

Exhibit "A"



BID DOCUMENTS FOR SEAWALL RESTORATION PROJECT AT PLAZA DEL PRADO CONDOMINIUM ASSOCIATION

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PROJECT: Plaza Del Prado Condominium Association

LOCATION: 18701 Biscayne Blvd, Aventura FL. 33160

PROJECT MANAGER: Esther Calle, P.E.
Ryan Manalo P.E.

PREPARED BY: The Falcon Group
Consulting Engineers
15405 NW 7th Avenue
Miami, FL 33169

DATE: April 6, 2022 – Issued for Bidding
Pre-Bid Meeting – April 13, 2022 10:00 am
Last Day for RFI – April 22, 2022 4:00 pm
Bid Due Date – May 6, 2022 4:00 pm

NOTE: THESE DOCUMENTS SHALL NOT BE USED WITHOUT THE DIRECT KNOWLEDGE OF FALCON ENGINEERING, AND SHALL NOT BE DUPLICATED OR USED FOR ANY PROJECT OTHER THAN THE ABOVE REFERENCED PROJECT.



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PLAZA DEL PRADO CONDOMINIUM ASSOCIATION

SEAWALL RESTORATION PROJECT

GENERAL REQUIREMENTS – SECTION 01 00 00

SUMMARY OF WORK – SECTION 01 11 00

- a. The scope of work is intended to describe the repairs required for the restoration of the concrete seawall. The work will encompass, but is not limited to, concrete restoration of the seawall cap, concrete wall panels and any other work described in these specifications and permitted set of drawings. The following work should be performed throughout the entire length of the seawall on the northern property lines in accordance with these specifications, permitted set of plans, instructions provided by the Engineer of Record, applicable Florida Building Code, requirements by the Authority Having Jurisdiction, Manufacturer's specifications and any other applicable document not specifically listed here.
- b. Work shall consist of furnishing all materials, labor, disposal, tools, equipment and supplies, and all related work and costs associated and required to complete project as described on the plans and this specification. The Contractor shall pay for all labor, material, equipment, disposal, tools and anything necessary and used in or for the work performed by the Contractor in connection with this Contract. Failure to comply with this paragraph shall be deemed a breach of the Contract, for which Owner may terminate this Contract and exercise any other methods available to the Owner.
- c. Contractor shall exercise utmost caution in working on the property and protecting both the property and its occupants. Any damages to (inclusive but not limited to) property, areas adjacent to work, systems in place but part of the scope, etc. caused by contractor's work, negligence or any other action shall be the sole responsibility of the contractor and shall be corrected at the sole expense to the contractor to its pre-damage condition to the satisfaction of the Owner and/or the Engineer.
- d. The following is a detailed breakdown of work for the restoration of the seawall located at the Plaza Del Prado Condominium Association:

SECTION G - GENERAL CONDITIONS:

1. Permits (A) – Contractor shall be responsible, at their own expense, to obtain all required permits to comply with all local ordinances, state and federal laws, rules, and regulations applicable and required by the authorities having jurisdiction. No overhead profit or permit expeditor fees will be paid for the cost associated with obtaining the permits for the project. The Association will reimburse the Contractor for the cost of the permit alone. Contractor needs to provide backup information for the fees incurred (receipts, bills, etc.)
2. Mobilization, Staging and Protection (LS)
 - A. This item shall consist of the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to



the project site. It shall also include the establishment by the Contractor of staging areas, temporary offices, building facilities, all utilities, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations.

- B. For placement of the site protection at all areas likely to be affected by this work, including but not limited to, other property at the site or adjacent thereto, including trees, shrubs, lawns, mangroves (if any), pedestrian walkways, pavements, bumpers, roadways, drainage system, catch basins, manhole, structures, pools, gates, existing tiebacks (if any after excavation) and utilities not designated for removal, relocation or replacement in the course of the construction. All areas shall be restored to their pre-project condition by Contractor upon completion of work in that area. Before start of work on or near the seawall, all tenant-owned items such as motorcycles, bicycles, cars, boats etc. that will be interfere with the course of the work or will be subject to damage shall be relocated by the Owner upon notification by the Contractor (provide a minimum one-week notice).
- C. This item shall include all necessary steps to protect workers, tenants, pedestrians and others from injury, include erecting all necessary protective enclosures, barriers and warning signs. Contractor's ladders, scaffolds, other equipment and construction methods shall be in accordance with OSHA and local building code requirements. Contractor shall install and maintain OSHA approved perimeter security and safety at all time.
- D. This item shall include all necessary steps to prevent debris from entering the canal waterway. Contractor shall adequately protect all areas being repaired from damage due to rain, or other weather conditions. While work is in progress, every effort shall be made to reduce the adverse effect of dust from demolition work, cutting of mortar joints or other construction operations. When using concrete saws or grinders, they must be fitted with vacuum devices to collect the resulting dust and must comply with all containment and protections required by OSHA.

3. General Conditions (LS):

- A. For general conditions of the contract.
- B. For administrative costs associated with preparation of required submittals, mock-ups, product samples, inspection reports, project schedules, pre-construction survey, and progress and record documents.
- C. For costs associated with required field quality control testing and reports of same to be performed by the Contractor.
- D. For general costs to administer the work in accordance with all referenced standards, the project specifications, OSHA requirements and local, state and federal regulations.
- E. For all costs associated with the required meetings and coordination with the Authority and Engineer. In addition, all costs associated with the Contractor badging and the quality control and safety plan requirements, as well as preparation and maintenance of the project schedule, shall be included in this item.
- F. For Engineering inspections - The cost of Engineering is the responsibility of the Owner; however, Contractor shall provide access to the construction site and allow use of Contractor's equipment such as the use of a boat for inspections at no



additional cost to the Owner. It is inclusive of use of the equipment, and manpower to operate equipment, along with miscellaneous items (spray paint, hammers, blue tape, etc.)

- G. This item shall include all necessary tools, equipment, facilities, machinery, supervision, overhead, and anything else required for the performance of the work.

Note: General conditions will be paid as a percentage of completion throughout the project.

4. Clean-up and Demobilization (LS): The contractor is entitled to invoice for this one-time fee after the Close-Out process has been completed. This process is inclusive, but not limited to:
- A. Complete clean-up of the job site and any areas affected by the work. The Contractor shall completely demobilize and remove from the project site all equipment, vehicles, materials, offices, protection, sanitary facilities, waste disposal facilities, and waste, etc.
 - B. Other items to complete will be Close of the permit, Final Release of Liens from all vendors involved in the project, and warranties. Warranties shall include Contractor's work, Sub-contractor's work, and manufacturers.
 - C. Demobilization will be completed once a final walkthrough is completed with the Engineer of Record, Building Management, and Association representation.

5. Additional General Conditions - Allowances: The contractor acknowledges that all work provided in the bid form is covered by the general conditions listed herein.

These additional general conditions will be used only for the unit price items and only for the amounts that exceed the base bid with additional allowance (as specified under item G-5a).

Any additional unit price work not specified under this contract that is added to the scope after the contract is executed will follow the same rules, and the provisions of section 5 shall apply.

The contractor acknowledges that the cost of additional lump sum work not covered by these specifications that may be added during the course of the project will be inclusive of any additional general conditions.



SECTION A - BASE BID -

A. CONCRETE WORK

1. Demolition, Clearing, and Disposal (LS) – Demolition, clearing, and proper disposal of all concrete and concrete masonry unit (CMU) materials required to be removed during the concrete restoration of the concrete cap and concrete wall panels along the length of the seawall as indicated by the engineer, depicted in the drawings or require by the contract documents. Under this item, the contractor shall also include demolition, clearing, and disposal of, but not limited to, rip-raps (if any), boulders, tieback rods and deadman system (only if indicated by the engineer), existing trees obstructing the construction and repair operations in accordance with FL DOT standard specification section 110, surface improvements, pavement, vegetation, landscape, and any debris associated with the REPAIR of the seawall. It shall include all materials, labor, equipment and work necessary to complete the work in accordance with the contract plans and specifications. This includes removal of any other items not paid for within a separate pay item. Materials removed by clearing and grubbing/demolition shall be removed from the project site and properly disposed of by the contractor to a Miami County approved location. Demolition or removal of objects, debris, material specified, or obstructing construction shall take place only to the extent necessary. Any permitted demolition or removal from submerged lands or adjacent uplands shall be fully contained within siltation devices permit requirements and state water standards are met. Turbidity barrier to be paid as a separate line item. No removal of mangroves or submerged vegetation is permitted as part of this item.
2. Furnish all labor and materials to perform inspection at several locations as directed by the engineer (LS) - This is to be comprised of a boat, barge or similar setup that will allow the inspection process. Mobilization and demobilization for this work are to be included on this line item.
3. Use hydraulic cement to repair all voids, and joints on seawall (LS) – This works includes checking, cleaning, repairing and resealing all joints between king piles and concrete panels using hydraulic cement material, as necessary and at the locations indicated by the engineer. Chip and remove all existing loose and damaged grout material prior to resealing. Sealing shall extend from underside of concrete cap to 12" below the berm line.
4. Structural Concrete cracks (LF) – This includes pressurized injection of structural concrete cracks as directed by the engineer, and in accordance with industry standard and manufacturer's recommendations. All injection ports will be patched and all areas to be finished to match surrounding.
5. King Pile Concrete Repair (CF) – Repair spalled, broken concrete areas, or both with epoxy mortar, including but not limited to, removal of loose material to sound concrete, preparing surface to receive repair material, form work, anti-corrosive and bonding agent, and installing steel reinforcement and/or wire mesh if necessary and as directed by the Engineer, cleaning of canal bottom incidentals to be paid under line item 5 (demolition, clearing, and disposal). Contractor must be careful not to damaged existing reinforcement.



Image 1: Seawall king pile repair

6. Seawall Cap Repair (CF) – This includes sawcut, chip, and removal of concrete spall areas, within the boundaries of engineer's markings, until sound concrete is reached, repair and/or replacement of reinforcement, form work, anti-corrosive and bonding agent, and concrete patching as directed by the engineer. Removal and disposal of the concrete debris to be disposed and paid under line item 5 (demolition, clearing, and disposal). Contractor must be careful not to damaged existing reinforcement.



Image 2: Seawall Concrete cap repair



7. Concrete Wall Panel repair (CF) - Repair spalled, broken concrete areas, or both with epoxy mortar, including but not limited to, removal of loose material to sound concrete, preparing surface to receive repair material, form work, anti-corrosive and bonding agent, and installing steel reinforcement and/or wire mesh if necessary and as directed by the Engineer, cleaning of canal bottom incidentals to be paid under line item 5 (demolition, clearing, and disposal). Contractor must be careful not to damage existing reinforcement.



Image 3: Concrete wall panel repair

8. Concrete Dock pier footing repair (CF) - Repair spalled, broken concrete areas, or both with epoxy mortar, including but not limited to, removal of loose material to sound concrete, preparing surface to receive repair material, form work, anti-corrosive and bonding agent, and installing steel reinforcement and/or wire mesh if necessary and as directed by the Engineer, cleaning of canal bottom incidentals to be paid under line item 5 (demolition, clearing, and disposal). Contractor must be careful not to damage existing reinforcement.



Image 4: Concrete dock pier footing



9. Concrete Dock tie beam repair (CF) - Repair spalled, broken concrete areas, or both with epoxy mortar, including but not limited to, removal of loose material to sound concrete, preparing surface to receive repair material, form work, anti-corrosive and bonding agent, and installing steel reinforcement and/or wire mesh if necessary and as directed by the Engineer, cleaning of canal bottom incidentals to be paid under line item 5 (demolition, clearing, and disposal). Contractor must be careful not to damage existing reinforcement.



Image 5: Concrete dock tie beam

10. Concrete Dock floor underside (overhead) repair (SF) - Repair spalled, broken concrete areas, or both with epoxy mortar, including but not limited to, removal of loose material to sound concrete, preparing surface to receive repair material, form work, anti-corrosive and bonding agent, and installing steel reinforcement and/or wire mesh if necessary and as directed by the Engineer, cleaning of canal bottom incidentals to be paid under line item 5 (demolition, clearing, and disposal). Contractor must be careful not to damage existing reinforcement.



Image 6: Concrete dock floor underside



11. Preformed riprap retaining wall repair (CF) – Work is inclusive of removal and replacement of any broken and missing preformed concrete member along the riprap retaining wall structure. Work is also inclusive of removing any foreign object along the work area and stabilizing soil behind retaining wall (if needed). Contractor to replace preformed concrete riprap component to match existing. See image below for reference.



Image 7: Photo on right, preformed concrete riprap retaining wall and left damage section.

SECTION B - OPTIONAL WORK (ALL OPTIONAL WORK IS INCLUSIVE OF GENERAL CONDITIONS)

1. Installation of Riprap (CF) – Haul and install one-foot (1') to three-feet (3') average size riprap rock material in front of existing seawall and at any required places indicated by the engineer. As a minimum rip rap stone shall comply with FDOT specifications, section 530. Delivery tickets shall verify quantities.
2. Installation of Seawall weep hole system (EA) – Work is inclusive of surface preparations (jet pressure washing or similar), core drilling 4 inch diameter holes along the concrete wall panels of the seawall and installing a 4 inch jet filter system and any related accessories.
3. Install Impressed Current Cathodic Protection (ICCP) system (LS) – Work is inclusive of the following:
 - Contractor to install Cathodic protection (NOCO CASSETTE™ Surface Mounted MMO Ti ICCP System) along the concrete seawall structure.
 - All required installation, testing, mitigation and monitoring services are included in accordance with manufacturer requirements and recommendations.

Noco Tech LLC (MANUFACTURER)
561-570-2994
1230B 52nd St,
West Palm Beach, FL 33407
Email: info@noco.tech
<https://noco.tech/>



GENERAL NOTES:

1. The contractor will need to provide a schedule for approval prior to construction. A revised schedule shall be submitted with every payment application. If a revised schedule has not been provided, the Engineer has the right to deny payment application until such schedule is provided. The schedule will be provided in a format acceptable to the Engineer (Gantt chart or similar approved).
2. All unit price work (allowances) is **INCLUSIVE** of general conditions, staging, mobilization, demobilization, overhead, profit, labor, material and any other fees/costs necessary for completing the work. **No additional general conditions will be allowed based on the increase in quantities. Contractor should be providing general condition fees/mobilization/demobilization fees only for lump sum items.**
3. The existing site's soils subsurface conditions was not verified, and the Engineer does not guarantee its condition. The contractor is responsible for verifying the condition of the site's subsurface by having a geotechnical firm performed a geotechnical investigation prior to application and or installation of any material and bring any discrepancies to the attention of the Engineer. Should the contractor install the material on site that is not appropriate for the installation without notifying Engineer in writing and obtaining Engineer's approval, it shall be solely contractor's responsibility and the Contractor will remedy the issue to Engineer's satisfaction at Contractor's cost.
4. The removal of areas for repairs must be made in such a manner to minimize potential damages to the adjacent undisturbed areas. Every attempt must be made that all cutting, and chipping be completed within marked areas with area boundaries remaining visible for engineer's inspection. Chipping beyond marked areas of more than 15% of the original area without Engineer's permission will be grounds for denying additional quantities and the additional work performed will be completed to the Engineer's satisfaction at Contractor's cost.
5. Contractor shall be responsible for installing temporary protections as needed to complete the work. Protective measures shall be used to protect existing finishes, pools, canal, trees, pavement, anything not mentioned here but within the project boundaries, as well as prevent the migration of dust and weather to other buildings. All work and transport of material and permit shall be from the building exterior.
6. The contractor shall be responsible for obtaining all ROW permits and shall provide adequate overhead protection to comply with OSHA and any governing agencies to allow for all ground level areas to be uninhibited by the construction.
7. Contractor shall obtain and submit photographic documentation of existing conditions prior to the start of work to Engineer and Owner (Pre-construction survey).
8. Contractor shall submit daily field reports indicating work performed, location(s) of work performed, number of workers at site, date, weather and conditions at site, any field conditions discovered requiring alteration of specified work scope, damages or accidents at site, and any quality control measures performed. Daily reports shall be submitted not less than once per week to Engineer and Owner.
9. The contractor must provide an on-site, English speaking supervisor at all times.



10. Contractor will need to provide sufficient notice requesting engineering inspection – at least 48 hours in advance. If an inspection is called and cannot be completed due to Contractor's fault (access is not provided, work not ready for inspection, work not completed, etc.), the Contractor will be responsible for paying the engineering re-inspection fee.

MATERIALS

1. Substitution of materials shall only be made by written Change Order authorized by the Owner and the Owner's designated representative (Engineer of Record).
2. See structural repair specification for approved materials.
3. All materials will be new, unexpired, original, in original packaging, free of defects, stored properly in accordance with manufacturer's requirements. The Engineer has the right to request purchase orders in to review the condition of the material. The Engineer has the right to request material to be removed from the site and replaced it if the material does not meet project requirements.
4. Material that is not part of this project or was not part of this project shall not be stored on the site. Any issues arising from Contractor using unapproved material will be corrected at Engineer's request to the Engineer's satisfaction at Contractor's cost.

EXECUTION

1. All materials shall be installed in accordance with manufacturer written specifications and acceptable industry standards, and these specifications.
2. All work shall be performed with experienced labor and first quality workmanship.
3. All work shall conform to 2017 Florida Building Code 6th Edition, Derm Requirements, FDOT, Industry Standards, Manufacturer's Specifications, these specifications, and municipality, state and federal guidelines as applicable.

WARRANTY

The Contractor shall provide an unconditional warranty for all materials and workmanship in accordance with the following:

- **Contractor shall warranty all materials and labor against defect for a minimum period of five (5) years.**
- **ICCP system 10 Year manufacturer warranty.**
- **Jet filter system 5 years contractor warranty.**



LIST OF MATERIALS

1. Concrete Restoration:

Above water Euclid Speed Crete Red Line

Below water Euclid Speed Crete Blue Line

Contact:

Mr. Steven Butler

Cell: 863-220-0610

Email: sbutler@euclidchemical.com

2. Steel reinforcement corrosion Inhibitor

A single component water-based epoxy amine adduct, self-healing, protection solution for reinforcing steel in concrete restoration shall be **AMP-UP RB**.

Noco Tech LLC (MANUFACTURER)

561-570-2994

1230B 52nd St,

West Palm Beach, FL 33407

Email: info@noco.tech

<https://noco.tech/>

3. Optional (Weep System)

4 inch weep hole with louver from Jet filter systems.

<https://jetfiltersystem.com/>

4. Optional Impressed Current Cathodic Protection (ICCP)

NOCO CASSETTE Surface Mounted MMO Ti ICCP System

Noco Tech LLC (MANUFACTURER)

561-570-2994

1230B 52nd St,

West Palm Beach, FL 33407

Email: info@noco.tech

<https://noco.tech/>

NOTE: Changes in material only as approved by Engineer for equal or better.



GENERAL REQUIREMENTS

SECTION 001113 - ADVERTISEMENT FOR BIDS

1.1 PROJECT INFORMATION

Notice to Bidders:	Qualified bidders may submit bids for project as described in this Document. Submit bids according to the Instructions to Bidders.
Project Identification:	Seawall Repair Project at Plaza Del Prado Condominium Association
Project Location:	18701 Biscayne Blvd, Aventura FL. 33160
Owner:	Plaza Del Prado Condominium Association
Owner's Managing Agent:	Ms. Marjorie Davalos
Engineer:	The Falcon Group
Engineer's Representative:	Esther Calle, P.E., Ryan Manalo P.E., The Falcon Group
Project Description:	Project Consists of, but is not limited to, concrete restoration of the seawall cap, concrete wall panels and any other work described in these specifications and permitted set of drawings.



1.2 BID SUBMITTAL AND OPENING

Owner will receive sealed lump sum bids until the bid time and date at the location given below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:

Bid Due Date: **May 6, 2022**

Bid Time: **4:00 PM E.S.T**

Location: **Plaza Del Prado Condominium Association**
Attention: Ms. Marjorie Davalos
18701 Biscayne Blvd, Aventura FL. 33160

All bidders shall submit an electronic copy of their **Bid Proposal and the populated Excel file provided** via email to рманало@thefalcongroup.us as well as **hand-deliver one (1) hard copy** of the Bid Proposal Form in a double-sealed envelope to the address listed above. Building's representative **will not** accept bid proposals submitted after the due date and time.

Bids shall be submitted in a double sealed envelope.

Bids shall be marked **“Sealed Bid for Plaza Del Prado Condominium Association. – Concrete Seawall Restoration Project”**.

Bids will not be publicly opened.

The OWNER reserves the right to reject any and all bids, to waive any and all informalities not involving price, time or change in the work and to negotiate contract terms with the successful BIDDER, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional bids. The OWNER also reserves the right to reject the Bid if not responsive or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the OWNER. Additionally, the OWNER reserves the right to break up the individual components of each submitted Bid. In evaluating the bids, the OWNER will consider the qualifications of the BIDDERS, whether or not the Bids comply with the prescribed requirements, and such alternatives, unit prices and other data.

Each Bid Proposal Form shall be complete. All requested information shall be completed in full. All units for pricing shall be in accordance with the Bid Proposal Form. The Owner will reject any bids not submitted on the Bid Proposal Form or bids submitted which have incomplete information on the Bid Proposal Form.

The Specifications and all relevant attachments including addenda, drawings, instructions to bidders, and the Bidders submitted Bid Proposal Form shall become part of the Contract to be executed by the successful Bidder.



1.3 PRE-BID MEETING

Pre-bid Meeting: A Mandatory pre-bid meeting for all bidders will be held at the site on April 13, 2022, Wednesday at 10:00am.

Prospective bidders are required to attend. Bids submitted by non-attending bidders will not be considered. No make-up time will be granted to any bidders not attending the meeting.

1.4 DOCUMENTS

Printed Procurement and Contracting Documents: Obtain by contacting Falcon Engineering:
The Falcon Group
15405 NW 7th Avenue
Miami, FL 33169

Documents will be provided to approve bidders only via email in electronic form; only complete sets of documents will be issued. Should prospective bidders require Engineer to issue hard copies it will be at an additional cost as listed below:

Cost for hard copy: \$50.00
Shipping: Additional shipping charges will apply

Online Procurement and Contracting Documents: Obtain access by contacting The Falcon Group. Online access will be provided to selected bidders only.

1.5 TAXES, FEES AND PERMITS

The Bidder shall, pay all applicable taxes and fees, except those taxes, which apply to the real property comprising the site of the project.

The Bidder shall be responsible for paying and obtaining any required Building Permits for the work. In addition, it shall be the Bidder's responsibility to arrange for inspection by and comply with the requirements of the local municipal authorities. The permit cost will be reimbursed by the Owner. The Owner will reimburse the Bidder only for the real cost for the permit (receipt issued by the Authority issuing the permit is required for reimbursement). The Owner will not reimburse the bidder for use of "permit runners". "Permit expeditors" and similar unless it was a direct request by the Owner.

1.6 TIME OF COMPLETION / PENALTIES

Successful bidder shall begin the Work within ten (10) workdays of receiving Notice to Proceed and issuance of work permit and shall complete the Work within the agreed upon Contract Time.



1.7 BIDDER'S QUALIFICATIONS

Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work.

Each bidder must submit a list of references of at least five (5) similar jobs completed in the past three (3) years. Bids submitted without the proper references will not be considered.

1.8 INSURANCE REQUIREMENTS

Bidders shall provide and maintain insurance as specified herein for the duration of the project.

- Comprehensive General Liability, including Contractual Liability, of at least Two Million (\$2,000,000) dollars for Bodily Injury and Property Damage per occurrence and at least Five Million (\$5,000,000) dollars aggregate.
- Automobile Insurance of at least five hundred thousand/one million (\$500,000/\$1,000,000) dollars for Bodily Injury and two hundred fifty thousand (\$250,000) dollars for Property Damage, or comparable Single Limit coverage.
- Workmen's Compensation insurance in an amount no less than the full statutory minimum required by the laws of the State of Florida.

The insurance coverage shall waive the carrier's rights to subrogation as to the Owner and shall provide that the insurance coverage will not be decreased, changed, or canceled prior to the Owner receiving ninety (90) days written notice. Failure to maintain insurance coverage as specified herein shall be considered a breach of this contract.

The following entities must be listed as additionally insured:

Owner – Plaza Del Prado Condominium Association
Engineer – The Falcon Group
Property Management – AKAM Property Management



SECTION 004000 –BID PROPOSAL FORM

PLAZA DEL PRADO CONDOMINIUM ASSOCIATION
SEAWALL REPAIR PROJECT

LEGAL NAME OF BIDDER: Aqua-Nautik Underwater-Work LLC

ADDRESS: 5225 NW 35th Ave, Fort Lauderdale, FL 33309

TELEPHONE NUMBER: Office: (954) 775-0704
Bill Mulder CMO: (954) 651-3393
Carsten Thoermer CEO: (954) 655-8149

DATE OF BID PREPARATION: 2022-05-06

Having completely examined the Specifications, all attached and referenced documents, and the existing site conditions and quantities, the undersigned hereby agrees to provide all the labor and materials and all else necessary for the proper construction and completion of the work in accordance with the Specifications.

In submitting this Bid, the undersigned agrees and certifies:

To hold the Bid open for a period of ninety (90) days after the due date.

To enter into and execute a Contract, if awarded on a basis of this Bid, and to furnish all guarantees as required in the Contract Documents.

To accomplish all work in accordance with the Contract Documents.

To commence all Work within ten (10) workdays of receipt of Notice to Proceed.

To have all work complete in accordance with the Contract Documents within the time period allotted.



PLAZA DEL PRADO CONDOMINIUM ASSOCIATION

SEAWALL RESTORATION PROJECT

All requested pricing shall include the general description of the items listed below and shall also include the specific materials and methods as outlined within these specifications and as indicated on the construction drawings. Quantities provided are approximate. It is the Contractor's responsibility to verify all quantities, dimensions and locations in the field prior to submitting proposal. There shall be no compensation for additional base bid quantities. Work hours shall be 8:30am to 5pm Monday through Friday. No work on holidays.

The work area for lump sum pricing and unit cost allowances includes all bid items shown in the specifications. The provided allowances are variable estimates of the units throughout all buildings. The actual number of units the contractor will be paid for will be marked out in the field by the engineer prior to executing the work.

The Owner reserves the right to reduce or increase the Scope of Work of the project throughout the course of work using the Base Bids and Unit Prices provided by the Bidder to reduce or increase the Total Contract Sum.

		Plaza Del Prado Seawall Restoration Project			
SCOPE OF WORK		Unit of Measure	Estimated Quantity	Unit Price	Amount
No.	SECTION G - GENERAL CONDITIONS				
1	Permits	N/A	N/A	N/A	At Cost
2	Mobilization, Staging and Protection	N/A	N/A	N/A	\$ 119,200.00 -
3	General Conditions	N/A	N/A	N/A	\$ 31,400.00 -
4	Clean-up and Demobilization	N/A	N/A	N/A	\$ 20,000.00 -
5	Additional General Conditions:				
	a. If the total value of the allowance work contracted and agreed upon is exceeded by:	%	25		\$ -
	b. The contractor is entitled to additional general conditions in the amount of	%	25		\$ -
Total Section G					\$ 170,600.00 -
No.	SECTION A - BASE BID CONCRETE WORK				



1	Demolition, Clearing, and Disposal	N/A	LS	\$ -	\$ 15,000.00 -
2	Use hydraulic cement to repair all voids, and joints on seawall	N/A	LS	\$ -	\$ 36,000.00 -
3	Furnish all labor and materials to perform inspection at several locations as directed by the engineer	N/A	LS	\$ -	\$ 27,600.00 -
4	Structural Concrete cracks	LF	100	\$ -	\$ 31,500.00 -
5	King Pile Concrete Repairs	CF	100	\$ -	\$ 59,300.00 -
6	Seawall Cap Repair	CF	50	\$ -	\$ 29,500.00 -
7	Concrete Wall Panel Repair	CF	100	\$ -	\$ 66,250.00 -
8	Concrete Dock pier footing repair	CF	50	\$ -	\$ 85,000.00 -
9	Concrete Dock tie beam repair	CF	20	\$ -	\$ 47,600.00 -
10	Concrete Dock floor underside (overhead) repair	SF	100	\$ -	\$ 34,800.00 -
11	Preformed riprap retaining wall repair	CF	10	\$ -	\$ 6,500.00 -
Total Section A					\$ 439,050.00 -
No.	SECTION B - OPTIONAL WORK (All optional work is inclusive of general conditions)				
1	Installation of Riprap	CY	2,000	\$ -	TBD
2	Weep hole Installation	EA	10	\$ -	\$ 14,850.00 -
3	Installation of Impressed current cathodic protection (NOCO CASSETTE Surface Mounted MMO Ti ICCP System)	LS	LS	\$ -	TBD
Total Section B					\$ 14,850.00
Additional time to include Section B1 on the scope (Calendar Days)					
Additional time to include Section B2 on the scope (Calendar Days)					10
Additional time to include Section B3 on the scope (Calendar Days)					
Total Base Bid (Section G+A)					609,650.00
Total w/ Optional Work (Section G+A+B)					\$ 624,500.00
No.	SECTION M - Miscellaneous Services				
M1	a. Payment and Performance Bond (G+A)	%		n/a	\$ -
	b. Payment and Performance Bond (B)			n/a	\$ -
M2	Allowance for Shoring	LS		n/a	\$ -
Total of Section M1a (G+A)					\$ 609,650.00
Total of Section M1b (D)					\$ -
Total of Section M; M1a+M2					\$ -



Total of Section M with optional work; M1a+M1b+M2				\$	-
TOTAL BID (T)					
Total Base Project (Section G+A+M1a+M2)					\$ 609,650.00
Total W/ Optional Work (Section G+A+B+M1a+M1b+M2)					\$ 624,500.00
Total Time to Complete Base Bid (A) (Calendar Days)					120
Total Time to Complete Base Bid and Optional Work (A+B) (Calendar Days)					130
HOURLY LABOR RATES					
Electrician	per hour				\$ 115.00
Carpenter	per hour				\$ 100.00
Laborer commercial diver	per hour				\$ 125.00
Plumber commercial diver supervisor	per hour				\$ 170.00

HOURLY LABOR RATES

For purposes of reviewing and approving change orders for additional work, if and where required, the Bidder shall submit hourly rates for the following trades.

LEGEND:

N/A	– NOT APPLICABLE
EA	– EACH
LS	– LUMP SUM
LF	– LINEAR FOOT
SF	– SQUARE FOOT
CF	– CUBIC FOOT
%	– PERCENTAGE
G	– GALLONS
A	– LUMP SUM ALLOWANCE – TO BE BILLED AT ACTUAL COST



1. A preliminary schedule must be submitted with the bid.
2. The BIDDER, in submitting a BID, warrants that he/she has investigated and is acquainted with the conditions to be encountered for performing the work including the character, quality of work to be performed and materials to be furnished.
3. Before submitting a BID, each BIDDER must visit the site to familiarize him/herself with local conditions that may in any manner affect cost, progress or performance of the work, and familiarize him/herself with Federal, State and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the work.
4. Upon request the OWNER will provide each BIDDER access to the site to conduct such investigations and tests as each BIDDER deem necessary for submission for his/her BID.
5. Each BIDDER, by submitting the BID, acknowledges that is familiar with the rigging requirements, structural stability of the roof and roof structures, parapet walls, existing tie-off elements, power allowances, etc. Each BIDDER should request all necessary information and access to the site to determine rigging conditions and requirements. No change orders will be allowed based on rigging changes that were discoverable during BIDDING process.
6. The bidder assumes responsibility for contract quantities for lump sum pricing including field measurements and verifications of existing dimensions. Quantities and /or dimensions provided by the OWNER are estimates and for reference only. Contract quantities for unit price contract items will be based on actual quantities approved by OWNER or Owner representative.
7. BIDDER shall provide evidence of sufficient previous experience on work of a similar nature to assure the OWNER of his capability to perform the work. BIDDER shall submit information of at least five (5) different projects, performed in the last three (3) years, including the following information: Project's description, location, duration, total cost, and OWNER's contact information.
8. The OWNER reserves the right to reject any and all bids, to waive any and all informalities not involving price, time or change in the work and to negotiate contract terms with the successful BIDDER, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional bids. The OWNER also reserves the right to reject the Bid if not responsive or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the OWNER. Additionally, the OWNER reserves the right to break up the individual components of each submitted Bid. In evaluating the bids, the OWNER will consider the qualifications of the BIDDERS, whether or not the Bids comply with the prescribed requirements, and such alternatives, unit prices and other data.



COMMENTS/CLARIFICATIONS:

Please add here all comments/clarifications regarding the project. Any other paper will not be accepted.

NOTES:

After reviewing the Plaza Del Prado seawall and consultation from the Falcon Group we inspected the deficiencies at the existing seawall, 3 Finger Concrete docks and the rip rap area behind the trees.

We would recommend for the dock piles and king piles which has major cracks and exposed rebars to use fiberglass jackets and fiberglass rebars for a long term solution for a higher structure integrity.

We also highly recommend to refill (cement injection) the void between the existing seawall panels and the foundation of the building. (north building after rip rap wall)

content of the work:

- cleaning and removing of spall areas (marked by engineer) with high pressure water up to 15k psi
- cleaning / brushing exposed rebar and exposed metal
- installing reinforcement steel (rebar) or fiberglass rebar
- installation form work and filling with pressure grout (non shrink grout up to 9,000psi)
- or installing of fiberglass jackets
- match surrounding areas after deinstalling form work
- open/spotting exposed cracks
- refill cracks with grout or epoxy
- close/patch and match surrounding areas

provided by customer:

- free access to the seawall / property
- docking for workboat and attached workbarge
- electricity up to 110V
- freshwater supply



REDUCTIONS AND LIMITATION OF SCOPE:

Please add here all reductions and limitations of scope of work. Any other paper will not be accepted.

Line Item:		Limitations:
GN	WARRANTY	Contractor's warranty is limited to material and
		specific work that's accomplished. Warranty is not for
		existing structure strength or failures. Warranty for
		material is for a period of maximum two (2) years.
1.6	TIME OF COMPLETION / PENALTIES	Beginning of work is depend of receiving of official
		permissions and construction start meeting between
		contractor, owner and falcon group.
		After NOP contractor needs to order all material, after
		receiving all material contractor is able to start the
		work that the time of completion can start.

GENERAL CONTRACTUAL COMMENTS:



ATTACHED TO THIS BID FORM ARE THE FOLLOWING DOCUMENTS:

BIDDERS QUALIFICATION STATEMENT
STATEMENT OF STOCKHOLDERS
LIST OF SUBCONTRACTORS

The Contractor, in this Agreement, accepts full responsibility for the Bid Amount, including all estimates of quantities for materials; estimates for refuse removal, costs for materials, labor, and all else necessary for the successful completion of the project.

SIGNATURES:

Aqua-Nautik Underwater-Work LLC, 5225 NW 35th Ave, Fort Lauderdale, FL 33309

Legal name of Contracting Firm, Partnership, or Corporation



Signed

May 6th 2022

Date

Thoermer Carsten, CEO

Name and Title

SECTION 004500 – REPRESENTATIONS AND QUALIFICATIONS

Required as a qualification statement in advance of award of contract:

EXPERIENCE, EQUIPMENT AND FINANCIAL QUALIFICATIONS

The Undersigned certifies the truth and correctness of all statements and of all answers to questions made hereinafter.

SUBMITTED TO: The Falcon Group
Attn: Esther Calle, P.E.
15405 NW 7th Avenue
Miami, FL 33169

SUBMITTED BY: **Aqua-Nautik Underwater-Work LLC**
5225 NW 35th Ave, Fort Lauderdale, FL 33309

☐ Corporation ☐ Partnership ☐ Individual ☐ Joint Venture ☒ Other

How many years has your organization been in business under your present company name?

Aqua-Nautik is in the inshore construction business since 2001

List all projects of similar nature and size that you have completed in the last five (5) years:
Please list

please review the reference list of Aqua-Nautik, which has Falcon Group already since August 2020, plus the accomplished projects since 2020



Job/Location, Type of work, Date of completion, Contract Amount, contact w/ phone #
(Use additional sheets as needed)

especially in South Florida:

- Sereno Condominium
- Island Pointe Condominium
- City of Pompano Beach
- City of Redington Beach
- JW Marriott Turnberry Golf Course Aventura
- Miami Dade County
- different private Land development companies

Have you ever failed to complete or been declared in DEFAULT by an owner for any work awarded to you? If so, note when, where, why, and Contact w/ phone #:

every task that Aqua-Nautik did in the past was fulfilled succesful

Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? If so, state the circumstances:

no never

List the states and categories in which your organization is legally qualified to do business:

commercial diving business, marine contractor mainly in South Florida

List Trade References w/ phone # (minimum of 3):

- City of Sunrise, Diego Santana (954) 319-5251
- City of Sunrise, Mark Pacitti (754) 234-4865
- City of Pembroke Pines, Paul Thompson (954) 995-0281
- City of Brunswick, GA Jason Vo, P.E. (912) 324-9905
- JW Marriott Turnberry Golf Course, Mark Allison (305) 370-8357



List Bank References w/ phone # (minimum of 3):

- CHASE
- Bank of America

Name of Bonding Company and name and address of agent:

Mattson-Charlton Surety Group, Coral Gables, FL

SIGNATURES:

Aqua-Nautik Underwater-Work LLC

Legal name of Contracting Firm, Partnership, or Corporation


Signed

May 6th 2022
Date

Thoermer Carsten, CEO

Name and Title



LIST OF SUBCONTRACTORS

Notwithstanding any language to the contrary contained within this bid package and all attached thereto, the contracting unit hereby requires full compliance, and lists the following subcontractors to perform the various types of work described:

No	Name of Subcontractor	Description of Work	Subcontractor Address and Phone Number
1	Lambert Brothers Inc.	General Contractor	5501 Powerline Rd., Ft.Lauderdale, FL 33309 (954) 491-9380
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

SECTION 00 50 00 - CONTRACTING FORMS AND SUPPLEMENTS

1.1 TIME OF COMPLETION / PENALTIES

Successful bidder shall begin the Work within ten (10) workdays of receiving Notice to Proceed and issuance of work permit and shall complete the Work within the agreed upon Contract Time. The Owner requires liquidating damages for not completing the project within specified time frame. The provisions for liquidating damages will be established by the Agreement

1.2 WORK HOURS

The Contractor shall conduct his work between 8:30 AM (or sunrise if later) and 4:30 PM (or sunset if earlier). No work will take place on Saturdays, Sundays or Holidays. The access to the property will be allowed at 8:00 AM for work preparation and deliveries, however no noisy work, use of equipment, and/or heavy machinery will be allowed before 8:30AM. All construction related activities shall be completed by 4:30PM, and all construction personnel will leave the property by 5:00PM.

1.3 PHASING

In order to successfully complete the proposed repairs while minimizing the disruption of the property, the work must be phased and each area of work must be completely enclosed to accommodate the repairs and protect the public and tenant-owned property. The repairs are to be done in phases.

1.4 INSPECTIONS

All work outlined in these Specifications and related work may be inspected by the Owner, its representatives or the Engineer at any time. If the Owner does or does not elect to inspect, this confers no rights on the part of the contractor and does not relieve the contractor from his responsibilities. The Contractor shall perform all work in accordance with these Specifications, and to the satisfaction of the Owner, the Owner's representative, and Engineer including any work not included in these Specifications but required by the local and government authorities.

The Contractor shall schedule all inspections required by local and government authorities and in accordance with required permits and that required to obtain Certificates of Occupancy or Certificates of Completion issued by the local authorities. The Contractor shall notify the Owner of all such inspections and provide ample notification so that the Owner may be present for all inspections.

The Contractor shall keep on the site a log with all inspections and will be responsible for ensuring that the Engineer, or Inspector have access to it on the day of inspection.

The Contractor shall be responsible for fines, fees, and costs, resulting from the necessity of reinspection, including fees incurred by the Owner's representative for reinspection, and consequential damages resulting from substandard work.



1.5 EMERGENCY REPAIRS

Within twelve (12) hours of being notified of crisis, health or safety circumstances the Contractor shall take suitable steps to remedy the crisis. What comprises a crisis, health or safety situation will be determined on a case-by-case basis. If the Contractor fails to take appropriate action, the Owner, at its option, may effectuate the repair, and charge the Contractor for the reasonable cost of the work performed.

1.6 INDEMNIFICATION

The Contractor shall indemnify, defend and hold harmless the Owner and residents of the project, Falcon Engineering, the Management Company and all employees associated with the aforementioned entities, from any and all claims, damages, actions or legal suites including attorney's fees which may arise in connection with this Contract.

The Contractor shall indemnify, defend and hold harmless the Owner and residents of the project, Falcon Engineering, the Management Company and all employees associated with the aforementioned entities from and against damage or injury to persons or to property caused or incident directly or indirectly by the Contractor, his subcontractors, or any person acting on behalf of the Contractor or subcontractor.

In the event of any such liability, loss, expense, damage or injury, or if any claim or demand for damages is made against the Owner, the Management Company and/or Falcon Engineering, the Owner may withhold from the Contractor, any payment due, and at the Owner's discretion may require the Contractor to furnish a Surety, satisfactory to the Owner, guaranteeing such protection, which Bond shall be furnished by the Contractor, at the Contractor's expense, within five (5) days after written demand has been made for such Surety.

1.7 TERMINATION

The Owner may terminate this Agreement and direct the Contractor to cease work for any reason whatsoever, upon seven (7) days written notice to the Contractor.

If this Agreement is terminated for convenience and without cause, the Contractor shall be paid for any work completed to the date of termination, subject to any Retention provisions of this Agreement.

If this agreement is terminated for cause, the Owner may proceed to complete the work the Contractor was required to do herein and correct any faulty work and/or damages caused by the contractor. Any amounts owed the Contractor will be used for the completion of such work. The Contractor shall pay the Owner, upon written request thereof, any costs and damages incurred by the Owner in the completion of the work set forth in this Contract.

The Contractor shall remove all tools, materials, etc., from the project site, and shall clean up the site in accordance with these Specifications.

Upon satisfactory completion of all Punch List work, cleanup of the project site, and provision of required warranties for completed work, the Contractor shall receive any Retention held under this Agreement.

In the event of Termination, the Contractor shall not be entitled to any damages of any kind.



SECTION 030130 - STRUCTURAL CONCRETE REPAIRS ABOVE WATER LEVEL

PART 1 – GENERAL

SUMMARY

Furnish all labor, materials, tools, and equipment required to perform the structural concrete repairs. The Work of this specification section shall include all items as described in the bid form.

Work covered under this Section shall conform to the following sections of ACI 301, except as modified by these Contract Documents:

- Section 1-General Requirements;
- Section 2-Formwork and Formwork Accessories;
- Section 3-Reinforcement and Reinforcement Supports;
- Section 4-Concrete Mixtures;
- Section 5-Handling, Placing, and Constructing.

DEFINITIONS

A. Design Professional: Engineer or Architect issuing Contract Documents or administering the Work under the Contract Documents, or both.

REFERENCED STANDARDS AND REPORTS

- ACI 117 Specifications for Tolerances for Concrete Construction and Materials
- ACI 222.3R Guide to Design and Construction Practices to Mitigate Corrosion of Reinforcement in Concrete Structures
- ACI 228.2R Report on Nondestructive Test Methods for Evaluation of Concrete Structures
- ACI 318 Building Code Requirements for Structural Concrete
- ACI 347R Guide to Formwork for Concrete
- ACI 347.2R Guide for Shoring/Reshoring of Concrete Multistory Buildings
- ACI 360R Guide to Design of Slabs-On-Ground
- ACI 364.3R Guide for Cementitious Repair Material Data Sheet
- ACI 546R Guide to Concrete Repair
- ACI 546.3R Guide to Materials Selection for Concrete Repair
- ASTM STP 169D Significance of Test and Properties of Concrete and Concrete-Making Materials
- CSA A23.1/23.2 Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete
- ICRI 130.1R Guide for Methods of Measurement and Contract Types for Concrete Repair Work
- ICRI 210.4 Guide for Nondestructive Evaluation Methods for Condition Assessment, Repair, and Performance Monitoring of Concrete Structures
- ICRI 310.3R Guide for the Preparation of Concrete Surfaces Using Hydro demolition Methods



ICRI 320.2R Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces
ICRI Concrete Repair Terminology
BR MERL Report #12-17 Bureau of Reclamation Report “Best Practices for Preparing Concrete Surfaces Prior to Repairs and Overlays
SSPC SP2 Hand Tool Cleaning.
SSPC SP3 Power Tool Cleaning.
B. ACI Standards and Reports

301-10 Specifications for Structural Concrete
305.1-14 Specification for Hot Weather Concreting
306R-10 Guide to Cold Weather Concreting

C. ASTM Standards and Reports

A615/A615M-14	Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement
A775/A775M-07b-14	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
A820/A820M-11	Standard Specification for Steel Fibers for Fiber-Reinforced Concrete
A884/A884M-14	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
A1064/A1064M-14	Standard Specification for Carbon Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
C31/C31M-12	Standard Practice for Making and Curing Concrete Test Specimens in the Field
C33/C33M-13	Standard Specification for Concrete Aggregates
C39/C39M-14a	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
C94/C94M-14b	Standard Specification for Ready-Mixed Concrete
C109/C109M-13	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in [50-mm] Cube Specimens)
C138/C138M-14	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
C143/C143M-05	Standard Test Method for Slump of Hydraulic-Cement Concrete
C144-11	Standard Specification for Aggregate for Masonry Mortar
C150/C150M-12	Standard Specification for Portland Cement
C157/C157M-08	Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
C171-07	Standard Specification for Sheet Materials for Curing Concrete
C173/C173M-14	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
C231/C231M-14	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
C260/C260M-10a	Standard Specification for Air Entraining Admixtures for Concrete



C309-11	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
C387/C387M-11b	Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar
C494/C494M-13	Standard Specification for Chemical Admixtures for Concrete
C457/C457M-11	Standard Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete
C595/C595M-14	Standard Specification for Blended Hydraulic Cements
C618-12a	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
C881/C881M-14	Standard Specification Epoxy-Resin-Base Bonding Systems for Concrete
C928/C928M-13	Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
C989/C989M-14	Standard Specification for Slag Cement for Use in Concrete and Mortars
C1064/C1064M-12	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
C1116/C1116M-10a	Standard Specification for Fiber-Reinforced Concrete
C1157/C1157M-11	Standard Performance Specification for Hydraulic-Cement
C1202/C1202M-12	Standard Test Method for Electrical Indication of Concretes Ability to Resist Chloride Ion Penetration
C1240-14	Standard Specification for Silica Fume Used in Cementitious Mixtures
C1315-11	Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
C1543-10a	Standard Test method for Determining the Penetration of Chloride Ion into Concrete by Ponding
C1582/C1582M-11	Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete
C1583/C1583M-13	Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)
C1600/C1600M-11	Standard Specification for Rapid Hardening Hydraulic-Cement
C1602/C1602M-12	Standard Specification for Mixing Water Used in the Production of Hydraulic-Cement Concrete
D4580/D4580M-12	Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding

AWS Standards and Reports

D 1.4/D 1.4M Structural Welding Code-Reinforcing Steel

CAN/CSA Standards and Reports

A 3000-13 Cementitious Materials Compendium

SSPC Standards and Reports

SP6/NACE No. 3 Commercial Blast Cleaning



Cited ICRI Technical Guidelines in this Specification.

120.1-2009	Guidelines and Recommendations for Safety in the Concrete Repair Industry
210.3R-2013	Guide for Using In-Situ Tensile Pulloff Tests to Evaluate Bond of Concrete Surface Materials
310.1R-2008	Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
320.2R-2009	Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces
320.3R-2012	Guideline for Inorganic Repair Material Data Sheet Protocol

Standards-Producing Organizations: Names, abbreviations, and addresses of organizations issuing documents referenced in this Specification.

American Association of State Highway and Transportation Officials (AASHTO)
444 North Capitol Street NW, Suite 249
Washington, DC 20001
www.transportation.org

American Concrete Institute (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331
www.concrete.org

American Welding Society (AWS)
8669 Doral Boulevard, Suite 130
Doral, FL 33166
www.aws.org

ASTM International (ASTM)
100 Barr Harbor Drive
West Conshohocken, PA 19428
www.astm.org

Canadian Standards Association (CSA)
178 Rexdale Blvd.
Toronto, ON
Canada M9W 1R3
www.csagroup.org

International Concrete Repair Institute (ICRI)
St. Paul, MN 55114
www.icri.org

The Society for Protective Coatings (SSPC)
40 24th Street, 6th Floor
Pittsburgh, PA 15222
www.sspc.org



UNIT PRICES

A. Submit unit prices as required on the Bid Form. Unit prices shall include costs for all activities related to the execution of the repair as described in 1.4 C.

All quantities and costs associated with the cleaning and adjustment of existing reinforcement are incidental and shall be included in the unit price for the Work. Replacement and new reinforcement and accessories shall be provided as part of the unit price for the repair Work unless separate unit prices are requested on the bid form. Unit prices provided for replacement of reinforcement shall apply only to bars in need of replacement due to section loss caused by corrosion or bars added at the discretion of the Design Professional. Replacement of bars for other reasons shall not be billed to the Owner.

Unit prices apply to authorized Work performed within the quantities defined by the Division 01 General Requirements.

SUBMITTALS

A. Products:

- Submit in accordance with the Division 1 General Requirements. Include product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material indicated.
- Subparagraphs 1.5A.2 and 1.5A.3 list requirements that may be covered in the General Requirements and, therefore, need to be coordinated with those requirements.
- Select materials from the product or products noted in these specifications, or the submittal is permitted to be rejected at the discretion of the Design Professional or Owner. Provide documentation that alternate materials submitted are equivalent or superior to those provided in these specifications. Material submittals can be accompanied by requests for credits or additional charges when appropriate.
- All submittals shall be made 2 weeks prior to the start of Work. Do not proceed with the Work prior to submittal acceptance. Submittals requested during the project for unforeseen Work shall be provided 2 weeks prior to the use of the material to allow adequate time for engineering evaluation and acceptance. If a substitution request is accompanied by a cost savings offer to the Owner, the cost savings shall be returned to the Owner in the form of a credit change order.



B. Shop Drawings:

Shoring and Bracing: Ensure the adequacy of the structure and temporary supports to withstand the anticipated loads during construction, and the effect of demolition on the capacity of the structure. Submit design calculations, sealed by an Engineer licensed to practice in the jurisdiction where the Work is performed, for shoring and bracing at all repair types. Submit shoring and bracing drawings, or documentation from the Shoring Engineer that none is required prior to the start of demolition on the structure.

Formwork: Ensure the adequacy of the formwork to withstand the anticipated pressures exerted by the wet concrete. Submit design calculations, sealed by an Engineer licensed to practice in the jurisdiction where the Work is performed, for the formwork when required by the Design Professional. Submit formwork drawings.

Reinforcement: Submit data and shop drawings in accordance with the requirements of ACI 301.

Form and Pump: Pumps and fittings used for the placement of concrete in sealed forms shall be submitted. The proposed spacing of fittings and the means for assuring proper vibration and complete filling of the repair cavity shall be demonstrated.

C. Repair Materials

Ready Mixed/Site Batch Concrete: Submit all proposed concrete mixture designs for use on the project. Mixture design submittals shall include trial-batch test results or historical test data for the specific mixture proposed. All components of ready mixed and site batched concrete shall be listed.

Packaged Materials: Packaged material submittals shall include all relevant manufacturers' literature, including technical data. Submit data on materials and limitations where aggregate extension is planned.

Include MSDS for all materials submitted.

D. Qualifications

Submit documentation demonstrating conformance with the qualification requirements for the concrete repair Contractor and the foreman for the concrete repair Contractor as described in the Quality Assurance section.

Equipment and Procedures for Concrete Removal: Submit a list of concrete removal equipment to be used on the project, and the locations and circumstances under which each piece of equipment will be used. Include special provisions that will be used to avoid post-tensioning tendons and related hardware, embedded conduit, or other embedded items not specified for removal. Include a description of procedures that will be used to dispose of wastewater from water jetting, blasting, and hydrodemolition (if applicable).

Equipment and Procedures for Surface Preparation: Submit a description of the equipment and procedures that will be used to achieve the required bond of the repair material.



Records Retention: Retain all design and as-built records for a period of 7 years. These documents shall include, as a minimum, the original contract drawings and specifications, material submittals including MSDS, shop drawings, patch logs, test and inspection reports, progress photographs, and warranties.

PREINSTALLATION CONFERENCE

A. Prior to the start of work, the following personnel shall attend a preinstallation conference:

- Contractor's Project Manager;
- Contractor's Superintendent;
- Concrete Repair Subcontractor;
- Inspectors;

QUALITY ASSURANCE

A. Qualifications:

1. **Concrete Repair Contractor:** Submit documentation demonstrating experience with previous projects of similar size and complexity. The documentation shall include references from Owners, Contractors, and Engineers on the previous projects.
2. **Foreman for the Concrete Repair Contractor:** Submit a résumé for the foreman demonstrating experience with previous projects of similar size and complexity. The documentation shall include references from Owners, Contractors, and Engineers on the previous projects.

Mockups: Provide mockups for concrete removal, surface preparation, and concrete repair material placement to demonstrate the quality and appearance of the repair Work. Mockups shall be constructed using the same personnel, equipment, and materials that will be used for the final work. Locate the mockups in areas designated by the Design Professional. Notify the Design Professional in writing at least 48 hours in advance of the mockup placement to allow for inspection and acceptance of the Work.

1. Accepted mockups are permitted to become part of the completed Work if undisturbed at the time of Substantial Completion.
2. The manufacturer's representative shall review the mockup when requested by the Design Professional.

Notify the Design Professional for scheduling purposes at least **24 hours** in advance of when repair locations are ready for repair material placement and allow adequate time for inspection. Schedule all inspection Work with the Design Professional. Any Work covered up without inspection is subject to rejection by the Design Professional.

Provide and maintain a facility or location for the safe storage and proper curing of freshly cast test specimens. The temporary storage area and access for the Design Professional or testing agency to perform concrete testing during placement shall comply with the requirements of ASTM C31/C31M.

DELIVERY, STORAGE, AND HANDLING



A. Deliver materials to the project site in the manufacturer's original and unopened containers, label intact with type and name of products and manufacturers.

Comply with the manufacturer's written instructions for conditions for temperature requirements as well as other conditions for storage.

Do not use materials that have exceeded their stated expiration date.

Store all materials off the ground, under cover, and in a dry location. Protect from rain, water, freezing, excessive heat, foreign matter, and other damaging conditions until ready for use. If materials have frozen, obtain manufacturer's written approval prior to use. Do not stir liquids or mix materials until they are completely thawed. Do not force-thaw materials. Do not use damaged containers or broken bags.

Comply with the material manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

PROJECT CONDITIONS

A. Environmental Limitations and Requirements:

Execute demolition in a manner to limit unnecessary dust and noise. Enclose each phase of the Work with a minimum of a plastic or cloth barrier to maximize confinement of dust and debris inside the Work area. Enclosures shall be securely constructed and inspected by the Contractor each working day to ensure there are no holes or tears. Take other steps as required to keep dust and debris confined to the Work, such as providing air filtration equipment, the use of wet cutting equipment, and the use of wet abrasive cleaning equipment. Vent exhaust fumes from enclosed Work areas. If the exhaust fume level cannot be kept at an acceptable level, use other equipment or relocate the equipment so that the exhaust can be properly vented away from occupied areas.

Dispose of water from operations in a safe and lawful manner.

Existing Electrical, Plumbing, and Mechanical Services:

Protect all electrical conduits, boxes, wiring, and fixtures from damage. Safe removal of lighting fixtures and existing surface mounted electrical lines, when required, shall be the responsibility of the Contractor. All electrical lines shall be reattached to the structure after completion of the repairs.

Take reasonable precautions to avoid damaging embedded electrical conduits. Reasonable precautions shall include, but are not limited to, reviewing existing documentation and connected services in combination with nondestructive testing to determine the layout of the conduit. Demolition equipment shall be selected to minimize damage to conduit. Damage to embedded conduits as a result of Contractor negligence shall be repaired by the Contractor at no cost to the Owner.

SAFETY



A. All Work shall be performed in accordance with the applicable provincial, local, state, and federal requirements for safety and the recommendations of ICRI 120.1.

B. Maintain a copy of MSDS at the jobsite for all materials.

PART 2 PRODUCTS

SPEED CRETE RED LINE

Rapid Setting Repair Material

SPEED CRETE RED LINE is a rapid-setting, cement-based concrete and masonry repair mortar. SPEED CRETE RED LINE is a proprietary formulation of blended portland cements, finely processed selected aggregates, and specific chemical additives that undergo a chemical "hyper hydration" and produces a stable, low permeability, cementitious matrix.

2.1. CEMENTITIOUS REPAIR MORTAR

A. Trowelable Vertical Rapid Setting Repair Mortar: Cement-based, one component, rapid setting repair mortar, suitable for interior or exterior use. Material shall have the following properties neat:

1. Compressive Strength minimum 2,500 psi (17.6 MPa) at 1 day and minimum 4,000 psi (27.6 MPa) at 7 days, and 5,500 psi (38.0 MPa) at 28 days per ASTM C 109.

2. Flexural Strength minimum 900 psi (6.2 MPa) at 28 days per ASTM C 348.

3. Length Change maximum -0.69% at 28 days per ASTM C157.

4. Freeze Thaw Resistance of 300 Cycles...96.75% dynamic modulus per ASTM C666.

5. Basis of Design Product:

a) Euclid Chemical Company (The); SPEED CRETE RED LINE, www.euclidchemical.com

B. Manufacturer shall have ISO 9001 Quality Certification.

C. To ensure compatibility bonding agent and curing compound where used shall be from same manufacturer as repair mortar.

2.2. CURING

Euclid Chemical suggests curing this repair mortar with a high-solids curing compound. If desired choose a recommended product from the data sheet and insert a product description here. Guide spec language for these products can be found by accessing each product separately through the Euclid Chemical web site.



Be advised that liquid curing compounds are typically not compatible with future penetrating sealer, adhesives or coatings. If such treatments are intended the specifier should insert language for a dissipating resin curing compound such as KUREZ DR VOX or insert language for proper ACI 308 curing methods. Duration of such cure should be minimum 3 days.}

PART 3 EXECUTION

3.1. SURFACE PREPARATION

- A. Concrete Removal: Remove all loose and unsound concrete per recommendations of ICRI Guideline 310.2R “Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays and Concrete Repair”

1. Areas to be repaired shall have perimeter boundaries saw cut to minimum depth of $\frac{1}{2}$ ” inch or less if such depth will cause saw to come in contact with embedded reinforcing steel. Saw cuts shall be made perpendicular to the concrete surface and all concrete removal boundaries shall be straight and aligned parallel to opposite boundary edges resulting in repair areas that are rectangular in shape. The aspect ratio of the repair area shall be as square as possible, not exceeding 1.5:1. Odd shapes shall be avoided. If they cannot be avoided, re-entrant corners shall be mitered or reinforced to limit cracking at these locations.

- a. Extend repair boundaries to beyond corrosion on reinforcing bars.
- b. Do not allow saw to come into contact with reinforcing steel.

2. All concrete shall be removed from within repair boundary to a uniform depth. Depth of removal shall be as required to accommodate manufacturer’s recommended minimum and maximum placement depth range for specified repair mortar and as required to remove all delaminating, cracking or unsound materials. Provide a sound surface with suitable profile for bond, as defined in repair mortar manufacturer’s written recommendations.

- B. Preparing Reinforcing Steel: Clean and prepare any exposed embedded reinforcing steel per recommendations of ICRI Guideline 310.1R. “Guideline for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion”

- 1. Where $\frac{1}{2}$ or more of diameter of reinforcement steel is exposed either by existing conditions or concrete removal, bond between the concrete and reinforcing steel is broken, or corrosion is present, the concrete shall be removed to provide a minimum $\frac{3}{4}$ ” clearance around entire perimeter of steel and along entire exposed length.
- 2. Remove concrete fragments, corrosion product, mill scale, and other contaminants from reinforcing bars in accordance with SSPC-SP 6 until a bare metal finish has been achieved on the reinforcing bars.



- a. Where section loss on a reinforcing bar is more than 25% or 15% in two or more adjacent bars contact Engineer.
- b. Any damage to epoxy-coated reinforcement shall be repaired by coating with an approved epoxy-coating repair material.
- C. Remove bruised concrete substrate weakened by microcracking by abrasive blasting or high-pressure water blasting with or without abrasive.
- D. Concrete Preparation and Cleaning: Areas to receive concrete repair shall be structurally sound and free from deteriorated concrete, dust, dirt, debris, loosened concrete and aggregates, bruised concrete substrate weakened by microcracking, paint, oil, efflorescence, laitance, and other contaminants, and shall have a minimum Concrete Surface Profile CSP equal to that recommended by the repair mortar manufacturer per ICRI Guideline 310.2.

3.2. REPAIR MORTAR APPLICATION:

- A. At areas where a bonding agent has not been specified, the saturated-surface dry (SSD) concrete shall be primed with a scrub coat of the specified repair mortar.
 - 1. Soak the repair area with potable water to achieve a saturated-surface dry (SSD) condition.
 - 2. The repair mortar must be made before the scrub coat dries out.
- B. Repair Mortar Trowel Applied: Mix and place Repair Mortar per manufacturer's recommendations within the open time of the product scrub coat or any bonding agents. Finish to level of surrounding concrete surface utilizing techniques recommended by manufacturer.

3.3. CURING

- A. Exposed repair mortar surfaces not receiving subsequent applications of penetrating sealers, coatings or adhesives, shall be cured utilizing a high-solids, water-based curing compound recommended by the repair mortar manufacturer.
- B. Liquid curing compound shall not be applied to surfaces that are to receive subsequent applications of penetrating sealers, coatings, or adhesives. Instead cure surfaces utilizing wet cure methods per ASTM C308.1 for minimum 3 days.

END OF SECTION



SECTION 030130 - STRUCTURAL CONCRETE REPAIRS BELOW WATER LEVEL

PART 1 – GENERAL

SUMMARY

Furnish all labor, materials, tools, and equipment required to perform the structural concrete repairs. The Work of this specification section shall include all items as described in the bid form.

Work covered under this Section shall conform to the following sections of ACI 301, except as modified by these Contract Documents:

Section 1-General Requirements;
Section 2-Formwork and Formwork Accessories;
Section 3-Reinforcement and Reinforcement Supports;
Section 4-Concrete Mixtures;
Section 5-Handling, Placing, and Constructing.

DEFINITIONS

C. Design Professional: Engineer or Architect issuing Contract Documents or administering the Work under the Contract Documents, or both.

REFERENCED STANDARDS AND REPORTS

ACI 117 Specifications for Tolerances for Concrete Construction and Materials
ACI 222.3R Guide to Design and Construction Practices to Mitigate Corrosion of Reinforcement in Concrete Structures
ACI 228.2R Report on Nondestructive Test Methods for Evaluation of Concrete Structures
ACI 318 Building Code Requirements for Structural Concrete
ACI 347R Guide to Formwork for Concrete
ACI 347.2R Guide for Shoring/Reshoring of Concrete Multistory Buildings
ACI 360R Guide to Design of Slabs-On-Ground
ACI 364.3R Guide for Cementitious Repair Material Data Sheet
ACI 546R Guide to Concrete Repair
ACI 546.3R Guide to Materials Selection for Concrete Repair
ASTM STP 169D Significance of Test and Properties of Concrete and Concrete-Making Materials
CSA A23.1/23.2 Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

ICRI 130.1R Guide for Methods of Measurement and Contract Types for Concrete Repair Work
ICRI 210.4 Guide for Nondestructive Evaluation Methods for Condition Assessment, Repair, and Performance Monitoring of Concrete Structures
ICRI 310.3R Guide for the Preparation of Concrete Surfaces Using Hydro demolition Methods



ICRI 320.2R Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces
ICRI Concrete Repair Terminology
BR MERL Report #12-17 Bureau of Reclamation Report “Best Practices for Preparing Concrete Surfaces Prior to Repairs and Overlays
SSPC SP2 Hand Tool Cleaning.
SSPC SP3 Power Tool Cleaning.
D. ACI Standards and Reports

301-10 Specifications for Structural Concrete
305.1-14 Specification for Hot Weather Concreting
306R-10 Guide to Cold Weather Concreting

E. ASTM Standards and Reports

A615/A615M-14	Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement
A775/A775M-07b-14	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
A820/A820M-11	Standard Specification for Steel Fibers for Fiber-Reinforced Concrete
A884/A884M-14	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
A1064/A1064M-14	Standard Specification for Carbon Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
C31/C31M-12	Standard Practice for Making and Curing Concrete Test Specimens in the Field
C33/C33M-13	Standard Specification for Concrete Aggregates
C39/C39M-14a	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
C94/C94M-14b	Standard Specification for Ready-Mixed Concrete
C109/C109M-13	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in [50-mm] Cube Specimens)
C138/C138M-14	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
C143/C143M-05	Standard Test Method for Slump of Hydraulic-Cement Concrete
C144-11	Standard Specification for Aggregate for Masonry Mortar
C150/C150M-12	Standard Specification for Portland Cement
C157/C157M-08	Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
C171-07	Standard Specification for Sheet Materials for Curing Concrete
C173/C173M-14	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
C231/C231M-14	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
C260/C260M-10a	Standard Specification for Air Entraining Admixtures for Concrete



C309-11	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
C387/C387M-11b	Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar
C494/C494M-13	Standard Specification for Chemical Admixtures for Concrete
C457/C457M-11	Standard Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete
C595/C595M-14	Standard Specification for Blended Hydraulic Cements
C618-12a	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
C881/C881M-14	Standard Specification Epoxy-Resin-Base Bonding Systems for Concrete
C928/C928M-13	Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
C989/C989M-14	Standard Specification for Slag Cement for Use in Concrete and Mortars
C1064/C1064M-12	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
C1116/C1116M-10a	Standard Specification for Fiber-Reinforced Concrete
C1157/C1157M-11	Standard Performance Specification for Hydraulic-Cement
C1202/C1202M-12	Standard Test Method for Electrical Indication of Concretes Ability to Resist Chloride Ion Penetration
C1240-14	Standard Specification for Silica Fume Used in Cementitious Mixtures
C1315-11	Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
C1543-10a	Standard Test method for Determining the Penetration of Chloride Ion into Concrete by Ponding
C1582/C1582M-11	Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete
C1583/C1583M-13	Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)
C1600/C1600M-11	Standard Specification for Rapid Hardening Hydraulic-Cement
C1602/C1602M-12	Standard Specification for Mixing Water Used in the Production of Hydraulic-Cement Concrete
D4580/D4580M-12	Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding

AWS Standards and Reports

D 1.4/D 1.4M Structural Welding Code-Reinforcing Steel

CAN/CSA Standards and Reports

A 3000-13 Cementitious Materials Compendium

SSPC Standards and Reports

SP6/NACE No. 3 Commercial Blast Cleaning



Cited ICRI Technical Guidelines in this Specification.

120.1-2009	Guidelines and Recommendations for Safety in the Concrete Repair Industry
210.3R-2013	Guide for Using In-Situ Tensile Pulloff Tests to Evaluate Bond of Concrete Surface Materials
310.1R-2008	Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
320.2R-2009	Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces
320.3R-2012	Guideline for Inorganic Repair Material Data Sheet Protocol

Standards-Producing Organizations: Names, abbreviations, and addresses of organizations issuing documents referenced in this Specification.

American Association of State Highway and Transportation Officials (AASHTO)
444 North Capitol Street NW, Suite 249
Washington, DC 20001
www.transportation.org

American Concrete Institute (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331
www.concrete.org

American Welding Society (AWS)
8669 Doral Boulevard, Suite 130
Doral, FL 33166
www.aws.org

ASTM International (ASTM)
100 Barr Harbor Drive
West Conshohocken, PA 19428
www.astm.org

Canadian Standards Association (CSA)
178 Rexdale Blvd.
Toronto, ON
Canada M9W 1R3
www.csagroup.org

International Concrete Repair Institute (ICRI)
St. Paul, MN 55114
www.icri.org

The Society for Protective Coatings (SSPC)
40 24th Street, 6th Floor
Pittsburgh, PA 15222
www.sspc.org



UNIT PRICES

F. Submit unit prices as required on the Bid Form. Unit prices shall include costs for all activities related to the execution of the repair as described in 1.4 C.

All quantities and costs associated with the cleaning and adjustment of existing reinforcement are incidental and shall be included in the unit price for the Work. Replacement and new reinforcement and accessories shall be provided as part of the unit price for the repair Work unless separate unit prices are requested on the bid form. Unit prices provided for replacement of reinforcement shall apply only to bars in need of replacement due to section loss caused by corrosion or bars added at the discretion of the Design Professional. Replacement of bars for other reasons shall not be billed to the Owner.

Unit prices apply to authorized Work performed within the quantities defined by the Division 01 General Requirements.

SUBMITTALS

G. Products:

- Submit in accordance with the Division 1 General Requirements. Include product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material indicated.
- Subparagraphs 1.5A.2 and 1.5A.3 list requirements that may be covered in the General Requirements and, therefore, need to be coordinated with those requirements.
- Select materials from the product or products noted in these specifications, or the submittal is permitted to be rejected at the discretion of the Design Professional or Owner. Provide documentation that alternate materials submitted are equivalent or superior to those provided in these specifications. Material submittals can be accompanied by requests for credits or additional charges when appropriate.
- All submittals shall be made 2 weeks prior to the start of Work. Do not proceed with the Work prior to submittal acceptance. Submittals requested during the project for unforeseen Work shall be provided 2 weeks prior to the use of the material to allow adequate time for engineering evaluation and acceptance. If a substitution request is accompanied by a cost savings offer to the Owner, the cost savings shall be returned to the Owner in the form of a credit change order.



H. Shop Drawings:

Shoring and Bracing: Ensure the adequacy of the structure and temporary supports to withstand the anticipated loads during construction, and the effect of demolition on the capacity of the structure. Submit design calculations, sealed by an Engineer licensed to practice in the jurisdiction where the Work is performed, for shoring and bracing at all repair types. Submit shoring and bracing drawings, or documentation from the Shoring Engineer that none is required prior to the start of demolition on the structure.

Formwork: Ensure the adequacy of the formwork to withstand the anticipated pressures exerted by the wet concrete. Submit design calculations, sealed by an Engineer licensed to practice in the jurisdiction where the Work is performed, for the formwork when required by the Design Professional. Submit formwork drawings.

Reinforcement: Submit data and shop drawings in accordance with the requirements of ACI 301.

Form and Pump: Pumps and fittings used for the placement of concrete in sealed forms shall be submitted. The proposed spacing of fittings and the means for assuring proper vibration and complete filling of the repair cavity shall be demonstrated.

I. Repair Materials

Ready Mixed/Site Batch Concrete: Submit all proposed concrete mixture designs for use on the project. Mixture design submittals shall include trial-batch test results or historical test data for the specific mixture proposed. All components of ready mixed and site batched concrete shall be listed.

Packaged Materials: Packaged material submittals shall include all relevant manufacturers' literature, including technical data. Submit data on materials and limitations where aggregate extension is planned.

Include MSDS for all materials submitted.

J. Qualifications

Submit documentation demonstrating conformance with the qualification requirements for the concrete repair Contractor and the foreman for the concrete repair Contractor as described in the Quality Assurance section.

Equipment and Procedures for Concrete Removal: Submit a list of concrete removal equipment to be used on the project, and the locations and circumstances under which each piece of equipment will be used. Include special provisions that will be used to avoid post-tensioning tendons and related hardware, embedded conduit, or other embedded items not specified for removal. Include a description of procedures that will be used to dispose of wastewater from water jetting, blasting, and hydrodemolition (if applicable).

Equipment and Procedures for Surface Preparation: Submit a description of the equipment and procedures that will be used to achieve the required bond of the repair material.



Records Retention: Retain all design and as-built records for a period of 7 years. These documents shall include, as a minimum, the original contract drawings and specifications, material submittals including MSDS, shop drawings, patch logs, test and inspection reports, progress photographs, and warranties.

PREINSTALLATION CONFERENCE

K. Prior to the start of work, the following personnel shall attend a preinstallation conference:

- Contractor's Project Manager;
- Contractor's Superintendent;
- Concrete Repair Subcontractor;
- Inspectors;

QUALITY ASSURANCE

L. Qualifications:

3. **Concrete Repair Contractor:** Submit documentation demonstrating experience with previous projects of similar size and complexity. The documentation shall include references from Owners, Contractors, and Engineers on the previous projects.
4. **Foreman for the Concrete Repair Contractor:** Submit a résumé for the foreman demonstrating experience with previous projects of similar size and complexity. The documentation shall include references from Owners, Contractors, and Engineers on the previous projects.

Mockups: Provide mockups for concrete removal, surface preparation, and concrete repair material placement to demonstrate the quality and appearance of the repair Work. Mockups shall be constructed using the same personnel, equipment, and materials that will be used for the final work. Locate the mockups in areas designated by the Design Professional. Notify the Design Professional in writing at least 48 hours in advance of the mockup placement to allow for inspection and acceptance of the Work.

3. Accepted mockups are permitted to become part of the completed Work if undisturbed at the time of Substantial Completion.
4. The manufacturer's representative shall review the mockup when requested by the Design Professional.

Notify the Design Professional for scheduling purposes at least **24 hours** in advance of when repair locations are ready for repair material placement and allow adequate time for inspection. Schedule all inspection Work with the Design Professional. Any Work covered up without inspection is subject to rejection by the Design Professional.

Provide and maintain a facility or location for the safe storage and proper curing of freshly cast test specimens. The temporary storage area and access for the Design Professional or testing agency to perform concrete testing during placement shall comply with the requirements of ASTM C31/C31M.



DELIVERY, STORAGE, AND HANDLING

M. Deliver materials to the project site in the manufacturer's original and unopened containers, label intact with type and name of products and manufacturers.

Comply with the manufacturer's written instructions for conditions for temperature requirements as well as other conditions for storage.

Do not use materials that have exceeded their stated expiration date.

Store all materials off the ground, under cover, and in a dry location. Protect from rain, water, freezing, excessive heat, foreign matter, and other damaging conditions until ready for use. If materials have frozen, obtain manufacturer's written approval prior to use. Do not stir liquids or mix materials until they are completely thawed. Do not force-thaw materials. Do not use damaged containers or broken bags.

Comply with the material manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

PROJECT CONDITIONS

N. Environmental Limitations and Requirements:

Execute demolition in a manner to limit unnecessary dust and noise. Enclose each phase of the Work with a minimum of a plastic or cloth barrier to maximize confinement of dust and debris inside the Work area. Enclosures shall be securely constructed and inspected by the Contractor each working day to ensure there are no holes or tears. Take other steps as required to keep dust and debris confined to the Work, such as providing air filtration equipment, the use of wet cutting equipment, and the use of wet abrasive cleaning equipment. Vent exhaust fumes from enclosed Work areas. If the exhaust fume level cannot be kept at an acceptable level, use other equipment or relocate the equipment so that the exhaust can be properly vented away from occupied areas.

Dispose of water from operations in a safe and lawful manner.

Existing Electrical, Plumbing, and Mechanical Services:

Protect all electrical conduits, boxes, wiring, and fixtures from damage. Safe removal of lighting fixtures and existing surface mounted electrical lines, when required, shall be the responsibility of the Contractor. All electrical lines shall be reattached to the structure after completion of the repairs.

Take reasonable precautions to avoid damaging embedded electrical conduits. Reasonable precautions shall include, but are not limited to, reviewing existing documentation and connected services in combination with nondestructive testing to determine the layout of the conduit. Demolition equipment shall be selected to minimize damage to conduit. Damage to embedded conduits as a result of Contractor negligence shall be repaired by the Contractor at no cost to the Owner.



SAFETY

O. All Work shall be performed in accordance with the applicable provincial, local, state, and federal requirements for safety and the recommendations of ICRI 120.1.

P. Maintain a copy of MSDS at the jobsite for all materials.

PART 2: PRODUCT

EUCO-SPEED CRETE BLUE LINE and SPEED CRETE BLUE LINE

Fast Setting, cement based repair mortar for making repairs under water. Minimum application thickness of 3/4" and maximum thickness of 3" per lift.

2.1. CEMENTITIOUS REPAIR MORTAR

A. Fast setting cementitious repair mortar designed specifically for placement under water. Product shall exhibit the following characteristics:

1. Compressive Strength minimum 3,000 psi at 24 hour, 4,000 psi at 7 days and minimum 6,000 psi 28 days per ASTM C 109.
2. Flexural Strength minimum 600 psi at 7 days, and 700 psi at 28 days per ASTM C 348.
3. Linear Shrinkage maximum -0.01% at 7 days and -0.054% at 28 days per ASTM C 157.
4. Freeze Thaw Resistance of 310 Cycles...96.0% dynamic modulus per ASTM C 666.
5. Product:

- a) Euclid Chemical Company (The); Euco-Speed Crete Blue Line
www.euclidchemical.com

B. Manufacturer shall have ISO 9001 Quality Certification. To ensure compatibility all admixtures shall be from the same manufacturer.

C. To ensure compatibility bonding agent and curing compound if used shall be from same manufacturer as repair mortar.

2.2. CURING

Euclid Chemical suggests curing exposed surfaces of this repair mortar with a high solids curing compound. If desired choose a recommended product from the data sheet and insert here. Guide spec language for these products can be found



by accessing each product separately through this web site. Be advised that liquid curing compounds are typically not compatible with future penetrating sealer, adhesives or coatings. If such treatments are intended the specifier should insert language for a dissipating resin curing compound such as KUREZ DR VOX, a removable curing compound such as KUREZ RC, or insert language for proper moisture retaining curing methods meeting ACI 308. Duration of such cure should be minimum 3 days.

PART 3: EXECUTION

3.1. SURFACE PREPARATION

A. Concrete Removal: Remove all loose and unsound concrete per ICRI Guideline 310.1R "Guide for Surface Preparation"

1. Unsound concrete surface areas shall have perimeter boundaries saw cut to minimum depth of ½" inch or less if such depth will cause saw to come in contact with embedded reinforcing steel. Saw cuts shall be made perpendicular to the concrete surface and all concrete removal boundaries shall be straight and aligned parallel to opposite boundary edges resulting in repair areas that are rectangular in shape.

2. All concrete shall be removed from within repair boundary to minimum depth of ½" inch. Provide a surface with suitable profile for bond, as defined in repair mortar manufacturer's written recommendations. If delaminations, cracking, or unsound materials exist beyond minimum removal depth, then removal shall continue until all unsound, delaminated, or cracked concrete has been removed from cavity.

B. Concrete Preparation and Cleaning: Areas to receive concrete repair shall be structurally sound and free from deteriorated concrete, dust, dirt, debris, loosened concrete, paint, oil, efflorescence, laitance, and other contaminants, and shall have a minimum Concrete Surface Profile CSP equal to that recommended by the repair mortar manufacturer per ICRI Guideline 310.2.

3.2. REPAIR MORTAR APPLICATION:

A. Repair Mortar Trowel Applied: Mix and apply Repair Mortar per manufacturer's recommendations within the open time of the product scrub coat or any bonding agents. Finish to level of surrounding concrete surface utilizing techniques recommended by manufacturer.

3.3. CURING

Euclid Chemical suggests curing exposed surfaces of this repair mortar with a high solids curing compound. If desired choose a recommended product from the data sheet and insert here. Guide spec language for these products can be found by accessing each product separately through this web site. Be advised that liquid curing compounds are typically not compatible with future penetrating sealer, adhesives or coatings. If such treatments are intended the specifier should insert language for a dissipating resin curing compound such as KUREZ DR VOX, a removable curing compound such as KUREZ RC, or insert language



for proper moisture retaining curing methods meeting ACI 308. Duration of such cure should be minimum 3 days.



SECTION 099713 – STEEL COATING

Part 1 - General

1.01 Summary

A. This specification describes the use of a single component water-based epoxy amine adduct, self-healing, protection solution for reinforcing steel in concrete restoration with at least 99% pullout bond strength as compared to bare bar.

1.02 Quality Assurance

A. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection.

B. Install materials in accordance with all safety and weather conditions required by manufacturer, or as modified by applicable rules and regulations of local, state, and federal authorities having jurisdiction. Consult Safety Data Sheets for complete handling recommendations.

1.03 Delivery, Storage, and Handling

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

1.04 Job Conditions

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature > 40°F (> 4°C) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to handling of the specified coating.

1.05 Submittals

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Safety Data Sheets (SDS).

1.06 Warranty

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.



Part 2 – Products

2.01 Manufacturers

A. **AMP-UP RB**, as manufactured by Autonomic Materials Inc., is considered to conform to the requirements of this specification.

2.02 Materials

A. A single component water-based epoxy amine adduct, self-healing, protection solution for reinforcing steel in concrete restoration shall be **AMP-UP RB**.

2.03 Performance Criteria

A. Properties of wet single component water-based epoxy amine adduct, self-healing, protection solution.

1. Minimum Dry times:

Tack Free: 0.5 - 1 hour

Handle: 2 – 4 hours

Recoat: 1 – 4 hours

Concrete application: 1 hour to 180 days

2. Color: pink

3. Volatile Organic Content (VOC): < 50 g/L

B. Properties of the cured single component water-based epoxy amine adduct, self-healing, protection solution.

1. Pencil Hardness (ASTM D3363)

a 7 day: H

2. Flexibility (ASTM D522)

a. Mandrel Bend: > 40%

3. Impact Resistance (ASTM D2794)

a. Direct: 100 inch-lbs.

4. Taber Abrasion (ASTM D4060)

a. CS10, 1000 g, 1000 cycles: 57mg loss

5. Cross-Hatch (ASTM D3359)



a. 5B

6. Corrosion Performance (ASTM B117)

a. 1000 h exposure: 1.5 mm of creep from scribe

7. Rebar Pullout Adhesion (ASTM D7913)

a. #5 rebar, 28 day concrete cure:

Bare bar: 21,510 lbs.

AMP-UP RB coated: 21,333 lbs.

99% of bar rebar adhesion

Note: Tests above were performed with material and curing conditions at 70-80°F and 50% relative humidity.

Part 3 - Execution

3.01 Mixing and Application

A. Mixing the single component water-based epoxy amine adduct, self-healing, protection solution: Mix thoroughly to redisperse any settle pigments.

B. Placement procedure: 1. Apply to prepared steel surface with a good quality synthetic bristle brush or synthetic nap roller to a thickness of 5.0 to 8.0 mils wet to achieve a dry film thickness of 2.0 to 3.0 mils. Allow minimum of 1 hour before applying repair mortar.

C. Adhere to all limitations and cautions for the single component water-based epoxy amine adduct, environmentally friendly, self-healing, protection solution in the manufacturer's current printed literature.

3.02 Cleaning

A. Use soap and water immediately to any spills or equipment after use.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION



SECTION EARTH RETAINING STRUCTURE | WEEP HOLE COMPONENT REPAIR & INSTALLATION

PART 1 GENERAL

1.01 DESCRIPTION

A. A filter assembly for a earth retaining structure filters the flow of groundwater through a hole in the wall. The filter assembly includes: (a) a housing containing a flat flange and a perforated conical shell, the shell adapted to extend into the hole with its apex extending toward the landward side, the flange having a frontward side adapted to fit flush against the earth retaining structure, the flange having a landward side connected to the shell, the flange having an opening that defines an open base for the shell.

1.02 REFERENCES

A. FHWA-FLH DIVISION 250 SLOPE REINFORCEMENT AND RETAINING WALLS 259.09 Wall Drainage Network. Install drain strips, PVC connector pipes, wall footing drains, and weepholes as shown on the plans. Exclusive of the wall footing drains, install all elements of the drainage network, as appropriate, before shotcreting each lift.

PART 2 MATERIALS

2.01 FLAME RETARDENT POLYCARBONATE/ ACRYLONITRILE- BUTADIENE-STYRENE

A. Filter cartridges are U/V protected.

2.02 ASTM

A. ASTM A-36 Hot Rolled Steel or 316 Stainless Steel. Corrosion Resistance

2.03 FILTER MEDIA

A. Media Properties

1) Mirafi® FW300 geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mirafi® FW300 geotextile is composed of high-tenacity monofilament polypropylene yarns, which are woven into a stable network such that the yarns retain their relative position.

Wide Width Tensile Strength	ASTM D4595	lbs/in (kN/m)	230 (40.3)	225 (39.4)
Grab Tensile Strength	ASTM D4632	lbs (N)	400 (1780.0)	335 (1491)
Grab Tensile Elongation	ASTM D4632	%	20	15
Trapezoid Tear Strength	ASTM D4533	lbs (N)	145 (645)	125(556)

CBR Puncture Strength	ASTM D6241	lbs (N)	1250 (5563)
Apparent Opening Size (AOS) ¹	ASTM D4751	U.S. Sieve (mm)	30 (0.60)
Percent Open Area	COE-02215	%	8
Permittivity	ASTM D4491	sec-1	1.5
Permeability	ASTM D4491	cm/sec	0.13
Flow Rate	ASTM D4491	(gal/min/ft ²)	115
		l/min/m ²	(4685)
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	90

PART 3 EXECUTION

3.01 SUBMITTALS

- A. The product data is to be submitted in accordance with the provisions of the General Conditions.

3.02 GENERAL

- A. Core drilling weep holes through existing or new earth retaining structures that meets the specifications required.
- B. Step 1. Core a 4 or 6 inch diameter hole in the earth retaining structure every 4 to 6 feet slightly above the mean high water line or lowest elevation.
- C. Step 2. Insert weep hole assembly into the drilled hole on wall.
- D. Step 3. Pre-drill the mounting holes by using a 1/4" bit. Attach with tap-Flex screws (Included) through the filter plate holes into the earth retaining structure or before welding grind to remove surface coating for a good weld or anchor mount.

Note: Be sure to epoxy/seal around the housing for any possible openings of the core.

- E. Product Warranty; Merchantability Warranty.
 - 1) Supplier warrants to Buyer that the Products shall, at the time of delivery to buyer in accordance with the Specifications, therefore, be free from material defects; and (iii) be manufactured in accordance with good manufacturing practice and Applicable Law (such warranty being referred to as the "Product Warranty"). (b) EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, NO WARRANTIES, OTHER THAN THE PRODUCT WARRANTY, ARE EXPRESSED OR IMPLIED IN RESPECT OF THE PRODUCTS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



3.03 EQUIPMENT

- A. Equipment and tools necessary for handling materials and performing all parts of the Work are to be approved by the Commissioner as to design, capacity, and mechanical condition. The equipment is to be at the job site before the start of construction operations for examination and approval.
- B. At least two weeks prior to equipment for repair of weep hole as recommended by the product manufacturer and must be in good working order.

PART 4 METHOD OF MEASUREMENT

4.01 MEASUREMENT

- A. Earth retaining structures weep holes will be measured separately but will be included in pay item “weep holes”.

PART 5 BASIS OF PAYMENT

5.01 PAYMENT

- A. Weep holes will be paid for each “weep holes”.

END OF SECTION