
- * ADDITION OF SUPPLEMENTAL BAR OVER AFFECTED SECTION.

NEW BARS MAY BE MECHANICALLY SPLICED TO OLD BARS OR PLACED PARALLEL TO AND APPROXIMATELY $\frac{3}{4}$ IN. (19 MM) FROM EXISTING BARS. LAP LENGTHS SHALL BE DETERMINED IN ACCORDANCE WITH ACI 318; ALSO REFER TO CRSI AND AASHTO MANUAL.



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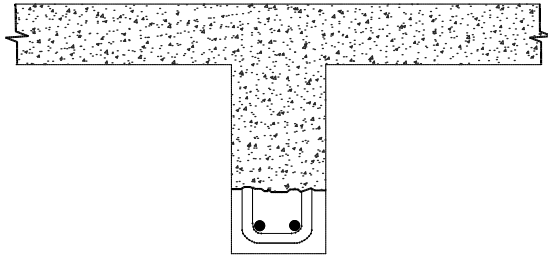
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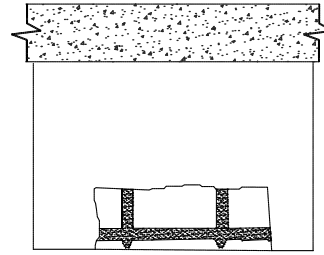
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CONSTRUCTION RESTORATION REMOVAL GEOMETRY

SECTION

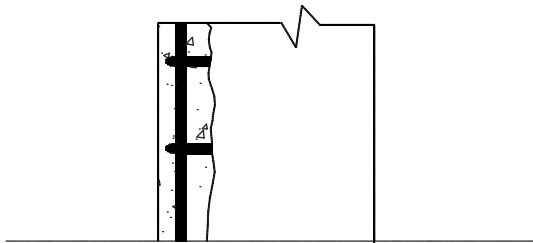


ELEVATION

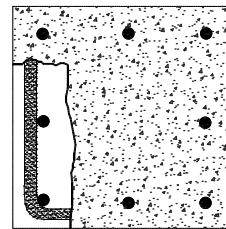


BEAM OR RIB

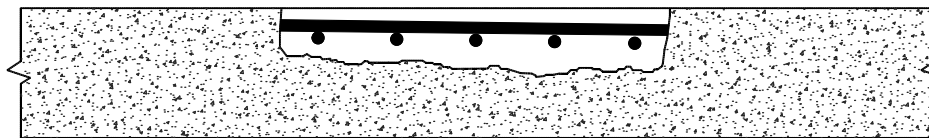
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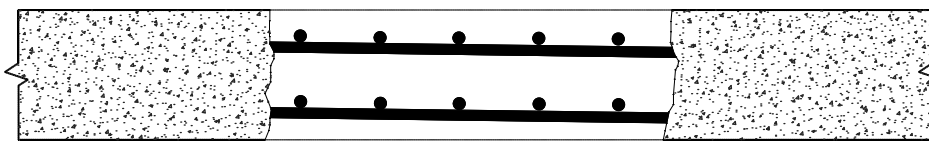
SECTION



COLUMN CORNER



SLAB OR WALL
PARTIAL DEPTH



SLAB OR WALL
FULL DEPTH

CAUTION! BEFORE STARTING REMOVALS, REVIEW EFFECT OF REMOVABLE ON STRUCTURAL INTEGRITY. PROVIDE SHORING OF MEMBER AS NECESSARY. PARTICULAR CARE SHALL BE EXERCISED AT SLAB/BEAM CONNECTIONS TO COLUMNS.

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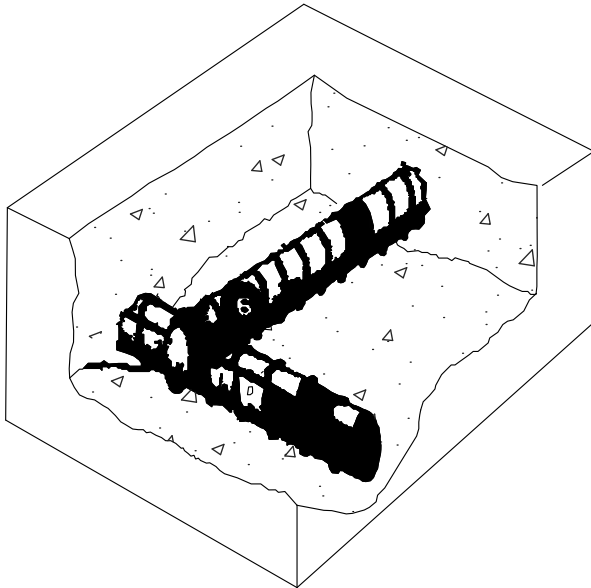
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EDGE AND SURFACE CONDITIONING OF CONCRETE

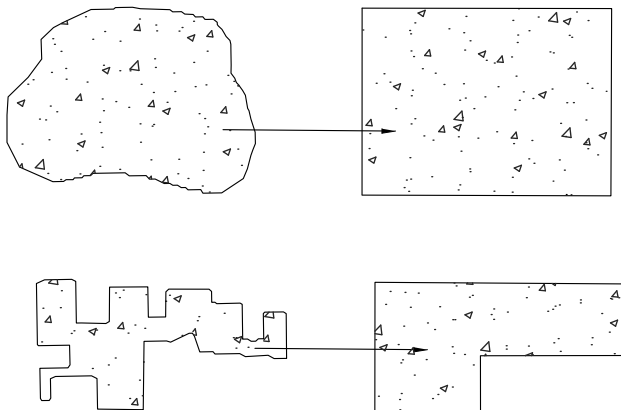
EDGE AND SURFACE CONDITIONING OF CONCRETE

1. THESE DETAILS ARE APPLICABLE TO HORIZONTAL, VERTICAL, AND OVERHEAD LOCATIONS. THEY ARE ALSO APPLICABLE TO REMOVAL BY HYDRO-DEMOLITION, HYDROMILLING, AND ELECTRIC, PNEUMATIC OR HYDRAULIC IMPACT BREAKERS.
2. REMOVE DELAMINATED CONCRETE, UNDERCUT REINFORCING STEEL, REMOVE ADDITIONAL CONCRETE AS REQUIRED TO PROVIDE MINIMUM REQUIRED THICKNESS OF REPAIR MATERIAL.
3. CHIP OUT THE CONCRETE TO EXPOSE THE ENTIRE CIRCUMFERENCE OF THE REBAR. REMOVAL SHALL CONTINUE ALONG THE LENGTH OF THE REINFORCING STEEL UNTIL AT LEAST 6" OF UNCORRODED STEEL IS OBSERVED.
4. AT EDGE LOCATIONS, PROVIDE RIGHT ANGLE CUTS TO THE CONCRETE SURFACE WITH EITHER OF THE FOLLOWING METHODS:
 - 4.1. SAWCUT 1/2" (13 MM) OR LESS AS REQUIRED TO AVOID CUTTING REINFORCING STEEL.
 - 4.2. USE POWER EQUIPMENT SUCH AS HYDRODEMOLITION OR IMPACT BREAKERS. AVOID FEATHER EDGES.
 - 4.3. REPAIR CONFIGURATIONS SHOULD BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARED CORNERS.
5. AFTER REMOVALS AND EDGE CONDITIONING ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, CONCRETE SLURRY, LOOSELY BONDED AGGREGATES) BY ABRASIVE BLASTING OR HIGH PRESSURE WATERBLASTING WITH OR WITHOUT ABRASIVE.
6. CHECK THE CONCRETE SURFACES AFTER CLEANING TO INSURE THAT SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE, OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
7. IF HYDRODEMOLITION IS USED, CEMENT AND PARTICULATE SLURRY MUST BE REMOVED FROM PREPARED SURFACES BEFORE SLURRY HARDENS.



BOUNDARY OF LOOSE AND DELAMINATED CONCRETE

RECOMMENDED LAYOUT



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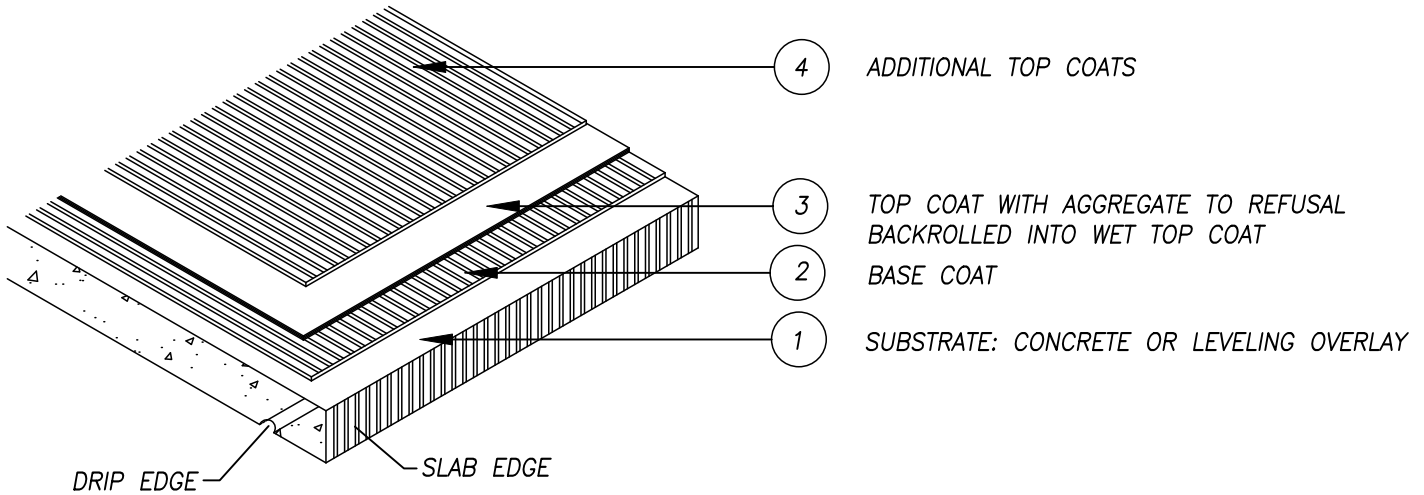
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SLAB WATER PROOFING



REPAIR PROCEDURE:

1. ALLOW CONCRETE DECKS TO DRY FOR 48 HOURS MINIMUM WITHOUT RAINFALL. CONCRETE MUST BE VISIBLY DRY WITH MAXIMUM 4% MOISTURE CONTENT. IF REQUIRED BY THE ENGINEER, A MAT TEST SHALL BE PERFORMED ON ONE OR MORE DECKS PRIOR TO BASE COAT APPLICATION. TEST SHALL COVER AN AREA OF FOUR SQUARE FEET, MAT SHALL BE A 6 MIL CLEAR POLYURETHANE SHEET, SEALED ALL AROUND WITH ADHESIVE TAPE AND IT SHALL REMAIN IN PLACE FOR A MINIMUM OF 16 HOURS. CONCRETE DECKS SHALL BE DRY, CLEAN, SOUND AND FREE OF ALL CONTAMINANTS WHICH MAY INTERFERE WITH ADHESION OR PROPER CURING.
2. APPLY BASE COAT TO TOP OF SLAB AND VERTICAL EDGES PER MANUFACTURER'S SPECIFICATIONS AND ALLOW IT TO CURE BEFORE TOP COAT APPLICATION. EXTEND APPLICATION TO VERTICAL EDGE OF SLAB AND TO DRIP EDGE IF APPLICABLE.
3. AFTER SUFFICIENT CURE TIME, SURFACE DEFECTS SHALL BE REMEDIED, CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING PONDING AREAS WITH COATINGS 3/16" OR LESS. ALLOW IT TO CURE FOR 72 HOURS MINIMUM BEFORE OPENING THE BALCONY TO TRAFFIC. TOP COAT APPLIED PER MANUFACTURER'S SPECIFICATIONS. BROADCAST SILICA SAND IMMEDIATELY INTO THE WET TOPCOAT AND BACK ROLL TO EVENLY DISTRIBUTE THE AGGREGATE. TOP COAT TO BE COMPATIBLE WITH BASE COAT.
4. APPLY FINAL TOP COATS PER MANUFACTURER'S INSTRUCTIONS.

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH FS553 AND FS633.

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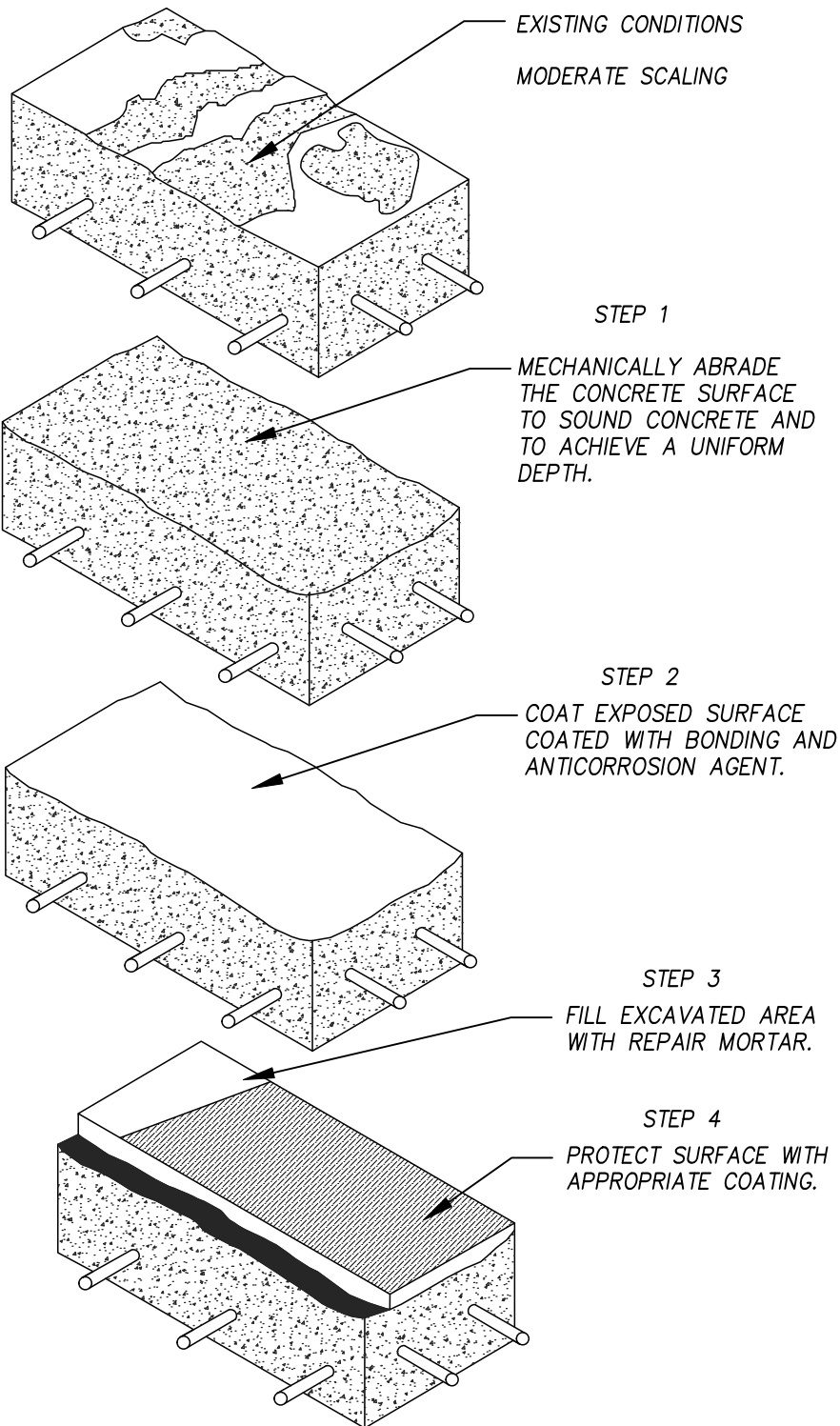
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DECK OVERLAY SCALING / SLAB PITCH CORRECTION



NOTES:

1. SPALL/SCALING UP TO 1/4" (7mm) IN DEPTH WITH MINOR AGGREGATE LOOSE, BUT NO EXPOSURE TO REBARS.
2. AN EXPOSED AGGREGATE PROFILE OF +/- 1/8"(3mm) IS REQUIRED IN ORDER TO OBTAIN A GOOD MECHANICAL BOND TO THE SUBSTRATE. PRESSURE WASH AFTER EXCAVATION TO REMOVE DUST, LAITANCE AND OTHER BOND INHIBITING MATERIALS, SSD SUBSTRATE.
3. APPLY A 20 MIL. COATING OF BONDING AND ANTI-CORROSION AGENT ONTO THE SSD SURFACE TO INSURE PROPER BOND OF REPAIR MATERIAL.
4. FILL AND SCREED EXCAVATED AREA WITH THE APPROPRIATE REPAIR MORTAR, CONSOLIDATE, FINISH AND CURE AS REQUIRED.

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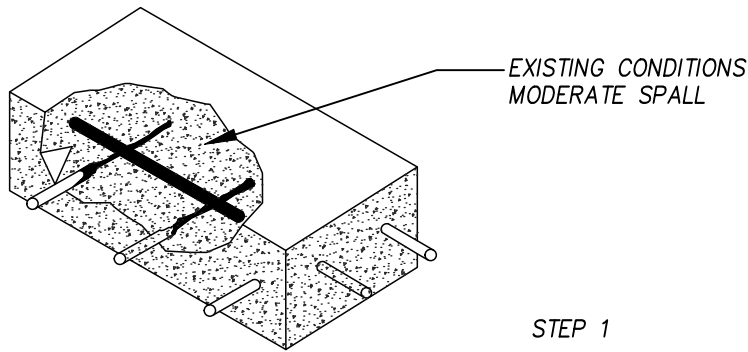
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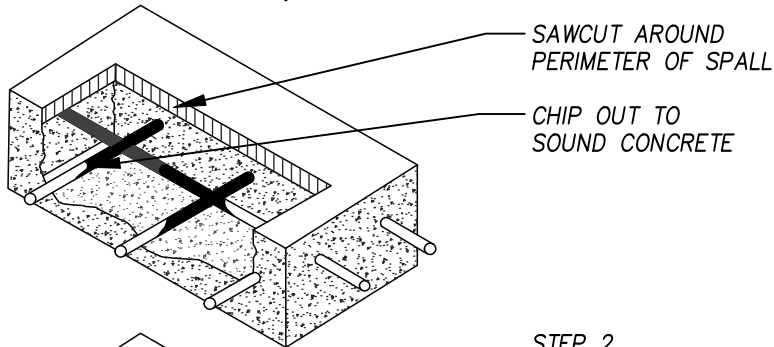
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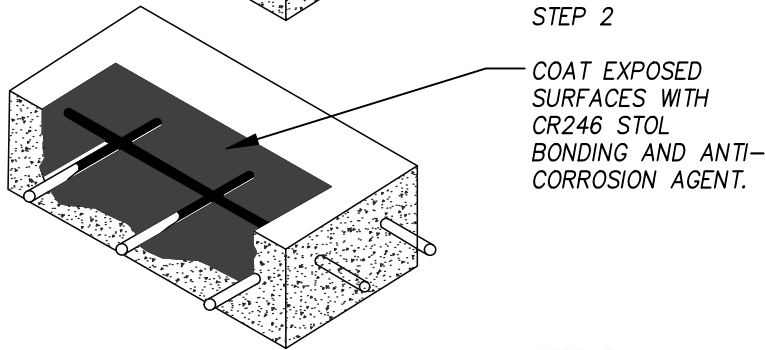
CONCRETE SPALLS: MODERATE



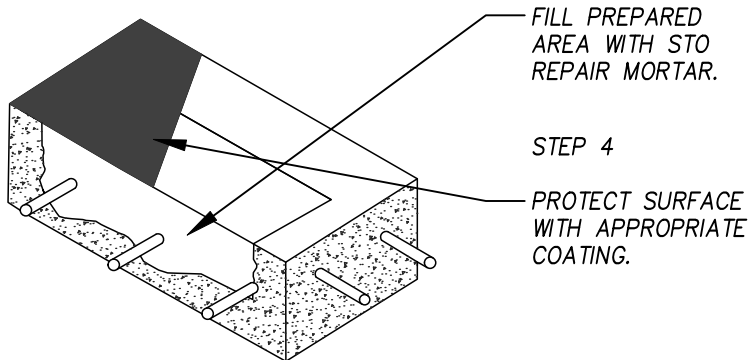
STEP 1



STEP 2



STEP 3



STEP 4

NOTES:

1. MODERATE SPALLS ARE DEEPER THAN 1/4" (7MM) WITH AGGREGATE LOSS, AND EXPOSED RE-BAR, BUT LESS THAN 30% OF SLAB THICKNESS.
2. REMOVE ALL DAMAGED OR UNSOUND CONCRETE FOLLOWING THE CONDITIONING OF CONCRETE GUIDELINES.
3. SAWCUT THE PERIMETER OF THE REPAIR AREA FORMING A SHOULDER PERPENDICULAR TO THE SUBSTRATE.
4. THE VERTICAL AND HORIZONTAL SURFACES SHALL BE ROUGHENED WITH 1/4" AMPLITUDE.
5. SANDBLAST, HYDROBLAST, OR GRIND THE EXPOSED CONCRETE AND REBAR TO REMOVE DUST, LAITANCE AND OTHER BOND INHIBITING MATERIALS. AVOID DAMAGING OR CUTTING EXISTING REINFORCEMENT.
6. INSERT NEW BARS OF EQUAL DIAMETER NEXT TO THOSE THAT HAVE DETERIORATED BY MORE THAN 15%. ALL NEW STEEL SHALL BE ASTM A-615 GRADE 60. LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318.
7. COAT ALL NEW AND EXISTING REBAR WITH TWO 10 MILS OF EPOXY, POLYMER CEMENT SLURRY OR A ZINC-RICH COATING FOR CORROSION PROTECTION. INSTALLATION SHALL BE DONE FOLLOWING THE MANUFACTURER SPECIFICATIONS.
8. THE BONDING AGENT SHALL BE INSTALLED AS DESCRIBED IN THE MANUFACTURER SPECIFICATIONS TO SSD (SATURATED-SURFACE- DRY) CONCRETE SURFACE.
9. FILL THE EXCAVATION WITH REPAIR MORTAR OR READY MIX CONCRETE PLACED AS DESCRIBED IN THE MANUFACTURER SPECIFICATIONS. REPAIR MIX SHALL HAVE A COMPRESSIVE RESISTANCE OF 5,000 PSI AT 28 DAYS AND A WATER CEMENT RATIO OF 0.45 OR LESS.
10. FINISH SURFACE TO TEXTURE AND SMOOTHNESS REQUIRED FOR THE SPECIFIC APPLICATION.
11. UPON COMPLETION OF FINISHING OPERATIONS, ALLOW MATERIAL TO CURE IN ACCORDANCE WITH MANUFACTURERS'S RECOMMENDATIONS.
14. APPLY PROTECTIVE WATERPROOF COATING TO PREPARED SUBSTRATE.
15. PROVIDE THE ARCHITECTURAL FINISH AS REQUIRED BY THE OWNER.
16. FOR MATERIAL SELECTION, PHYSICAL PROPERTIES, MIXING, APPLICATION AND CURING INFORMATION REFER TO APPROPRIATE TECHNICAL SPECIFICATIONS FROM MANUFACTURER.

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FLASHING AT WALL

CEMENTITIOUS WATERPROOFING NOTES:

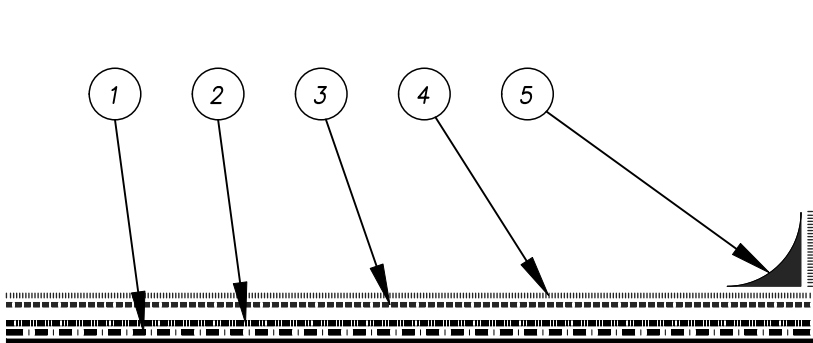
- SUBSTRATE SHALL BE PREPARED BY MECHANICAL MEANS TO REMOVE ALL BOND-INHIBITING MATERIALS TO SANDPAPER LIKE TEXTURE.
- FILL ALL VOIDS, REPAIR CONCRETE SPALLS, OR INSTALL REQUIRED SLOPING MATERIALS AS DIRECTED BY THE ENGINEER PRIOR TO INSTALLING THE WATERPROOFING SYSTEM.
- SUBSTRATE MUST BE THOROUGHLY SATURATED SURFACE DRY (SSD) PRIOR TO INSTALLING WATERPROOFING SYSTEM.

DECORATIVE COATING SYSTEM NOTES:

- ALLOW THE INSTALLED WATERPROOFING SYSTEM TO-CURE SO THAT THE SURFACE CAN TAKE FOOT TRAFFIC WITHOUT HARMING THE CEMENTITIOUS COATING.
- IF NECESSARY USE A RUBBING STONE TO SMOOTH OUT ANY TROWEL MARKS THAT APPEAR IN THE FINISH OF THE WATERPROOFING SYSTEM.
- RINSE OR BLOW OFF (WITH OIL-FREE COMPRESSED AIR) ENTIRE AREA TO REMOVE ALL DIRT, DUST, AND DEBRIS PRIOR TO INSTALLING COATING.

WATERPROOFING & ACRYLIC COATING SYSTEM (SIKAGARD-OPTION):

1. BASE COAT OF SIKAGARD FLEXCOAT AT 35-45 MILS THICK OVER ENTIRE SURFACE AREA.
2. TOP COAT OF SIKAGARD FLEXCOAT AT 35-45 MILS THICK OVER ENTIRE SURFACE AREA.
3. BASE COAT - SIKAGARD FLEXCOAT ATC, APPLY WITH ROLLER, BRUSH OR SPRAY EQUIPMENT AT A UNIFORM THICKNESS OF APPROXIMATELY 5-6 WET MILS.
 - ALLOW TO COMPLETELY DRY.
4. TOP COAT - SIKAGARD FLEXCOAT ATC, APPLY WITH ROLLER, BRUSH OR SPRAY EQUIPMENT AT A UNIFORM THICKNESS OF APPROXIMATELY 5-6 WET MILS.
 - ALLOW TO COMPLETELY DRY PRIOR TO ALLOWING FOOT TRAFFIC.
5. CONTINUOUS CANT BEAD - SIKAFLEX 2C NS OR SIKAFLEX 1A AND APPROPRIATE SIKAFLEX PRIMER (PRIME AS REQUIRED) ALONG ENTIRE PERIMETER OF SLAB TO WALL TRANSITION AND ALL DOOR THRESHOLDS.
 - REFER TO SEALANT AND PRIMER TECHNICAL DATA SHEETS FOR INSTALLATION REQUIREMENTS.



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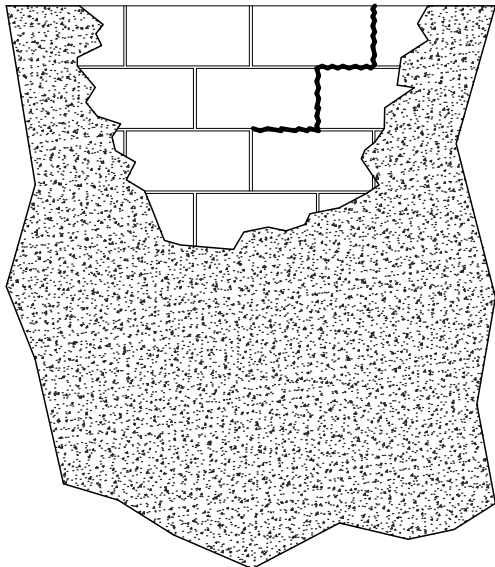
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WALL REPAIR



NOTES FOR GENERAL REPAIR:

1. CHIP AND REMOVE CRACKED MORTAR OR LOOSE WALL CONCRETE.
2. THOROUGHLY CLEAN MASONRY SUBSTRATE AND REMAINING STUCCO SURFACES (EXPOSED EDGES INCLUDED) WITH CONCRETE/MASONRY CLEANER OR TRISODIUM PHOSPHATE/WATER SOLUTION.
3. REPAIR CRACKED AND/OR SPALLED MASONRY SUBSTRATE INCLUDING CONCRETE BLOCK UNITS, MORTAR JOINTS, AND GROUT FILLED CELLS IN ACCORDANCE WITH REPAIR DETAILS AND SPECIFICATIONS PROVIDED HEREIN.
4. REPAIR CRACKS WITH "UGL DRYLOK MASONRY CRACK FILLER", "ELASTIPOXY" OR SIMILAR EPOXY JOINT & CRACK FILLER MATERIAL; FOLLOWING THE MANUFACTURER'S RECOMMENDATIONS. FOR LARGER CRACKS TO PREVENT THE EPOXY FROM RUNNING OUT OF THE CRACK, INSERT FOAM BACKER ROD OF SUITABLE DIAMETER OR FILL IN WITH CAULK.
5. FILL HOLLOW CORE HOLES WITH EXPANDABLE FOAM FILLER MATERIAL TO PROVIDE A BACKING SUBSTRATE.
6. COAT ALL SIDES OF GAP/HOLE WITH BONDING AGENT.
7. PATCH REPAIR AREAS WITH NEW REPAIR MORTAR SYSTEM OR EXTERIOR STUCCO SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
8. MATCH EXISTING FINISH TEXTURE AND COLOR AS CLOSE AS POSSIBLE.
9. FINISH/PAINT/COAT REPAIRED AREA IN ACCORDANCE WITH THE GENERAL NOTES.

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