



## PROPOSED REPAIR PERMIT DOCUMENTS

4/8/2023

Capri Isle Garden Apartments No. 2 Condominium Association, Inc.  
280 126<sup>th</sup> Ave.  
Treasure Island, FL 33706

PREPARED BY:

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PREPARED FOR:

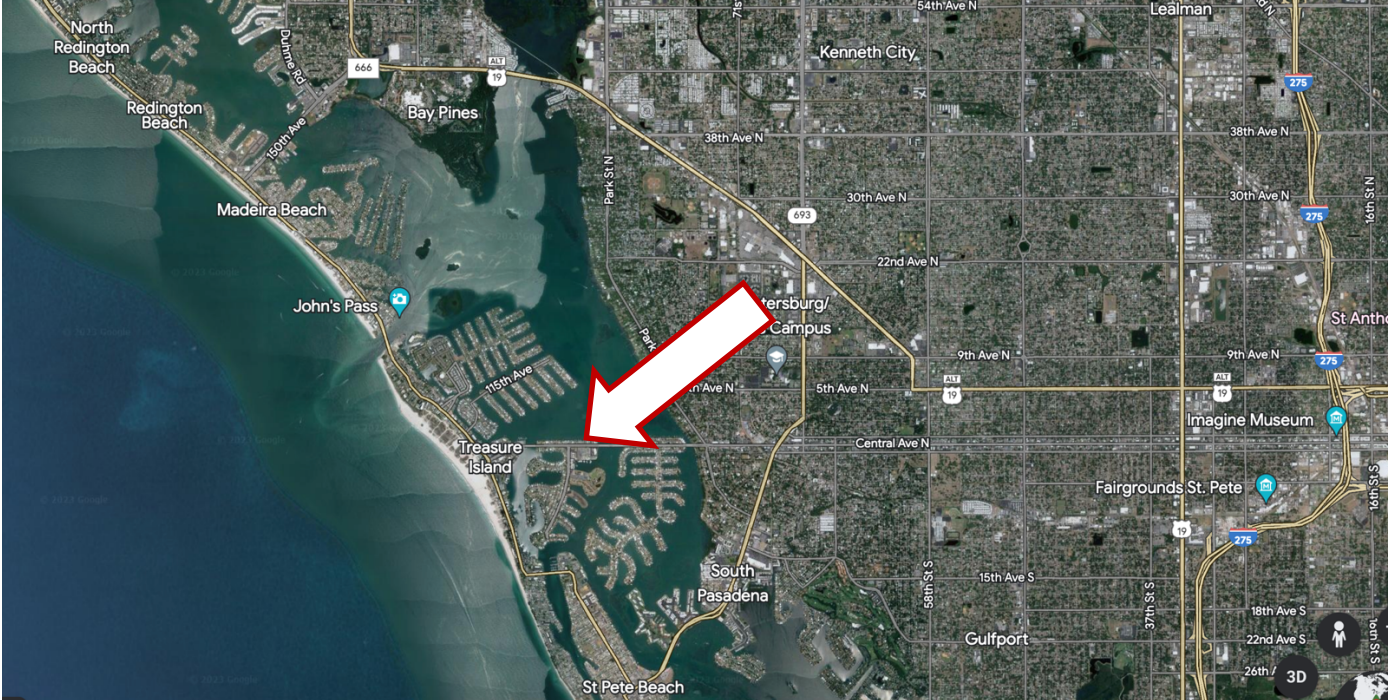
Munyan Painting & Restoration  
1175 Gould St., Clearwater FL 33756

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- Site Location
- Scope of Work
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ANDREW SCHRADER, STATE OF FLORIDA, PROFESSIONAL ENGINEER,  
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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS  
COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES INCLUDING THE 2020  
FLORIDA BUILDING CODE (7<sup>TH</sup> EDITION)



SITE LOCATION



Project Location. Project work area includes all exterior walls of building on North, South, East and West elevations as well as walkways on South Elevation.  
No interior work is contemplated as part of these permit documents.



Front (South) Elevation of Building



Rear (North) Elevation of Building



## **SCOPE OF WORK**

The following is the anticipated scope of work observed prior to Contractor pressure washing the building. The required repair locations and size of repairs may grow, however the repair method and types of repairs required is anticipated to remain unchanged. All work to be performed on exterior.

1. Scope of work for this proposed project consists of the following:
  - a. Structural concrete repair at the following locations:
    - i. Front (South elevation) columns supporting stair landings at East and West ends of building.
      1. Column in front of Unit 211, South elevation, East side, 2<sup>nd</sup> floor stair landing (repair size approx. 36" x 36" x 3" deep)
      2. Column in front of Unit 110, South elevation, supporting stair landing, (repair size approx.. 36" x 36" x 3" deep)
      3. Column at West end of building supporting west stairwell, 2<sup>nd</sup> floor landing in front of Unit 201 (repair size approx.. 36" x 36" x 3" deep)
    - ii. Estimated total of repairs, 5 CF.
  - b. Structural concrete repair to top of walkway slabs in multiple locations at South elevation walkway. Representative example in front of Unit #308 noted in this document—more locations will likely be observed once Contractor pressure washes the walkways.
    - i. Estimated 0.5 cubic feet (CF) per location, 50 locations.  $50 \times 0.5 = 25$  CF
  - c. Concrete handrail repair at East end, south elevation is significantly deteriorated. We request confirmation by Fire Marshal if replacement of concrete handrail can take place, or if new code-compliant guardrail system is required.
  - d. Concrete window sills require chip and patch concrete repair in many locations on the building. These are non-structural repairs.
    - i. Twenty-five estimated window sills total, 3 CF per repair.  $25 \times 3 = 75$  CF
  - e. Minor chip and patch concrete repairs at walkway slab edges where rebar ends are exposed (numerous locations on South elevation).
    - i. Estimated 0.5 cubic feet (CF) per location, 50 locations total.  $50 \times 0.5 = 25$  CF
  - f. Minor chip and patch concrete repairs at walkway ceilings.
    - i. Estimated 0.5 cubic feet (CF) per location, 50 locations total.  $50 \times 0.5 = 25$  CF.
  - g. Delaminated skim coat (texture) at front (South) elevation walkway ceilings in many locations. This is non-structural work and can be performed at Contractor's discretion.
2. See following sections for photographs of repair locations.

# RECON RESPONSE

ENGINEERING

3. No electrical, fire, or mechanical work is anticipated or included in this scope of work. Concrete railings and guardrails are to remain in place.
4. Contractor shall perform repairs using suspended scaffolding (swing stages) or boom trucks. Contractor shall perform repairs in a manner that neither egress nor life safety is impacted.
5. All work is designed to meet the Code standards at the time of original building construction.

**ESTIMATED QUANTITY OF REPAIR WORK** is provided here for identification of magnitude of work only. Repair quantities and sizes will grow depending on the condition of the concrete.

Total Estimated Repair quantity for reinforced concrete repair: one hundred fifty-five (155) cubic feet.

This is an initial estimate only and is not intended to be a guaranteed maximum.

## BUILDING CODE

- Florida Building Code 7<sup>th</sup> Edition (2020)
- Level = Repair (less than substantial structural damage per Florida Building Code Section 404.4). “For damage less than substantial structural damage, repairs shall be allowed that restore the building to its pre-damage state, based on material properties and design strengths applicable at the time of original construction. New structural members and connections used for this repair shall comply with the detailing provisions of the Florida Building Code, Building for new buildings of similar structure, purpose and location.”

## DEAD LOADS

- Dead Loads have been calculated in accordance with ASCE 7-16.
  - a. Reinforced Concrete = 150 pcf

## LIVE LOADS

- Live loads have been calculated in accordance with ASCE 7-16
  - a. Balconies and Walkways: 100 psf

## WIND INFORMATION

- ASCE 7-16 Windspeed
- Risk Category II
- Exposure Category D
- Ultimate Velocity Vult = 145 mph 3-sec gust (Velocity Vasd = 132 mph 3-sec gust)



Walkway Slab Repair Location (typical). These will be numerous and their exact locations can only be determined once the walkways are pressure-cleaned.

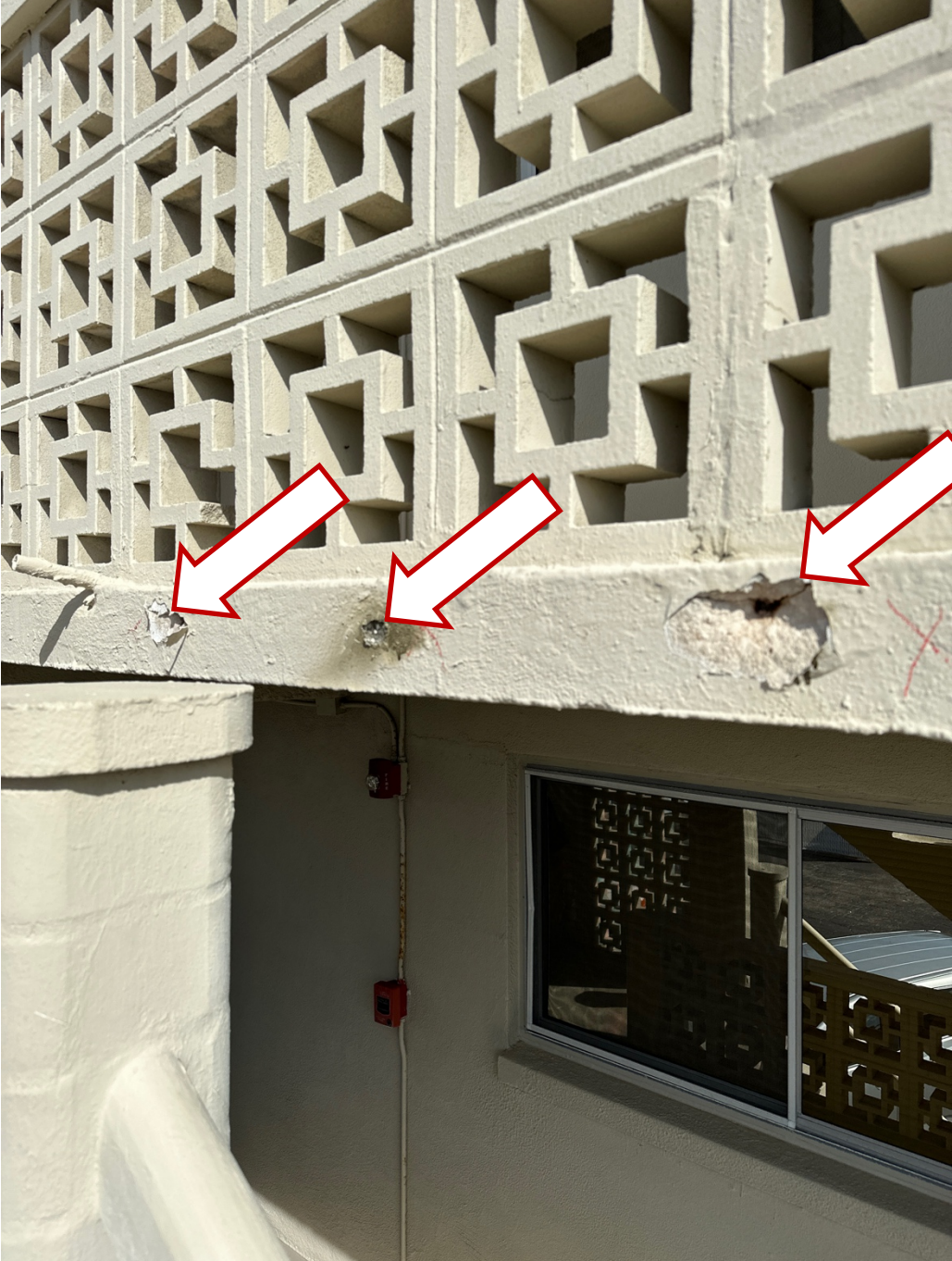




Typical concrete stair area, front (South) elevation



Deteriorated concrete handrail, front (South) elevation, East side. We request direction from Fire Marshal as to whether or not portion can be replaced, or if complete replacement of railing with code-compliant rail is required.



Front (South) Elevation, Walkway Slab Edges. Numerous rebar ends exposed and have caused minor spalls. These repairs will be required at many walkway slab edge locations on front elevation, on all floors.



Concrete spall observed at base of column supporting stair landing, ground floor front (South)  
Capri Isle

April 8, 2023

elevation. (photo taken prior to hand excavation of loose concrete)



Concrete spall observed at base of column supporting stair landing, ground floor front (South)  
Capri Isle

April 8, 2023

# RECON RESPONSE ENGINEERING

elevation. Photo taken following hand excavation of loose concrete.



# RECON RESPONSE

E N G I N E E R I N G

Concrete Repair Area required at underside of concrete stairs, located at front (South) elevation,  
ground floor, East side



Concrete spall observed at base of column supporting stair landing, elevated stair landing at front  
Capri Isle

April 8, 2023

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Typical concrete spall in window sill requiring repair (numerous locations on building)





North elevation, Typical concrete spall in window sill requiring repair  
(numerous locations on building)



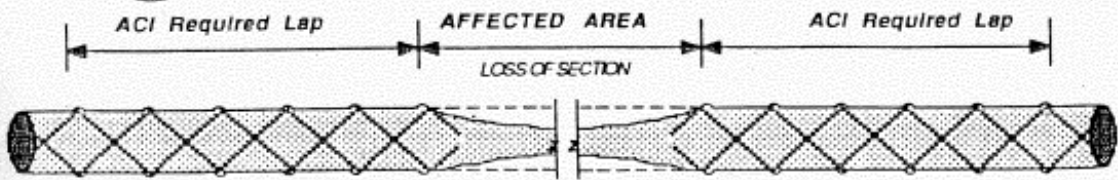
## CONCRETE REPAIR NOTES

1. The reinforced concrete on the walkways and columns is deteriorating due to corrosion and needs to be repaired. It appears that long-term moisture intrusion into the concrete has caused the reinforcing steel to rust. When the steel rusts it expands, cracking the surrounding concrete and destroying the structure.
2. Discovery/Identification: Contractor is to sound the concrete elements of the building for delamination and bring these areas to the attention of Engineer for confirmation of repair necessity.
3. In order to repair these areas, the deteriorated sections must be chipped out with maximum 15# jackhammers and replaced with fresh repair-quality mortar specified below. Several of the reinforcing bars will also have to be replaced.
  - a. At a minimum, building department inspection must be called for pre-pour inspection after areas have been excavated and prepped for concrete, and prior to the installation of concrete repair material. Additional inspection requirements may be required by the local jurisdiction.
  - b. All repair areas should be square-cut with 90° angles. Feather edging of repairs should be avoided. Repairs must be made in accordance with International Concrete Repair Institute (ICRI) specification guideline #310.
  - c. After the repair mortar has reached 75% of full strength, concrete forms can be removed. (Minimum 48-hour waiting period).
  - d. Contractor shall use MasterEmaco N425 (formerly called Gelpatch) repair mortar or equal be used for the repairs. This one-component mortar contains integrated corrosion inhibitors which will help prevent this from happening again. Note that due to the depth of repair, it is likely that multiple lifts will be required (max 2" depth of each lift).
  - e. Contractor shall use BASF MasterEmaco P124 rebar coating or equal be applied to all exposed rebar, old and new, prior to placement of repair mortar. Mortar must be placed within four (4) hours of coating application to prevent bonding/adhesion issues. If excessively hot temperatures are encountered, this open time will be reduced. Substrate and ambient temperatures must be between 40 to 95 degrees F.



4. At slab edge locations: If conditions are encountered where reinforcing bars were originally placed too close to surface (inadequate concrete cover), these bars shall be cleaned as best as possible and then hand-packed with repair mortar. When these bars are replaced, Contractor shall hand-pack additional concrete around the rebar to provide additional concrete cover as best as possible. Note that 1 ½" clear concrete cover may not be possible to provide in all locations due to constraints of existing construction.
  
5. At locations where stucco cracks are observed: Loose stucco cladding to be removed and replaced. Any fully adhered stucco with cracking to be properly cleaned, routed out, and repaired with elastomeric caulking per BASF guidelines.

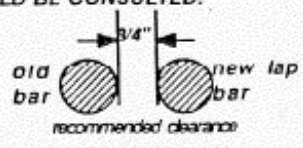
## B REPAIR OF REINFORCING STEEL DUE TO LOSS OF SECTION



IF REBAR HAS LOST MORE THAN 25% OF ITS CROSS SECTION (20% IF 2 OR MORE CONSECUTIVE PARALLEL BARS ARE AFFECTED), A STRUCTURAL ENGINEER SHOULD BE CONSULTED.

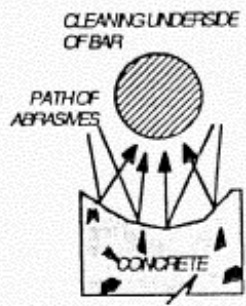
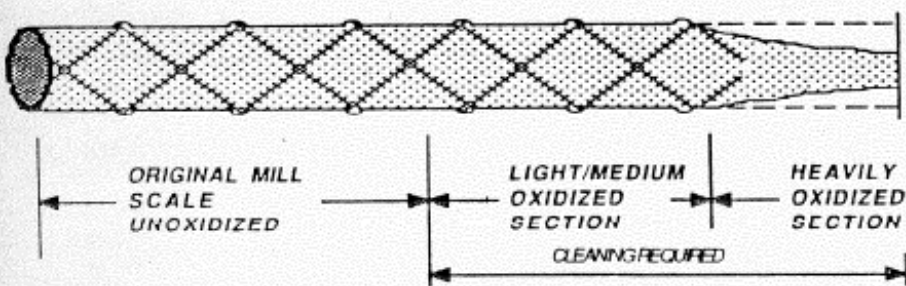
IF REPAIRS ARE REQUIRED TO THE REINFORCING STEEL ONE OF THE FOLLOWING REPAIR METHODS SHOULD BE USED:

- 1) COMPLETE BAR REPLACEMENT, OR
- 2) ADDITION OF SUPPLEMENTAL BAR OVER AFFECTED SECTION. NEW BAR MAY BE MECHANICALLY SPLICED TO OLD BAR OR PLACED PARALLEL TO AND APPROXIMATELY 3/4" FROM EXISTING BAR.



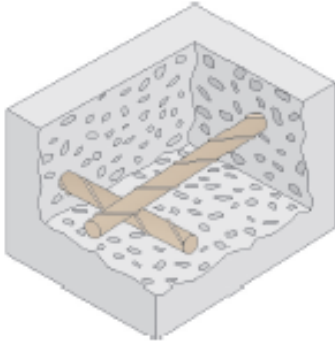
LAP LENGTH SHALL BE DETERMINED IN ACCORDANCE WITH ACI 318. ALSO REFER TO CRSI AND AASHTO MANUAL

## CLEANING OF REINFORCING STEEL

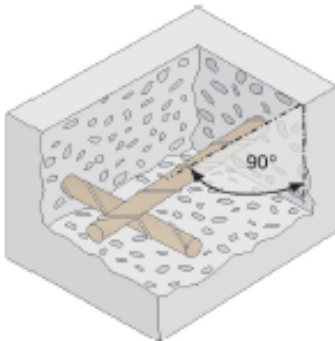


ALL HEAVY OXIDES AND SCALE SHOULD BE REMOVED FROM THE BAR AS NECESSARY TO PROMOTE MAXIMUM BOND OF REPLACEMENT MATERIAL. OIL FREE ABRASIVE BLAST IS THE PREFERRED METHOD. A TIGHTLY BONDED LIGHT OXIDE BUILD-UP ON THE SURFACE MAY RESULT FROM HIGH-PRESSURE WATERBLASTING, WITH OR WITHOUT ABRASIVE. THIS IS 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.

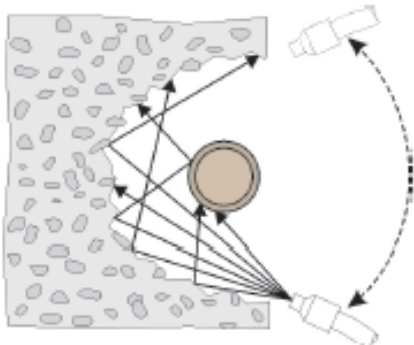
Concrete Repair Detail #1



*Fig. 7.1: Remove concrete to undercut and expose reinforcing steel and provide uniform repair depth*



*Fig. 7.2: Saw cut perimeter to provide vertical edge*



*Fig. 7.3: Abrasive blasting to clean substrate and reinforcing*

Concrete Repair Detail #2. Wire wheeling may be performed in place of abrasive blasting where clear cover permits.



## CONCRETE REPAIR REFERENCES

- A. American Concrete Institute (ACI)
1. ACI 224 – Causes, Evaluation, and Repair of Crack in Concrete Structures
  2. ACI 301 – Specifications for Structural Concrete for Buildings
  3. ACI 304 – Guide for Measuring, Mixing, Transporting and Placing Concrete
  4. ACI 305 – Hot Weather Concreting
  5. ACI 306 – Cold Weather Concreting
  6. ACI 311 – Recommended Practice for Concrete Inspection
  7. ACI 318 – Building Code Requirements for Reinforced Concrete
  8. ACI 347 – Guide to Formwork for Concrete
  9. ACI 503.4 – Standard Specification for Repairing Concrete with Epoxy Mortars
  10. ACI 546 – Concrete Repair Guide
  11. ACI 614 – Recommended Practice for Measuring, Mixing, and Placing Concrete
- B. International Concrete Repair Institute (ICRI)
1. ICRI Guideline No. 03730 – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
  2. ICRI Technical Guideline No. 03731 – Guide for Selecting Application methods for the Repair of Concrete Surfaces.
  3. ICRI Technical Guideline No. 03732 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

### **Project Conditions**

- A. Follow manufacturer's recommendations regarding ambient weather conditions and other additional installation information.
- B. Where shoring is required, formwork and shoring shall remain in place as specified by Contractor's specialty shoring Engineer until structural element repair materials have reached a strength equal to the original design strength of the structural element under repair, as verified by the testing procedures set forth in this Section or a minimum of (14) fourteen calendar days.



## CONCRETE REPAIR EXECUTION

### **3.01 Concrete Repair General**

- A. Mix, place, consolidate, finish, and cure concrete in accordance with ACI 301.

### **3.02 Concrete Repair Shoring**

- A. Contractor shall provide shoring, bracing or support for all existing structural elements during repairs.

### **3.03 Concrete Repair Surface Preparation**

- A. Prior to the commencement of the work, the Contractor shall verify the Scope of Work for the repair. Should the repair include more than 25 percent of the cross sectional area of a column or beam or large areas of concrete, Contractor shall contact Engineer prior to the commencement of the Work. **CONTRACTOR SHALL NOT CHIP ANY CONCRETE COLUMNS WITHOUT EXPRESS WRITTEN APPROVAL OF ENGINEER OF RECORD. SHORING MUST BE INSTALLED PRIOR TO CHIPPING COLUMNS AND WALKWAY SLABS.**
- B. All repair areas shall be prepared in accordance with the International Concrete Repair Institute's "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion" (ICRI Guideline No. 03730), repair product manufacturer's directions and the Supplemental Drawings. ICRI Guideline No. 03730 includes but is not limited to the following:
1. Remove loose or delaminated concrete above corroded reinforcing steel.
  2. Once initial removals are made, proceed with the undercutting of all exposed corroded bars. Undercutting will provide clearance for under bar cleaning and full bar circumference bonding to surrounding concrete, and will secure the repair structurally. Provide minimum 3/4" clearance between exposed reinforcing steel and surrounding concrete or 1/4" larger than largest aggregate in repair material, whichever is greater.
  3. Concrete removals shall extend along the bars to locations along the bar free of bond inhibiting corrosion, and where the bar is well bonded to surrounding concrete. (See 3.03.E)
  4. If non-corroded reinforcing is exposed during the undercutting process, care shall be taken not to damage the bar's bond to surrounding concrete. If bond between bar and concrete is broken, undercutting of bar shall be required.
  5. Any reinforcement that is loose shall be secured in place by tying to other secured bars or by approved methods.
  6. 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.
  7. At edge locations, provide right angle cuts to the concrete surface by saw-cutting 1/2" or less as required to avoid cutting reinforcing steel. Avoid featheredges.



8. Repair Configurations should be kept as simple as possible with rectangular shapes and 90° corners.
  9. After removals and edge conditioning are complete, remove bond-inhibiting materials (dirt, concrete slurry, loosely bonded aggregates) by abrasive blasting or high-pressure water blasting with or without abrasive. Check the concrete surface after cleaning to insure that surface is free from additional loose aggregate, or that additional delaminations are not present.
- C. Reinforcing steel with a section loss of 15 percent or greater shall be reported to Engineer. Engineer shall determine necessity of replacing/supplementing reinforcing steel with reduced cross sectional area resulting from corrosion. Install additional reinforcing as directed by Engineer.
  - D. Repairs shall be prismatic and uniform in depth throughout repair area unless otherwise directed by Engineer.
  - E. The area of the concrete to be removed shall extend along the length of the reinforcing steel bar, beyond the limits of the reinforcing steel deterioration a minimum of 2" into sound concrete.
  - F. Application of repair concrete shall not be less than 1/2" depth.
  - G. Where practicable and as directed by Engineer, provide a minimum of 1" concrete cover over existing reinforcing bars.
  - H. Repair of excess demolition as determined by Engineer shall be the responsibility of Contractor and shall not be included in Application for Payment quantities.

#### **3.04 Concrete Repair Reinforcing Steel Replacement**

- A. All reinforcing steel with deterioration of more than 15 percent of the original bar section shall be reported to the Engineer.
- B. Prior to the repair, the Contractor shall support the area to be repaired. This support shall remain in place for 14 days to 75 percent of the design capacity; which ever is greater, or until otherwise directed by the Engineer.
- C. The concrete shall be removed to ensure a minimum of 1" clearance around the existing reinforcing steel and the new reinforcing steel.
- D. At the repair location, the concrete shall be excavated a minimum of 12" beyond the damaged reinforcing steel at each end into sound concrete to allow for splicing.
- E. After existing reinforcing steel is prepared, lap new reinforcing steel beside the existing reinforcing steel; Engineer shall provide lapping requirements.
- F. Where the removal of the existing concrete to achieve the required lap length is not deemed practical as determined by the Engineer, bar development could be achieved by epoxy doweling the reinforcing steel into the existing sound concrete. Embedment depth shall be provided by the Engineer.
- G. Follow all other procedures as defined in this section for concrete repair and placement.
- H. All reinforcing steel shall be Grade 60, minimum





**3.05 Concrete Repair Manufactured Repair Materials: Mixing**

- A. Mixing procedures and water quantities shall be accomplished according to the manufacturer's recommendations.

**3.06 Concrete Repair Manufactured Repair Materials: Application**

- A. Application of manufactured repair materials shall be accomplished according to the manufacturer's recommendations.
- B. Contractor shall coordinate observation of repairs by manufacturer's representative. Manufacturer's representative shall periodically observe repairs in progress not less than once per week while repairs are underway and shall observe initial surface preparation and installation of repair materials.
- C. Completed repair surfaces shall be straight, level and true; ready to receive coating materials.
- D. Manufactured cementitious repair materials shall be cured according to manufacturer's recommendations.

**3.07 Concrete Crack Repair**

- A. Crack repairs will be performed for all areas as identified by the Engineer.
- B. Remove all loose and unsound concrete within and adjacent to the crack.
- C. For surface cracks, "V" notch the surface of the crack with a mechanical router, hand chipping tool, or other, or the combination thereof, to a maximum width of 1/4 inch. Remove loose debris and dust by air blasting the repair area. The substrate may be dry or damp prior to the product application. If the crack propagates through the structural element, contact Engineer before proceeding. Seal the underside with epoxy resin, adhesive paste or Portland cement-based quick setting compound as a dam for the liquid epoxy resin adhesive until cured.
- D. At the direction of the Engineer, if a control joint is to be installed at or near the crack location, saw cut the control joint a 1/4" wide by 1/2" in depth. Care shall be taken to avoid damage to the existing reinforcing steel. Prepare the control joint in accordance with Section 07900.
- E. For overhead cracks, install injection ports that intersect the crack at slab mid-depth. Injection ports shall be sealed prior to performing injection repairs.
- F. Finish grind all surfaces following crack repairs.



**3.08 Concrete Repair: Surface Finishing Concrete Repairs**

- A. In areas where new concrete has been placed and areas adjacent to such areas, install skim coat mortar, epoxy mortar, or stucco, as required, to fill voids and match surface texture of surrounding surfaces.
  
- B. Finish concrete surfaces shall be uniform with a positive slope for drainage to the exterior of the structure.

GENERAL CONSTRUCTION NOTES

- Store materials in area(s) designated by Owner.
- Protect stored materials against damage due to exposure using blocking, moisture protection, etc.
- Use care off-loading materials to prevent damage, splitting and breaking of materials.
- Stockpile materials sufficiently in advance of need to ensure their availability in a timely manner.
- Contractor is solely responsible for all job and site safety. This includes following all federal, state, and local construction safety requirements. As these structures and site are currently occupied and will continue to be occupied during repairs, the Contractor must maintain a safe work environment for residence including maintaining means of egress, blocking access to work areas by residents, and effectively managing traffic patterns.
- Manufactured materials installed under this Section shall be installed according to the manufacturer's directions.
- Contractor is responsible for safety and stability of the structure, including the design and installation of any shoring which may be required.