PROJECT MANUAL

Rear Balcony Handrail Repair & Resurfacing

for

Admiralty Club Condominium

3606 South Peninsula Drive
Port Orange, FL 32127

PREPARED BY

Hiller Engineering Services, LLC
JOSEPH D. HILLER, P.E.
STATE OF FLORIDA
LICENSED PROFESSIONAL ENGINEER
#74583

May 10, 2024

TABLE OF CONTENTS

Contact Information

Project Location:	Admiralty Club Condominium 3606 South Peninsula Drive Port Orange, FL 32127
Owner Representative:	Laura Goodearly, Office Manager/CAM (386) 767-3882
Project Engineer:	Joseph Hiller, P.E. Hiller Engineering P.O. Box 290855 Port Orange, FL 32129 Phone: (386) 248-1700 Mobile: (386) 589-1900 Email: hillerengineering@gmail.com
Contractor:	

Project Description:

UPDATE FOR ADMIRALTY CLUB

The Admiralty Club is a beachside residential condominium complex located on the Halifax River just south of Dunlawton Bridge, in Port Orange. The Admiralty Club is a 8-story tall condominium built in 1974, with a total with 101-Units, 9 units per floor. All units have direct riverfront views. The Units are accessed via two elevator / stair towers leading to common walkways. The condominium units have private balconies which can only be accessed through the units that overlook the pool deck, boat dock and have a river view.

Repair Recommendations

Concrete restoration of unit balconies and repair of existing pre-cast concrete railing systems. The pre-cast concrete railing system should have samples tested.

Testing of the pre-cast railing system should be performed by a qualified testing company. Local testing companies include: Universal Engineering and ECS. Both are located in Daytona Beach and are qualified to test the compressive strength of the railings.

Contract Documents:

The contract documents shall be the Standard Form of Agreement used by The American Institute of Architects (AIA). The "Standard Form of Agreement the between the Owner and Contractor" is A1A Document A1 and shall be the 2006 version. Payment Applications shall use the contractor invoice forms or the standard AIA payment form A1A G702 and 703.

The General Conditions of the Contract shall be AIA Document A207, 1997 or newer edition, and is supplied in the Appendix of this document for reference.

Additional Copies of these documents may be obtained from The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006, or from local AIA office.

Scope of Work:

The repair area shall incorporate the rear balcony decks and walkway areas as necessary to replace existing deteriorated handrails and balustrades with new precast concrete handrails and balustrades to match existing. The contractor shall furnish all labor materials equipment, incidentals, supervision and insurances to install and complete the work items described in these documents, a summary of which follows.

General

The intent is to provide a structurally sound concrete handrails and balustrades to match existing. Problem areas have been identified through inspection; but unanticipated areas may be discovered during the work. Contractor shall bring these to the Engineer's attention.

General Scope

1. Site Conditions

The Contractor is to visit the site and become familiarized with the conditions present. The Contractor shall incorporate these conditions into the bids as to cover necessary costs for access, mobilization, debris removal and any other related project aspect. The Contractor will also be required to restore the site to its pre-construction condition, including replacement of sod, landscaping, irrigation system damage and any other related Contractor caused issues.

2. Mobilization

Includes all costs of project for on-site equipment, storage, permits, debris removal and any other costs not specifically included in other line items.

3. Existing Conditions

Contractor is encouraged to collect video and photographs to document the existing condition of pertinent building elements before beginning work. This documentation can be utilized for review at the completion of work to identify any damage as either new or existing prior to work.

4. Concrete and Stucco Repairs

Contractor is to repair any necessary concrete and/or stucco as directed by the Project Engineer. Concrete and stucco repairs will be completed on a unit cost basis. All repairs shall be completed to ICRI standards including 310.1R-2008. Surface repairs shall be defined as partial depth repairs to the slabs that extend below one mat of reinforcing steel.

5. Concrete Railing Repair, Removal and Reinstall

Railing shall only be removed as required for proper repair, the contractor to repair the walkway edges and anchor pin locations as necessary. Railing removal shall include sealing of all existing anchor fasteners with epoxy or urethane sealant prior to coating finish application. Railings shall be reset using manufacture's anchor pins or with 316 stainless steel all thread rod or equivalent. Existing anchors are to be utilized as best possible.

6. Concrete Railings shall meet the following requirements for Glass Fiber Reinforced Concrete Railing and Balustrades.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Glass fiber reinforced concrete (GFRC) balustrade(s) and accessories as indicated on the drawings.

1.2 REFERENCES

A. ASTM C 150 - Standard Specification for Portland Cement; 1999a.

B. ASTM C 33-99 Concrete Aggregates

C. ASTM C 979-82(1993): Pigments for Integrally colored Concrete.

D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 1999.

E. ASTM G 23 - Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials; 1996.

i. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 1997a.

ii. ASTM A 184/A 184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement; 1996.

iii. ASTM A 185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement; 1997.

iv. ASTM A 497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement; 1997.

v. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 1996a.

vi. ASTM C 31/C 31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 1998.

vii. ASTM C 33 - Standard Specification for Concrete Aggregates; 1999a.

viii. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 1999.

1.3 SUBMITTALS

A. Submit under provisions of Section 01300. Products shall match engineered design drawings.

B. Product Data: Manufacturer's data sheets on each product to be used, including dimensions, finishes, storage and handling requirements and recommendations, and installation recommendations.

C. Shop Drawings: For custom items, provide drawings showing dimensions, layout, joints, details, and interface with adjacent work; include field measured dimensions of the spaces where items are to be installed, if critical to proper installation.

D. Samples: For each custom finish specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.4 QUALITY ASSURANCE

A. Manufacturer: Obtain GFRC balustrade(s) as manufactured by a firm specializing in the manufacture of GFRC balustrade(s), with a minimum of five years experience and having adequate facilities and capacity to produce the quantity and quality specified in the time frame required..

B. Provide verification that glass fiber reinforced concrete balustrade meets or exceeds products specified.

C. Installer Qualifications: Regularly engaged and experienced in the installation of glass fiber reinforced concrete balustrades.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Transport, lift, and handle units with care, avoiding excessive stress and preventing damage; use appropriate equipment.

B. Store products in manufacturer's unopened packaging until ready for installation, in a clean dry area protected from weather, moisture, staining and damage; store units upright and not stacked unless permitted by manufacturer. Product shall be stored clear of the ground on non-staining pallets or other temporary planking.

C. Protect product from staining, chipping, and other damage.

PART 2 PRODUCTS

2.1 MATERIALS

A. Glass Fiber Reinforced Concrete Balustrade: High density concrete made of ASTM C 150 Portland cement, crushed stone, silica sand, and polymers reinforced with glass fiber and structural reinforcing as required; asbestos free.

1. Baluster Style: to match existing, see drawings for rectangular baluster style
2. Color: To match existing building
3. Surface Texture: Exposed surface as selected from manufacturer’s selection
2. Density: 140 pcf (2240 kg/cu m).
3. Shell Thickness: 3/8” to 3/4 inch (9.5 mm), nominal.
4. Weather Resistance: No significant loss in strength or change in appearance after 200 hours accelerated weathering conducted in accordance with ASTM G 23.
5. Flexural Strength: 1000 to 1800 psi
6. Compressive Strength: 5000 psi. at 28 days
7. Variation from Dimensions Indicated on Drawings: Plus and minus 1/8 inch (3 mm), maximum.
8. Variation from Plane Along Edge or Surface: Plus and minus 1/16 inch per linear foot (1.5 mm in 300 mm), maximum.
9. Outside Corner Radius: 1/16 inch to 1/8 inch
10. Draft Angle: 3 degrees, minimum, on returns, setbacks, reveals, and grooves.
11. Provide concealed anchorage points for plaster type wire anchors.
12. Provide non-corrosive screwed or bolted anchors with reinforced holes through face of units.
13. Provide non-corrosive anchors and reinforced anchoring points as indicated on drawings.

a. Concealed Anchors: stainless Steel unless otherwise indicated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly constructed; verify that substrates are plumb and true.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding

1. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Check field dimensions before beginning installation. If dimensions vary too much from design dimensions for proper installation, notify Architect and wait for instructions before beginning installation.

D. Verify that bearing surface is plumb and true.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Install supplementary temporary and permanent supports as required for proper installation.

3.3 INSTALLATION

A. Install in accordance with applicable code and manufacturer's recommendations, plumb and true to line; shim where necessary.

B. Provide control joints at not more than 35 feet (10.5 m) on center if not indicated on drawings.

C. Provide expansion joints where moving joints in substrate occur.

D. Patch exposed anchor points to match color and texture of unit.

E. Clean GFRC units according to manufacturer’s written instructions.

1. Remove dirt, stains, excess sealant or other undesired materials.
2. Protect surrounding materials and surfaces during cleaning.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 DURABILITY AND WEATHER RESISTANCE

Florida’s climate, characterized by humidity, frequent rain, and the potential for tropical storms, demands materials that can withstand the elements. Architectural precast concrete products are renowned for their durability and weather resistance. The inherent strength of concrete combined with modern production techniques ensures that precast elements remain structurally sound and visually appealing over time, even in the face of Florida’s challenging weather conditions.

3.6 SUSTAINABILITY AND EVIROMENTAL BENEFITS

As sustainability continues to drive architectural practices, precast concrete products have emerged as an eco-friendly solution in Florida. The production process for precast concrete generates lower carbon emissions compared to other construction materials, making it a greener choice for builders and developers. Additionally, precast concrete's thermal mass properties contribute to energy efficiency by regulating temperature and reducing the need for extensive heating or cooling systems, which is particularly valuable in Florida's warm climate.

3.7 LOCAL SORCING AND ECONOMICY IMPACT

The availability of raw materials and skilled craftsmanship has made Florida a hub for architectural precast concrete production. Local sourcing reduces transportation costs and carbon emissions associated with long-distance shipping, while also supporting the state's economy. This symbiotic relationship between designers, manufacturers, and the local community has fostered innovation and excellence in architectural precast concrete production.

Project Staging:

The work will be performed in a sequence that is suitable to the contractor to fully expedite the work in an efficient manner that compromises neither the quality of the work nor the reasonable needs of the Association. The contractor must demonstrate an effort to sequence the work with minimum inconvenience and interruption of the tenants, owners and building staff.

Project Schedule:

Project duration to be approximately 3 to 6 months based on balustrade availability and individual unit acess. Contractor to size work crews accordingly to and schedule construction as required to meet the construction schedule.

Contractor shall provide a "best effort construction schedule" for the proposed repair and this schedule shall be updated during the construction process for the benefit of residents/owners. Owners shall be notified a minimum of seven (7) days prior to restriction of access to their unit(s). Contractor shall minimize unit access restrictions as much as possible and work with Owner Representative and/or Property Manager to accomplish that result.

Owners shall be required to provide a minimum of forty-eight (48) hours of curing time for epoxy anchors and coatings to properly cure. Contractor to notify owners a minimum of twenty-four (24) hours before application of waterproof coatings to surfaces. (Note that if these applications restrict access to a unit, then seven (7) days' notice is required.)

Project Material Estimate:

Repair material estimates listed in the spreadsheets are based upon the limited condition survey performed.

Construction and Payment Schedule:

The Contractor shall submit a proposed construction schedule within ten (10) days of award of the contract

The schedule shall denote all activities and start/finish dates

The schedule shall be updated on a monthly basis.

Payment Requests (and back-up data for billings) are to be submitted to the Engineer or owner agent at regularly agreed intervals. The Engineer or owner agent will review the payment request and either approve payment amount, or request additional information. Payments shall be made within 7 business days of the approved payment request. The Contractor shall include appropriate lien releases at the completion of each stage of the project and for payment made to all sub-contractors and suppliers.

Contractor Insurance Requirements:

Without limiting any of the liabilities obligations of the Contractor, the Contractor shall furnish to the Owner a duly executed Certificate of Insurance, stating that the following types of insurance coverage and limits are in force and that insurance will not be canceled without ten (10) days prior notice to the Owner by the Insurance Agent.

A.	Commercial General Liability:	
General Aggregate		$2,000,000.00
Products/Completed Operations Aggregate		$1,000,000.00
Personal and Advertising Injury		
Owners and Contractors Protective		$2,000,000.00
Each Occurrence		$1,000,000.00
B.	Automobile Liability:	
Combined Single Limit/Each Occurrence		
Bodily Injury/Property Damage		$1,000,000.00
C.	Excess Liability Umbrella:	
Each Occurrence		$1,000,000.00
Aggregate		$1,000,000.00
D.	Worker's Compensation and Employers Liability:	
Each Accident		$1,000,000.00
Disease Each Employee		$1,000,000.00
Disease Policy Limit		$1,000,000.00

Contractor shall indemnify and hold harmless the Owner and his agents and employees from and against all claims, damages, losses and expenses arising out of or resulting from the performance of the work, provided that any such claims, damages, loss or expense are caused in whole or in part by any negligent act or omission on the part of the Contractor, any subcontractor, or anyone directly employed by the Contractor.

Contractor Responsibility:

1 Contractor shall maintain his own credit standing for material purchases in accordance with terms set forth by suppliers and shall supply lien releases when Notice to Owner has been filed by the Contractor and/or his suppliers.

2 Contractor shall properly maintain payrolls and pay related taxes and insurance required.

3 Contractor shall pay sales tax levied on materials at the point of purchase.

4 Contractor must by duly licensed by the governing body of the area in which the facility is located, and obtain all required permits for the work involved. Negligence in obtaining proper permit resulting in a fine shall be the total responsibility of the Contractor.

5 Contractor shall employ competent superintendents, foremen, and workmen. Contractor shall remove any person employed in the job that shall conduct himself improperly or be deemed incompetent or negligent in the performance of his duties by the Contractor.

6 Contractor shall see that personnel employed on the job are fully and properly clothed in identifiable uniforms while working on the premises or entering any part of the facility

7 Contractor shall provide the Owner with safety notices to be posted in conspicuous locations accessible to all residents/ guests. Notices shall remain posted for the duration of the construction contract and additional notices may be obtained on request.

8 Contractor shall take all reasonable precautions to protect adjacent surfaces, finishes, and properties. However, when the work, by its nature, involves activities that may result in potential damage: for example, vibration of the structure or the creation of excessive dust. The contractor shall not be responsible for damages resulting from the normal and unavoidable circumstances of the work.

9 Contractor shall protect adjacent surfaces, finishes, and foliage from damage or staining during application.

10 Contractor will be responsible for providing basic window cleaning in the areas of work at the completion of that given area.

11 Other specific Contractor responsibilities may be as listed under Job Site Conditions and Requirements.

12 Contractor shall protect swimming pool and common area and maintain its use for owners during working hours.

13 Contractor shall mark off and erect signs in areas where over spray /dripping or hazardous conditions may occur. No damages will be paid for items or vehicles located or parked within the zoned areas. Contractor shall not be liable for injuries or damages to persons disregarding signs or barriers.

14 Contractor shall be responsible for safety administration on the job including tools, equipment, and work methods and must be in compliance with all OSHA safety regulations.

15 Contractor shall comply with applicable noise abatement and work hour ordinances.

Contractor Responsibility: (continued)

16 In the event of discovery of Asbestos materials incorporated in the construction of the building it shall be the responsibility of the Owner to determine and execute the necessary action to comply with safety and environmental regulations.

17 The Contractor shall provide and maintain all equipment, such as temporary stairs, ladders, ramps, runways, chutes, etc., as requested for the proper execution of the work.

18 The Contractor shall secure all stages, ladders and other equipment, materials and supplies at the end of each work day.

19 All such apparatus, equipment, and construction methods shall meet all requirements as set by local, state, or federal laws applicable thereto.

Life Safety Requirements:

Life Safety: The project will require construction and/or repair of parking deck. Contractor shall provide a project schedule for review to the project engineer and the home owners association prior to construction and renovation.

Contractor shall mark off and erect signs in areas where hazardous conditions may occur, or where the normal egress from any unit is temporarily altered due to the construction. Contractor shall provide accessible means of egress for all residents at all times. Signs shall be clearly marked and located for any changes in use of any exit, including stairs, balconies or elevators. Stairs, elevators and exits shall only be blocked during construction hours, and contractor shall schedule work, man hours and stage all equipment and storage materials such that common balconies and all stairs and elevators are accessible during non-construction hours. Contractor shall also mark off and erect signs in areas where over spray/dripping of paint or primer is applied. Contractor shall not be liable for injuries or damages to persons disregarding signs or barriers.

Contractor shall comply with applicable city requirements for noise abatement and work hour ordinances.

Proposed Job Site Conditions:

1 Hours of Construction Operation: Monday through Friday 7:30 a.m. to 5:00 p.m. with the exception of national holidays. No work is permitted on Saturday or Sunday, unless otherwise designated by Owner. Noisy activities, such as jackhammering, are not permitted until after 8:00 a.m.

2 Parking: The Contractor's personnel are authorized to park in areas designated on the site plan, or otherwise designated by the Owner.

3 Construction Trailers: One construction trailer shall be permitted to remain in overnight on the site at a location designated by the Owner for the duration of the contract.

4 Dumpster: One dumpster is permitted on site at a location designated by the Owner and shall be provided by the Contractor

5 Portable toilets are permitted on site. Contractor will provide Portable toilets as required by permitting. Toilets will be located in the parking lot. Location of Portable toilets will be coordinated with the owner.

6 Clean Up: The job site shall be left free of debris at the end of work each day. The dumpster shall be emptied on a scheduled basis. The dumpster shall not be filled above top sides.

7 Contractor use of the premises shall be limited to areas indicated. Contractor shall allow for Owner occupancy of the units during construction.

8 Confine operations to areas within limits indicated. Portions of the building beyond areas in which work operations are indicated are not to be disturbed.

9 Keep driveways and entrances clear at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize requirements for storage of materials.

10 Contractor shall maintain the existing building on an operational condition throughout construction. Repair damage caused by construction operation. Take precautions necessary to protect the building and occupants during the construction period.

11 Contractor will not be allowed use of the elevators. Stairways shall not be used for storage and shall be kept clean and free debris at all times

12 Full Owner Occupancy: The Owner will occupy the site and existing building during the entire period of construction. Cooperate with the Owner to minimize conflicts and facilitate Owner usage. Perform the work as so not to interfere with the Owner's operations.

13 Contractor shall remove all material, equipment, and debris from the premises within five (5) working days from final inspection by Engineer and/or Owner.

14 All construction debris shall be taken down on hoists or lowered in receptacles. Under no circumstances shall any waste be dropped or thrown from one level to another outside the building.

15 Care should be taken by workmen not to mark, soil, or otherwise deface finished surfaces. In the event that finished surfaces become defaced, clean and restore such surfaces to their original condition.

Proposed Job Site Conditions: (continued)

16 Contractor must coordinate with Owner for the protection of automobiles while work is in progress to safeguard against possible damage to any vehicles.

17 The responsibility for the removal and re-installation of external ladders, mechanical equipment etc. Other devices must be determined prior to commencement of the work and a policy agreed between the Owner and Contractor that is both practical and equitable for this purpose. The policy to be adopted shall form and amendment to the contract.

18 Contractor is to restore all landscaping that is damaged including sod, mulch, soil, trees, and shrubbery.

19 Contractor is to restore all irrigation that is damaged or removed during the project.

Material Storage and Handling:

1 Deliver all materials to job site in unopened container, bearing Manufacturer's brand, product name, product number, batch number, and color designated.

2 Store materials and equipment at the site in a properly ventilated and secured trailer in an area assigned for this purpose by the Owner. Do all receiving, opening, and mixing in this location.

3 Comply with Manufacturers recommendations as to environmental conditions under which materials can be applied. Protect adjacent surfaces from spattering or overruns using adequate drop cloths, masking, etc., as necessary.

4 Repair any damaged surfaces that occur as a result of storage or mixing as described above.

5 Contractor must familiarize himself and his crew with MSDS information and ensure that his site staff has access to MSDS sheets for each product used.

Submittals and Approval:

1 Color selections shall be made by the Engineer and Owner.

2 Samples of final finish shall be prepared on the job.

3 Materials other than those specified herein may be submitted to the Engineer, prior to bid date, together with sufficient data to prove equal-to or better-than qualities of materials specified.

4 Immediately following the signing of the contract, or after the Owner has issued a notice to proceed with the work, the Contractor must submit a list of products to be utilized on the project. The Contractor must submit to the Engineer all technical literature from each manufacturer for all products specified, including those approved by the Engineer and submitted prior to bidding.

5 Sample warranties must be included. Where the status of manufacturer's warranties has changed or differs from those specified, a statement must be included pertaining thereto.

6 Shop drawings for pre cast concrete balustrades and other items must be prepared and submitted to the Engineer for review and approval prior to fabrication for any work requiring off-site manufacture and assembly.

Owner Responsibility:

1 Exterior work is to be performed from the exterior of buildings. However, in the event it becomes necessary to enter the building, Owner will, with 24-hour minimum notification, provide access and be in attendance for building entry.

2 Owner will assign **4** parking spaces to the Contractor for vehicles and equipment and 1 for dumpster for a total of 5 spaces. Water and electricity use will be confined to common building sources only. Individual owner unit electricity and water is not to be used. Any modification of the utility source required will be the responsibility of the Contractor. Any utility source modified is to be restored to original condition at the end of the project unless otherwise approved by the owner.

3 Owner will be responsible to remove or protect miscellaneous loose objects in the work area; for example: potted plants, patio furniture, etc. If items are not removed, Contractor will take due care to protect them, but will not be responsible for any damages that might occur.

4 Owner will be responsible for notifying all concerned of the work being performed in order to avoid any injuries or damages to personal property. Areas of possible over spray or dripping of material will be marked off and signs will be erected by Contractor. Owner will be responsible for enforcement of restricted areas, and no compensation will be paid by Contractor for damages or injuries occurring within the zoned areas.

5 It will be the responsibility of the Owner to perform any trimming or pruning of foliage which will interfere with the contracted work. Although Contractor will take all reasonable precautions for the protection of plants. Owner shall be responsible for assessment of potential plant damage resulting from unavoidable exposure to fumes and/or residue of materials. Plants that would recover naturally in time shall be done at the discretion and expense of the Owner.

6 Owner shall be responsible to advise residents/tenants, neighbors of potential damage situations that may occur in the normal course of the work, such as vibrations or excessive dust, and will assume responsibility for any claims for damages resulting from normal and unavoidable circumstances of the work.

7 The Owner shall furnish electrical power (120/240-volt) and water for the Contractor's use. Any modification to the source of electricity is the contractor's responsibility.

8 Drinking water is to be furnished by the Contractor.

Material Specifications:

Use the following specified materials or see attached submittals.

Concrete Repair Mortar

Product: ThoRoc® LA40 Repair Mortar by BASF Building Systems

This is a One-component, shrinkage-compensated micro concrete consisting of cement, graded aggregate, shrinkage-compensating agents, and additives. This repair material is suitable for large-volume structural repairs from 2 inches to full depth

Manufacturer:
BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379
Customer Service: 800- 433-9517
Technical Service: 800-243-6739
Direct Phone: 952-496-6000
Internet: www.BASFbuildingsystems.com

Repair Mortar Performance Requirements:
- Fresh Wet Density, ASTM C138:
  - 142 pounds per cubic foot
- Compressive Strength, ASTM C109:
  - 1 day: 2,500 psi (17.2 MPa).
  - 7 days: 5,000 psi (34.5 MPa).
  - 28 days: 6,000 psi (41.4 MPa).
- Flexural Strength, ASTM C348:
  - 7 days: 1,150 (9 MPa).
- Slant Sheer Bond, AASHTO T-237:
  - 28 days: 3,000 psi (20.7 MPa).
- Coefficient of Thermal Expansion, ASTM C531:
  - 28 days: 5.5 by 10-6 inch per degree F
- Freeze/Thaw Resistance, ASTM C666 at 300 cycles: 100 percent RDM.
- Splitting Tensile Strength, ASTM C496: 28 days: 500 psi

Rebar

All reinforcement bars to be shall be new domestic deformed billet steel reinforcement conforming to ASTM a 615 and shall be Grade 60. Wire ties and supplemental reinforcement may be deformed billet steel reinforcement conforming to ASTM a 615 and shall be Grade 40.

All reinforcing details shall conform to “Manual of Standard Practice for Detailing Reinforced Concrete Structures” ACI 315 unless detailed otherwise on the structural repair drawings.

Contractor shall provide all spacers, chairs, bolters, etc., as required to assemble. Place and support all reinforcing in place.

Waterproofing

The waterproofing system shall be: Fluid-applied, moisture-curing, polyurethane, waterproofing, traffic-bearing, membrane deck coating system. The following products are acceptable:

Base Coat: BASF Neoguard Epoxy Primer.

Top Coat: BASF Neoguard Pedestrian Urethance system Top Coat. One-component, aliphatic, moisture-curing polyurethane.

Top Coat color: BASF Neoguard tan color to closely mtach existing color.

Aggregate: BASF Neogaurd Aggregate – Rounded media 40/60 Silica Sand texture

Cementitious and Epoxy Patching Materials: BASF Corporation repair mortar and epoxies.
Sealant Primer: Sonneborn Primer 733.
Sealant: Sonneborn SL-2 or Sonneborn Ultra.
Deep Joint Sealant: Sonneborn SL-2 or Sonneborn NP-2.
Plywood Joint Sealant: Sonneborn NP-1 or Sonneborn NP-2.
Reinforcing Fabric: Sonoshield Reinforcing Fabric.

Concrete Repair Procedures:

This concrete balcony repair specification describes the patching of exterior horizontal and vertical surfaces as well as overhead surfaces including balconies, walkways, beams, columns and landings with a hand-applied, set-accelerated polymer modified Portland cement, repair mortar. The replacement or supplement of structural reinforcement as required.

Contractor shall submit Product data for all materials specified.

Material submittals shall Provide the Manufacturer's technical information, including label analysis and instruction for handling, storage, and use of each material proposed. Include the Material Safety Data Sheet (MSDS).

Contractor shall Notify the Engineer about anticipated problems using the materials or procedures specified. Contractor shall locate and mark work areas requiring repair using Drawings as guidance. Engineer shall review areas marked prior to the concrete removal begins.

Contractor shall install all **s**tructural supports will be utilized as necessary, where existing support is comprised during restoration process.

Contractor shall saw cut and Power chip / hand chip all contaminated concrete, from around contaminated reinforcement exposing the reinforcement bars where necessary. Repair area shall extend to sound concrete, where no further cracking or delamination is visible. Repair area shall extend 6” minimum beyond reinforcement damage. Provide a minimum of 3/4” of clearance around rebar to surrounding concrete. Concrete removal shall be a minimum of 3/4” deep Repair area and shall be verified by the engineer. All removal geometry shall conform to ICRI 310.1R. The perimeter of the repair area shall be saw cut to a minimum depth of 3/4” to provide a vertical surface for the repair material. No feathered edges shall be accepted.

Clean area and remove all loose concrete, grease, oil, paint, and any other foreign material that may inhibit adhesion or performance of concrete repair. Cut and remove damaged and contaminated concrete around existing embedded handrail inserts and remove all handrail inserts.

Machine tool all exposed reinforcement bars to black steel per SSPC-SP3. Contractor may use abrasive blasting as required to remove excessive scale from main balcony reinforcement. If reinforcement bar diameter has disintegrated below minimums, Reinforcement bar will be replaced as required. If reinforcement bar is damaged more than 15 % of the original cross section of the bar, supplemental reinforcement shall be installed. Required lap length on each side of the affected area shall extend a minimum of 12” or 20 bar diameters in accordance with ACI 318-2010. All supplemental steel and replaced steel reinforcement shall be inspected and approved by engineer.

All repairs will be prepared, and forms will be built to make ready for Polymer-Modified Full Depth concrete application. Corner beads with corrosion present will be exposed and repaired as necessary. Badly corroded corner beads will be removed, and a fiberglass corner bead will be installed. Fiberglass corner beads have a higher rate of resistance to corrosion and other pollutants as opposed to steel corner beads. Upon completion of restoration and allowed to cure, substrate will be finished with stucco to best match existing finish.

If any existing reinforcement bars will be exposed during the demolition of the deck slab for more than 24 hours, then apply a primer with Reinforcing Steel Corrosion Inhibitor: Cortec 20/20 or equal. Repair Material to have 5000 psi minimum compressive strength at 28 days, and an early 3000 psi minimum strength at 3 days.

Mix polymer modified concrete repair mortar in accordance with the manufacture's recommendations.

All repairs will be performed in a professional manner, and as efficiently as possible, making all common areas mostly accessible during restoration process.

Existing expansion joints to be inspected by the engineer of record to determine condition. Contractor shall notify engineer prior to replacement.

Concrete Placement

All repairs will be prepared, and forms will be built to make ready for Polymer-Modified Full Depth concrete application. plywood or metal forms shall be free of defects or dirt and debris. All Form work shall placed straight and level to provide a finished product meeting the design specifications and standard construction tolerances as specified in ACI 301. Contractor shall use a bond breaker compatible with repair material and subsequently applied coatings.

Remove all loose material so no dust, oil, scale, loose aggregate or particles remain. Clean the area to be repaired by high pressure water blasting.

Engineer shall inspect preparation of repair surface prior to concrete repair mortar placement to approve for concrete placement.

Contractor shall remove all standing water from pre-dampened repair area.

Repair mortar shall be scrubbed in, ensuring a proper bond to existing concrete. Fill all holes and voids. A single pour is recommended for each repair area. Trowel smooth surface level with surrounding surface and finished as required.

All concrete pours shall be protected from excessive rain or extreme cold temperatures. Do not pour concrete in temperature will drop below 40 degrees Fahrenheit with in 24 of the pour.

Upon completion of restoration and allowed to cure, substrate will be finished with stucco to best match existing finish.

All repairs shall be in accordance with the 2020 Florida Building Code and ACI-318 - 2014 Building Code Requirements for Reinforced Concrete and ICRI 310.1R-2008, Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion., and CRSI Manual of Standard Practice, and the CRSI Design Handbook

Contractor shall maintain a clean work site at all times. The contractor shall Cleanup job site at the end of each workday. The contractor shall remove any empty containers, rubbish, or any other discarded materials from the site.

Contractor shall protect other work areas, whether being prepared or not, against damage by abrasive blasting, or concrete spatter or any chemical spills. Contractor shall fix any damage by cleaning, repairing or replacing, as acceptable to owner/Engineer. Contractor shall also protect all nearby vehicles, passing traffic, and any pedestrians from any hazards associated with the repair process.

Waterproofing Installation Procedures:

Prior to installation, contractor to water test balconies for proper drainage. Add profiling mortar as necessary to provide proper drainage and proper pitch of deck away from building in accordance with ASTM D5957-98 (R2013).

Prepare substrates in accordance with manufacturer's instructions. Substrates shall be: Sound and free of dust, dirt, laitance, paints, oils, grease, curing compounds, or other contaminants.

Verify substrate has properly cured. Mechanically remove efflorescence before proceeding.
Concrete:

Minimum Compressive Strength: 3,000 psi (21 MPa).
Cure for a minimum of 28 days or 80 percent of design strength.

Mechanically prepare substrate to remove previous coatings, laitance, and miscellaneous surface contamination. Provide surface profile to achieve specified adhesion equal to International Concrete Repair Institute surface profile CSP 3.
Roughen or brush blast extremely smooth surfaces to ensure good mechanical adhesion.
Patch holes and cracks before installation.
Repair voids and delaminated areas with cementitious and epoxy patching materials.
Mix materials in accordance with manufacturer's instructions.

Apply materials in accordance with manufacturer's instructions.
Do not apply materials to damp, wet, or contaminated substrates.

Prestripe with primer 1 inch (25 mm) beyond surfaces that require detail work.
For nonmoving joints and cracks repaired with SLV epoxy less than 1/16 inch (1.6 mm) wide, apply 25 wet mils (0.6 mm) Apply base coat to fill and overlap joint or crack 3 inches (76 mm) on each side. Feather the edges.
Dynamic cracks and joints over 1/16 inch (1.6 mm) wide shall be routed to a minimum of 1/4 inch by 1/4 inch (6 mm by 6 mm) and cleaned. Install bond breaker tape to prevent adhesion to bottom of joint. Prime joint faces only with sealant primer and fill with sealant. Fill joints deeper than 1/4 inch (6 mm) with backer rod and deep joint sealant. For cracks, sealant shall be flush with adjacent surface. For expansion joints, sealant shall be slightly concave.
Sealed joints 1 inch (25 mm) or less shall be coated over with deck coating system.
Expansion joints exceeding 1 inch (25 mm) wide, including primary wide expansion-joint system, shall not be coated.
Where coating system will be terminated and no wall, joint, or other break exists, cut 1/4 inch by 1/4 inch (6 mm by 6 mm) keyway into concrete. Fill and coat keyway as application of base coat progresses on all flooring areas such as balconies, walkways and stairs. All waterproof coatings must be smooth, without pitting, color changed or abnormal effervescence.

Codes and Referenced Standards:

Florida Building Code

1. Florida Building Code 2023 – Existing Volume
2. Florida Building Code 2023 – Building Volume

American Concrete Institute (ACI)

1. ACI 301: "Standard Specifications for Structural Concrete for Buildings"
2. ACI 318-2014: "Building Code Requirements for Reinforced Concrete"
3. ACI 546R "Concrete Repair Guide"
4. ACI 503.4 "Standard Specification for Repairing Concrete with Epoxy Mortars"
5. ACI 506.2: "Specification of Concrete"
6. ACI 201.1R "Guide for Making a Condition Survey of Concrete in Service"

International Concrete Repair Institute (ICRI)

ICRI 310.1R: "Guide for Surface Preparation for the Repair of Deteriorated Concrete"

ICRI 320.1R: "Guide for Selecting Application Methods for Repair of Concrete Surfaces"

ICRI 320.2R: "Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces"

American Society for Testing and Materials (ASTM)

1. ASTM A 615: "Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcing."
2. ASTM C 31: "Standard Practice for Making and Curing Concrete Test Specimens in the Field"
3. ASTM C 39: "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens"

Codes and Referenced Standards: (cont.)

4. ASTM C 78: "Standard Test Method for Flexural Strength of Concrete Using Simple Beam with Three-Point-Loading"
5. ASTM C 109: "Standard Test Method for Compressive Strength of Hydraulic Cement Mortars"
6. ASTM C 143: "Standard Test Method for Determining Slump of Fresh Concrete"
7. ASTM C 150: "Standard Specifications for Portland Cement"
8. ASTM C 171: "Standard Specifications for Sheet Materials for Curing Concrete"

APPENDIX