



AIA® Document A105® – 2017

Standard Short Form of Agreement Between Owner and Contractor

(Paragraph deleted)

12/29/2023

AGREEMENT made as of the _____ day of _____ in the year 2023

BETWEEN the Owner:

Carlton House Management Association, Inc.
2701 South Blvd.
Highland Beach, FL 33487

and the Contractor:

Promar Building Services, LLC
5383 Sandhurst Circle North
Lake Worth, FL 33463
(License CGC 060027)

for the following Project:

Carlton House Condominiums
Exterior Wall Repairs

The Engineer:

O&S Associates
2500 Hollywood Blvd, Suite 212
Hollywood, FL 33020

All references in this Agreement to "Architect" or "Engineer" shall mean and refer to the Owner's Engineer, O&S Associates.

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contractor shall complete the Work described in the Contract Documents for the Project. The Contract Documents consist of

- .1 this Agreement signed by the Owner and Contractor;
- .2 EXHIBITS
 - Exhibit 1 - O & S Associates Engineers & Architect Project Manual & Specifications Dated April 17, 2023, Labeled Carlton House Condominium Association Exterior Wall Project (255 Pages)
 - Exhibit 2 - Contractor Bid Proposal for CARLTON HOUSE MANAGEMENT ASSOCIATION, INC. Exterior Wall Repair (2 Pages)
 - Exhibit 3 - Application and Certification for Payment supported by Continuation Sheet (2 pages)
 - Exhibit 4 - Hurricane Preparedness Policy
 - Exhibit 5 - Insurance by Contractor (2 pages)

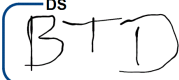
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Exhibit 6 - Contractor Warranty Form (2 pages)

(Table deleted)

(Table deleted)

(Paragraphs deleted)

In the event of any conflict or ambiguity between this AIA Document A105–2017 Agreement, and any other documents or Contract Documents, this AIA-A105-2017 Agreement shall control and supersede any such other documentation; however, any written changes or addenda executed by both parties after the date of this Agreement shall have priority.

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The Contract Time is the number of calendar days available to the Contractor to substantially complete the Work.

§ 2.2 Date of Commencement:

Unless otherwise set forth below, the date of commencement shall be the date of this Agreement.

(Paragraph deleted)

The commencement date for the Work shall occur within ten (10) days from the date that all permits have been issued, time being of the essence ("Date of Commencement"). The Contractor shall expedite the application for and obtain all permits for the Work.

§ 2.3 Substantial Completion:

Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion, as defined in Section 12.5, of the entire Work:

[X] Not later than Two Hundred and Sixteen (216) calendar days from the date of commencement.

TIME IS OF THE ESSENCE OF THIS CONTRACT. Time is of the essence with respect to all provisions of the Original Estimated Contract that specify a time or an amount of time for performance. Due to the difficulty in determining damages for failure to timely achieve Substantial Completion, all parties agree that the failure of Contractor to timely achieve Substantial Completion, shall subject Contractor to liquidated damages for each day the work remains incomplete (Substantial Completion not achieved) at the daily rate of Two Hundred Fifty (\$250.00) Dollars, which amounts may be withheld and deducted by Owner from any amounts otherwise due to Contractor.

ARTICLE 3 CONTRACT SUM

§ 3.1 The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work. Subject to additions and deductions in accordance with Article 10, the Contract Sum is:
Eight Hundred Ninety-Seven Thousand Six Hundred Ninety-Five and no/100 Dollars (\$897,695.00)

§ 3.2

(Paragraphs deleted)

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(Table deleted)

§ 3.3 The Contract Sum is based upon the following alternates, (not included in completion time) if any, which are described in the Contract Documents and hereby accepted by the Owner:

See Exhibit 2 - Contractor Bid Proposal

§ 3.4 Allowances, if any, included in the Contract Sum are as follows:

(Paragraph deleted)

Item

See Exhibit 2 - Contractor Bid Proposal

§ 3.5 Unit prices, if any, are as follows:

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See Exhibit 2 - Contractor Bid Proposal

ARTICLE 4 PAYMENTS

§ 4.1 Based on Contractor’s Applications for Payment certified by the Engineer, the Owner shall pay the Contractor, in accordance with Article 12, as follows:

Applications for Payment will be submitted no more than one (1) time per month (unless approved by Owner) based on a Quantity of completion basis in accordance with the schedule of values.

Payment applications will be reviewed by the Engineer within five (5) days. If errors are found in an Application for Payment by the Engineer, Engineer shall be afforded an additional five (5) days to review any revised Application for Payment, as well as an additional five (5) days for any subsequent review thereafter.

Upon approval of an Application for Payment by the Engineer, Owner shall issue payment to Contractor no later than Five (5) days after the approved and certified Application for Payment is received by the Owner. If payment is made by ACH Transfer, Wire Transfer, or Certified Check Owner shall issue payment o Contractor no later than Ten (10) days after the approved and certified Application for Payment is received by the Owner.

A Ten Percent (10%) retainage amount shall be deducted from each partial payment, if any, required pursuant to this Contract. Retainage will not be deducted for Mobilization, General Conditions, Permit related Fees, Overhead Protection, Demobilization, Bond. Retainer will not exceed Ten Percent (10%) or the Original Contract Amount less Mobilization, General Conditions, Permit related Fees, Overhead Protection, Demobilization, Bond .The total retainage amount shall be paid to Contractor only upon Contractor’s completion of all punch-list items at the conclusion of the entire project as determined in the sole discretion of the Owner and its Engineer, and in no event prior to the Owner’s receipt of all warranties, all approvals of all permits and final inspections required by governmental agencies, and a Contractor’s Final Affidavit and Final Release of Lien (from Contractor and its subcontractors, laborers, materialmen and suppliers), indicating that Contractor and all subcontractors, laborers, materialmen and suppliers who worked for Contractor under the Contract have been paid in full.

§ 4.2 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.
Eighteen Percent (18%) but will not exceed State of Florida Statute.

§ 4.3 Each Application for Payment shall be accompanied by a Progress Payment Affidavit, Partial Release of Lien, or, if completion is final, a Contractor’s Final Affidavit and Final Release of Lien, from Contractor and each subcontractor, materialmen, laborer and supplier working on the Project, and any other forms as may be required by the Contract Documents, indicating that Contractor and all subcontractors, laborers, materialmen and suppliers who worked for Contractor under the Contract have been paid in full for the work completed up through the date of the previous most recent Application for Payment. All subcontractor lien releases shall include a statement as to all unresolved issues or claims.

If defective work is not remedied by Contractor, or Contractor fails to make payments to subcontractors, laborers, materialmen or suppliers, Owner shall have the option, but not obligation, after seven (7) business days’ written notice to Contractor, and without prejudice to any other remedy it may have, to provide for the work to be completed by another contractor, to make payment to subcontractors, laborers, materialmen or suppliers, and to terminate this Contract. If the expenses of finishing the work hereunder shall exceed the contract’s price, Contractor shall be liable to Owner for such amounts, in addition to all other remedies available to Owner.

ARTICLE 5 INSURANCE AND BONDS

§ 5.1 The Contractor shall maintain the following types and limits of insurance until the expiration of the period for correction of Work as set forth in Section 14.2, subject to the terms and conditions set forth in this Section 5:

The Contractor shall procure and maintain the insurance cited in this Article 5 for the duration of this Agreement which insurance shall be placed with insurance companies authorized to do business in the State of Florida and rated A minus VII or better by the current edition of A.M. Best’s Key Rating Guide or as otherwise approved by Owner.

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Contractor's insurance coverage is Primary and Non-Contributory to any insurance of the Owner.

(Paragraphs deleted)

§ 5.1.1 COMPREHENSIVE GENERAL LIABILITY.

Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than \$1,000,000.00 each occurrence, \$2,000,000.00 general aggregate, and \$2,000,000.00 aggregate for products-completed operations hazard, providing coverage for claims including See Exhibit 5A

§ 5.1.2 AUTOMOBILE LIABILITY. Automobile Liability Insurance Policy covering vehicles owned, and non-owned vehicles used, by the Contractor written with limits of not less than \$1,000,000.00 combined single limit per occurrence for bodily injury and property damage. See Exhibit 5A

§ 5.1.3 UMBRELLA/EXCESS LIABILITY. Umbrella/Excess Liability insurance with limits of not less than \$1,000,000.00 for each occurrence of bodily injury and/or property damage and/or automobile liability. See Exhibit 5A

§ 5.1.4 WORKERS' COMPENSATION. Workers' Compensation coverage (including Employer's Liability coverage) with a policy limit of not less than \$1,000,000.00, including but not limited to, statutory benefits and limits which shall fully comply with all State and Federal requirements. See Exhibit 5B

§ 5.2 INSURANCE REQUIREMENTS OF SUBCONTRACTORS, LABORERS, MATERIALMEN, AND SUPPLIERS. Contractor agrees to require its subcontractors, laborers, materialmen, and suppliers who worked for Contractor under the Contract to comply with the insurance provisions required of Contractor pursuant to this Agreement. Contractor agrees that it will contractually obligate its subcontractors, laborers, materialmen, and suppliers to advise Contractor promptly of any changes or lapses of the requisite insurance coverages and Contractor agrees to promptly advise Owner of any such notices Contractor receives from its subcontractors, laborers, materialmen, and suppliers. Contractor agrees that it will contractually obligate its subcontractors, laborers, materialmen, and suppliers to indemnify and hold harmless Owner to the same extent that Contractor is required to do so as provided in this Agreement. Contractor assumes all responsibility for monitoring its subcontractors', laborers', materialmen and suppliers' contracts and insurance certificates for compliance with the insurance and other provisions of this Agreement until final completion of the Project.

§ 5.3 ADDITIONAL INSURANCE REQUIREMENTS. Contractor shall not make changes in or allow the required insurance coverages to lapse without Owner's prior written approval thereto. All policies for insurance must be endorsed to contain a provision giving Owner a thirty (30) day prior written notice by certified mail of any cancellation of that policy or material change in coverage. Should a notice of cancellation be issued for non-payment of premiums or any part thereof, or should Contractor fail to provide and maintain certificates as set forth herein, Owner shall have the right, but shall not the obligation, to pay such premium to the insurance company or to obtain such coverage and to deduct such payment from any sums that may be due or become due to Contractor, or to seek reimbursement for said payments from Contractor. Any sums paid by Owner shall be due and payable immediately by Contractor upon notice from Owner. Receipt and review by Owner of any copies of insurance policies or insurance certificates shall not relieve Contractor of his obligation to comply with the insurance provisions of this Agreement. The insurance provisions of this Agreement shall not be construed as a limitation on Contractor's responsibilities and liabilities pursuant to the terms and conditions of this Agreement.

(Paragraphs deleted)

(Table deleted)

§ 5.4 WAIVER OF SUBROGATION. Contractor waives all rights against the Owner, and its agents and employees, for damages caused by injury to persons or property or other causes of loss to the extent covered by such insurance obtained pursuant to Section 5 herein. This waiver of subrogation rights includes insured losses as well as losses within the Contractor's deductible or self-insured retention, if any. The Contractor shall require of the subcontractors, sub-subcontractors, agents, and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of the Owner, its agents, and employees. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Agreement shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even

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though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 5.5 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property as determined in the sole discretion of the Owner.

§ 5.6 The Contractor shall obtain an endorsement to its Commercial General Liability, Umbrella/Excess Liability, and Automobile Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12. See Exhibit 5A

§ 5.7 Prior to commencement of the Work, each party shall provide certificates of insurance showing their respective coverages. See Exhibit 5A & 5B of this Contract.

§ 5.8 PERFORMANCE AND PAYMENT BONDS. Contractor shall furnish the Owner with a performance bond and an payment bond issued on forms AIA Document A-312-2010, unmodified, the cost of same which shall be invoiced to Owner at a rate not to exceed **Three percent (3%)** of the Contract Sum, as adjusted, with a Penal Sum in the amount of the Contract Sum, covering the full faithful performance of the Contract and full payment of all obligations arising under the Contract. The payment bond shall be issued in accordance with Section 713.23, Florida Statutes. **A "conditional payment bond" as provided by Section 713.245, Florida Statutes, shall not be acceptable to the Owner.**

Such performance and payment bonds shall be obtained by Contractor and provided to Owner, prior to the commencement of any work under the Contract by Contractor. If the Contract exceeds the original contract amount additional bond fee will be charged. Contractor will need from the Owner the following; Most recent financial statement, letter stating the name of the Contractor and Engineer hired, means of funding the Project (ex. Reserves) if the project is being funded by Special Assessment Owner will have to submit Special Assessment Terms. If the Owner is getting a loan to fund the Project, the Bonding Company will not issue bond until the Loan is closed.

§ 5.9 In the event Contractor fails to provide such insurance and performance and payment bonds to Owner as required by this Article 5 within Twenty (20) days from date required information from Owner is received., then in such event, Owner shall have the right to terminate this Agreement for cause and without any liability to Contractor. Contractor shall not commence any Work as contemplated by this Agreement until such time that Contractor has provided Owner with all insurance and performance and payment bonds as required by this Article 5.

ARTICLE 6 GENERAL PROVISIONS

§ 6.1 The Contract

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

§ 6.2 The Work

The term "Work" means the construction and services required by the Contract Documents, and includes all other labor, materials, equipment, and services provided, or to be provided, by the Contractor to fulfill the Contractor's obligations.

The Work to be performed under this Contract includes all transportation, storage, equipment, supplies, labor and materials, plans, drawings and specifications, necessary for a complete and functional installation of the Work, and the Work shall comply with all manufacturer specifications, applicable codes, ordinances, and inspection requirements. All Work performed by Contractor or by others to make this Contractor's Work comply with the same, or interpretations thereof, shall be performed at no additional cost to the Owner. The Work shall also include all labor, materials, and everything required or claimed by Contractor's materialmen, suppliers, or laborers to complete the work in accordance with the drawings and specifications. The Contractor will be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract.

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§ 6.3 Intent

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

§ 6.4 Ownership and Use of Engineer's Drawings, Specifications and Other Documents

Documents prepared by the Engineer are instruments of the Engineer's service for use solely with respect to this Project. The Engineer shall retain all common law, statutory, and other reserved rights, including copyright. The Contractor, subcontractors, sub-subcontractors, and suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Engineer.

§ 6.5 Notice

Written notice under this Agreement may be given by one party to the other by email as set forth below.

(Insert requirements for delivering written notice by email such as name, title, and email address of the recipient, and whether and how the system will be required to generate a read receipt for the transmission.)

All written Notices sent pursuant to this Agreement shall be sent via U.S. certified mail, return receipt requested to the addresses indicated on the first page of this Agreement.

ARTICLE 7 OWNER**§ 7.1 Information and Services Required of the Owner**

§ 7.1.1 If requested by the Contractor, the Owner shall furnish all necessary surveys and a legal description of the site.

§ 7.1.2 Except for permits and fees under Section 8.7.1 that are the responsibility of the Contractor, the Owner shall obtain and pay for other necessary approvals, easements, assessments, and charges.

§ 7.1.3 If the Contractor becomes aware of any deviations between existing conditions and the Contract Documents, the Contractor shall promptly notify the Engineer in writing.

§ 7.2 Owner's Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the Contract Documents, the Owner may direct the Contractor in writing to stop the Work until the correction is made.

§ 7.3 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, correct such deficiencies. In such case, the Engineer may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correction, provided the actions of the Owner and amounts charged to the Contractor were approved by the Engineer.

(Paragraphs deleted)

ARTICLE 8 CONTRACTOR**§ 8.1 Review of Contract Documents and Field Conditions by Contractor**

§ 8.1.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the Engineer.

§ 8.1.3 The Contractor shall not be liable for damages which are pre-existing as of the date of commencement of this Agreement; however, negligent damage to a building component or real property which could arguably have been caused in connection with the Work shall be deemed not to be pre-existing unless the damage is specifically listed in

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an inventory, signed by both the Contractor and the Owner, to be pre-existing. To this end, the Contractor and Owner shall meet prior to commencement of the Work to complete an inventory of pre-existing damages. If a pre-existing condition is worsened during the course of Work due to Contractor negligence, and such additional damage is caused in connection with the Work, then the Contractor is responsible for the additional damages caused.

§ 8.2 Contractor's Construction Schedule

The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Engineer's information a Contractor's construction schedule for the Work and a schedule of values allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Engineer. This schedule, unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Engineer and supported by such data to substantiate its accuracy as the Engineer may require, and unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 8.3 Supervision and Construction Procedures

§ 8.3.1 The Contractor shall supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work.

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the Engineer, the names of subcontractors or suppliers for each portion of the Work. Owner shall have an opportunity to object to use of certain subcontractors or suppliers as determined in the reasonable discretion of the Owner. In the event of any such objection, Contractor shall use and advise Owner of an alternative subcontractor or supplier agreed to by the Owner. The Contractor shall not contract with any subcontractor or supplier to whom the Owner or Engineer has made a timely and reasonable objection. No Subcontractor shall be employed by Contractor unless it holds current State of Florida and County contractor's license as applicable and required by law, and (if required) a city occupational license. The Contractor represents and warrants to Owner that all Subcontractors are duly licensed in their particular trade or specialty to perform the task for which contracted.

§ 8.3.3 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. The Contractor shall promptly remedy negligent damage and loss to all real and personal property caused in whole or in part by the Contractor negligence, a subcontractor, a sub-subcontractor, or anyone directly or indirectly employed or retained by any of them, and by anyone for whose acts Contractor may be liable. This provision shall survive any termination of this contract.

§ 8.4 Labor and Materials

§ 8.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

§ 8.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Contractor shall ensure that there is at least one English speaking foreman, superintendent or other supervisor present during performance of the work. Owner reserves the right to require Contractor to remove any person working for Contractor or its subcontractors who cause a disturbance or nuisance in Owner's community, as determined in Owner's sole discretion. Contractor and subs must conform to all Owner rules and regulations for contractors which will be provided to Contractor by Owner.

§ 8.5 Warranty

The Contractor warrants to the Owner and Engineer for a period of **Five (5) years** for materials, parts and labor from the date of completion of the Work, that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; (3) the Work will conform to the requirements of the Contract Documents; and (4) will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit, and will be fit for the purposes intended. Work, materials, or equipment not conforming

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to these requirements may be considered defective. Contractor hereby agrees that during the warranty period of time, any flaws or deficiencies in either work or material shall be corrected and/or replaced and restored to first class working order by Contractor at no cost to the Owner. In the event of Contractor's refusal to so restore same as aforesaid, Owner may perform such repair or replacement work, and/or secure additional material after five (5) days' notice to Contractor and Contractor shall reimburse Owner for such sum.

In addition, Contractor shall assign all manufacturer warranties in writing to Owner. Contractor shall strictly comply with all manufacturers' directions and specifications for installation or application of all products and materials which are part of the Work and shall take no action which might void or limit such warranties. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

§ 8.6 Taxes

The Contractor shall pay sales, consumer, use, and similar taxes that are legally required when the Contract is executed.

§ 8.7 Permits, Fees and Notices

§ 8.7.1 The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work. Permit Related Fees and Notice of Commencement Filing Fees will be charged to Owner at actual cost.

§ 8.7.2 The Contractor shall comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Engineer in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

§ 8.8 Submittals

The Contractor shall promptly review, approve in writing, and submit to the Engineer shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents.

§ 8.9 Use of Site

§ 8.9.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.

§ 8.10 Cutting and Patching

The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

§ 8.11 Cleaning Up

The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials. Contractor shall provide a dumpster (FOR CONTRACTOR USE ONLY) at Contractor's expense and all debris shall be removed from the Owner's property/project daily.

If after three (3) business days' notice by Owner's representative to Contractor's representative at the site of the work Contractor has not diligently proceeded with the clean-up as outlined in this paragraph, then the Owner has the right to proceed with the clean-up at Contractor's costs and expense and may deduct such amounts from any monies that may be due to Contractor.

Free, clear and unobstructed egress and ingress with respect to the Owner's property shall be maintained by the Contractor.

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§ 8.12 Indemnification

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to (1) all employees performing the Work and other persons who may be affected thereby, (2) all the Work and all materials and equipment to be incorporated therein, and (3) other property at the site or adjacent thereto including areas affecting property owned by unit owners. Contractor shall post all notices and comply with all applicable laws, ordinances, rules, regulations, and orders of any public authority bearing on the safety of persons and property and their protection from damage, injury, or loss. To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the Association, Engineer, its respective agents, property managers, and employees and if applicable, its Lender and unit owners from and against all claims, damages, losses, and expenses, including but not limited to attorneys' fees and costs caused by Contractor or anyone working under or at the direction of the Contractor. In addition, this indemnification, hold harmless and duty to defend obligation will apply to all acts, conduct, omissions and negligence of the Contractor with respect to any such claim, damage, loss or expense (1) that is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, and (2) that is caused in whole or in part by the negligent act and/or omission of the Contractor, any subcontractor, any sub-subcontractor, any material or equipment supplier, anyone directly or indirectly employed by any of them. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph. In any and all claims against the Association, or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. The foregoing indemnity from Contractor shall be applicable to all losses, damages, expenses or claims for damage or injury to any person or property, negligence, recklessness misconduct of Contractor, and persons employed or utilized by Contractor relating to the performance of Work as described in this Contract. This indemnification provision is incorporated by reference into the Contract Documents. This indemnification shall not apply, however, to claims arising out of, or damages resulting from, the negligent acts and omissions, gross negligence, or willful, wanton, or intentional misconduct of the Association, its unit owners, or its officers, directors, agents, employees, or other contractors contracted directly by the Association or their subcontractors. The Contractor shall not be responsible for labor or materials furnished by anyone working under separate contract to or under the direction of the Association or for any loss or additional Work that result from any persons working directly for the Association, all of which shall be the sole responsibility of the Association. The Contractor shall promptly remedy all damage or loss to any property negligently caused by the Contractor, any subcontractor, any sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The foregoing obligations of the Contractor are in addition to his other obligations under this Contract. Pursuant to Section 725.06, Florida Statutes, the specific amount of indemnification provided by Contractor to Association herein is \$2,000,000.00 per occurrence. Contractor agrees that such monetary limitation on the indemnification provided herein bears a reasonable commercial relationship to the Contract and is hereby part of the Project specifications. This provision shall survive the termination or expiration of this Contract.

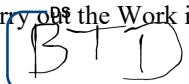
ARTICLE 9 ENGINEER

§ 9.1 The Engineer will provide administration of the Contract as described in the Contract Documents. The Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

All references in this Agreement to "Architect" or "Engineer" shall mean and refer to the Owner's Engineer, O&S Associates.

§ 9.2 The Engineer will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Engineer will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Engineer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.





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§ 9.4 Based on the Engineer's observations and evaluations of the Contractor's Applications for Payment, the Engineer will review and certify the amounts due the Contractor.

§ 9.5 The Engineer has authority to reject Work that does not conform to the Contract Documents.

§ 9.6 The Engineer will promptly review and approve or take appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 9.7 On written request from either the Owner or Contractor, the Engineer will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents.

§ 9.8 Interpretations and decisions of the Engineer will be consistent with the intent of, and reasonably inferable from the Contract Documents, and will be in writing or in the form of drawings. When making such interpretations and decisions, the Engineer will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 9.9 The Engineer's duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and Engineer. Consent shall not be unreasonably withheld.

ARTICLE 10 CHANGES IN THE WORK

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum and Contract Time shall be adjusted accordingly, in writing.

§ 10.1.1 CHANGE ORDERS

No additional Work that is outside the scope of the Work contemplated by Exhibit "I" will be authorized except by a written change order properly executed by the Association, Contractor and Engineer which shall include any change in the Contract Sum and/or Contract Time. All change order work, that is not within the scope of this Contract and is not addressed by unit prices, will be billed at an hourly rate of \$75.00 per hour which is inclusive of small compressors, electric hammers, grinders, drills, vacuums, and other small tools as necessary to perform the work plus the actual cost of material and equipment rental plus 20% of that actual cost (material and equipment rental) which is inclusive of all overhead, profit and administrative cost and fees. Contractor will be required to submit with each change order all supporting documentation that the Association may reasonably require. Contractor shall have no claim for the cost of additional Work or for an extension of time (including, without limitation, claims for impact damages or to costs due to delay) unless such work and the cost and expenses thereof or time is stated on the face of a written change order and approved and accepted by Association and Engineer by written change order, which such approval shall not be unreasonably delayed or withheld. Any attempted reservation by Contractor of the right to subsequently claim any amount or extension of time not stated on the face of a written change order approved and accepted by Association shall be null and void. All change orders issued under this Contract shall be subject to all the terms of this Contract.

A reduction in the Work or quantities required pursuant to the Contract Documents shall only be authorized by a written change order properly executed by the Association, Contractor, and Engineer or by a written construction change directive executed by the Association and the Engineer, both of which shall include any change in the Contract Sum and/or Contract Time.

In the event Contractor fails to obtain such fully executed Change Order prior to commencing such changes in the Work, Owner shall not be liable to Contractor for any additions to the Contract Sum, costs, expenses, or additional Contract Time associated with such changes in the Work and Contractor shall pay all costs and expenses associated with the unapproved changes in the Work.

§ 10.2 The Engineer may authorize or order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such authorization or order shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall proceed with such minor changes promptly.

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§ 10.3 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to equitable adjustment.

ARTICLE 11 TIME

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 **FORCE MAJEURE.** Where a party to this Agreement fails or is prevented from timely performing one or more of its contractual duties or receiving the benefits of this Agreement, the provisions of this clause will follow if and only to the extent that that party proves:

- the event must be beyond the reasonable control of the applicable party;
- the applicable party must have been prevented from performing its contractual duties or receiving the benefits of this Agreement;
- the applicable party must have taken all reasonable steps to avoid its non-performance or inability to receive the benefits and have satisfied its duty to mitigate damages as a result thereof; and
- timely written notice must have been given to the other party to this Agreement in accordance herein and the Notice requirements contained in this Agreement.

This provision shall apply in the case of the occurrence of one or more of the following impediments: war (whether declared or not), armed conflict or the serious threat of the same (including but not limited to hostile attack, blockade, military embargo), hostilities, invasion, act of a foreign enemy, extensive military mobilization; civil war, riot, rebellion, revolution, military or usurped power, insurrection, civil commotion or disorder, mob violence, act of civil disobedience; act of terrorism, sabotage or piracy; plague, epidemic, pandemic, outbreaks of infectious disease or any other public health crisis, including quarantine or other employee restrictions; act of authority whether lawful or unlawful, compliance with any law or governmental order, rule, regulation or direction, curfew restriction, expropriation, compulsory acquisition, seizure of works, requisition, nationalization; act of God or natural disaster such as but not limited to violent storm, cyclone, typhoon, hurricane, tornado, blizzard, earthquake, volcanic activity, landslide, tidal wave, tsunami, flood, damage or destruction by lightning, drought; explosion, fire, destruction of machines, equipment, factories and of any kind of installation, prolonged break-down of transport, telecommunication or electric current; general labor disturbance such as but not limited to boycott, strike and lock-out, go-slow, occupation of factories and premises; shortage or inability to obtain critical material or supplies to the extent not subject to the reasonable control of the subject party ("Force Majeure Event"). Increases in the cost of materials or supplies for the Project shall not be deemed a Force Majeure Event and such increases, if any, shall not affect the Contract Sum as stated in this Agreement.

This provision shall become effective only if the party to this Agreement failing or prevented from timely performing its duties or receiving the benefits of this Agreement, notifies the other party in writing within a reasonable time (not in excess of five (5) calendar days after the first occurrence of the Force Majeure Event) of the extent and nature of the Force Majeure Event.

In the event of a Force Majeure Event, the affected party shall negotiate with the other party as to additional contract time for performance or other circumstances necessary to perform its contractual duties or receive the benefits of this Agreement which have been affected by the Force Majeure Event.

In the event a mutual agreement cannot be reached by both of the parties as to such additional contract time or other circumstances, either party may terminate this Agreement without cause upon Thirty (30) days' written notice. In the event of any such termination Contractor shall only be entitled to payment for the Work fully completed on the Project up through the date of termination. In no event shall Contractor be entitled to receive termination expenses, overhead or lost profit or any other incidental or consequential damages.

§ 11.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the responsible party.

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ARTICLE 12 PAYMENTS AND COMPLETION**§ 12.1 Contract Sum**

The Contract Sum stated in this Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 12.2 Applications for Payment

The Association shall not be liable for any cost increases associated with labor and material that arise during the Project. The Contractor assumes all risks and responsibilities for performing all Work within the parameters of the Contract Sum, subject to written change orders and construction change directives issued in accordance with this Contract. The parties acknowledge that the total Contract Sum may be more or less than the Contract Sum referenced in this Contract depending on the quantity of Work performed by the Contractor. If additional or fewer unit quantities are required to complete the Unit Priced Items of Work (as described in Exhibit "2"), the Contract Sum will be adjusted upward or downward based upon the unit prices set forth in Exhibit "2." Further, the Association may direct Contractor to not perform certain Work or perform fewer quantities than required under Exhibit "2," at which point the Contract Sum will be adjusted downward based upon the unit prices set forth in Exhibit "2." Work deleted or added from the unit price quantities specified in Exhibit "2" will result in a dollar-for-dollar change to the Contract Sum as reflected in a written change order executed in accordance with this Contract. Contractor acknowledges and agrees that payment will only be due for actual quantities of Work performed by Contractor. Contractor acknowledges and agrees that it will have no claims as to the Association if the quantity of unit price items of Work performed is less than the quantity of the Work specified by the Contract Documents. The Contract Sum is inclusive of all costs and expenses associated with the Work including taxes, as well as the cost to haul debris away from all areas of the Project. The scrap value of components removed during the performance of the Work will belong to the Contractor. Permit fees are not included in the Contract Sum, but upon issuance will be charged at actual cost to the Association without mark-up for overhead, profit, or any other administrative fee or expense. To the extent that additional work outside the scope of the Contract is requested to be performed by the Association (hereinafter "Additional Work"), such Additional Work shall first be authorized by a properly executed change order and the value of the change order work calculated in accordance with Paragraph 15 of this Contract. Contractor shall be entitled to a reasonable extension of time to complete all Additional Work to the extent that a) additional unit quantities performed exceed the original estimated quantities set forth in Exhibit "2"; b) for Additional Work outside the original scope of the Contract Documents performed at the direction of the Engineer pursuant to a properly executed written change order or a written construction change directive executed by the Engineer with approval of the Association in accordance with this Contract. The Contractor's request for additional days based on said additional unit quantities must specify in writing, the additional quantities provided and a proportionate amount of additional time necessary to perform the additional quantities based on the value of the original estimated unit quantities and approved as determined by the Engineer.

The Association will pay Contractor a portion of the Contract Sum, including mobilization fee plus the cost related to permits and the cost of Payment and Performance Bond on the first Application for Payment as confirmed by the Engineer. The balance of the Contract Sum will be paid based upon the progress of the Work performed by Contractor and approved by the Engineer. The Contractor shall submit its Applications for Payment at thirty (30) day intervals but not more frequently than once every month, unless at the sole option of the Association approves an interim Application for Payment. The form of such payment requests shall be a notarized "Application and Certification for Payment" supported "Continuation Sheet," or equivalent form which shall be approved by Engineer which will also be used as a Schedule of Values in the form labeled and included in the attached documents to this Contract as Exhibit "3" showing all items of Work to be completed by Contractor and broken down by that portion of the Contract Sum completed with each Application for Payment. In addition, as a condition precedent to payment, Contractor shall deliver to Engineer an updated Project Schedule to reflect any changes to the schedule, with each Application for Payment. Any reasonable objections to Work performed shall be given, in writing, to Contractor within five (5) days from the receipt of the Application for Payment by the Engineer and, if no objections are made, then the Application shall be deemed approved, and payment shall be tendered to Contractor (by Bank Wire or Certified check) within ten (10) days of receipt of written notice to the Association from the Engineer that the payment request has been approved. But payment will be due no later than 15 days from submission to the Engineer. The Association will timely pay Contractor all undisputed amounts due under a given Application for Payment as provided in this paragraph and will only withhold those disputed amounts as authorized by this Contract. The Association will withhold a ten (10%) percent retainage from all payments made to Contractor (retainage will not be held on Mobilization, Permit Fees, Payment & Performance Bond, General Conditions, Overhead Protection or Demobilization). Total Retainage will not exceed ten (10) percent of the original Contract Sum less Mobilization,

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General Conditions, Permit Fees, Payment & Performance Bond, Overhead Protection and Demobilization in order to secure completion of all Punch List items of Work and other obligations pursuant to the Contract for the Work. Retainage shall be paid to Contractor within ten (10) days from the date that Contractor achieves Final Completion as described in this Contract and all conditions precedent as described in Paragraph 4(h) below have been satisfied. With respect to this Paragraph, the Association shall be entitled to withhold portions of the retainage from payment to the Contractor based upon Contractor's failure to comply with its material obligations under this Contract.

Contractor shall notify the Association when the Work is Substantially Complete. At that time, the Engineer will perform an inspection of the Work and if appropriate, will issue a Certificate of Substantial Completion and prepare a written Punch List for the Work and furnish it to Contractor within ten (10) days. Engineer shall issue one comprehensive Punch List of items for Contractor to perform to achieve Final Completion; any items not included in the comprehensive Punch List shall be considered warranty repairs. All Punch List items of Work shall be promptly completed in a good and workmanlike manner in accordance with this Contract within thirty (30) days from delivery of the Punch List to the Contractor.

(Paragraphs deleted)

§ 12.2.3 The Contractor shall use the AIA G702 & G703 for Applications for Payment or similar (see Exhibit 3).

§ 12.3 Certificates for Payment

The Engineer will, within Five days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; (2) issue to the Owner a Certificate for Payment for such amount as the Engineer determines is properly due, and notify the Contractor and Owner in writing of the Engineer's reasons for withholding certification in part; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Engineer's reason for withholding certification in whole. If certification or notification is not made within such five-day period, the Contractor may, upon seven additional days' written notice to the Owner and Engineer, stop the Work until payment of the amount owing has been received. The Contract Time and the Contract Sum shall be equitably adjusted due to the delay.

Certificates for Payment shall only be approved by Engineer upon Engineer's and Owner's receipt of a Progress Payment Affidavit, Partial Release of Lien from the Contractor and all subcontractors, materialmen, laborers and suppliers working on the project, or, if completion is final, a Contractor's Final Affidavit and Final Release of Lien, from Contractor and each subcontractor, materialmen, laborer and supplier working on the Project, and any other forms as may be required by the Contract Documents, indicating that Contractor and all subcontractors, laborers, materialmen and suppliers who worked for Contractor under the Contract have been paid in full for the work completed up through the date of the previous most recent Application for Payment.

§ 12.4 Progress Payments

§ 12.4.1 After the Engineer has issued a Certificate for Payment, the Owner shall make payment in the manner provided in the Contract Documents.

§ 12.4.2 The Contractor shall promptly pay each subcontractor materialmen, laborer, and supplier, working on the Project in full for the work completed up through the date of each of the Contractor's Applications for Payment.

§ 12.4.3 Neither the Owner nor the Engineer shall have responsibility for payments to a subcontractor or supplier.

§ 12.4.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the requirements of the Contract Documents.

§ 12.5 Substantial Completion

§ 12.5.1 Substantial Completion is the stage in the progress of the Work when all of the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize all of the Work for its intended use.

§ 12.5.2 When the Contractor believes that the Work or designated portion thereof is substantially complete, it will notify the Engineer and the Engineer will make an inspection to determine whether the Work is substantially complete. When the Engineer determines that the Work is substantially complete, the Engineer shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, establish the

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responsibilities of the Owner and Contractor, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 12.6 Final Completion and Final Payment

§ 12.6.1 Upon receipt of a final Application for Payment, the Engineer will inspect the Work. When the Engineer finds the Work acceptable and the Contract fully performed, the Engineer will promptly issue a final Certificate for Payment.

§ 12.6.2 Upon completion of all Work under this Contract and before Final Payment will be issued, Contractor shall satisfy the following conditions precedent to Final Payment along with those specified in Exhibit "I":

- (i) Deliver to the Association all warranties, final certifications, and similar documents as well as to provide documentation to demonstrate that all building department requirements within the reasonable control of the Contractor have been satisfied.
- (ii) Complete all Punch List items of Work.
- (iii) Remove temporary facilities from the site, along with construction tools and similar elements.
- (iv) Complete final clean up including repair, replace or restore any items damaged because of Contractor's failure to exercise due care in the performance of Work.
- (v) Deliver to the Association Final Waivers and Releases of Lien from all subcontractors, and suppliers.
- (vi) Deliver to the Association a Contractor's Final Payment Affidavit in accordance with Section 713.06, Florida Statutes.

Neither the Final Payment nor any provision of the Contract Documents, nor partial or entire use of occupancy of the premises by the Association, shall constitute an acceptance of the Work not performed in accordance with the Contract Documents, or relieve Contractor of liability in respect to any express warranties or responsibilities for any faulty materials or workmanship as described in this Contract.

§ 12.6.3 Acceptance of final payment by the Contractor, a subcontractor or supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy negligent damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

The Contractor shall cordon off areas where Work is being performed and shall adequately post signs in the construction areas.

The Contractor shall arrange the Work to cause minimum disturbance to pedestrian and vehicular traffic and shall be responsible for providing suitable means of access to all public and private properties during all stages of construction. Other than for an emergency safety condition, the Contractor must contact the Owner and Engineer for approval prior to completely blocking off any street or drive area to vehicular traffic during construction.

ARTICLE 14 CORRECTION OF WORK

§ 14.1 The Contractor shall promptly correct Work rejected by the Engineer as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

§ 14.2 In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of one year after Substantial Completion, correct work not conforming to the requirements of the Contract Documents.

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§ 14.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

ARTICLE 15 MISCELLANEOUS PROVISIONS

§ 15.1 Assignment of Contract

Neither party to the Contract shall assign the Contract as a whole without written consent of the other.

§ 15.2 Tests and Inspections

§ 15.2.1 At the appropriate times, the Contractor shall arrange and bear cost of tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 15.2.2 If the Engineer requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear cost of tests, inspections, or approvals that do not become requirements until after the Contract is executed. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require. (ex. Lead and Asbestos Testing)

§ 15.3 Governing Law

The Contract shall be governed by the laws of the State of Florida. All claims or disputes arising from or in any way related this Agreement shall be litigated in a court of law or equity with competent jurisdiction in Palm Beach County, Florida.

§ 15.4 NOTICES, PERMITS, AND APPLICABLE LAWS. Contractor shall give all notices and comply with all local ordinances, requirements of city and county building codes, and of federal and state authorities, which are applicable to the Work. Contractor shall secure all permits at the Owners expense, inspections, fees, licenses and royalties necessary for the execution of the Work to be performed. All Work shall be in compliance with the South Florida Building Code. In addition, in all instances, the Work furnished shall be sufficient to meet or exceed the requirements of the Miami-Dade County and Florida Building Code.

§ 15.5 MATERIALS AND TOOLS. Contractor shall be responsible for the security and welfare of all materials delivered to the jobsite and shall insure and be responsible for same in the event they are damaged due to any casualty, vandalism, or theft, until such time that such materials are installed and incorporated into the work.

In addition, Contractor shall be responsible for the security and welfare of its materials, tools, machinery, and equipment while on Owner's property.

During any tropical storm or hurricane advisory affecting the project area, Contractor shall ensure that the project area and all such materials, tools, equipment and Work shall be secured to avoid potential injury or damage to person or property, at no additional cost or expense to Owner.

§ 15.6 LIENS. With exception of any lien filed by Contractor for non-payment by the Owner, unless such non-payment is otherwise permitted by this Contract, Contractor shall ensure that no construction lien is recorded against the real property pertaining to this Contract, real property owned by the Owner or its members of any portion of the real property, development, or buildings managed by the Owner. If a lien is recorded as a result of, or in any way connected with, the Contract or the work, services or materials provided hereunder, the Contractor agrees that it shall within five (5) days take all steps necessary to release the lien, including, but not limited to, transferring the lien to a surety or cash bond at Contractor's expense. If Owner must pay any monies including attorney's fees to release or satisfy any said lien, then in addition to all other remedies, the Owner may collect those sums from Contractor, plus interest at the maximum rate permitted by law, and deduct such amounts from any payments due under the Contract.

§ 15.7 NOTICES. A duplicate copy of any notice sent to the Owner pursuant to this Contract shall also be sent to the Owner's counsel, via certified mail, return receipt requested, as follows:

Edward S. Hammel, Esquire
Sachs Sax Caplan, P.L.

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6111 Broken Sound Parkway NW, Suite 200
Boca Raton, Florida 33487

§ 15.8 WAIVER. No consent or waiver by Owner or Contractor shall be effective unless it is in writing and then only to the extent specifically stated. Failure on the part of any party to this Agreement to enforce any act or failure to act of the other party or to declare the other party in default hereunder, irrespective of how long such failure continues, shall not constitute a waiver of the rights of such party hereunder.

§ 15.9 ENFORCEMENT. If it becomes necessary to hire an attorney to enforce any provision of the Contract, the prevailing party shall be entitled to recover their costs and attorney's fees incurred prior to suit, as well as in litigation, appeal and any arbitration, bankruptcy or administrative proceedings.

§ 15.10 CONSTRUCTION OF CONTRACT. All parties hereto agree that each has either received, or had the opportunity to obtain, independent legal counsel with respect to this Contract. The parties further agree that this Contract is the joint product of all parties herein and shall not be construed against any individual party as the drafter of this Contract.

§ 15.11 ENTIRE AGREEMENT. The terms and provisions of this Contract represent the entire agreement between the parties. There shall be no change in any of the provisions of the Contract without the prior written approval of all parties.

ARTICLE 16 TERMINATION OF THE CONTRACT

Termination and Suspension:

- a) This Contract may be terminated by Contractor upon not less than ten (10) days written notice should the Association fail, in a material way, to perform in accordance with the terms of this Contract, and after an opportunity to cure provided by Contractor to the Association within the aforementioned ten (10) day period, provided there is no fault on the part of the Contractor. In the event of a termination of the Contract by Contractor as set forth herein, the Association shall only be required to pay Contractor for proper Work performed and approved by the Engineer (if any) through the effective date of termination and no other compensation. To the extent that any compensation is due Contractor pursuant to this provision, the amount due will be set-off for any damages caused by the Contractor to the Association and/or for any amounts for which the Association, under the terms of this Contract, has the right to deduction or to withhold payment.
- b) If the Contractor cannot satisfy the conditions and obligations imposed by the Contract, or if it makes a general assignment for the benefit of its creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails to supply properly skilled Workmen, or proper materials in accordance with the Contract, or if it fails to make prompt payment to subcontractors or for materials or labor, or disregard laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a violation of any provision of the Contract, then the Association, without prejudice to any right or remedy, and after giving the Contractor ten (10) days written notice, may terminate the Contract. In the event that the Association terminates this Contract for cause as set forth herein, the Contractor shall not be entitled to receive any further unearned payment. Contractor's sole and exclusive remedy shall be a claim for payment of the proper Work performed through the effective date of termination that has been or is subject to approval by the Engineer including approved Work performed that was subject to an approved Change Order in accordance with this Contract, and reimbursable expenses that were approved by the Engineer prior to the date of termination. This provision shall in no way limit Association's right to claim any additional damages, including but not limited to delay and consequential damages. To the extent that any compensation is due to the Contractor pursuant to this provision, the amount due will be set off for any damages caused by the Contractor to the Association.
- c) If the Contractor fails to take steps to correct the Work, or any portion thereof, which is not in accordance with the requirements of the Contract Documents or fails to carry out Work or provide information in accordance with the Contract Documents, and the Contractor, after receipt of written

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notice from the Association, either (i) has not cured such failure within ten (10) days or (ii) if the nature of the failure is such that it is not capable of cure within ten (10) days, has not taken steps to cure such failure within such ten (10) day period, then the Association, by written order signed by the Association or by an agent specifically so empowered by the Association in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated or the Contractor has provided the Association with a plan for corrective action acceptable to the Association in its reasonable judgment. The right of the Association to stop the Work shall not, however, give rise to a duty on the part of the Association to exercise this right for the benefit of the Contractor or any other person or entity.

- d) If the Work is suspended at the Association's request or direction through no fault of the Contractor, the Contractor will be compensated for Work performed and approved by the Engineer prior to the notice of such suspension. When the Project is resumed, the Contractor's compensation shall be equitably adjusted to provide for reimbursement of actual expenses including project specific general conditions incurred in the interruption and resumption of the Contractor's Work, plus a non-compensable adjustment to the Schedule. However, no such adjustment shall be made to the extent that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or that an equitable adjustment is made or denied under another provision of the Contract. All requests for reimbursement of actual expenses including project specific general conditions incurred shall be fully supported by documentation as the Association may reasonably require.

Termination for Convenience:

The Association retains the exclusive right to terminate this Agreement for convenience. The Association and Contractor acknowledge and agree that a termination for convenience under this paragraph will only require the Association to pay Contractor for proper Work performed and approved by the Engineer through the effective date of termination plus reasonable demobilization costs and no other compensation. The Association will provide Contractor with ten (10) days written notice before the termination for convenience becomes effective. Once notice of a termination for convenience is delivered to Contractor, the Contractor will initiate all steps not to incur any further fees, costs, and expenses absent the express written consent of the Association.

(Paragraphs deleted)

ARTICLE 17 OTHER TERMS AND CONDITIONS

Contractor shall exercise reasonable due care to protect and prevent damage to all areas surrounding the areas where Work is being performed, including but not limited to, common areas controlled by the Association that arise from the negligent and/or willful acts, conduct and/or omissions of the Contractor. All precautionary measures will be subject to approval by the Engineer prior to the Commencement Date and approval will not be unreasonably withheld. Contractor shall protect the Work from damage due to climate. The Contractor shall reasonably protect the sidewalk, swimming pool, and all common areas from damage along with all areas adjacent to where Work will be performed or where tools and materials are stored that arise from the negligent and/or willful acts, conduct and/or omissions of the Contractor. If it is identified by the Engineer that the Contractor has damaged sod, plantings, sprinklers, and landscaping located at 10' or more from the areas that are being worked on, then the Contractor will be responsible for all costs and expense to replace and or repair these items but only if the Contractor fails to exercise reasonable due care in the performance of the Work resulting in damage to these areas. The notice to unit owners will be based upon the Schedule, along with written updates, delivered to Association by Contractor during performance of the Work. Contractor shall prevent damage to the unit interiors to the extent reasonably practicable but will not be responsible for damage unless the damage was caused by Contractor's failure to exercise due care in performance of the Work, recklessness, or intentional wrongful misconduct of Contractor or persons employed or utilized by Contractor relating to the performance of Work. To the extent damage to Association property occurs as a result of the negligent acts, conduct and/or omissions of Contractor, all damaged areas shall be repaired and/or replaced at Contractor's sole expense. At a date and time as agreed upon by the Association prior to commencement of the Work, Contractor shall video tape or take digital photographs of the condition of all areas adjacent to the building prior to commencement of Work and provide the Association with a copy of it. The Association or its designee may accompany Contractor while the videotaping or the taking of digital photographs is performed. All Work and storage areas shall be maintained in a neat/clean condition. Contractor shall prepare progressive drawings of all locations where actual Work was performed to be submitted to the Engineer with each payment application where applicable for review. Contractor will only be liable for those damages caused or contributed by its own acts and/or

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omissions as well as their employees, subcontractors, suppliers, and agents. Contractor will not be liable for damages caused by third parties over whom it does not exercise control. To the extent that any components are removed during the performance of the Work to be reinstalled, the components shall be wrapped in Visqueen, numbered, and stored on site in a secured location protected from damage by the climate, theft or vandalism and the cost of removal, protection, storage, and reinstallation is included in the Contract Sum. All components that were removed shall be cleaned of dust/grit and shall be returned to their condition prior to removal.


Should adverse conditions such as severe storms be forecasted, Contractor shall promptly take all necessary precautions to remove any pipe scaffolding or swing stage scaffolding or any other materials, equipment or debris which could be moved by the winds and become projectiles and will follow the protocol set forth in the "Hurricane Preparedness Plan" furnished by Contractor labeled and attached to this Contract as Exhibit "4". All precautionary measures and removal of such of Contractor's apparatus and all necessary precautionary measures involving Contractor's equipment shall be provided at no cost or expense to the Association. In the event of a hurricane or other severe weather, the Engineer may order Contractor to protect exposed exterior portions of the Work in progress where areas susceptible to damage exist to interiors, with protection equal to or better than pre-existing conditions, but in no event with protection less effective than plywood sheathing constructed as per the Engineer's drawings and specifications. In the event of a hurricane or other severe weather, should Contractor be directed by the Engineer and/or Association to do so, and as reasonably attainable given the advance notice period provided, these precautionary measures will be performed at an hourly rate of \$75.00 per hour which rate is inclusive of small compressors, electric hammers, grinders, drills, vacuums, and other small tools as necessary to perform the work plus actual cost of material and equipment rental, plus 20% applied only on material as well as equipment rental which is inclusive of all overhead, profit and administrative cost and fees, the cost for which shall be borne by the Association. For such charges, Contractor shall provide the Association with complete supporting documentation including time-slips, invoices, and other documentation that the Association may reasonably require. Contractor shall be responsible for restoring the premises and repairing other damage created during performance of the Work resulting from Contractor's failure to comply with obligations hereunder.

Prior to commencement of the Work, the Association will designate the location(s) of Contractor's staging area for storage of equipment, material and for vehicle parking by employees of the Contractor. Contractor will be prohibited from storing its equipment, material, and parking vehicles in all other areas of the Project. The Association is not responsible for any risk of damage, theft, vandalism or other damages to Contractor's equipment, material and vehicles situated on the Association's property.

All electrical power requirements for the scaffolding and power for the Work, as well as all reasonable and necessary water, shall be supplied by the Association. The Association will not be required to modify existing electrical components to accommodate any requirements of the Contractor. Prior to commencement of the Work, Contractor will inspect all electrical facilities and satisfy itself that such facilities are adequate for Contractor's use in the performance of the Work.


This Agreement entered into as of the day and year first written above.
(Paragraphs deleted)

Carlton House Management Assoc. Inc.

DocuSigned by:
OWNER 
Signature 510DD2BCC4014B5...
Brian Duffy President

(Printed name and title)
(Rows deleted)

Promar Building Services, LLC

DocuSigned by:
CONTRACTOR 
Signature 7F0D84D1...
Arnaldo Alfredo Amador Rosales President

(Printed name and title)

The following pages 20 thru 40 show contract negotiations that resulted in the final contract pages 1 thru 19 and do not need to be executed.

Additions and Deletions Report for **AIA® Document A105® – 2017**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:12:38 ET on 12/05/2023.

PAGE 1

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

AGREEMENT made as of the day of in the year 2023

...

(Name, legal status, address and other information)
Carlton House Management Association, Inc.
2701 South Blvd.
Highland Beach, FL 33487

...

(Name, legal status, address and other information)
Promar Building Services, LLC
5383 Sandhurst Circle North
Lake Worth, FL 33463
(License CGC 060027)

...

(Name, location and detailed description)Carlton House Condominiums
Exterior Wall Repairs

...

The Engineer:

O&S Associates
2500 Hollywood Blvd, Suite 212
The Architect: Hollywood, FL 33020
(Name, legal status, address and other information)

All references in this Agreement to "Architect" or "Engineer" shall mean and refer to the Owner's Engineer, O&S Associates.

PAGE 2

9 ARCHITECT/ENGINEER

...

.2 ~~the drawings and specifications prepared by the Architect, dated —, and enumerated as follows:~~EXHIBITS

Exhibit 1 - O & S Associates Engineers & Architect Project Manual & Specifications Dated April 17, 2023, Labeled Carlton House Condominium Association Exterior Wall Project (255 Pages)

Exhibit 2 - Contractor Bid Proposal for CARLTON HOUSE MANAGEMENT ASSOCIATION, INC. Exterior Wall Repair (2 Pages)

Exhibit 3 - Application and Certification for Payment supported by Continuation Sheet (2 pages)

Exhibit 4 - Hurricane Preparedness Policy
Exhibit 5 - Insurance by Contractor (2 pages)

Drawings:

Number	Title	Date
--------	-------	------

Exhibit 6 - Contractor Warranty Form (2 pages)

Specifications:

Section	Title	Pages
---------	-------	-------

.3 ~~addenda prepared by the Architect as follows:~~

Number	Date	Pages
--------	------	-------

.4 ~~written orders for changes in the Work, pursuant to Article 10, issued after execution of this Agreement; and~~

.5 ~~other documents, if any, identified as follows:~~

In the event of any conflict or ambiguity between this AIA Document A105–2017 Agreement, and any other documents or Contract Documents, this AIA-A105-2017 Agreement shall control and supersede any such other documentation; however, any written changes or addenda executed by both parties after the date of this Agreement shall have priority.

PAGE 3

(Insert the date of commencement if other than the date of this Agreement.)

The commencement date for the Work shall occur within ten (10) days from the date that all permits have been issued, time being of the essence ("Date of Commencement"). The Contractor shall expedite the application for and obtain all permits for the Work.

...

(Check the appropriate box and complete the necessary information.)

[**X**] Not later than (—) Two Hundred and Sixteen (216) calendar days from the date of commencement.

[—] ~~By the following date:~~ TIME IS OF THE ESSENCE OF THIS CONTRACT. Time is of the essence with respect to all provisions of the Original Estimated Contract that specify a time or an amount of time for performance. Due to the difficulty in determining damages for failure to timely achieve Substantial Completion, all parties agree that the failure of Contractor to timely achieve Substantial Completion, shall subject Contractor to liquidated damages for each day the work remains incomplete (Substantial Completion not achieved) at the daily rate of Two Hundred Fifty (\$250.00) Dollars, which amounts may be withheld and deducted by Owner from any amounts otherwise due to Contractor.

...

—(\$ —)Eight Hundred Ninety-Seven Thousand Six Hundred Ninety-Five and no/100 Dollars (\$897,695.00)

§ 3.2 For purposes of payment, the Contract Sum includes the following values related to portions of the Work:
(Itemize the Contract Sum among the major portions of the Work.)

DELETED

Portion of the Work	Value
---------------------	-------

§ 3.3 The Contract Sum is based upon the following alternates, (not included in completion time) if any, which are described in the Contract Documents and hereby accepted by the Owner:
(Identify the accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

See Exhibit 2 - Contractor Bid Proposal

...

(Identify each allowance.)

Item	Price
See Exhibit 2 - Contractor Bid Proposal	

PAGE 4

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
Item		
See Exhibit 2 - Contractor Bid Proposal		

...

§ 4.1 Based on Contractor’s Applications for Payment certified by the Architect, Engineer, the Owner shall pay the Contractor, in accordance with Article 12, as follows:

Applications for Payment will be submitted no more than one (1) time per month (unless approved by Owner) based on a Quantity of completion basis in accordance with the schedule of values.
(Insert below timing for payments and provisions for withholding retainage, if any.) Payment applications will be reviewed by the Engineer within five (5) days. If errors are found in an Application for Payment by the Engineer, Engineer shall be afforded an additional five (5) days to review any revised Application for Payment, as well as an additional five (5) days for any subsequent review thereafter.

Upon approval of an Application for Payment by the Engineer, Owner shall issue payment to Contractor no later than Five (5) days after the approved and certified Application for Payment is received by the Owner. If payment is made by ACH Transfer, Wire Transfer, or Certified Check Owner shall issue payment o Contractor no later than Ten (10) days after the approved and certified Application for Payment is received by the Owner.

A Ten Percent (10%) retainage amount shall be deducted from each partial payment, if any, required pursuant to this Contract. Retainage will not be deducted for Mobilization, General Conditions, Permit related Fees, Overhead Protection, Demobilization, Bond. Retainer will not exceed Ten Percent (10%) or the Original Contract Amount less Mobilization, General Conditions, Permit related Fees, Overhead Protection, Demobilization, Bond .The total retainage amount shall be paid to Contractor only upon Contractor’s completion of all punch-list items at the conclusion of the entire project as determined in the sole discretion of the Owner and its Engineer, and in no event

prior to the Owner's receipt of all warranties, all approvals of all permits and final inspections required by governmental agencies, and a Contractor's Final Affidavit and Final Release of Lien (from Contractor and its subcontractors, laborers, materialmen and suppliers), indicating that Contractor and all subcontractors, laborers, materialmen and suppliers who worked for Contractor under the Contract have been paid in full.

...

(Insert rate of interest agreed upon, if any.)Eighteen Percent (18%) but will not exceed State of Florida Statute.

§ 4.3 Each Application for Payment shall be accompanied by a Progress Payment Affidavit, Partial Release of Lien, or, if completion is final, a Contractor's Final Affidavit and Final Release of Lien, from Contractor and each subcontractor, materialmen, laborer and supplier working on the Project, and any other forms as may be required by the Contract Documents, indicating that Contractor and all subcontractors, laborers, materialmen and suppliers who worked for Contractor under the Contract have been paid in full for the work completed up through the date of the previous most recent Application for Payment. All subcontractor lien releases shall include a statement as to all unresolved issues or claims.

%—If defective work is not remedied by Contractor, or Contractor fails to make payments to subcontractors, laborers, materialmen or suppliers, Owner shall have the option, but not obligation, after seven (7) business days' written notice to Contractor, and without prejudice to any other remedy it may have, to provide for the work to be completed by another contractor, to make payment to subcontractors, laborers, materialmen or suppliers, and to terminate this Contract. If the expenses of finishing the work hereunder shall exceed the contract's price, Contractor shall be liable to Owner for such amounts, in addition to all other remedies available to Owner.

ARTICLE 5 INSURANCE AND BONDS

§ 5.1 The Contractor shall maintain the following types and limits of insurance until the expiration of the period for correction of Work as set forth in Section 14.2, subject to the terms and conditions set forth in this Section 5.1:Section 5:

The Contractor shall procure and maintain the insurance cited in this Article 5 for the duration of this Agreement which insurance shall be placed with insurance companies authorized to do business in the State of Florida and rated A minus VII or better by the current edition of A.M. Best's Key Rating Guide or as otherwise approved by Owner.

Contractor's insurance coverage is Primary and Non-Contributory to any insurance of the Owner.

§ 5.1.1 Commercial General Liability insurance for the Project, written on an occurrence form, with policy limits of not less than —(\$ —) each occurrence, —(\$ —) general aggregate, and —(\$ —) aggregate for products-completed operations hazard.

§ 5.1.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than —(\$ —) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance, and use of those motor vehicles along with any other statutorily required automobile coverage.

§ 5.1.3 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 5.1.1 and 5.1.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 5.1.4 Workers' Compensation at statutory limits.

§ 5.1.5 Employers' Liability with policy limits not less than —(\$ —) each accident, —(\$ —) each employee, and —(\$ —) policy limit.

§ 5.1.6 The Contractor shall provide builder's risk insurance to cover the total value of the entire Project on a replacement cost basis.

§ 5.1.7 Other Insurance Provided by the Contractor

(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

§ 5.1.1 COMPREHENSIVE GENERAL LIABILITY.

Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than \$1,000,000.00 each occurrence, \$2,000,000.00 general aggregate, and \$2,000,000.00 aggregate for products-completed operations hazard, providing coverage for claims including
See Exhibit 5A

§ 5.1.2 AUTOMOBILE LIABILITY. Automobile Liability Insurance Policy covering vehicles owned, and non-owned vehicles used, by the Contractor written with limits of not less than \$1,000,000.00 combined single limit per occurrence for bodily injury and property damage. See Exhibit 5A

§ 5.1.3 UMBRELLA/EXCESS LIABILITY. Umbrella/Excess Liability insurance with limits of not less than \$1,000,000.00 for each occurrence of bodily injury and/or property damage and/or automobile liability.
See Exhibit 5A

§ 5.1.4 WORKERS' COMPENSATION. Workers' Compensation coverage (including Employer's Liability coverage) with a policy limit of not less than \$1,000,000.00, including but not limited to, statutory benefits and limits which shall fully comply with all State and Federal requirements. See Exhibit 5B

§ 5.2 INSURANCE REQUIREMENTS OF SUBCONTRACTORS, LABORERS, MATERIALMEN, AND SUPPLIERS. Contractor agrees to require its subcontractors, laborers, materialmen, and suppliers who worked for Contractor under the Contract to comply with the insurance provisions required of Contractor pursuant to this Agreement. Contractor agrees that it will contractually obligate its subcontractors, laborers, materialmen, and suppliers to advise Contractor promptly of any changes or lapses of the requisite insurance coverages and Contractor agrees to promptly advise Owner of any such notices Contractor receives from its subcontractors, laborers, materialmen, and suppliers. Contractor agrees that it will contractually obligate its subcontractors, laborers, materialmen, and suppliers to indemnify and hold harmless Owner to the same extent that Contractor is required to do so as provided in this Agreement. Contractor assumes all responsibility for monitoring its subcontractors', laborers', materialmen and suppliers' contracts and insurance certificates for compliance with the insurance and other provisions of this Agreement until final completion of the Project.

§ 5.3 ADDITIONAL INSURANCE REQUIREMENTS. Contractor shall not make changes in or allow the required insurance coverages to lapse without Owner's prior written approval thereto. All policies for insurance must be endorsed to contain a provision giving Owner a thirty (30) day prior written notice by certified mail of any cancellation of that policy or material change in coverage. Should a notice of cancellation be issued for non-payment of premiums or any part thereof, or should Contractor fail to provide and maintain certificates as set forth herein, Owner shall have the right, but shall not the obligation, to pay such premium to the insurance company or to obtain such coverage and to deduct such payment from any sums that may be due or become due to Contractor, or to seek reimbursement for said payments from Contractor. Any sums paid by Owner shall be due and payable immediately by Contractor upon notice from Owner. Receipt and review by Owner of any copies of insurance policies or insurance certificates shall not relieve Contractor of his obligation to comply with the insurance provisions of this Agreement. The insurance provisions of this Agreement shall not be construed as a limitation on Contractor's responsibilities and liabilities pursuant to the terms and conditions of this Agreement.

Coverage**Limits**

§ 5.2 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property. The Contractor is entitled to receive an increase in the Contract Sum equal to the insurance proceeds related to a loss for damage to the Work covered by the Owner's property insurance.

§ 5.3 The Contractor shall obtain an endorsement to its Commercial General Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12.

§ 5.4 ~~Prior to commencement of the Work, each party shall provide certificates of insurance showing their respective coverages.~~ **WAIVER OF SUBROGATION.** Contractor waives all rights against the Owner, and its agents and employees, for damages caused by injury to persons or property or other causes of loss to the extent covered by such insurance obtained pursuant to Section 5 herein. This waiver of subrogation rights includes insured losses as well as losses within the Contractor's deductible or self-insured retention, if any. The Contractor shall require of the subcontractors, sub-subcontractors, agents, and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of the Owner, its agents, and employees. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Agreement shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 5.5 ~~Unless specifically precluded by the Owner's property insurance policy, the Owner and Contractor waive all rights against (1) each other and any of their subcontractors, suppliers, agents, and employees, each of the other; and (2) the Architect, Architect's consultants, and any of their agents and employees, for damages caused by fire or other causes of loss to the extent those losses are covered by property insurance or other insurance applicable to the Project, except such rights as they have to the proceeds of such insurance. The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property as determined in the sole discretion of the Owner.~~

§ 5.6 The Contractor shall obtain an endorsement to its Commercial General Liability, Umbrella/Excess Liability, and Automobile Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12. See Exhibit 5A

§ 5.7 Prior to commencement of the Work, each party shall provide certificates of insurance showing their respective coverages. See Exhibit 5A & 5B of this Contract.

§ 5.8 PERFORMANCE AND PAYMENT BONDS. Contractor shall furnish the Owner with a performance bond and a payment bond issued on forms AIA Document A-312-2010, unmodified, the cost of same which shall be invoiced to Owner at a rate not to exceed **Three percent (3%)** of the Contract Sum, as adjusted, with a Penal Sum in the amount of the Contract Sum, covering the full faithful performance of the Contract and full payment of all obligations arising under the Contract. The payment bond shall be issued in accordance with Section 713.23, Florida Statutes. **A "conditional payment bond" as provided by Section 713.245, Florida Statutes, shall not be acceptable to the Owner.**

Such performance and payment bonds shall be obtained by Contractor and provided to Owner, prior to the commencement of any work under the Contract by Contractor. If the Contract exceeds the original contract amount additional bond fee will be charged. Contractor will need from the Owner the following; Most recent financial statement, letter stating the name of the Contractor and Engineer hired, means of funding the Project (ex. Reserves) if the project is being funded by Special Assessment Owner will have to submit Special Assessment Terms. If the Owner is getting a loan to fund the Project, the Bonding Company will not issue bond until the Loan is closed.

§ 5.9 In the event Contractor fails to provide such insurance and performance and payment bonds to Owner as required by this Article 5 within Twenty (20) days from date required information from Owner is received., then in such event, Owner shall have the right to terminate this Agreement for cause and without any liability to Contractor. Contractor shall not commence any Work as contemplated by this Agreement until such time that Contractor has provided Owner with all insurance and performance and payment bonds as required by this Article 5.

PAGE 6

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, ~~representations~~ representations, or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

...

The Work to be performed under this Contract includes all transportation, storage, equipment, supplies, labor and materials, plans, drawings and specifications, necessary for a complete and functional installation of the Work, and the Work shall comply with all manufacturer specifications, applicable codes, ordinances, and inspection requirements. All Work performed by Contractor or by others to make this Contractor's Work comply with the same, or interpretations thereof, shall be performed at no additional cost to the Owner. The Work shall also include all labor, materials, and everything required or claimed by Contractor's materialmen, suppliers, or laborers to complete the work in accordance with the drawings and specifications. The Contractor will be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract.

PAGE 7

§ 6.4

Ownership and Use of Architect's Drawings, Specifications and Other Documents

Documents prepared by the ~~Architect-Engineer~~ are instruments of the ~~Architect's-Engineer's~~ service for use solely with respect to this Project. The ~~Architect-Engineer~~ shall retain all common law, statutory, and other reserved rights, including the copyright. The Contractor, subcontractors, sub-subcontractors, and suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the ~~Architect-Engineer~~.

§ 6.5 Electronic Notice

...

All written Notices sent pursuant to this Agreement shall be sent via U.S. certified mail, return receipt requested to the addresses indicated on the first page of this Agreement.

...

~~§ 7.1.3 Prior to commencement of the Work, at the written request of the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If the Contractor becomes aware of any deviations between existing conditions and the Contract Documents, the Contractor shall promptly notify the Engineer in writing.~~

...

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ~~seven-day~~ seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, correct such deficiencies. In such case, the ~~Architect-Engineer~~ may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correction, provided the actions of the Owner and amounts charged to the Contractor were approved by the ~~Architect-Engineer~~.

§ 7.4 Owner's Right to Perform Construction and to Award Separate Contracts

~~§ 7.4.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.~~

~~§ 7.4.2 The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.~~

...

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the ~~Architect-Engineer~~.

§ 8.1.3 The Contractor shall not be liable for damages which are pre-existing as of the date of commencement of this Agreement; however, negligent damage to a building component or real property which could arguably have been caused in connection with the Work shall be deemed not to be pre-existing unless the damage is specifically listed in an inventory, signed by both the Contractor and the Owner, to be pre-existing. To this end, the Contractor and Owner shall meet prior to commencement of the Work to complete an inventory of pre-existing damages. If a pre-existing condition is worsened during the course of Work due to Contractor negligence, and such additional damage is caused in connection with the Work, then the Contractor is responsible for the additional damages caused.

PAGE 8

The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and ~~Architect's~~ ~~Engineer's~~ information a Contractor's construction schedule for the Work and a schedule of values allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Engineer. This schedule, unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Engineer and supported by such data to substantiate its accuracy as the Engineer may require, and unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

...

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the ~~Architect, Engineer~~, the names of subcontractors or suppliers for each portion of the Work. Owner shall have an opportunity to object to use of certain subcontractors or suppliers as determined in the reasonable discretion of the Owner. In the event of any such objection, Contractor shall use and advise Owner of an alternative subcontractor or supplier agreed to by the Owner. The Contractor shall not contract with any subcontractor or supplier to whom the Owner or ~~Architect-Engineer~~ has made a timely and reasonable objection. No Subcontractor shall be employed by Contractor unless it holds current State of Florida and County contractor's license as applicable and required by law, and (if required) a city occupational license. The Contractor represents and warrants to Owner that all Subcontractors are duly licensed in their particular trade or specialty to perform the task for which contracted.

§ 8.3.3 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. The Contractor shall promptly remedy negligent damage and loss to all real and personal property caused in whole or in part by the Contractor negligence, a subcontractor, a sub-subcontractor, or anyone directly or indirectly employed or retained by any of them, and by anyone for whose acts Contractor may be liable. This provision shall survive any termination of this contract.

...

§ 8.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Contractor shall ensure that there is at least one English speaking foreman, superintendent or other supervisor present during performance of the work. Owner reserves the right to require Contractor to remove any person working for Contractor or its subcontractors who cause a disturbance or nuisance in Owner's community, as determined in Owner's sole discretion. Contractor and subs must conform to all Owner rules and regulations for contractors which will be provided to Contractor by Owner.

...

The Contractor warrants to the Owner and ~~Architect-Engineer~~ for a period of **Five (5) years** for materials, parts and labor from the date of completion of the Work, that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free

from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents; and (4) will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit, and will be fit for the purposes intended. Work, materials, or equipment not conforming to these requirements may be considered defective. Contractor hereby agrees that during the warranty period of time, any flaws or deficiencies in either work or material shall be corrected and/or replaced and restored to first class working order by Contractor at no cost to the Owner. In the event of Contractor's refusal to so restore same as aforesaid, Owner may perform such repair or replacement work, and/or secure additional material after five (5) days' notice to Contractor and Contractor shall reimburse Owner for such sum.

In addition, Contractor shall assign all manufacturer warranties in writing to Owner. Contractor shall strictly comply with all manufacturers' directions and specifications for installation or application of all products and materials which are part of the Work and shall take no action which might void or limit such warranties. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

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§ 8.7.1 The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work. Permit Related Fees and Notice of Commencement Filing Fees will be charged to Owner at actual cost.

§ 8.7.2 The Contractor shall comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the ~~Architect-Engineer~~ in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

...

The Contractor shall promptly review, approve in writing, and submit to the ~~Architect-Engineer~~ shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents.

...

~~The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.~~ § 8.9.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.

...

The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials. Contractor shall provide a dumpster (FOR CONTRACTOR USE ONLY) at Contractor's expense and all debris shall be removed from the Owner's property/project daily.

If after three (3) business days' notice by Owner's representative to Contractor's representative at the site of the work Contractor has not diligently proceeded with the clean-up as outlined in this paragraph, then the Owner has the right to proceed with the clean-up at Contractor's costs and expense and may deduct such amounts from any monies that may be due to Contractor.

Free, clear and unobstructed egress and ingress with respect to the Owner's property shall be maintained by the Contractor.

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The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all reasonable precautions for the safety of, and shall provide all

reasonable protection to prevent damage, injury, or loss to (1) all employees performing the Work and other persons who may be affected thereby, (2) all the Work and all materials and equipment to be incorporated therein, and (3) other property at the site or adjacent thereto including areas affecting property owned by unit owners. Contractor shall post all notices and comply with all applicable laws, ordinances, rules, regulations, and orders of any public authority bearing on the safety of persons and property and their protection from damage, injury, or loss. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them, from and against claims, damages, losses indemnify, defend, and hold harmless the Association, Engineer, its respective agents, property managers, and employees and if applicable, it's Lender and unit owners from and against all claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense fees and costs caused by Contractor or anyone working under or at the direction of the Contractor. In addition, this indemnification, hold harmless and duty to defend obligation will apply to all acts, conduct, omissions and negligence of the Contractor with respect to any such claim, damage, loss or expense (1) that is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a property, and (2) that is caused in whole or in part by the negligent act and/or omission of the Contractor, any subcontractor, any sub-subcontractor, any material or equipment supplier, anyone directly or indirectly employed by any of them Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph. In any and all claims against the Association, or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder any of them may be liable, the indemnification obligation under this paragraph shall not be limited by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. The foregoing indemnity from Contractor shall be applicable to all losses, damages, expenses or claims for damage or injury to any person or property, negligence, recklessness misconduct of Contractor, and persons employed or utilized by Contractor relating to the performance of Work as described in this Contract. This indemnification provision is incorporated by reference into the Contract Documents. This indemnification shall not apply, however, to claims arising out of, or damages resulting from, the negligent acts and omissions, gross negligence, or willful, wanton, or intentional misconduct of the Association, its unit owners, or its officers, directors, agents, employees, or other contractors contracted directly by the Association or their subcontractors. The Contractor shall not be responsible for labor or materials furnished by anyone working under separate contract to or under the direction of the Association or for any loss or additional Work that result from any persons working directly for the Association, all of which shall be the sole responsibility of the Association. The Contractor shall promptly remedy all damage or loss to any property negligently caused by the Contractor, any subcontractor, any sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The foregoing obligations of the Contractor are in addition to his other obligations under this Contract. Pursuant to Section 725.06, Florida Statutes, the specific amount of indemnification provided by Contractor to Association herein is \$2,000,000.00 per occurrence. Contractor agrees that such monetary limitation on the indemnification provided herein bears a reasonable commercial relationship to the Contract and is hereby part of the Project specifications. This provision shall survive the termination or expiration of this Contract.

ARTICLE 9 — ARCHITECT

ARTICLE 9 ENGINEER

§ 9.1 The Architect-Engineer will provide administration of the Contract as described in the Contract Documents. The Architect-Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

All references in this Agreement to "Architect" or "Engineer" shall mean and refer to the Owner's Engineer, O&S Associates.

§ 9.2 The Architect-Engineer will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Architect-Engineer will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the

Work, since these are solely the Contractor's responsibility. The ~~Architect-Engineer~~ will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

§ 9.4 Based on the ~~Architect's-Engineer's~~ observations and evaluations of the Contractor's Applications for Payment, the ~~Architect-Engineer~~ will review and certify the amounts due the Contractor.

§ 9.5 The ~~Architect-Engineer~~ has authority to reject Work that does not conform to the Contract Documents.

§ 9.6 The ~~Architect-Engineer~~ will promptly review and approve or take appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 9.7 On written request from either the Owner or Contractor, the ~~Architect-Engineer~~ will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents.

§ 9.8 Interpretations and decisions of the ~~Architect-Engineer~~ will be consistent with the intent of, and reasonably inferable from the Contract Documents, and will be in writing or in the form of drawings. When making such interpretations and decisions, the ~~Architect-Engineer~~ will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 9.9 The ~~Architect's-Engineer's~~ duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and ~~Architect-Engineer~~. Consent shall not be unreasonably withheld.

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§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum and Contract Time shall be adjusted accordingly, in writing. ~~If the Owner and Contractor cannot agree to a change in the Contract Sum, the Owner shall pay the Contractor its actual cost plus reasonable overhead and profit.~~

§ 10.1.1 CHANGE ORDERS

No additional Work that is outside the scope of the Work contemplated by Exhibit "I" will be authorized except by a written change order properly executed by the Association, Contractor and Engineer which shall include any change in the Contract Sum and/or Contract Time. All change order work, that is not within the scope of this Contract and is not addressed by unit prices, will be billed at an hourly rate of \$75.00 per hour which is inclusive of small compressors, electric hammers, grinders, drills, vacuums, and other small tools as necessary to perform the work plus the actual cost of material and equipment rental plus 20% of that actual cost (material and equipment rental) which is inclusive of all overhead, profit and administrative cost and fees. Contractor will be required to submit with each change order all supporting documentation that the Association may reasonably require. Contractor shall have no claim for the cost of additional Work or for an extension of time (including, without limitation, claims for impact damages or to costs due to delay) unless such work and the cost and expenses thereof or time is stated on the face of a written change order and approved and accepted by Association and Engineer by written change order, which such approval shall not be unreasonably delayed or withheld. Any attempted reservation by Contractor of the right to subsequently claim any amount or extension of time not stated on the face of a written change order approved and accepted by Association shall be null and void. All change orders issued under this Contract shall be subject to all the terms of this Contract.

A reduction in the Work or quantities required pursuant to the Contract Documents shall only be authorized by a written change order properly executed by the Association, Contractor, and Engineer or by a written construction change directive executed by the Association and the Engineer, both of which shall include any change in the Contract Sum and/or Contract Time.

In the event Contractor fails to obtain such fully executed Change Order prior to commencing such changes in the Work, Owner shall not be liable to Contractor for any additions to the Contract Sum, costs, expenses, or additional Contract Time associated with such changes in the Work and Contractor shall pay all costs and expenses associated with the unapproved changes in the Work.

§ 10.2 The Architect-Engineer may authorize or order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such authorization or order shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall proceed with such minor changes promptly.

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§ 11.2 ~~If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment.~~ **FORCE MAJEURE.** Where a party to this Agreement fails or is prevented from timely performing one or more of its contractual duties or receiving the benefits of this Agreement, the provisions of this clause will follow if and only to the extent that that party proves:

- the event must be beyond the reasonable control of the applicable party;
- the applicable party must have been prevented from performing its contractual duties or receiving the benefits of this Agreement;
- the applicable party must have taken all reasonable steps to avoid its non-performance or inability to receive the benefits and have satisfied its duty to mitigate damages as a result thereof; and
- timely written notice must have been given to the other party to this Agreement in accordance herein and the Notice requirements contained in this Agreement.

This provision shall apply in the case of the occurrence of one or more of the following impediments: war (whether declared or not), armed conflict or the serious threat of the same (including but not limited to hostile attack, blockade, military embargo), hostilities, invasion, act of a foreign enemy, extensive military mobilization; civil war, riot, rebellion, revolution, military or usurped power, insurrection, civil commotion or disorder, mob violence, act of civil disobedience; act of terrorism, sabotage or piracy; plague, epidemic, pandemic, outbreaks of infectious disease or any other public health crisis, including quarantine or other employee restrictions; act of authority whether lawful or unlawful, compliance with any law or governmental order, rule, regulation or direction, curfew restriction, expropriation, compulsory acquisition, seizure of works, requisition, nationalization; act of God or natural disaster such as but not limited to violent storm, cyclone, typhoon, hurricane, tornado, blizzard, earthquake, volcanic activity, landslide, tidal wave, tsunami, flood, damage or destruction by lightning, drought; explosion, fire, destruction of machines, equipment, factories and of any kind of installation, prolonged break-down of transport, telecommunication or electric current; general labor disturbance such as but not limited to boycott, strike and lock-out, go-slow, occupation of factories and premises; shortage or inability to obtain critical material or supplies to the extent not subject to the reasonable control of the subject party ("Force Majeure Event"). Increases in the cost of materials or supplies for the Project shall not be deemed a Force Majeure Event and such increases, if any, shall not affect the Contract Sum as stated in this Agreement.

This provision shall become effective only if the party to this Agreement failing or prevented from timely performing its duties or receiving the benefits of this Agreement, notifies the other party in writing within a reasonable time (not in excess of five (5) calendar days after the first occurrence of the Force Majeure Event) of the extent and nature of the Force Majeure Event.

In the event of a Force Majeure Event, the affected party shall negotiate with the other party as to additional contract time for performance or other circumstances necessary to perform its contractual duties or receive the benefits of this Agreement which have been affected by the Force Majeure Event.

In the event a mutual agreement cannot be reached by both of the parties as to such additional contract time or other circumstances, either party may terminate this Agreement without cause upon Thirty (30) days' written notice. In the event of any such termination Contractor shall only be entitled to payment for the Work fully completed on the Project up through the date of termination. In no event shall Contractor be entitled to receive termination expenses, overhead or lost profit or any other incidental or consequential damages.

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The Association shall not be liable for any cost increases associated with labor and material that arise during the

Project. The Contractor assumes all risks and responsibilities for performing all Work within the parameters of the Contract Sum, subject to written change orders and construction change directives issued in accordance with this Contract. The parties acknowledge that the total Contract Sum may be more or less than the Contract Sum referenced in this Contract depending on the quantity of Work performed by the Contractor. If additional or fewer unit quantities are required to complete the Unit Priced Items of Work (as described in Exhibit "2"), the Contract Sum will be adjusted upward or downward based upon the unit prices set forth in Exhibit "2." Further, the Association may direct Contractor to not perform certain Work or perform fewer quantities than required under Exhibit "2," at which point the Contract Sum will be adjusted downward based upon the unit prices set forth in Exhibit "2." Work deleted or added from the unit price quantities specified in Exhibit "2" will result in a dollar-for-dollar change to the Contract Sum as reflected in a written change order executed in accordance with this Contract. Contractor acknowledges and agrees that payment will only be due for actual quantities of Work performed by Contractor. Contractor acknowledges and agrees that it will have no claims as to the Association if the quantity of unit price items of Work performed is less than the quantity of the Work specified by the Contract Documents. The Contract Sum is inclusive of all costs and expenses associated with the Work including taxes, as well as the cost to haul debris away from all areas of the Project. The scrap value of components removed during the performance of the Work will belong to the Contractor. Permit fees are not included in the Contract Sum, but upon issuance will be charged at actual cost to the Association without mark-up for overhead, profit, or any other administrative fee or expense. To the extent that additional work outside the scope of the Contract is requested to be performed by the Association (hereinafter "Additional Work"), such Additional Work shall first be authorized by a properly executed change order and the value of the change order work calculated in accordance with Paragraph 15 of this Contract. Contractor shall be entitled to a reasonable extension of time to complete all Additional Work to the extent that a) additional unit quantities performed exceed the original estimated quantities set forth in Exhibit "2"; b) for Additional Work outside the original scope of the Contract Documents performed at the direction of the Engineer pursuant to a properly executed written change order or a written construction change directive executed by the Engineer with approval of the Association in accordance with this Contract. The Contractor's request for additional days based on said additional unit quantities must specify in writing, the additional quantities provided and a proportionate amount of additional time necessary to perform the additional quantities based on the value of the original estimated unit quantities and approved as determined by the Engineer.

The Association will pay Contractor a portion of the Contract Sum, including mobilization fee plus the cost related to permits and the cost of Payment and Performance Bond on the first Application for Payment pas confirmed by the Engineer. The balance of the Contract Sum will be paid based upon the progress of the Work performed by Contractor and approved by the Engineer. The Contractor shall submit its Applications for Payment at thirty (30) day intervals but not more frequently than once every month, unless at the sole option of the Association approves an interim Application for Payment. The form of such payment requests shall be a notarized "Application and Certification for Payment" supported "Continuation Sheet," or equivalent form which shall be approved by Engineer which will also be used as a Schedule of Values in the form labeled and included in the attached documents to this Contract as Exhibit "3" showing all items of Work to be completed by Contractor and broken down by that portion of the Contract Sum completed with each Application for Payment. In addition, as a condition precedent to payment, Contractor shall deliver to Engineer an updated Project Schedule to reflect any changes to the schedule, with each Application for Payment. Any reasonable objections to Work performed shall be given, in writing, to Contractor within five (5) days from the receipt of the Application for Payment by the Engineer and, if no objections are made, then the Application shall be deemed approved, and payment shall be tendered to Contractor (by Bank Wire or Certified check) within ten (10) days of receipt of written notice to the Association from the Engineer that the payment request has been approved. But payment will be due no later than 15 days from submission to the Engineer. The Association will timely pay Contractor all undisputed amounts due under a given Application for Payment as provided in this paragraph and will only withhold those disputed amounts as authorized by this Contract. The Association will withhold a ten (10%) percent retainage from all payments made to Contractor (retainage will not be held on Mobilization, Permit Fees, Payment & Performance Bond, General Conditions, Overhead Protection or Demobilization). Total Retainage will not exceed ten (10) percent of the original Contract Sum less Mobilization, General Conditions, Permit Fees, Payment & Performance Bond, Overhead Protection and Demobilization in order to secure completion of all Punch List items of Work and other obligations pursuant to the Contract for the Work. Retainage shall be paid to Contractor within ten (10) days from the date that Contractor achieves Final Completion as described in this Contract and all conditions precedent as described in Paragraph 4(h) below have been satisfied. With respect to this Paragraph, the Association shall be entitled to withhold portions of the retainage from payment to the Contractor based upon Contractor's failure to comply with its material obligations under this Contract.

Contractor shall notify the Association when the Work is Substantially Complete. At that time, the Engineer will perform an inspection of the Work and if appropriate, will issue a Certificate of Substantial Completion and prepare a written Punch List for the Work and furnish it to Contractor within ten (10) days. Engineer shall issue one comprehensive Punch List of items for Contractor to perform to achieve Final Completion; any items not included in the comprehensive Punch List shall be considered warranty repairs. All Punch List items of Work shall be promptly completed in a good and workmanlike manner in accordance with this Contract within thirty (30) days from delivery of the Punch List to the Contractor.

§ 12.2.1 ~~At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for Work completed in accordance with the values stated in this Agreement. The Application shall be supported by data substantiating the Contractor's right to payment as the Owner or Architect may reasonably require, such as evidence of payments made to, and waivers of liens from, subcontractors and suppliers. Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing.~~

§ 12.2.2 ~~The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or other encumbrances adverse to the Owner's interests.~~

§ 12.2.3 ~~The Contractor shall use the AIA G702 & G703 for Applications for Payment or similar (see Exhibit 3).~~

~~The Architect-Engineer will, within seven-Five days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; (2) issue to the Owner a Certificate for Payment for such amount as the Architect-Engineer determines is properly due, and notify the Contractor and Owner in writing of the Architect's-Engineer's reasons for withholding certification in part; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's-Engineer's reason for withholding certification in whole. If certification or notification is not made within such seven-day-five-day period, the Contractor may, upon seven additional days' written notice to the Owner and Architect-Engineer, stop the Work until payment of the amount owing has been received. The Contract Time and the Contract Sum shall be equitably adjusted due to the delay.~~

~~Certificates for Payment shall only be approved by Engineer upon Engineer's and Owner's receipt of a Progress Payment Affidavit, Partial Release of Lien from the Contractor and all subcontractors, materialmen, laborers and suppliers working on the project, or, if completion is final, a Contractor's Final Affidavit and Final Release of Lien, from Contractor and each subcontractor, materialmen, laborer and supplier working on the Project, and any other forms as may be required by the Contract Documents, indicating that Contractor and all subcontractors, laborers, materialmen and suppliers who worked for Contractor under the Contract have been paid in full for the work completed up through the date of the previous most recent Application for Payment.~~

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§ 12.4.1 ~~After the Architect-Engineer has issued a Certificate for Payment, the Owner shall make payment in the manner provided in the Contract Documents.~~

§ 12.4.2 ~~The Contractor shall promptly pay each subcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders, materialmen, laborer, and supplier, working on the Project in full for the work completed up through the date of each of the Contractor's Applications for Payment.~~

§ 12.4.3 ~~Neither the Owner nor the Architect-Engineer shall have responsibility for payments to a subcontractor or supplier.~~

...

§ 12.5.1 Substantial Completion is the stage in the progress of the Work when all of the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize all of the Work for its intended use.

§ 12.5.2 When the Contractor believes that the Work or designated portion thereof is substantially complete, it will notify the ~~Architect-Engineer~~ and the ~~Architect-Engineer~~ will make an inspection to determine whether the Work is substantially complete. When the ~~Architect-Engineer~~ determines that the Work is substantially complete, the ~~Architect-Engineer~~ shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, establish the responsibilities of the Owner and Contractor, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

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§ 12.6.1 Upon receipt of a final Application for Payment, the ~~Architect-Engineer~~ will inspect the Work. When the ~~Architect-Engineer~~ finds the Work acceptable and the Contract fully performed, the ~~Architect-Engineer~~ will promptly issue a final Certificate for Payment.

§ 12.6.2 ~~Final payment shall not become due until the Contractor submits to the Architect releases and waivers of liens, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests, or encumbrances arising out of the~~ Upon completion of all Work under this Contract and before Final Payment will be issued, Contractor shall satisfy the following conditions precedent to Final Payment along with those specified in Exhibit "1":

- (i) Deliver to the Association all warranties, final certifications, and similar documents as well as to provide documentation to demonstrate that all building department requirements within the reasonable control of the Contractor have been satisfied.
- (ii) Complete all Punch List items of Work.
- (iii) Remove temporary facilities from the site, along with construction tools and similar elements.
- (iv) Complete final clean up including repair, replace or restore any items damaged because of Contractor's failure to exercise due care in the performance of Work.
- (v) Deliver to the Association Final Waivers and Releases of Lien from all subcontractors, and suppliers.
- (vi) Deliver to the Association a Contractor's Final Payment Affidavit in accordance with Section 713.06, Florida Statutes.

Neither the Final Payment nor any provision of the Contract Documents, nor partial or entire use of occupancy of the premises by the Association, shall constitute an acceptance of the Work not performed in accordance with the Contract Documents, or relieve Contractor of liability in respect to any express warranties or responsibilities for any faulty materials or workmanship as described in this Contract.

...

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy negligent damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

The Contractor shall cordon off areas where Work is being performed and shall adequately post signs in the construction areas.

The Contractor shall arrange the Work to cause minimum disturbance to pedestrian and vehicular traffic and shall be responsible for providing suitable means of access to all public and private properties during all stages of construction. Other than for an emergency safety condition, the Contractor must contact the Owner and Engineer for approval prior to completely blocking off any street or drive area to vehicular traffic during construction.

...

§ 14.1 The Contractor shall promptly correct Work rejected by the ~~Architect-Engineer~~ as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

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§ 15.2.2 If the ~~Architect-Engineer~~ requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear cost of tests, inspections, or approvals that do not become requirements until after the Contract is executed. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require. (ex. Lead and Asbestos Testing)

...

The Contract shall be governed by the ~~law of the place where the Project is located, excluding that jurisdiction's choice of law rules.~~ laws of the State of Florida. All claims or disputes arising from or in any way related this Agreement shall be litigated in a court of law or equity with competent jurisdiction in Palm Beach County, Florida.

§ 15.4 NOTICES, PERMITS, AND APPLICABLE LAWS. Contractor shall give all notices and comply with all local ordinances, requirements of city and county building codes, and of federal and state authorities, which are applicable to the Work. Contractor shall secure all permits at the Owners expense, inspections, fees, licenses and royalties necessary for the execution of the Work to be performed. All Work shall be in compliance with the South Florida Building Code. In addition, in all instances, the Work furnished shall be sufficient to meet or exceed the requirements of the Miami-Dade County and Florida Building Code.

§ 15.5 MATERIALS AND TOOLS. Contractor shall be responsible for the security and welfare of all materials delivered to the jobsite and shall insure and be responsible for same in the event they are damaged due to any casualty, vandalism, or theft, until such time that such materials are installed and incorporated into the work.

In addition, Contractor shall be responsible for the security and welfare of its materials, tools, machinery, and equipment while on Owner's property.

During any tropical storm or hurricane advisory affecting the project area, Contractor shall ensure that the project area and all such materials, tools, equipment and Work shall be secured to avoid potential injury or damage to person or property, at no additional cost or expense to Owner.

§ 15.6 LIENS. With exception of any lien filed by Contractor for non-payment by the Owner, unless such non-payment is otherwise permitted by this Contract, Contractor shall ensure that no construction lien is recorded against the real property pertaining to this Contract, real property owned by the Owner or its members of any portion of the real property, development, or buildings managed by the Owner. If a lien is recorded as a result of, or in any way connected with, the Contract or the work, services or materials provided hereunder, the Contractor agrees that it shall within five (5) days take all steps necessary to release the lien, including, but not limited to, transferring the lien to a surety or cash bond at Contractor's expense. If Owner must pay any monies including attorney's fees to release or satisfy any said lien, then in addition to all other remedies, the Owner may collect those sums from Contractor, plus interest at the maximum rate permitted by law, and deduct such amounts from any payments due under the Contract.

§ 15.7 NOTICES. A duplicate copy of any notice sent to the Owner pursuant to this Contract shall also be sent to the Owner's counsel, via certified mail, return receipt requested, as follows:

Edward S. Hammel, Esquire

Sachs Sax Caplan, P.L.

6111 Broken Sound Parkway NW, Suite 200

Boca Raton, Florida 33487

§ 15.8 WAIVER. No consent or waiver by Owner or Contractor shall be effective unless it is in writing and then only to the extent specifically stated. Failure on the part of any party to this Agreement to enforce any act or failure to act of

the other party or to declare the other party in default hereunder, irrespective of how long such failure continues, shall not constitute a waiver of the rights of such party hereunder.

§ 15.9 ENFORCEMENT. If it becomes necessary to hire an attorney to enforce any provision of the Contract, the prevailing party shall be entitled to recover their costs and attorney's fees incurred prior to suit, as well as in litigation, appeal and any arbitration, bankruptcy or administrative proceedings.

§ 15.10 CONSTRUCTION OF CONTRACT. All parties hereto agree that each has either received, or had the opportunity to obtain, independent legal counsel with respect to this Contract. The parties further agree that this Contract is the joint product of all parties herein and shall not be construed against any individual party as the drafter of this Contract.

§ 15.11 ENTIRE AGREEMENT. The terms and provisions of this Contract represent the entire agreement between the parties. There shall be no change in any of the provisions of the Contract without the prior written approval of all parties.

Termination and Suspension:

- a) This Contract may be terminated by Contractor upon not less than ten (10) days written notice should the Association fail, in a material way, to perform in accordance with the terms of this Contract, and after an opportunity to cure provided by Contractor to the Association within the aforementioned ten (10) day period, provided there is no fault on the part of the Contractor. In the event of a termination of the Contract by Contractor as set forth herein, the Association shall only be required to pay Contractor for proper Work performed and approved by the Engineer (if any) through the effective date of termination and no other compensation. To the extent that any compensation is due Contractor pursuant to this provision, the amount due will be set-off for any damages caused by the Contractor to the Association and/or for any amounts for which the Association, under the terms of this Contract, has the right to deduction or to withhold payment.
- b) If the Contractor cannot satisfy the conditions and obligations imposed by the Contract, or if it makes a general assignment for the benefit of its creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails to supply properly skilled Workmen, or proper materials in accordance with the Contract, or if it fails to make prompt payment to subcontractors or for materials or labor, or disregard laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a violation of any provision of the Contract, then the Association, without prejudice to any right or remedy, and after giving the Contractor ten (10) days written notice, may terminate the Contract. In the event that the Association terminates this Contract for cause as set forth herein, the Contractor shall not be entitled to receive any further unearned payment. Contractor's sole and exclusive remedy shall be a claim for payment of the proper Work performed through the effective date of termination that has been or is subject to approval by the Engineer including approved Work performed that was subject to an approved Change Order in accordance with this Contract, and reimbursable expenses that were approved by the Engineer prior to the date of termination. This provision shall in no way limit Association's right to claim any additional damages, including but not limited to delay and consequential damages. To the extent that any compensation is due to the Contractor pursuant to this provision, the amount due will be set off for any damages caused by the Contractor to the Association.
- c) If the Contractor fails to take steps to correct the Work, or any portion thereof, which is not in accordance with the requirements of the Contract Documents or fails to carry out Work or provide information in accordance with the Contract Documents, and the Contractor, after receipt of written notice from the Association, either (i) has not cured such failure within ten (10) days or (ii) if the nature of the failure is such that it is not capable of cure within ten (10) days, has not taken steps to cure such failure within such ten (10) day period, then the Association, by written order signed by the Association or by an agent specifically so empowered by the Association in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated or the Contractor has provided the Association with a plan for corrective action acceptable to the Association

in its reasonable judgment. The right of the Association to stop the Work shall not, however, give rise to a duty on the part of the Association to exercise this right for the benefit of the Contractor or any other person or entity.

- d) If the Work is suspended at the Association's request or direction through no fault of the Contractor, the Contractor will be compensated for Work performed and approved by the Engineer prior to the notice of such suspension. When the Project is resumed, the Contractor's compensation shall be equitably adjusted to provide for reimbursement of actual expenses including project specific general conditions incurred in the interruption and resumption of the Contractor's Work, plus a non-compensable adjustment to the Schedule. However, no such adjustment shall be made to the extent that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or that an equitable adjustment is made or denied under another provision of the Contract. All requests for reimbursement of actual expenses including project specific general conditions incurred shall be fully supported by documentation as the Association may reasonably require.

Termination for Convenience:

The Association retains the exclusive right to terminate this Agreement for convenience. The Association and Contractor acknowledge and agree that a termination for convenience under this paragraph will only require the Association to pay Contractor for proper Work performed and approved by the Engineer through the effective date of termination plus reasonable demobilization costs and no other compensation. The Association will provide Contractor with ten (10) days written notice before the termination for convenience becomes effective. Once notice of a termination for convenience is delivered to Contractor, the Contractor will initiate all steps not to incur any further fees, costs, and expenses absent the express written consent of the Association.

§ 16.1 Termination by the Contractor

If the Work is stopped under Section 12.3 for a period of 14 days through no fault of the Contractor, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, and costs incurred by reason of such termination.

§ 16.2 Termination by the Owner for Cause

§ 16.2.1 The Owner may terminate the Contract if the Contractor

- .1 — repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 — fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the subcontractors;
- .3 — repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 — is otherwise guilty of substantial breach of a provision of the Contract Documents.

§ 16.2.2 When any of the above reasons exist, the Owner, after consultation with the Architect, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may

- .1 — take possession of the site and of all materials thereon owned by the Contractor, and
- .2 — finish the Work by whatever reasonable method the Owner may deem expedient.

§ 16.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 16.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of the Contract.

§ 16.3 Termination by the Owner for Convenience

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

(Insert any other terms or conditions below.) Contractor shall exercise reasonable due care to protect and prevent damage to all areas surrounding the areas where Work is being performed, including but not limited to, common areas controlled by the Association that arise from the negligent and /or willful acts, conduct and/or omissions of the Contractor. All precautionary measures will be subject to approval by the Engineer prior to the Commencement Date and approval will not be unreasonably withheld. Contractor shall protect the Work from damage due to climate. The Contractor shall reasonably protect the sidewalk, swimming pool, and all common areas from damage along with all areas adjacent to where Work will be performed or where tools and materials are stored that arise from the negligent and /or willful acts, conduct and/or omissions of the Contractor. If it is identified by the Engineer that the Contractor has damaged sod, plantings, sprinklers, and landscaping located at 10' or more from the areas that are being worked on, then the Contractor will be responsible for all costs and expense to replace and or repair these items but only if the Contractor fails to exercise reasonable due care in the performance of the Work resulting in damage to these areas. The notice to unit owners will be based upon the Schedule, along with written updates, delivered to Association by Contractor during performance of the Work. Contractor shall prevent damage to the unit interiors to the extent reasonably practicable but will not be responsible for damage unless the damage was caused by Contractor's failure to exercise due care in performance of the Work, recklessness, or intentional wrongful misconduct of Contractor or persons employed or utilized by Contractor relating to the performance of Work. To the extent damage to Association property occurs as a result of the negligent acts, conduct and/or omissions of Contractor, all damaged areas shall be repaired and/or replaced at Contractor's sole expense. At a date and time as agreed upon by the Association prior to commencement of the Work, Contractor shall video tape or take digital photographs of the condition of all areas adjacent to the building prior to commencement of Work and provide the Association with a copy of it. The Association or its designee may accompany Contractor while the videotaping or the taking of digital photographs is performed. All Work and storage areas shall be maintained in a neat/clean condition. Contractor shall prepare progressive drawings of all locations where actual Work was performed to be submitted to the Engineer with each payment application where applicable for review. Contractor will only be liable for those damages caused or contributed by its own acts and/or omissions as well as their employees, subcontractors, suppliers, and agents. Contractor will not be liable for damages caused by third parties over whom it does not exercise control. To the extent that any components are removed during the performance of the Work to be reinstalled, the components shall be wrapped in Visqueen, numbered, and stored on site in a secured location protected from damage by the climate, theft or vandalism and the cost of removal, protection, storage, and reinstallation is included in the Contract Sum. All components that were removed shall be cleaned of dust/grit and shall be returned to their condition prior to removal.

Should adverse conditions such as severe storms be forecasted, Contractor shall promptly take all necessary precautions to remove any pipe scaffolding or swing stage scaffolding or any other materials, equipment or debris which could be moved by the winds and become projectiles and will follow the protocol set forth in the "Hurricane Preparedness Plan" furnished by Contractor labeled and attached to this Contract as Exhibit "4". All precautionary measures and removal of such of Contractor's apparatus and all necessary precautionary measures involving Contractor's equipment shall be provided at no cost or expense to the Association. In the event of a hurricane or other severe weather, the Engineer may order Contractor to protect exposed exterior portions of the Work in progress where areas susceptible to damage exist to interiors, with protection equal to or better than pre-existing conditions, but in no event with protection less effective than plywood sheathing constructed as per the Engineer's drawings and specifications. In the event of a hurricane or other severe weather, should Contractor be directed by the Engineer and/or Association to do so, and as reasonably attainable given the advance notice period provided, these precautionary measures will be performed at an hourly rate of \$75.00 per hour which rate is inclusive of small compressors, electric hammers, grinders, drills, vacuums, and other small tools as necessary to perform the work plus actual cost of material and equipment rental, plus 20% applied only on material as well as equipment rental which is inclusive of all overhead, profit and administrative cost and fees, the cost for which shall be borne by the Association. For such charges, Contractor shall provide the Association with complete supporting documentation including time-slips, invoices, and other documentation that the Association may reasonably require. Contractor shall be responsible for restoring the premises and repairing other damage created during performance of the Work resulting from Contractor's failure to comply with obligations hereunder.

Prior to commencement of the Work, the Association will designate the location(s) of Contractor's staging area for storage of equipment, material and for vehicle parking by employees of the Contractor. Contractor will be prohibited

from storing its equipment, material, and parking vehicles in all other areas of the Project. The Association is not responsible for any risk of damage, theft, vandalism or other damages to Contractor's equipment, material and vehicles situated on the Association's property.

All electrical power requirements for the scaffolding and power for the Work, as well as all reasonable and necessary water, shall be supplied by the Association. The Association will not be required to modify existing electrical components to accommodate any requirements of the Contractor. Prior to commencement of the Work, Contractor will inspect all electrical facilities and satisfy itself that such facilities are adequate for Contractor's use in the performance of the Work.

This Agreement entered into as of the day and year first written above.

(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)

Carlton House Management Assoc. Inc.

OWNER *(Signature)*

Signature

(Printed name and title)title)

Promar Building Services, LLC

CONTRACTOR *(Signature)*

Signature

(Printed name and title)title)

LICENSE NO.:

JURISDICTION:

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, _____, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 13:12:38 ET on 12/05/2023 under Order No. 2114450677 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A105™ – 2017, Standard Short Form of Agreement Between Owner and Contractor, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

**Signatures here acknowledge the Engineer O & S
Associates Engineers & Architects Project Manual &
Specifications Package Consisting of 255 Pages**

Carlton House Management Association, Inc.

DocuSigned by:



510DD2BCC4014B5...

President

Promar Building Services LLC

DocuSigned by:



E4C26F0AF0D84D1...

President

PROJECT MANUAL & SPECIFICATIONS

SET ISSUED FOR BIDDING

April 17, 2023

Project:
**Carlton House Condominiums
Exterior Wall Repairs**

Prepared For:
Carlton House Condominiums
2701 South Ocean Blvd.
Highland Beach, FL 33487

BY:



ASSOCIATES
ENGINEERS & ARCHITECTS

CONSULTING ENGINEERS

2500 Hollywood BLVD.
Hollywood FL 33020
305.676.9888

www.OandSassociates.com

**Carlton House Condominiums
Exterior Wall Repairs**

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**Carlton House Condominiums
Exterior Wall Repairs**

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BIDDER'S NAME _____

SECTION 00 20 00 - BID FORM

**CARLTON HOUSE CONDOMINIUMS
EXTERIOR WALL REPAIRS
HIGHLAND BEACH, FL 33487**

TO: Carlton House Condominiums
2701 S Ocean Blvd
Highland Beach, FL 33487

ATTN: Denise Alvarez, Property Manager

FROM: (Bidder) _____
(Address) _____
(City, State, Zip) _____

Operating as *(strike out conditions that do not apply)* an individual, a company, a corporation organized and existing under the law of the State of _____, or a proprietorship, a partnership, or joint venture consisting of _____. Bidder (is/is not) registered to do business in the State of Florida.

The undersigned declares that he has successfully completed projects similar in magnitude, conditions and scope under similar conditions throughout the past 5 years as demonstrated in the attached Qualifications Statement.

The undersigned hereby declares that he has carefully examined all bidding and contract documents, and hereby proposes and agrees to provide all supervision, labor, materials, plant, equipment, transportation and other facilities as necessary and/or required to execute all the work described by the aforesaid documents for the restoration of the referred project, for the lump sum consideration of (BASE BID TOTAL):

_____ DOLLARS

(\$ _____ Dollars)

The sum of work items above includes all applicable taxes.

BIDDER'S NAME _____

W.I. #	Description	Contract Quantity	Units	Unit Price	Extension	
	GENERAL CONDITIONS:					
0.1	Mobilization/Demobilization/General Conditions	1	LS		=	\$
0.2	Access (Swing Stage) and Overhead Protection	1	LS		=	\$
0.3	Permits /Expediter cost pass through owner	1	LS		=	\$
0.4	Payment and Performance Bonds	1	LS		=	\$
	Bond Rate		%			
	STRUCTURAL CONCRETE REPAIR WORK:					
1.1	Partial Depth Slab Repair	350	SF			
1.2	Full Depth Slab Repair	150	SF		=	\$
1.3	Partial Depth Overhead Slab Repair	250	SF		=	\$
1.4	Overhead Concrete Beam or Tie-Beam Repair	40	CF		=	\$
1.5	Vertical Concrete Repair at Columns or Tie-Columns	40	CF		=	\$
1.6	Vertical Concrete Repair at Walls	75	CF		=	\$
1.7	Concrete Repair at Top or Bottom of Steel Column	5	CF		=	\$
1.8	Concrete Repair at Guardrail or Handrail Post	35	EA		=	\$
	STUCCO MAINTENANCE:					
2.1	Stucco Crack Repair	500	LF		=	\$
2.2	Stucco Patch Repair	1500	SF		=	\$
	WATERPROOFING					
3.1	Remove Existing Finish and Prepare Catwalk Floor for Waterproofing	9750	SF		=	\$
3.2	Install Waterproofing Membrane at Catwalk	9750	SF		=	\$
3.3	Remove Existing Finish and Prepare Balcony Floor for Waterproofing	5250	SF		=	\$
3.4	Install Waterproofing Membrane at Balconies	5250	SF		=	\$
3.5	Removal and Replacement of Expansion Joint Sealant at Catwalk	225	LF		=	\$
3.6	Removal and Replacement of Building Expansion Joints	125	LF		=	\$
3.7	Remove and Replace Window Perimeter Sealant at Catwalk	2360	LF		=	\$
3.8	Remove and Replace Sliding Door Perimeter Sealant at Balconies	830	LF		=	\$
3.9	Clean and Recoat Building (Approx 40,000 S.F.)	1	LS		=	\$
	MISCELLANEOUS					
4.1	Remove and Reinstall Shutters at Balconies	6	EA		=	\$
4.2	Clean and Repaint Corroded Steel Post at Catwalk	8	EA		=	\$
4.3	Clean and Repaint Corroded Steel Post at Balconies	7	EA		=	\$
4.4	Welded Steel Column Repair at Catwalk or Balcony	3	EA		=	\$
4.5	Replace Wood Privacy Screen	9	EA		=	\$
4.6	Install/Replace Drip Pipes at Balcony and Catwalk Weeps	1	LS		=	\$

Carlton House Condominiums
Exterior Wall Repairs

00 20 00 - 2
BID FORM

BIDDER'S NAME _____

W.I. #	Description	Contract Quantity	Units	Unit Price	Extension	
	ELECTRICAL REPAIRS					
5.1	Allowance for Misc. Electrical Work				=	\$5,000
	TOTAL COST OF BASE BID	=	\$			

Approximate quantities for Lump Sum work items are NOT guaranteed as not to exceed. Contractor is responsible for full scope of work as described and/or shown on drawings. All work items include furnishing and installation.

CONSTRUCTION TIME:

The undersigned agrees to commence work under this Contract on or before a date to be specified in a written "Notice to Proceed", and proposes to substantially complete all work in:

_____ Calendar Days

_____ Earliest Available Construction Start Date

ELECTRICAL ALLOWANCE:

Included in this contract is an allowance of \$5000 to cover the cost of incidental electrical work which may be required to be completed as part of the project scope of work. Contractor to indicate here the hourly rate and mark-up on materials for electrical work.

Hourly Rate for Electrician and Electrical Work: \$ _____/hr

Markup Percentage for Electrical Materials: _____%

BIDDER'S NAME _____**GENERAL REQUIREMENTS**

The bidder shall, before submitting his Proposal, carefully examine the Contract Documents. He shall inspect in detail the site of the proposed work and familiarize himself with all the local conditions affecting The Work and the detailed requirements of construction. If his Proposal is accepted, he will be responsible for all errors in his Proposal resulting from his failure or neglect to comply with these instructions or errors in judgment arising from said inspections of the work site and examination of the Contract Documents. The Engineer and/or the Owner will, in no case, be responsible for any losses or change in Contractor's anticipated profits resulting from such failure or neglect.

If the bidder finds any language in the Contract inconsistent, vague or difficult to understand or interpret, for any reason, he shall request clarification in writing from the Engineer or Owner not less than 7 working days prior to the scheduled dates for response thereto in writing to all bidders known to the Owner. Unless the bidder seeks clarification in accordance with this paragraph, he will be deemed to have waived his rights, if any he had, to object to said Contract language as vague or misleading for any reason.

When the plans and Special Provisions include information pertaining to surface observations, material testing and other preliminary investigations, such information represents only the opinion of the Engineer as to the location, character, or quantity of the materials encountered and is only included for the convenience of the bidder. The Owner/Engineer assumes no responsibility whatever in respect to the sufficiency or accuracy of the information, and there is no guarantee, either expressed or implied, that the conditions indicated are accurate or that unanticipated developments may not occur. Said information shall not be considered by the parties as a basis for the Contract award amount.

The Bidder agrees that adequate time was allowed the bidder to inspect all work sites and, unless express written request has been made, the Engineer/Owner will be presumed to have supplied the bidder all the information and access required to adequately complete the Proposal.

The estimated quantities of work to be done and materials to be furnished under these Specifications are given in the Proposal. All quantities are to be considered as approximate and are to be used only for comparison of bids and as a basis for computing amounts of bid bonds, payments bonds and performance bonds to be furnished. The unit and lump sum prices to be tendered by the bidders are to be for the scheduled quantities as they may be increased or decreased. Payments will be made to the Contractor only for the actual quantities of work performed and materials furnished in accordance with the Plans and Specifications. The scheduled quantities may each be increased or diminished or entirely deleted. Such changes may become necessary for the best interest of the project due to circumstances not known at the time the Contract was entered into or arising thereafter. In the event, in the sole judgment of the Owner or its representative such changes become necessary, the lump sum and unit prices set forth in the Proposal and embodied in the Contract shall remain valid.

Work acceptance is to be made by the Engineer. Any extra work beyond the scheduled quantities requiring additional cost to the Owner shall be approved by the Owner prior to taking such action. Claims for extra work which have not been authorized in writing by the Owner and approved by the Engineer will be rejected and the Contractor shall not be entitled to payment thereof.

RIGHT TO REJECT BIDS AND SIGNING CONTRACTS

In submitting this Proposal, it is understood that the right is reserved by the Owner to reject any and all bids. If written notice of acceptance of this bid is mailed, telegraphed or delivered to the undersigned within ninety (90) days after the opening thereof, or at any time thereafter before this bid is withdrawn by written notification, the undersigned agrees to execute and deliver a Contract in the prescribed form.

BIDDER'S NAME _____

BID GUARANTEE

The information in this proposal is correct to the best information, knowledge and belief of the undersigned.

Contractor

Signature

Title

Witness

Address

State of _____, County of _____.

On this _____ day of _____, 20__ before me personally known who did depose and say that he
of _____, The Corporation/Partnership/Individual described in and which executed the
foregoing instrument and that such instrument is duly on behalf of

Notary Public

END OF FORM OF BID

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

Owner: Carlton House Condominiums
2701 S. Ocean Blvd,
Highland Beach, FL 33487

Engineer: O&S Associates, Inc.
2500 Hollywood Blvd
Suite 212
Hollywood, FL 33020

Project: Exterior Wall Repair

GENERAL

1.1 RELATED DOCUMENTS

A. The following list composes the Contract Documents:

1. Instructions to Bidders (Section 00 21 13)
2. Bid Form (Section 00 20 00)
3. Agreement Form (AIA A101)
4. General Conditions (AIA A201)
5. General Requirements (01 00 00)
6. Technical Specifications
7. Drawings

B. Proposals to be entitled to consideration must be made in accordance with the following instructions:

1. Owner reserves right to award contract in his best interests; to reject any and all Bids; to waive any informalities in Bidding when such waiver is in the best interest of the Owner; and to hold Bids, which shall remain in force and effect, not less than ninety (90) days after date for receipt of Bids.
2. By submitting a Bid, Contractor acknowledges that he has visited the site, examined work areas, understands site constraints, project permit requirements, scope of work and specifications for the project. Any deviations, discrepancies and omissions from drawings and specifications or site conditions found during bidding different from those described in the contract documents (Drawings and Specifications) shall be brought to the attention of the Engineer for immediate resolution and to send written instructions to all bidders. Neither Owner nor Engineer will be responsible for any oral instructions. Lack of such notification to the Engineer will indicate that the bidder considers the documents to be sufficiently complete to prepare a bid for complete installation including all necessary accessory parts.
3. The drawings and specifications shall be considered to be cooperative and anything appearing in the specifications which may not be indicated on the plans, or vice versa, shall be considered as part of the contract and must be executed by the contractor the same as though indicated by both.
4. Before submitting a proposal, bidders should carefully examine the drawings and specifications: Check all schedules, visit the site, fully inform themselves as to all existing

conditions and limitations and shall include in the proposal a sum to cover the cost of all items included in that part.

5. Any addenda issued during the time of bidding shall be taken into account in preparing proposals and shall become a part of the contract documents.
6. Wherever in the contract documents, a particular article, material, device, form of construction, fixtures, etc., is shown or specified, such article, material, device, form of construction, fixture, etc., shall be known as standard. All PROPOSALS SHALL BE BASED ON STANDARDS SPECIFIED, and where two or more are named, bidders may bid on any so named. The Contractor is responsible for any extra cost due to changes required by substitutions or selection of any other than the first named product. Alternates for bid items are not allowed unless approved by the Engineer prior to Bidding.
7. The Bid Form shall contain a construction sequence conforming to contract documents identifying beginning and completion of construction activities. The sequence shall indicate winter mobilization and spring mobilization, as required.
8. The Contractor shall obtain Bonds and Permits as required by the contract documents.
9. Bidders should be aware time, as well as money, are of the essence and both shall be considered during bid evaluation.

1.2 BID SUBMITTALS:

- A. BID Forms shall be made upon the form provided in the Project Manual, and all blank spaces shall be fully filled; numbers shall be stated both in writing and figures; the signature shall be in long hand; and the completed form shall be without interlineations, alteration or erasure.

B. Submission

1. Single hard copy of bid forms shall be addressed to and delivered to in care of

ATTN: Denise Alvarez (denise.alvarez@castlegroup.com)
Carlton House Condominiums
2701 S. Ocean Blvd,
Highland Beach, FL 33487

no later than the date specified in the invitation to bid correspondence. The following shall be noted on the outside of the sealed envelope.

“Carlton House Exterior Wall Repair Program”

2. Electronic copy shall be submitted to the following, no later than the date and time stated above.

- a. TO: Denise Alvarez (denise.alvarez@castlegroup.com)
CC: Alma Liriano-Blanco (aliriano@oandsassociates.com)

proposal shall be properly signed as follows:

3. When a CORPORATION, with the name of the corporation, signature of an officer or other person properly authorized to enter into obligations for it and his title.
4. When a PARTNERSHIP, with name of partnership and signature of one of the partners.
5. When SOLE PROPRIETORSHIP, with his signature.

1.3 PRE-BID MEETING:

A. A Non-MANDATORY Pre-bid conference will be held at:

1. Date: Friday, April 21, 2023
2. Time: 9:30 A.M
Location: 2701 S. Ocean Blvd
Highland Beach, FL 33487

1.4 SCHEDULE OF CONSTRUCTION:

- A. The successful Contractor, prior to start of work, shall submit a schedule of activities for each day during the entire repair period for approval by Owner and Engineer.

1.5 STARTING AND COMPLETION TIME:

- A. Work shall start within ten days after the notification of the of the Contract.
- B. Bid Proposal shall include estimate of number of consecutive calendar days needed to complete the project.

1.6 MISCELLANEOUS:

- A. All (local, state, and federal) laws, codes, ordinances, and regulations pertaining to this class or type of construction shall be obeyed in regard to preparation of bids, letting of contracts, and complete installation of work.

1.7 CONSTRUCTION CONTRACT ADMINISTRATION:

A. Successful bidders shall furnish to the Engineer, at the time of signing the Contract, the following:

1. List of Sub-Contractors
 - a. Division of Work
 - b. Amount of Sub-Contract
 - c. Firm Name
 - d. Address
 - e. Telephone Number
 - f. Representative
2. List of Major Material Suppliers:
 - a. Division of Work
 - b. Amount of Material Purchase Order
 - c. Firm Name
 - d. Address
 - e. Telephone Number
 - f. Representative
3. Contract Cost Breakdown:
 - a. Shall be provided on AIA Form G-702A.

B. Indemnity and Insurance by the Contractor:

1. The Contractor shall provide insurance to completely indemnify, defend, protect, and save harmless to the full extent of the law, the Owner, the Engineer, and agents and employees of any of them, from any and all losses, liens, claims, suits, judgments, and proceedings of whatever nature arising out of the conduct of the work or performance of this contract.
2. All insurance that will be required to be maintained by the Contractor shall be in the minimum amounts and for the coverage specified herein and with such insurance companies as approved by the Owner. Insurance companies must be licensed to do business in the state of New Jersey.
3. All insurances shall protect the Owner, the Engineer, agents and employees of any of them and the Contractor, and any sub-contractors, from any losses, claims, suits and judgments, from claims set forth below which may arise out of or result from the operations of the Contractor under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor, or by a sub- contractor, by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable:
 - a. Claims under worker's compensation, disability benefit, and other similar employee benefit, acts which are applicable to the work to be performed;
 - b. Claims for damages because of bodily injury, sickness, or disease, or death of the employees of the Contractor;
 - c. Claims for damages because of bodily injury, sickness, or disease, or death of any person other than the employee of the Contractor;
 - d. Claims for damages insured by usual personal liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;
 - e. Claims for damages, other than to the work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
 - f. Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance, or use of a motor vehicle; and
 - g. Claims involving contractual liability insurance applicable to the obligations of the Contractor under indemnity provisions.
4. The Contractor shall furnish acceptable endorsements for the Following:
 - a. Worker's or Workmen's Compensation:
 - 1) State: Statutory
 - 2) Applicable Federal: Statutory
 - 3) Employer's Liability: One million (\$1,000,000) Dollars.
 - b. Comprehensive General Liability (including Premises-Operations; Independent Contractor's Protective; Products and Completed Operations; Broad Form Property Damage; Blanket Contractual Liability; and Personal Injury):
 - 1) Bodily Injury and Property Damage: Single Limit - One Million (\$1,000,000) Dollars.
 - 2) Property Damage Liability Insurance shall provide explosion (X), collapse (C), and underground (U) coverage, as applicable.
 - c. Comprehensive Automobile Liability:
 - 1) Bodily Injury and Property Damage: Single Limit - One Million (\$1,000,000) Dollars.
 - d. Umbrella excess Liability: Four million (\$4,000,000) Dollars over Primary Insurance.

5. Certificate of Insurance shall state that they are Primary Insurance, where applicable, and shall name the Owner, Engineer, and agents and employees of any of them, as additional insured. Certificates of Insurance shall state that they shall not be canceled, modified, or changed in status except upon (60) days written notice to all named insured. NO CONTRACT SHALL BE BINDING UPON THE OWNER, OR WORK COMMENCED, UNTIL ALL INSURANCE CERTIFICATES HAVE BEEN FILED WITH AND APPROVED BY THE OWNER, INCLUDING INSURANCE CERTIFICATES FROM ALL SUB-CONTRACTORS.

C. Application for Payment:

1. The Contractor shall furnish, free of charge, the necessary blank copies of AIA Form G-702 and G-702A for his applications for Payment.
2. Partial payments made as the work progresses shall in no way be considered as an acceptance of any portion of the labor or material embraced in the contract.
3. Material delivered at the site and approved by the Engineer and included in a certified estimate for partial payment shall become the property of the Owner and in no case shall such materials be removed from the site. However, if such material is stolen, destroyed or damaged by casualty before being used, the contractor will be required to replace it at his own expense. Storage of materials shall comply with the manufacturer's instructions or recommendations.
4. The Contractor, upon receipt of payment, shall reimburse each sub-contractor for labor and materials for which the contractor has received payment from the Owner. The contractor, upon receipt of payment, shall pay each material supplier for materials for which the contractor has received payment from the Owner.
5. Contractor's requests for payment shall normally be submitted by the Contractor once a month.
6. During the course of work, a retainage of ten (10%) percent will be withheld from work performed, until the satisfactory completion of all work in the Contract.
7. All materials delivered on the site shall be paid for at the rate of 90 percent of the invoiced value of the material.
8. During the course of construction, payment on estimates approved by the Engineer and filed with the Owner shall be made within 30 days.
9. Evidence, satisfactory to the Owner, may be required to show that all current obligations relating to the work are satisfied before releasing any payment due on the work. Before payment of the final estimate, each contractor shall file an affidavit with the Owner, stating that monetary obligations relating to lienable items in connection with this work have been fulfilled. When the major portion of the project is substantially completed and occupied, or in use, or otherwise accepted and there exists no other reasons to withhold retainage, the retained percentages held in connection with such portion will be released from escrow and paid to the Contractor, withholding only that amount necessary to assure completion. The balance of funds will be paid to the Contractor within thirty days from the date of completion and after acceptance by the Engineer and Owner. Provided, however, that nothing in this Contract shall be construed to create an obligation or incur a liability against the Owner in excess of the encumbrances issued to support this Contract.
10. Payment for materials stored, but not installed, may require the Engineer to visit the Contractor's place of storage for verification of all items on the Contractor's certificate. He shall certify that the items are in agreement with the specifications, and approved their incorporation into the project.

D. Progress Schedule:

1. The Progress Schedule required by the Owner shall be based on starting construction within 10 days after the notification of the award of the contract and completion of the Project as stipulated in the Contract. After contract is awarded, a meeting shall be held, to be attended by representatives of the General Contractor and all affected Subcontractors, the Engineer, and the Owner's Representative, to work out a definite schedule to be followed for starting and completing each Phase of the work.

1.8 CONTACTS:

- A. In order to assist those invited to submit a proposal and their prospective subcontractors, the following sources are available for consultation:

1. Alma Liriano-Blanco ALiriano@oandsassociates.com (305) 676-9888

END OF SECTION

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Exterior Wall Repairs
Bidder's Qualification Form
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SECTION 004400 – BIDDER'S QUALIFICATION FORM

1.1 BIDDER'S QUALIFICATION FORM

- A. AIA Document A305, Contractor's Qualification Statement, will be used in evaluating the qualifications of the Contractors. Bidders must secure and submit this fully completed document with their bid.
- B. Bidder will have successfully completed at least (2) two projects involving the repair of concrete parking structures with a contract amount of equal to, or greater than, the anticipated cost previously identified, within the last (5) five years.
- C. Also include experiences of the proposed Project Manager and Superintendent.

END OF SECTION 004400

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Agreement Form
00 52 00/1

SECTION 005200 – BIDDER’S QUALIFICATION FORM

1.1 AGREEMENT FORM

- A. AIA Document A101, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum – 2007 Edition, as amended and included here, forms the basis of Contract between the Owner and Contractor, and is included, following this page, as an integral part of the Bid documents. Provisions that are not so amended or supplemented remain in full force and effect.

END OF SECTION 005200

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General Conditions
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SECTION 007000 – GENERAL CONDITIONS

1.1 GENERAL CONDITIONS

- A. AIA Document A201, General Conditions of the Contract for Construction – 2007 Edition, as amended and included here, forms the basis of Contract between the Owner and Contractor, and is included, following this page, as an integral part of the Bid documents. Provisions that are not so amended or supplemented remain in full force and effect. The Bidder hereby acknowledges that is has reviewed AIA Document A201-2007 as amended, and hereby accepts the form except as to the items noted there to be completed upon Award.

END OF SECTION 007000

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Performance Bond; Payment Bond
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SECTION 008000 – PERFORMANCE; PAYMENT BOND

1.1 PERFORMANCE BOND

- A. AIA Document A312 – Performance Bond – shall be used as an integral part of the Bid documents, and issues of this form, signed and executed by the successful Bidder and Surety will be bound into the executed Contract copies of the Project Manual.

1.2 PAYMENT BOND

- A. AIA Document A312 – Payment Bond – shall be used as an integral part of the Bid documents, and issues of this form, signed and executed by the successful Bidder and Surety will be bound into the executed Contract copies of the Project Manual.

END OF SECTION 008000

SECTION 009000 – CONSTRUCTION FORMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The following documents are to govern the Bidding and the Contract
1. Application and Certification for Payment (AIA Document G702-1992)
 2. Continuation sheet (AIA Document G703-1992)
 3. Certificate of Substantial Completion (AIA Document G704-2000)
 4. Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706-1994)
 5. Contractor's Affidavit of Release of Liens (AIA Document G706A-1994)
 6. Consent of Surety Company to Final Payment (AIA Document G707-1994)
 7. List of Subcontractors (AIA Document G805-2001)
 8. Change Order (AIA Document G701-2001)
 9. Work Changes Proposal Request (AIA Document G709-1992)
 10. Architect's Supplemental Instructions (AIA Document G710-1992)
 11. Construction Change Directive (AIA Document G714-2007)

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Construction Forms
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PART 2 – PRODUCTS

Not Applicable to this Section

PART 3 – EXECUTION

Not Applicable to this Section

END OF SECTION 009000

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Exterior Wall Repairs
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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Access to site.
5. Coordination with occupants.
6. Work restrictions.

B. Related Requirements:

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1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Carlton House Condominiums

1. Project Location: 2701 S. Ocean Blvd., Highland Beach, FL 33487

B. Owner: Carlton House Condominiums

1. Owner's Representative: Denise Alvarez, Property Manager.

C. Engineer: O&S Associates, 2500 Hollywood Blvd, Suite 212, Hollywood, FL 33020

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Structural repair, waterproofing, and preventive maintenance of the building exterior walls, balconies, catwalks and exposed stairs

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 PHASED CONSTRUCTION

A. The Work shall be conducted in phases:

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1. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule showing the sequence, commencement and completion dates for all phases of the Work.

1.6 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated by Contractor's updated construction schedule.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of the parking facility affected by construction processes fully operational condition throughout the construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 1. Maintain access to existing driveways, walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct driveways, walkways, corridors, or other

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- occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify Owner not less than 7 days in advance of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 9:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
 1. Weekend Hours: As regulated by authorities having jurisdiction for restrictions on noisy work.
 2. Early Morning Hours: As regulated by authorities having jurisdiction for restrictions on noisy work.
 3. Hours for Utility Shutdowns: To be coordinated with Owner
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 1. Notify Owner not less than five days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

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Exterior Wall Repairs
Unit Prices
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SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

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Unit Prices
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1.3 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

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Unit Prices
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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Refer to BID FORM

END OF SECTION 012200

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Division 01 Section "Alternates" for products selected under an alternate.
 - 2. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
 - 3. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

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1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use CSI Form 13.1A or Method approved by Engineer.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.

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- j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided.
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

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SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Division 01 Section "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

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- A. Engineer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Engineer's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Work Change Proposal Requests issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: forms acceptable to Engineer.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Engineer.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times,

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and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Form acceptable to Engineer.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Unit-Price Adjustment: See Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Work Change Directive: Engineer may issue a Work Change Directive on AIA Document G714. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

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SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Division 01 Section "Unit Prices" for administrative requirements governing the use of unit prices.
 - 2. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 3. Division 01 Section "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

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- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 2. Submit the schedule of values to Engineer at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Engineer.
 - c. Engineer's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange schedule of values consistent with format of AIA Document G703.

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3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
5. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
7. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

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1. Submit draft copy of Application for Payment seven days prior to due date for review by Engineer.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

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1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. As-Built Drawings: With each Application for Payment, submit as-built drawing which describe the work completed during the time period described in the Application for Payment.
1. As-built drawings should show location and quantity of unit price work completed.
 2. As-built drawings should show extent or portion of lump sum work items for which partial payment is being requested.
 3. As-built drawings may be generated digitally or by hand but must be clear and legible.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Schedule of unit prices.
 5. Submittal schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 8. Initial progress report.
 9. Certificates of insurance and insurance policies.
 10. Data needed to acquire Owner's insurance.
- J. Application for Payment at Substantial Completion: After Engineer issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

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6. Evidence that claims have been settled.
7. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

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SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:

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1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 1. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

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1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Project closeout activities.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Indicate functional and spatial relationships of components of Engineerural, structural, civil, mechanical, and electrical systems.
 - c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - d. Indicate required installation sequences.
 - e. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance

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requirements. Provide alternate sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Engineer will return RFIs submitted to Engineer by other entities controlled by Contractor with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Engineer.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Specification Section number and title and related paragraphs, as appropriate.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Field dimensions and conditions, as appropriate.
 - 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 12. Contractor's signature.
 - 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Engineer.
 - 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.
 - 1. The following Contractor-generated RFIs will be returned without action:

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- a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt of additional information.
 3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log bi-weekly. Software log with not less than the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Engineer.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Engineer's response was received.
- F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

- A. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Engineer; Contractor and its superintendent; and other concerned parties shall attend the conference. Participants at

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the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Lines of communications.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Use of the premises.
 - l. Work restrictions.
 - m. Working hours.
 - n. Owner's occupancy requirements.
 - o. Responsibility for temporary facilities and controls.
 - p. Procedures for disruptions and shutdowns.
 - q. Construction waste management and recycling.
 - r. Parking availability.
 - s. Office, work, and storage areas.
 - t. Equipment deliveries and priorities.
 - u. First aid.
 - v. Security.
 - w. Progress cleaning.
 4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- B. Progress Meetings: Contractor will conduct progress meetings at regular intervals.
1. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.

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b. Review present and future needs of each entity present, including the following:

- 1) Interface requirements.
- 2) Sequence of operations.
- 3) Status of submittals.
- 4) Deliveries.
- 5) Off-site fabrication.
- 6) Access.
- 7) Site utilization.
- 8) Temporary facilities and controls.
- 9) Progress cleaning.
- 10) Quality and work standards.
- 11) Status of correction of deficient items.
- 12) Field observations.
- 13) Status of RFIs.
- 14) Status of proposal requests.
- 15) Pending changes.
- 16) Status of Change Orders.
- 17) Pending claims and disputes.
- 18) Documentation of information for payment requests.

2. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

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- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Engineer's final release or approval.
 - g. Scheduled date of fabrication.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Engineer's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Engineer for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

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3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
 3. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of subcontractor.
 - g. Name of supplier.
 - h. Name of manufacturer.
 - i. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - j. Number and title of appropriate Specification Section.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.

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- m. Other necessary identification.
- 4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- 5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will discard submittals received from sources other than Contractor.
 - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
 - 1) Project name.
 - 2) Date.
 - 3) Destination (To:).
 - 4) Source (From:).
 - 5) Name and address of Engineer.
 - 6) Name of Contractor.
 - 7) Name of firm or entity that prepared submittal.
 - 8) Names of subcontractor, manufacturer, and supplier.
 - 9) Category and type of submittal.
 - 10) Submittal purpose and description.
 - 11) Specification Section number and title.
 - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
 - 13) Drawing number and detail references, as appropriate.
 - 14) Indication of full or partial submittal.
 - 15) Transmittal number.
 - 16) Submittal and transmittal distribution record.
 - 17) Remarks.
 - 18) Signature of transmitter.
- E. Options: Identify options requiring selection by Engineer.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.

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- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Submit electronic submittals via email as PDF electronic files.
 - a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Engineer, will return two copies.
 - 3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Engineer will not return copies.
 - 4. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
 - 5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - 6. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:

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- a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 - a. Three paper copies of Product Data unless otherwise indicated. Engineer will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
 3. Submit Shop Drawings in the following format:
 - a. Three opaque copies of each submittal. Engineer will retain one copy; remainder will be returned.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:

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- a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. Three paper copies of product schedule or list unless otherwise indicated. Engineer will return two copies.
- F. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

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- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.

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- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S ACTION

- A. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

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- E. Submittals not required by the Contract Documents may be returned by the Engineer without action.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Engineer, Owner or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

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- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of three previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data : For Contractor's quality-control personnel.
- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.6 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports when specified in other Sections. Include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections when specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee

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payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

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1.8 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

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2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Engineer.
 4. Identification of testing agency or special inspector conducting test or inspection.

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- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- B. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.

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2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
1. Locations of dust-control partitions at each phase of work.
 2. HVAC system isolation schematic drawing.
 3. Location of proposed air-filtration system discharge.
 4. Waste handling procedures.
 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

2.2 TEMPORARY FACILITIES

- A. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

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- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 OPERATION, TERMINATION, AND REMOVAL

- A. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- B. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Division 01 Section "Substitution Procedures" for requests for substitutions.
 - 2. Division 01 Section "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

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1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within **15** days of receipt of request, or **seven** days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
 - b. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:

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1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

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2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Products:
 - a. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
3. Manufacturers:
 - a. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
4. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Engineer's sample", provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

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- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

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SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of Owner-installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
 - 9. Correction of the Work.
- B. Related Requirements:
 - 1. Division 01 Section "Summary" for limits on use of Project site.
 - 2. Division 01 Section "Submittal Procedures" for submitting surveys.
 - 3. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 - 4. Division 02 Section "Selective Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

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1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer.
- B. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.
- C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
 - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 - 4. Dates: Indicate when cutting and patching will be performed.

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Engineer of locations and details of cutting and await directions from Engineer before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Engineer for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

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3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Engineer according to requirements in Division 01 Section "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

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- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary."

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- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 5. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

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5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

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- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 01 74 00 – WARRANTIES

PART 1 - GENERAL:

1.1 RELATED DOCUMENTS:

- A. Drawings and Contract Documents, the Contract and General and Supplementary Conditions included in the Contract and Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 2 through 9.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS:

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS:

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace work that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Owner's Recourse: Written warranties made to the Owner, they shall not limit the duties, obligations, rights and remedies otherwise available under the law.
- D. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

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1.5 SUBMITTALS:

- A. Submit written warranties to the Owner prior to the date certified for Substantial Completion. When a designated portion of the Work is completed and occupied or used by the Owner, submit properly executed warranties to the Owner within fifteen days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.
- C. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer.
- D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
 - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
- E. Provide warranties and bonds in full color electronic format ("PDF").

PART 2 - PRODUCTS:

Not used

PART 3 - EXECUTION:

3.1 SCHEDULE OF WARRANTIES

- A. The General Contractor shall provide a 1 year warranty for all work performed under contract to conform with the specifications, applicable codes and industry standards in addition to specific warranties for individual products.
- B. Concrete (Division 3)
 - 1. The contractor shall provide a single source materials and performance warranty for all concrete work performed to conform with the contract documents, applicable codes and industry standards and against premature deterioration for a period of five years.
 - 2. Completed concrete repairs shall be guaranteed jointly and severally by the installation (concrete repair) contractor and by the patching material manufacturer against defects in material and application, for a period of five years from the completion of application. Defects shall include cracking in and around the patch perimeter, scaling, delamination, spalling and rust staining from underlying reinforcing steel.

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3. All defects in concrete repair areas shall be repaired by replacing the defective concrete at no cost to the Owner. Repair work shall include removal and replacement of the elastomeric coating or the traffic bearing membrane, as required, at no cost to the Owner.

C. Waterproofing (Division 7)

1. Section 079000 - Sealants, Caulking and Joint Fillers:
 - a. Completed installation of all sealant joints shall be guaranteed jointly and separately, on a single document, by the sealant manufacturer and the installation Contractor for a period of five years starting from the date of substantial completion. The guarantee shall include any failure of the joint system including leakage and cohesion and adhesion failure. Any repairs required during the guarantee period starting from the date of substantial completion shall be performed by the Contractor at no additional cost to the Owner.
2. Section 079100 – Expansion Joints:
 - a. Completed installation of all sealant joints shall be guaranteed jointly and separately, on a single document, by the sealant manufacturer and the installation Contractor for a period of five years starting from the date of substantial completion. The guarantee shall include any failure of the joint system including leakage and cohesion and adhesion failure. Any repairs required during the guarantee period starting from the date of substantial completion shall be performed by the Contractor at no additional cost to the Owner.

END OF SECTION

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Construction Waste Management and Disposal
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SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
 - 1. Division 02 Section "Selective Structure Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING OF WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site.
5. Protect items from damage during transport and storage.

C. Plumbing Fixtures: Separate by type and size.

D. Lighting Fixtures: Separate lamps by type and protect from breakage.

3.2 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Division 01 Section "Execution" for progress cleaning of Project site.
 - 2. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 3. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

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1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 3. Complete final cleaning requirements, including touchup painting.
 4. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

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1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Page number.

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4. Submit list of incomplete items in the following format:
 - a. Three paper copies. Engineer will return two copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

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- C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

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SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Sections:
 - 1. Division 01 Section "Execution" for final property survey.
 - 2. Division 01 Section "Closeout Procedures" for general closeout procedures.
 - 3. Divisions 02 through 49 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up record prints.
 - 2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Final Submittal: Submit one paper copy set of marked-up record prints. Print each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy of each submittal.
- D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

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- b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Changes made by Change Order or Change Directive.
 - d. Changes made following Engineer's written orders.
 - e. Details not on the original Contract Drawings.
 - f. Field records for variable and concealed conditions.
 - g. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
 4. Provide electronic, scalable, record documents annotating and distinguishing between different categories of work. Record documents should have legend distinguishing work items for identification by Owner/Architect.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Engineer.
 - e. Name of Contractor.

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2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 - 5. Note related Change Orders and record Drawings where applicable.
- B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders and record Drawings where applicable.
- B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked up paper copy of Product Data.
 - 1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked up miscellaneous record submittals.
 - 1. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

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PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Engineer's reference during normal working hours.

END OF SECTION 017839

SECTION 020700 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section requires the selective removal and subsequent offsite disposal of the following:
 - 1. Isolated areas of damaged concrete as noted on the drawings to be repaired.
 - 2. Portions of existing building indicated on drawings and as required to accommodate new construction.
 - 3. Removal and protection of existing fixtures, materials, and equipment items.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Schedule indicating proposed sequence of operations for selective demolition work to Owner's Representative for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise control protection.
 - 1. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
 - 2. Coordinate with Owner's continuing occupation of portions of existing building and with Owner's partial occupancy of completed work.
 - 3. Contractor shall review with the Owner and Engineer the types of equipment which he proposed to use during operations and obtain Owner's approval for such use.
- C. Photographs of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. File with Owner's Representative prior to start of work.
- D. Shoring plans, details and calculations, signed and sealed by a professional engineer registered in the project's jurisdiction for all shoring required for construction.

1.4 JOB CONDITIONS

- A. Occupancy: Owner will occupy portions of the building immediately adjacent to and above areas of selective demolition. Conduct selective demolition work in manner that will

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minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's normal operations.

- B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.
1. Examine areas and conditions under which the Work is to occur. Notify the Engineer immediately in writing of any conditions detrimental to the proper and timely completion of this Work.
 2. Proceed with the Work only after unsatisfactory conditions have been acceptably remedied.
 3. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.
- C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.
1. Storage or sale of removed items on site will not be permitted.
- D. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to selective demolition work.
1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of building.
 2. Erect temporary covered passageways as required by authorities having jurisdiction.
 3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.
 4. Protect from damage existing finish work, signs, windows, doors, plantings, parking equipment, etc. that is to remain in place during demolition operations.
 5. Protect floors with suitable coverings when necessary.
 6. Construct temporary insulated dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks.
 7. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
 8. Remove protections at completion of work.
 9. Protect adjoining properties, public thoroughfares, sidewalks and utilities from damage due to demolition operations.
 10. Take adequate precautions to prevent unauthorized personnel from entering the job site.
- E. Damages: Promptly repair damages caused to adjacent facilities by demolition work.

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- F. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, parking spaces and other adjacent occupied or used facilities.
 - 1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Protect vehicles and their occupants within or adjacent to the building from hazards or damages. Provide clean and unobstructed driveways and parking areas.
- G. Flame Cutting: Do not use cutting torches for removal until work area is cleared of flammable materials. At concealed spaces, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.
- H. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
 - 1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
 - 2. Maintain fire protection services during selective demolition operations.
- I. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
 - 2. Provide necessary protection to prevent airborne construction material, debris, fumes, etc from entering adjacent building, air intakes, etc.
 - 3. Provide necessary ventilation systems, independent of building systems, to remove dust and fumes from work area.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 PREPARATION

- A. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.

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1. Cease operations and notify Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
2. Cover and protect furniture, equipment, and fixtures from soilage or damage when demolition work is performed in areas where such items have not been removed.
3. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.
 - a. Where selective demolition occurs immediately adjacent to occupied portions of the building, construct dust-proof partitions of minimum 4-inch studs, 1/2-inch painted plywood on occupied side, 1/2-inch fire-retardant plywood on demolition side. Fill partition cavity with sound-deadening insulation.
 - b. Provide weatherproof closures for exterior openings resulting from demolition work.
4. Locate, identify, stub off, and disconnect utility services that are not indicated to remain.
 - a. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shutdown of service is necessary during changeover.

3.2 DEMOLITION

- A. General: Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.
 1. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools.
 2. The Contractor shall size and locate demolition equipment throughout structure and promptly remove debris in a manner to avoid imposing excessive loads on supporting walls, floors, or framing.
 3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
 4. Perform demolition using procedures and equipment which will avoid spalling, cracking or other damage to existing concrete or finishes.
 5. Demolish tile on Pedestrian Bridge's using a 15 lb. Chipping hammer maximum. Do not damage, gouge, spall, or otherwise mar the surface of the structural slab during the tile removal process. Damage to the structural slab shall be repaired.
- B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of directive from Owner's Representative, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

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- C. Perform selective partial demolition of delaminated or spalled areas of the concrete structure to prepare the areas for repair in accordance with the Drawings and the following Article 3.3.

3.3 DELAMINATED CONCRETE SURFACE PREPARATION

A. Location and Marking of Work Areas

1. The Contractor shall locate floor slab surface delaminations by sounding the surface with a hammer or rod, or dragging a chain. The Contractor shall sound all floor slabs. Delaminated areas once located by the Contractor will be further sounded to define their limits. These limits or "boundaries" shall be marked with chalk or paint.
2. Beam, joist, wall, curb, column and ceiling delaminations shall be located by sounding the appropriate member with a hammer or rod. Cracks, usually horizontal in orientation along beam faces, and vertical in orientation near corners of columns are reliable indicators of delaminated concrete. Delaminated areas once located by the Contractor will be further sounded to define their limits. These limits or "boundaries" shall be marked with chalks or paint.
3. Prior to concrete removal, these marked limits shall be reviewed and approved by the Engineer. The limits shall be relocated if directed by the Engineer to minimize the area of demolition.

B. Concrete Removal and Surface Preparation

1. Delaminated, spalled and unsound concrete floor areas shall have their marked boundaries sawcut to a depth of 1/2 inch (UNO) into the floor slab. For beams, joists, columns, curbs, ceilings and walls, the marked boundary may be either sawcut or ground to a depth of 1/2 inch (UNO) into the existing concrete, measured from the original surface. All edges shall be straight and patch areas square or rectangular shaped. A diamond blade saw or grinder with abrasive disk suitable for cutting concrete is acceptable for performing this work. The edge cut at the delamination boundary shall be dressed perpendicular to the member face. It shall also be of uniform depth for the entire length of the cut.
2. All concrete shall be removed from within the marked boundary to a minimum depth of 3/4 inch using 15 pound chipping hammers (maximum) equipped with chisel point bits. If delaminations exist beyond the minimum removal depth or beyond the marked boundary, the Engineer shall be notified and then, in the presence of the Engineer or his representative, chipping shall continue until all unsound and delaminated concrete has been removed.
3. Where reinforcing bars (or mesh) are exposed by concrete removal, extra caution shall be exercised to avoid damaging the reinforcement during removal operations. Concrete removal of 3/4 inch minimum around and beyond the perimeter of the bar for the entire exposed length is required. Optionally, mesh may be removed and new mesh spliced with existing. Removing and replacing the mesh is incidental to cost of concrete demolition and placement.
4. If rust is present on reinforcing bars where they enter sound concrete, then additional removal of concrete along the reinforcement is required. Such additional removal shall continue until grey reinforcement is exposed. If rust persists beyond the removal limits, the Engineer shall be advised and will direct further removals.

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C. Inspection of the Surfaces and Exposed Reinforcing

1. After removals are completed, but prior to final cleaning, the cavity and all exposed reinforcement shall be inspected by the Engineer. The inspection shall include sounding the exposed concrete to determine completeness of delamination removals, examination of dressed edges to verify depth and vertical edge of cut, and uniformity of excavation to insure compliance with minimum limits specified.
2. The Engineer shall inspect all reinforcement exposed within the cavity for defect due to corrosion or damage resulting from Contractor's removal operations. Replacement of defective or damaged reinforcement shall be performed in accordance with the Drawings.

D. Preparation of Concrete Bonding Surface

1. The Contractor shall abrasive-blast or high-pressure water blast all exposed surfaces to remove laitance and any foreign material that may impair bonding.

E. Cleaning and Securing of Reinforcing

1. Where noted on the Drawings, all exposed steel shall be cleaned and epoxy coated.
2. Loose reinforcing steel shall be secured by either tying loose top reinforcing bars to partially bonded reinforcing bars or drilling supplemental anchors into the existing floor and installing tie downs. Lead anchors are not permitted. Securing loose reinforcement is incidental to surface preparation and no extras will be allowed for this work.

F. Final Preparation

1. Cavity surfaces will be examined by the Engineer prior to concrete placement.
2. All concrete bonding surfaces shall be abrasive blasted prior to concrete placement.
3. Airblasting is required as a final step to remove debris.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
2. Burning of removed materials is not permitted on project site.

3.5 CLEANUP AND REPAIR

A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections not required for subsequent construction activities and leave interior areas broom clean.

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1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.
2. Clean adjacent facilities of dust, dirt and debris resulting from demolition operations.

END OF SECTION 020700

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and Contract Documents, the Contract and General and Supplementary Conditions included in the Contract and Division-1 Specification Sections, apply to this Section.
- B. Section 03380 – Microsilica Modified Concrete
- C. Section 03200 - Concrete Reinforcement
- D. Section 03400 - Fibrous Reinforcement in Concrete
- E. Section 03930 – Concrete Rehabilitation

1.2 SECTION INCLUDES

- A. Cast-in-place concrete for building frame members, floors, and supported slabs.
- B. Floors and slabs on grade.
- C. Control, expansion and contraction joint devices associated with concrete work and including joint sealants.
- D. Additional miscellaneous concrete work as specified in Supplementary General Requirements, the Form of Bid, or elsewhere in the Contract Documents.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Concrete - Slab-on-fill or Grade: By the square foot or as described in the bid form.
- B. Concrete - Vertical in Forms: By the square foot or as described in the bid form.
- C. Concrete - Includes concrete, placement accessories, consolidating and levelling, troweling, climate protection and curing.

1.4 REFERENCES

- A. ACI 211.1 - Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- B. ACI 211.2 - Selecting Proportions for Structural Lightweight Concrete.

- C. ACI 301 - Structural Concrete for Buildings.
- D. ACI 302 - Guide for Concrete Floor and Slab Construction.
- E. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- F. ACI 305R - Hot Weather Concreting.
- G. ACI 306R - Cold Weather Concreting.
- H. ACI 308 - Standard Practice for Curing Concrete.
- I. ACI 318 - Building Code Requirements for Reinforced Concrete.
- J. ASTM C33 - Concrete Aggregates.
- K. ASTM C94 - Ready-Mixed Concrete.
- L. ASTM C138 - Test method for unit weight, yield, and air content of concrete.
- M. ASTM C150 - Portland Cement.
- N. ASTM C260 - Air Entraining Admixtures for Concrete.
- O. ASTM C330 - Light Weight Aggregates For Structural Concrete.
- P. ASTM C494 - Chemical Admixtures for Concrete.
- Q. ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

1.5 SUBMITTALS

- A. General: Submit the following in accordance with Section 01300 of this specifications and conditions of Contract.
- B. Product data for proprietary materials and items, including forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Engineer.
- C. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Fiber reinforcement.
 - 6. Waterstops.
 - 7. Curing compounds.
 - 8. Floor and slab treatments.

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9. Bonding agents.
 10. Adhesives.
 11. Vapor retarders.
 12. Semirigid joint filler.
 13. Joint-filler strips.
 14. Repair materials.
- D. The Contractor shall submit trial mix proportion with compressive strength test results to the Engineer for approval. Proportion design mixes as defined in ACI 301 Article 3.9. Include the following information for each concrete mix design submission:
1. Method used for mix design.
 2. Gradation of fine and coarse aggregates (ASTM C33).
 3. Proportions of all admixtures added at the plant or at job site.
 4. Water/cement ratio.
 5. Slump (ASTM C143).
 6. Certification of chloride content of admixtures.
 7. Air Content of freshly mixed concrete (ASTM C31 and ASTM C173)
 8. Unit weight of concrete (ASTM C138).
 9. Strength at 3, 7, 28 days.
- E. The Testing Agency shall submit test results of cylinders for each day's testing, information shall include the following:
1. Slump (ASTM C143).
 2. Air Content of freshly mixed concrete (ASTM C31 and ASTM C173)
 3. Unit weight of concrete (ASTM C138).
 4. Strength at 3, 7, 28 days.
 5. Concrete temperature at placement time.
 6. Air temperature at placement time.
- F. The Contractor shall submit the proposed pouring sequence and construction joint layout for approval by the Engineer.
- G. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.
1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.
- H. Minutes of pre-construction conference.

1.6 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:
1. ACI 301, "Specifications for structural concrete for buildings", ACI 318, "Building Code Requirements for Reinforced Concrete", OR AASHTO specifications.
 2. Independent testing agency employed by Owner and acceptable to the Engineer.

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- B. Materials and installed work may require testing and retesting at any time during progress of work. Retesting of rejected materials for installed work shall be done at Contractor's expense.
- C. Pre-Construction Conference: Conduct conference at Project site and the following.
- D. At least 21 days prior to start of the concrete construction schedule, the contractor shall conduct a meeting to review the proposed mix designs and discuss the required methods and procedures necessary to achieve the required concrete quality. Review requirements for submittals, status of coordinating work, and availability of materials. Establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications. Request that representatives of each entity directly concerned with cast-in-place concrete attend conference, including, but not limited to, the following:
 - 1. Contractor's superintendent.
 - 2. Laboratory responsible for concrete design mixes.
 - 3. Laboratory responsible for field quality control.
 - 4. Ready-mix concrete producer.
 - 5. Concrete subcontractor.
 - 6. Primary admixture manufacturers and color admixture manufacturer.
 - 7. Architect or Owner's representative.
- E. Test Placement: Prior to beginning structural concrete flatwork placements and after approval of the proposed mixture proportions by the engineer, contractor shall conduct one test placement at location selected by the Engineer. Contractor shall use the placing, finishing, evaporation protection, and curing techniques proposed for use on the project. These techniques and the final finished appearance of the concrete shall be reviewed by the Engineer and the representative of the admixture manufacturer. Actual flatwork placements shall not begin until the test placement has been approved by the Engineer.
- F. The minutes shall include a statement by the concrete contractor indicating that the proposed mix design and placing techniques will produce the concrete quality required by these specifications.

1.7 CONTRACTOR'S QUALIFICATIONS

- A. The general Contractor, concrete sub-contractors and contractor specializing in stamped and colored concrete work shall have a minimum of five years of experience in performing work similar to that shown in the drawings and specifications. A statement of qualification should be submitted at time of bidding.
- B. The Contractor shall submit a list of five projects at the time of bidding, in which similar work to that specified was successfully completed. This list shall contain the following for each of the five projects.
 - 1. Project Name
 - 2. Owner of Project
 - 3. Owner's Representative, Address and Telephone Number
 - 4. Brief Description of Work
 - 5. Cost of Portion of Work Similar to that Specified in this Section
 - 6. Total Restoration Cost of Project
 - 7. Date of Completion

1.8 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I, non air-entraining, of recent manufacture and free of lumps.
1. Use one brand and type of cement throughout project unless otherwise acceptable to Engineer.
 2. Use of "fly ash" and "new cem" in the concrete mix is not permitted.
- B. Normal Weight Aggregates: ASTM C-33 and as herein specified. Provide aggregates from a single source for exposed concrete. Coarse aggregates shall be clean, sound crushed and graded limestone or approved equal conforming to ASTM C33. No chert shall be permitted.
1. Use ¾" nominal size conforming to ASTM C33, Table 2.
 2. Chloride ion level in aggregate shall be tested by laboratory making trial mixes. Test shall conform to FHA Report No. FHWA-RD-77-85, "Sampling and Testing for Chloride Ion in Concrete" or AASHTO Method T260. Water soluble chloride ion content of mix from all constituents shall not exceed 0.1% by weight of cement.
- C. Water: Potable water: ASTM C94.
- D. Sand: ASTM C-33. Sand shall be clean and sharp and shall be provided from a single source.
- E. Admixtures, General: (ACI 301) Provide admixtures for concrete that are free from chloride ions. Use of any admixtures must be approved by Engineer prior to its use. Use approved admixtures in strict accordance with manufacturer's recommendation.
- F. Air-Entraining Admixture: ASTM C-260, certified by manufacturer to be compatible with other required admixtures.

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1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Air-Mix" or "Perma-Air," Euclid Chemical Co.
 - b. "Darex AEA" or "Daravair," W.R. Grace & Co.
 - c. "MB-VR" or "Micro-Air," Master Builders, Inc.
 - d. "Sika AER," Sika Corp.
- G. Water-Reducing Admixture: ASTM C 494, Type A.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Eucon WR-75, Eucon WR-89 or Eucon MR" Euclid Chemical Co.
 - b. "WRDA with Hycol," W.R. Grace & Co.
 - c. "Pozzolith 322N or Polyheed 997," Master Builders, Inc.
 - d. "Plastocrete 161," Sika Corp.
- H. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or Type G.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Eucon 37, Eucon 1037 or Plastol 5000" Euclid Chemical Co.
 - b. "Daracem," W.R. Grace & Co.
 - c. "Rheobuild 1000, or Rheobuild 716" Master Builders, Inc.
 - d. "Sikament 300," Sika Corp.
- I. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Eucon Retarder 75," Euclid Chemical Co.
 - b. "Daratard-17," W.R. Grace & Co.
 - c. "Pozzolith R," Master Builders, Inc.
 - d. "Plastiment," Sika Corporation.
- J. Calcium Nitrite-Based Corrosion Inhibitor.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. DCI or DCI-s Corrosion Inhibitor, WR Grace & Co.
 - b. Rheocrete CNI, Master Builders
 - c. Eucon CIA, The Euclid Chemical Company
- K. Admixtures for Colored Concrete:
 1. For colored concrete, use L. M. Scofield "color Admixtures" in strict accordance with manufacturer's recommendations. Provide color as shown on plans. Dosage of color depends on the amount of cement used in the mix. Contractor to coordinate with ready mix supplier and color manufacturer for dosage.
 2. For stamped concrete, use L. M. Scofield "Lithochrome Color Hardner". Provide color as shown on plans and in strict accordance with manufacturer's recommendations.

2.2 RELATED MATERIALS

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- A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Moisture-Retaining Cover: Burlap complying with ASTM C 171.
- C. Clear Curing and Sealing Compound (A.I.M. Regulations – VOC Complaint, 350 g/l): Liquid-type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solid contents minimum. Moisture loss not more than 0.4 Kg./sq.m. when applied at 300 sq. ft./gal.
 - 1. Available Products for normal concrete: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Super Diamond Clear VOX, or Super Rez Seal Vox" Euclid Chemical Company.
 - b. "Masterkure100W," Master Builders, Inc.
- D. Curing Compound (Strippable) – VOC Complaint, 350 g/l): The water based compound shall conform to ASTM C 309. Use strippable curing compound on surfaces to be covered with finish or coating material applied directly to concrete, such as liquid densifier/sealer, waterproofing, dampproofing, membrane roofing, flooring, painting, and other coatings and finish materials.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Kurez DR VOX" Euclid Chemical Company.
- E. For colored concrete use "Lithochrome Colorwax" by L. M. Scofield Company.
- F. Vapor Barrier: A flexible, preformed sheer membrane having a water-vapor permeance rate no greater than 0.012 perms when tested in accordance with ASTM E154, Section 7 and otherwise conforming to ASTM E1475, Class B or higher. Vapor barrier shall be no less than 10 mils thick in accordance with ACI 302.1R-96.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Griffolyn Vaporguard," Reef Industries.
 - b. "Stego Wrap (15 mils) Vapor Barrier," Stego Industries L.L.C., San Juan Capistrano, CA, PH: 877-464-7834.
 - c. "Premoulded membrane with PLASMATIC CORE," W.R. Meadows.

2.3 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - a. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - 1) High-density overlay, Class 1 or better.
 - 2) Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - 3) Structural 1, B-B or better; mill oiled and edge sealed.
 - 4) B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

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- B. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- D. Form-Release Agent: Use commercially manufactured formwork release agent that reduces form-work moisture absorption, prevents bond with repair material, does not stain concrete and repair material surfaces, and does not interfere with bond of subsequently-applied sealers, coatings, waterproofing materials, and other finishes..
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
- F. Unless otherwise specified, locate and detail repair material construction joints per the following requirements:
 - 1. Locate joints within the middle third of spans of slabs, beams, and girders. When a beam intersects a girder within this region, offset construction joint in the girder a distance equal to or greater than twice width of beam.
 - 2. Locate joints in walls and columns at underside of slabs, beams, or girders and at tops of footings or slabs.
 - 3. Make joints perpendicular to main reinforcement.
 - 4. Locate joints to match construction joints in the existing structure.
- G. Unless otherwise specified, maximum deflection of facing materials reflected on repair material surfaces exposed to view shall be 1/240 of span between structural members of formwork.
- H. Contractor is responsible for design and engineering of all formwork. Unless otherwise specified, design calculations and drawings for engineer-designed formwork shall be signed and sealed by a specialty engineer as required by state or jurisdiction where Work will be done.
 - 1. Submit design calculations for engineer-designed formwork, shoring, reshoring and backshoring, signed and sealed by a specialty engineer as required by jurisdiction where Work will be done.

2.4 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 , deformed.
- B. Galvanized Reinforcing Bars: ASTM A 615, Grade 60 deformed bars, ASTM A 767/A 767M, [Class I] [Class II] zinc coated after fabrication and bending.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 615, Grade 60, deformed bars, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- D. Stainless-Steel Reinforcing Bars: ASTM A 955/A 955M, Grade 60, Type 304, deformed.

- E. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A 615, Grade 60, deformed bars, assembled with clips.
- F. Plain-Steel Wire: ASTM A 1064, [as drawn] [galvanized].
- G. Deformed-Steel Wire: ASTM A 1064.
- H. Epoxy-Coated Wire: ASTM A 884/A 884M, Class A, Type 1 coated, deformed-steel wire, with less than 2 percent damaged coating in each 12-inch wire length.
- I. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.
- J. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064, flat sheet.
- K. Galvanized-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from galvanized-steel wire into flat sheets.
- L. Epoxy-Coated Welded-Wire Reinforcement: ASTM A 884, Class A coated, Type 1, deformed steel.

2.5 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615, Grade 60, plain-steel bars, epoxy coated.
- C. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775.
- D. Zinc Repair Material: ASTM A 780.
- E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
 - 3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.6 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for concrete by laboratory trial batch or field experience methods as specified in ACI 301. Use an independent testing facility acceptable to the Engineer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.

- B. Submit written reports to the Engineer of each proposed mix at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed and approved by the Engineer.
- C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
 - 1. 5,000-psi, 28-day compressive strength;
 - 2. W/C ratio, 0.4 maximum,
 - 3. Air content, 6.0% with a tolerance of plus 1.0 percent, minus 0%
 - 4. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - a. Not more than 3 inches initial slump.
 - b. Not more than 8 inches final slump after the addition of plasticizing agent.
 - 5. Calcium Nitrite Corrosion Inhibitor, 2 gallons per cubic yard.
 - 6. Color additive and other admixtures as per manufacturer's recommendations.

2.7 ADMIXTURES

- A. Use high-range water-reducing admixture (Superplasticizer) in concrete for placement and workability.
- B. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content of 6.0% with a tolerance of plus 1.0 percent, minus 0%.
- C. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.
- D. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - 1. Not more than 3 inches initial slump.
 - 2. Not more than 8 inches final slump after the addition of plasticizing agent.

PART 3 - EXECUTION

3.1 PRODUCTION OF CONCRETE (ACI 301, CHAPTER 7)

- A. Concrete shall be produced by a ready-mix plant. On-site volumetric batching and concrete production shall be approved by the Engineer prior to start of the work.
- B. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as specified.
- C. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- D. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

- E. No water shall be added to concrete batch at site. Addition of superplasticizers at site shall be as directed by concrete manufacturer and admixture manufacturer. Truck shall be equipped with admixture dispenser or other auxiliary equipment, capable of adjustment for variation of dosage, calibration and accurate measurement.

3.2 PREPARATION OF SUBGRADE

- A. Demolition and surface preparation shall be performed as shown on plans at locations shown on plans and selected by the Engineer.
- B. Ensure compaction and grading of subgrade are in accordance with Section 313000 before placing concrete paving.
- C. Remove loose material from compacted subgrade surface prior to placing concrete.

3.3 PREPARATION

- A. Demolition and surface preparation shall be performed as shown on details and as per Section 02060 and 03 93 00 of this specification at locations shown on plans and selected by the Engineer.

3.4 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 11.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

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- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.5 PLACING, FINISHING AND CURING

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.

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4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Bonding Grout: (Partial Depth)

1. After the surface has been cleaned and immediately before placing concrete, a thin coating of bonding grout shall be scrubbed into the saturated, prepared surface of the existing concrete. The existing concrete surface shall be saturated by prewetting for 2 hours (min.) prior to concrete placing. Proper workmanship shall be exercised to insure that all existing surfaces receive a thorough, even coating and that no excess grout permitted to collect in pockets. The rate of progress in applying grout shall be limited so that the grout does not become dry before it is covered with new concrete.
2. Bonding grout for patching concrete to existing concrete shall consist of Portland Cement and a 50:50 mix of SBR Latex and water mixed in a portable mechanical mixer to a plastic consistency. The Water/Cement shall be the same as that of the topping mix.
3. Should the bonding grout dry before the concrete is placed, the Contractor will remove the dried grout and sandblast clean the grouted surface, at his expense, before placing fresh bonding grout.

F. Placing and finishing:

1. Receive Owner's and Engineer's written approval of surface finish used on flatwork before beginning work.
2. Do not place concrete when temperature of air is less than 50 degrees F. unless the following conditions are met:
 - a. Place concrete only when temperature of surrounding air is expected to be above 40 degrees F. and rising and expected to be above 45 degrees F. for at least 36 hours after the pour.
 - b. When above conditions are not met, concrete may be placed only if insulation or heating enclosures are provided in accordance with ACI 306 (Recommended practice for cold weather concreting). Submit proposed protective measures for Engineer's approval.
 - c. Cost of precautionary measures shall be borne by the Contractor.
3. For hot weather concrete placement the following conditions shall apply:
 - a. Do not place concrete if concrete mix temperatures exceeds 90 degrees F.
 - b. Do not place concrete under hot weather conditions. Hot weather is defined as air temperature which exceeds 80 degrees F. or any combination of high temperature, low humidity and high wind velocity which causes evaporation rate in excess of 0.10 pounds per square foot per hour as determined by ACI 305R, Figure 2.1.5.
4. Concrete shall be deposited as close to its final position as possible. All concrete placement shall be continuous and terminated only at bulkheads and designated construction joints.
5. On ramps with greater than 5 percent slope, all concreting shall begin at the low point and end at high point. Contractor shall make necessary adjustments to slump or equipment without any irregularities or roughness.

G. Finishing (ACI 301, Chapters 10 and 11)

1. All flatwork finishers shall hold current ACI Flatwork Finishers Certification.
2. Partial Depth Placement: After the bonding grout has been applied, concrete shall be placed, consolidated by vibration, and shall be finished by screeding and floating to bring the finished surface to specified elevation. The surface shall then receive a light broom finish. The

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reinforcing steel shall have a minimum concrete cover as shown on plans. The finished concrete shall be protected by barricades with lights, until the completion of the required curing period.

- H. Wet Curing: All normal concrete is to be cured using water only, unless approved by Engineer otherwise. When water is required to wet the surface of the newly placed concrete, it shall be applied as a fine spray so that it will not mark or pond on the surface. Except where otherwise specified, the curing period shall be at least 72 hours. If high early strength Portland Cement is approved by the Engineer, the curing period may be reduced as directed by the Engineer. Curing shall be accomplished by wet curing only. The curing membrane shall only be used in floor areas approved by the Engineer.
1. The surface of the newly poured concrete shall be covered with wetted burlap as soon as the concrete has hardened sufficiently to prevent marring of the surface. The burlap shall overlap six inches. At least two layers of wetted burlap shall be placed on the finished surface. The burlap shall be kept saturated by means of a mechanically operated sprinkling system. In place of the sprinkling system, two layers of burlap may be substituted for one layer of burlap and impermeable covering.
 2. The burlap sheets shall be placed so that they are in contact with the vertical faces of concrete slabs after removal of slab forms, and that portion of the material in contact with those faces shall be kept saturated with water.
- I. Membrane Curing Method: Membrane curing will not be permitted unless approved in writing by the Engineer. Colored and stamped concrete shall be cured by membrane curing method as specified below.
1. After the concrete has been finished and immediately after the final texture has been achieved and the water sheen has disappeared from the surface of the concrete, the surface shall be sealed with specified curing and sealing compound or the strippable curing compound. The seal shall be maintained for the specified curing period. The vertical faces of concrete slabs shall, likewise, be sealed immediately after the forms are removed. Two separate applications, applied at least one minute apart each at the rate of not less than one gallon per 300 square feet, will be required upon all surfaces of the concrete. These applications shall be made with mechanical equipment.
 2. At locations where the coating is discontinuous or where pin holes show or where the coating is damaged due to any cause and on areas adjacent to sawed joints, immediately after sawing is completed, an additional coating of membrane curing compound shall be applied at the rate of one gallon per 250 square feet.
 3. The Engineer may order curing by another method specified herein if unsatisfactory results are obtained with membrane curing compound. Prior to starting The Work, the Contractor shall have available, at the site of The Work, a supply of one of the other approved curing materials sufficient for curing one day's production.
 4. The Contractor's construction operations including the management of traffic, shall be such as to avoid damage to the coatings of curing compound for period of not less than the curing period specified. Any curing membrane that is damaged or that peels from the concrete surface within the curing period specified, shall be repaired by the Contractor without delay and in an approved manner. No additional compensation will be allowed to the Contractor for performance of this work.

3.6 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 396D. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A 780. Use galvanized-steel wire ties to fasten zinc-coated steel reinforcement.

3.7 PLACING JOINTS

- A. Place joints true-to-line with face perpendicular to surface of concrete.
- B. Place construction joints at end of placements and at locations where placement operations are stopped for a period of more than 1/2 hour, except where such placements terminate at expansion joints.
- C. Saw cut contraction joints to a depth equal to one-quarter (1/4) of concrete paving thickness with powered saws using 3/16 inch blade, as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.
- D. Construct expansion joints with one end of dowel set in expansion cap to allow longitudinal movement, as indicated.
- E. Place expansion joint filler between abutting concrete curbs, gutters, walks, manholes, catch basins and inlets, unless otherwise indicated.

3.8 CONCRETE PROTECTION FOR REINFORCEMENT

- A. The minimum concrete protection for reinforcement shall be in accordance with ACI 318.
 - 1. Minimum cover for non-prestressed and non post-tensioned cast in place concrete
 - a. Cast against and permanently in contact with ground – 3”
 - b. Exposed to weather or in contact with ground:
 - 1) Slab top or edge and beam top: 2”
 - 2) Slab bottom: 1”
 - 3) Beam sides and bottom, columns, and walls: 1½”

- c. Not exposed to weather or in contact with ground
 - 1) Slabs, joists and walls
 - a) No 14 through No. 18 bars – 1½”
 - b) No. 11 bar and smaller – ¾”
 - 2) Beams, columns, pedestals, and tension ties - 1½”
- 2. Minimum cover for post-tensioned cast in place concrete
 - a. Cast against and permanently in contact with ground – 3”
 - b. Exposed to weather or in contact with ground:
 - 1) Slab top or edge and beam top: 1½”
 - 2) Slab bottom: ¾”
 - 3) Beam sides and bottom, columns, and walls: 1½”
 - c. Not exposed to weather or in contact with ground
 - 1) Slabs, joists and walls – ¾”
 - 2) Beams, columns, pedestals, and tension ties - 1½”

3.9 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.
 - 1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar before bonding compound has dried.
 - 2. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- B. Repair of Concrete Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry-pack mortar, or precast cement cone plugs secured in place with bonding agent.
 - 1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

3.10 TOLERANCES

- A. Elevation: Plus or minus 1/2 inch of required elevations except that no difference in elevation will be permitted at joints with other surfaces intended to be at same elevation as portland cement concrete paving.
- B. Thicknesses indicated are minimum in-place thickness.

- C. Finished Surfaces: True planes within 1/4 inch in 10 feet as determined by a 10 feet straightedge placed anywhere on the paving in any direction.

3.11 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
1. Steel reinforcement placement.
 2. Steel reinforcement welding.
 3. Headed bolts and studs.
 4. Verification of use of required design mixture.
 5. Concrete placement, including conveying and depositing.
 6. Curing procedures and maintenance of curing temperature.
 7. Verification of concrete strength before removal of shores and forms from beams and slabs.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each truck of air-entrained concrete.
 4. Water Content: The water content of freshly mixed concrete will be tested each time cylinders are made as directed by the Engineer in accordance with AASHTO TP 23, Proposed Standard Method for Water Content of Freshly Mixed Concrete Using Microwave Oven Drying
 5. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 6. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of three standard cylinder specimens for each composite sample.
 - b. Cast and field cure three sets of three standard cylinder specimens for each composite sample.

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7. Compressive-Strength Tests: ASTM C 39; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of three field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of three specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that air content, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Engineer.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

SECTION -039300 – Concrete Repair

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Removal of deteriorated concrete and subsequent replacement and concrete repair.
2. Floor joint repair.
3. Epoxy crack injection.
4. Corrosion-inhibiting treatment.
5. Placement and curing of repair materials

B. References:

1. "Specifications for Structural Concrete for Buildings" (ACI 301) by American Concrete Institute, herein referred to as ACI 301, is included in total as specification for this structure except as otherwise specified herein.
2. Comply with provisions of following codes, specifications and standards except where more stringent requirements are shown on Drawings or specified herein:
3. ACI 546R-14 - Concrete Repair Guide
4. ASTM C33 - Concrete Aggregates.
5. ASTM C41 - Standard Test Method for Slump.
6. ASTM C138 - Test method for unit weight, yield, and air content of concrete.
7. ASTM C150 - Portland Cement.
8. ASTM C231 - Test for Air Content of Freshly Mixed Concrete.
9. ASTM C260 - Air Entraining Admixtures for Concrete.
10. ASTM C387 - Specifications for High Strength Mortars.
11. ASTM C494 - Chemical Admixtures in Concrete.
12. ACI 305R - Recommended Practice for Hot Weather Concreting.
13. ACI 306R - Recommended Practice for Cold Weather Concreting.
14. ACI 318 - Building Code Requirements for Reinforced Concrete.
15. ACI 562 - Code Requirement for Evaluation, Repair, and Rehabilitation of Concrete Buildings
16. ACI 562 - Specifications for Repair of Concrete in Buildings

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site to discuss and review Contract Documents, scope of Work, repair process, repair materials performance requirements, repair materials, dust control, preparation, acceptance criteria, tolerances, quality assurance program, quality control program, and roles and responsibilities for Work.

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1. Representatives of each entity directly concerned with concrete repair procedures to attend.
 - B. Mockups: Provide mockups to demonstrate the effectiveness and suitability of various methods intended to be used for concrete removal and surface preparation. Architect/Engineer will evaluate the mockups and testing results to determine if extent of concrete removal and proposed methods satisfy the project requirements and achieve desired tensile pull-off strengths.
 1. Prepared substrate surface within the mockup shall be made available for testing to determine if the required pull-off strength, profile, and moisture condition can be met.
 2. Test for the minimum pull-off tensile bond strength of prepared substrate surface of mock-up area in accordance with ASTM C1583/C1583M.
 3. Change or modify the concrete removal and surface preparation methods if the prepared substrates in the mockups do not satisfy the project requirements and the specified pull-off strengths are not met.
 4. Test for the minimum pull-off tensile bond strength of mock-up area between the repair material and the prepared substrate surface in accordance with ASTM C1583/C1583M.
 5. The required pull-off strengths shall be at least equal to the minimum pull-off value as indicated in Section 3.13 - E.1
- 1.4 SUBMITTALS
- A. Product Data and SDS: For each type of product.
 1. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.
 - B. Material Certificates:
 1. Repair materials
 2. Reinforcement
 3. Protective coatings
 4. Adhesives
 5. Injection Materials
 - C. Submit manufacturer's data sheet for concrete repair material consistent with the requirements of ACI 364.3R-09
 - D. Product Test Reports: For each concrete repair material, joint-filler, and crack-injection adhesive for tests performed by manufacturer and witnessed by a qualified testing agency.
 - E. Submit design mixes for concrete, associated laboratory test reports, and product data for admixtures. Include additional mix proportion tests for characteristics of materials that may be varied for special project conditions, weather, or other circumstances. As a performance-based system, design responsibility rests with the contractor.
 - F. Substitution requests shall specifically identify proposed substitution, reason for substitution, demonstrate compliance with performance requirements, and cost and schedule impacts
 - G. Field quality-control reports.
 - H. Contractor's quality control plan
 1. Submit quality control plan defining means and methods to control the purchase, use, and placement of materials.

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- I. Shoring and bracing
 - 1. Calculations: Submit signed and sealed calculations performed by a specialty engineer delineating the load effects on the structure and parts thereof occurring throughout the duration of the repair Work, and establish that all loadings are supported by the shoring and bracing system, unless more stringent requirements are delineated by the Architect/Engineer. When shoring is continuous over several floors or across several bays, the calculations shall delineate the sharing of loads between the existing structure and the shoring. Submittals shall delineate locations and maximum reactions at all points of bearing of the shoring against the existing structure, sufficient to permit Architect/Engineer to assess the impact of the proposed shoring on the overall structure.
 - 2. Shop drawings: Submit shoring layout shop drawings depicting the arrangement of equipment for shoring, inclusive of installation details, maintenance requirements, and permitted changes.
 - 3. Sequencing: Submit sequencing requirements of shoring installation and removal, concrete removals, surface preparation, repair installation, curing and minimum concrete strength at removal. Demonstrate that safety of structure is maintained through calculations prepared by specialty engineer.
 - 4. Certifications: Submit documentation of inspections and certifications required from specialty engineer

1.5 QUALITY ASSURANCE

- A. Repair materials and operations may be tested and inspected as Work progresses. Failure to detect defective Work or material will not prevent rejection if a defect is discovered later nor shall it obligate Architect/Engineer for final acceptance
- B. Manufacturer Qualifications: Each concrete repair material, crack injection adhesive, and corrosion inhibiting treatment manufacturer shall employ factory-authorized service representatives who are available for consultation and Project-site inspection and on-site assistance. All manufacturers of specified products shall be ISO 9001 certified.
- C. Concrete Repair Contractor Qualifications: Contractor must employ installers and supervisors who are trained and approved by manufacturer to apply concrete repair materials, crack injection adhesives, and corrosion inhibitors to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing or patching new concrete is insufficient experience for concrete-maintenance work.
 - 1. Field Supervision: Concrete Repair Contractor shall maintain experienced full-time supervisors on Project site during times that concrete repair work is in progress.
- D. Quality Standards: Comply with provisions of the following standards and industry practice guidelines, except where more stringent requirements are indicated.
 - 1. ACI Manual of Concrete Practice, including the following standard.
 - a. ACI 301, "Specifications for Structural Concrete for Buildings".
 - b. ACI 562, "Code Requirements for Evaluation, Repair, and Rehabilitation of Concrete Buildings".
 - 2. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".
 - 3. International Concrete Repair Institute (ICRI).
- E. Quality Control: Duties and Responsibilities of Contractor:
 - 1. Allow access to the project site or to the source of materials and assist Owner's testing agency in obtaining and handling samples at the project site or at the source of materials.

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2. Advise Owner's testing agency at least 24 hours in advance of operations that require services as specified to allow for scheduling of quality assurance tests, review of project requirements, and assignment of personnel.
3. Provide secure location and sources of water and electrical power on project site acceptable to Owner's testing agency for initial curing of concrete strength test specimens as required by ASTM C31/C31M. Unless noted otherwise, provide similar secured location and sources of water and electrical power for repair materials.
4. Submit procedures for executing the Work as indicated in Contract Documents.
 - a. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work
5. Submit test data and documentation for repair materials as indicated in Contract Documents.
6. Inspect and test surface preparation in accordance with Section 3.4 - J
7. Inspect reinforcement in accordance with Section 3.4 - M
8. Inspect Work in progress to verify that Work is being performed in accordance with approved procedures, manufacturer's instructions, specific instructions from Architect/Engineer if given, or reference standards cited in Contract Documents.
9. Inspect bracing and shoring on an ongoing basis as Work progresses.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.
- B. Store cementitious materials off the ground, under cover, and in a dry location.
- C. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.
- D. Damaged materials must be removed from the job site immediately.
- E. Deliver packaged materials clearly marked with legible and intact labels with manufacturer's name, brand name, lot number, and identifying contents of containers. Store materials in areas where conditions conform with repair material manufacturer's recommendations and instructions

1.7 PROJECT SITE

- A. Protect the structure and its contents, specific Work areas, and adjacent construction from risks associated with Work in this Specification and/or as indicated in Contract Documents, including impact, marring of surfaces, and other types of damage. Protect areas adjacent to repair Work from damage and stains with appropriate barriers and masking. Repair damage and remove stains resulting from Work of this Specification to its condition at the start of work, or if such cannot be determined, to its original condition.

1.8 FIELD CONDITIONS

- A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.

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- B. Cold-Weather Requirements for Cementitious Materials: Do not apply unless concrete-surface and air temperatures are above 45 deg F (5 deg C) and will remain so for at least 48 hours after completion of Work.
- C. Cold-Weather Requirements for Cementitious Materials: Comply with the following procedures:
 - 1. When air temperature is below 45 deg F (5 deg C), heat patching-material ingredients and existing concrete to produce temperatures between 45 and 90 deg F (5 and 32 deg C).
 - 2. When mean daily air temperature is between 25 and 45 deg F (minus 4 and plus 5 deg C), cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.
 - 3. When mean daily air temperature is below 25 deg F (minus 4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.
- D. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F (32 deg C) and above.
- E. During the curing period, protect repair materials from damage by temperature, humidity, sunlight, wind, precipitation, water, and deleterious materials.

1.9 WARRANTY

- A. Provide written contractor warranties in compliance with contract requirements.
- B. Provide written manufacturers warranties for all materials for maximum manufacturer warranty period available.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.
 - 1. BASF Corporation, Shakopee, MN 55379
 - 2. Sika Corporation, Lyndhurst, NJ 07071
 - 3. MAPEI Corporation, FL 33442
- B. Obtain and coordinate services of a repair material manufacturer's field representative at the project site before mixing or installing proprietary materials or components to train personnel in preparation, installation, and quality control procedures. Unless otherwise specified, they shall remain at the job site as Work commences and continue to observe the Work until the project manufacturer's field representative, the Contractor, and the Owner are satisfied that the crew has mastered the technique of preparing and installing the proprietary products acceptably. Unless otherwise specified, manufacturer's field representative shall make periodic visits to

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review completed Work and distribute reports describing workmanship and conformance with manufacturer's requirements.

1. The repair material manufacturer's field representative shall be qualified to perform the Work as indicated in Contract Documents and subject to the approval of the Owner.

2.2 CONCRETE REPAIR MATERIAL

A. MANUFACTURERS:

1. Only use repair materials that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
2. Horizontal Concrete Repair Materials
 - a. BASF MasterEmaco 1061
 - b. SIKA SikaQuick 1000
 - c. MAPEI Planitop 11
 - d. MAPEI Planitop 18 ES
 - e. MAPEI Planitop 18 TG
 - f. Or approved equal
3. Vertical/Overhead Concrete Repair Materials
 - a. BASF MasterEmaco N425
 - b. SIKA Sikacrete VOH
 - c. MAPEI Planitop X
 - d. Or approved equal
4. Form and Pour Concrete Repair Materials
 - a. BASF MasterEmaco S440CI
 - b. SIKA Sikacrete 211 SCC Plus
 - c. MAPEI Planitop 11SCC
 - d. MAPEI Planitop 15
 - e. Or approved equal
5. Anti-Corrosion Rebar Coating
 - a. BASF Emaco P24
 - b. SIKA Armatec 110 EpoCem
 - c. MAPEI Mapefer 1K
 - d. Or approved equal
6. Galvanic Anodes
 - a. Vector Corrosion; Type 1A, Class C
 - b. Or approved equal

2.3 FORM-FACING MATERIALS

- ### A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Plywood, metal, or other approved panel materials.
 - a. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

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- 1) High-density overlay, Class 1 or better.
 - 2) Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - 3) Structural 1, B-B or better; mill oiled and edge sealed.
 - 4) B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- B. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- D. Form-Release Agent: Use commercially manufactured formwork release agent that reduces formwork moisture absorption, prevents bond with repair material, does not stain concrete and repair material surfaces, and does not interfere with bond of subsequently-applied sealers, coatings, waterproofing materials, and other finishes..
1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
- F. Unless otherwise specified, locate and detail repair material construction joints per the following requirements:
1. Locate joints within the middle third of spans of slabs, beams, and girders. When a beam intersects a girder within this region, offset construction joint in the girder a distance equal to or greater than twice width of beam.
 2. Locate joints in walls and columns at underside of slabs, beams, or girders and at tops of footings or slabs.
 3. Make joints perpendicular to main reinforcement.
 4. Locate joints to match construction joints in the existing structure.
- G. Unless otherwise specified, maximum deflection of facing materials reflected on repair material surfaces exposed to view shall be 1/240 of span between structural members of formwork.
- H. Contractor is responsible for design and engineering of all formwork. Unless otherwise specified, design calculations and drawings for engineer-designed formwork shall be signed and sealed by a specialty engineer as required by state or jurisdiction where Work will be done.
1. Submit design calculations for engineer-designed formwork, shoring, reshoring and backshoring, signed and sealed by a specialty engineer as required by jurisdiction where Work will be done.

2.4 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

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- B. Portland Cement: ASTM C 150, Type I, Low-Alkali.
 - 1. Fly Ash: ASTM C 618, Class F.
 - 2. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
 - 3. Supplementary cementitious materials to be added in accordance with requirements of ACI 318.
- C. Normal Weight Aggregates: ASTM C-33 and as herein specified. Provide aggregates from a single source for exposed concrete. Coarse aggregates shall be clean, sound crushed and graded limestone or approved equal conforming to ASTM C33. No chert shall be permitted.
 - 1. Maximum Coarse-Aggregate Size: 3/8" to No. 8, except where larger diameter aggregates can be accommodated. Free of materials with deleterious reactivity to alkali.
 - a. Nominal maximum size of coarse aggregate shall not exceed three-fourths of the minimum clear spacing between reinforcing bars or the clearance of the reinforcing bars over the prepared concrete substrate, one-fifth of the narrowest dimension between sides of forms, or one-third of the thickness of slabs, toppings, or partial-depth repairs.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali.
 - 3. Chloride ion level in aggregate shall be tested by laboratory making trial mixes. Test shall conform to FHA Report No. FHWA-RD-77-85, "Sampling and Testing for Chloride Ion in Concrete" or AASHTO Method T260. Water soluble chloride ion content of mix from all constituents shall not exceed 0.1% by weight of cement
- D. Silica Fume: ASTM C 1240, amorphous silica.
- E. Water: Potable: ASTM C 94
- F. Concrete Temperatures
 - 1. Maximum temperature: The temperature of concrete as delivered shall not exceed 95°F
 - 2. Minimum temperature: When the average of the highest and lowest ambient temperature from midnight to midnight is expected to be less than 40°F for more than three successive days, deliver concrete to meet the following minimum temperatures immediately after placement:
 - a. 50°F/24 hours for sections with least dimension less than 12 in.
 - b. 40°F/24 hours for sections with least dimension from 12 to 36 in.
 - c. 30°F/24 hours for sections with least dimension greater than 36 to 72 in.
 - d. 20°F/24 hours for sections with least dimension greater than 72 in.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating. Silicate-based liquid surface densifiers are prohibited as curing compounds.

2.6 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

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- B. Epoxy-Coated Welded-Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, plain steel.

2.7 Reinforcement Accessories

- A. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- B. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar support contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.8 MIXES

- A. General: Mix products, in clean containers, according to manufacturer's written instructions.
 - 1. Do not add water, thinners, or additives unless recommended by manufacturer.
 - 2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
 - 3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.
- B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream.
- C. Dry-Pack Mortar: Mix required type(s) of patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

2.9 SHORING AND BRACING

- 1. This section covers design, construction, installation and removal of shoring and bracing to support the structure before, during, and after the performance of repairs, until the structure or members of the structure is/are self-supporting and accepted by Architect/Engineer. Use temporary shoring to accommodate in-place conditions in the structure and expected superimposed loads. Consider the effects of compatibility of deformations on the shoring system and supported/supporting structural members.
- 2. Employ a Specialty Engineer to design all shoring and bracing that shall address preexisting unsafe structural conditions, load and deflection requirements during repair, and to maintain stability of the structure and structural members during construction for locations as indicated in Contract Documents. Comply with limits on concrete or reinforcement removal prior to shoring as indicated in Contract Documents. Shoring design and scheduling shall meet requirements for location, spacing, placement, and

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sequencing to minimize impact on building operations as indicated in Contract Documents. The design shall comply with the requirements of ACI 562

3. Unloading: When the removal of applied loads is desired, either from redistribution of loads as a result of distress, deterioration or deformation of a member, to permanently remove a member or portion of a structure, or to create load sharing between the existing member and the repair, jacking loads applied to the existing construction shall be accounted for in assessing the need for and in the design of shoring and temporary bracing.
4. Prestressed reinforcement—When repairs involve altering forces in prestressed reinforcement, whether intentional or due to the unintentional damage to prestressing reinforcement, deterioration of prestressing, or the imposition of new forces, the change in forces shall be considered in the design of bracing and shoring. Install appropriate shoring or temporary bracing, as required, until the final prestress forces are re-imposed on the member or structure.

PART 3 - EXECUTION

3.1 CONCRETE REPAIR

- A. Comply with all manufacturer's written instructions
- B. Notify Engineer if manufacturer's written instructions conflict with Contract Documents prior to ordering material.

3.2 EXAMINATION

- A. Notify Engineer seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.
- B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries. At columns and walls make boundaries level and plumb unless otherwise indicated. Configure geometry of removal area to maximize the use of right-angle geometry, avoiding reentrant corners, and to obtain uniformity of depth, as indicated in Contract Documents.
- C. Perform surveys as the Work progresses to detect hazards resulting from concrete repair work.

3.3 PREPARATION

- A. Ensure that supervisory personnel are on-site and on duty when concrete repair work begins and during its progress.
- B. Protect persons, motor vehicles, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete repair work.
 1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
 2. Use only proven protection methods appropriate to each area and surface being protected.

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3. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete maintenance work is being performed.
 4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete maintenance work.
 5. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.
 6. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
- C. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Engineer immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is in working order.
1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete maintenance work.
 2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.
- D. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete repair work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.
1. Verify that affected utilities have been disconnected and capped.
 2. Verify the location of all electrical lines and lock out/ tag out as needed
 3. Inventory and record the condition of items to be removed for reinstallation or salvage.
 4. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.

3.4 CONCRETE REMOVAL AND SURFACE PREPARATION

- A. Do not overload structural elements with debris.
- B. Submit documentation of existing conditions, especially areas of preexisting damage and deterioration unrelated to the Work, including finishes of surfaces, before starting demolition.
- C. Provide perpendicular edges at perimeter of repair area. Unless noted otherwise, perimeter of the repair areas shall be saw cut to a depth of ½ in. Do not cut or damage embedded reinforcement or other embedded items. If embedded reinforcing bars or other embedded items are too close to the surface to provide the perpendicular edge cut, notify Architect/Engineer for direction before proceeding.
- D. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement. Take care not to damage existing structure.
- E. Do not cut, damage or remove existing embedded reinforcing steel, electrical conduits, etc., unless directed by the Engineer.

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- F. Concrete removal around existing reinforcement
 - 1. Extend concrete removal along the reinforcement to a point where there is no further delamination, concrete cracking, or reinforcement corrosion, and where the reinforcement is bonded to the surrounding concrete.
 - 2. Unless otherwise specified, remove concrete around the exposed layers of reinforcement to a uniform depth within the repair areas and provide a minimum clearance between exposed reinforcement and surrounding concrete of 0.75 in., or at least 0.25 in. larger than the maximum nominal size of the coarse aggregate in the repair material. If specified, extend the concrete removal beneath other layers of reinforcement within the repair area.
 - 3. Unless otherwise specified, do not remove concrete behind vertical reinforcing bars in columns. Obtain direction from the Architect/Engineer if further concrete removal is required.
- G. Confirm perpendicular edges at repair area perimeter, and reinstate if damaged by concrete removal process. Remove loosely bonded concrete, bruised surface or fractured concrete, and bond-inhibiting materials such as dirt, concrete slurry, or any other detrimental materials from the concrete substrate
- H. Test areas where concrete has been removed by tapping with hammer and remove additional concrete until unsound and de-bonded concrete is completely removed.
- I. Remove laitance, debris, and bond-inhibiting materials using methods that shall satisfy these requirements as indicated in Contract Documents.
- J. Mechanically prepare the concrete substrate to obtain a surface profile of +/- 1/4" (CSP 8 or greater as per ICRI Guidelines) with a new exposed aggregate surface.
- K. Removal methods producing bruised surfaces (microcracking) of the prepared substrate shall be followed by secondary removal/surface preparation methods to remove the bruised surface layer. Avoid directly striking reinforcement with impact tools used for concrete removal.
- L. Notify Engineer of any unanticipated mechanical, electrical, or structural elements that impede the progress of the work or affect the installation of the repairs as per the drawings and specifications.
- M. Reinforcing-Bar Preparation: Remove loose and flaking rust from exposed reinforcing bars by abrasive blast cleaning (SSPC-SP3) until only tightly adhered light rust remains.
 - 1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in two or more adjacent bars, notify Engineer.
 - 2. Remove additional concrete as necessary to provide at least 6" of sound reinforcement.
 - 3. Splice replacement bars to existing bars according to ACI 318 by lapping, welding, or using mechanical couplings.
 - 4. Apply two coats of approved anti-corrosion rebar coating
 - 5. Attach specified galvanic anodes to existing reinforcing steel to provide sufficient electrical connection and mechanical bond

3.5 SCRUB/SLURRY COAT APPLICATION

- A. Mortar Scrub Coat for Job-Mixed repair material and Concrete:
 - 1. Scrub coat of material; to be prepared with a neat mix of the approved repair mortar as per manufacturer's instructions

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2. Dampen repair area and surrounding concrete 6 inches beyond repair area to a saturated surface dry condition. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.

B. Mortar Scrub Coat for Ready-Mixed repair material and Concrete:

1. For scrub-coat material, mix one-part portland cement and one part sand by loose volume with water to form a thick slurry. Use sand meeting the requirements of ASTM C144 or ASTM C404
2. Dampen repair area and surrounding concrete 6 inches beyond repair area to a saturated surface dry condition. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.

3.6 PATCHING MORTAR APPLICATION

- A. Place concrete repair material as specified in this article unless otherwise recommended in writing by manufacturer.
 1. Provide forms where necessary to confine patch to required shape.
 2. Wet substrate and forms thoroughly and then remove standing water.
- B. Pretreatment: Apply scrub coat as per section 3.5
- C. General Placement: Place concrete repair material by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
- D. Vertical Patching: Place material in lifts of not more than specified by manufacturer. Do not feather edge.
- E. Overhead Patching: Place material in lifts of not more specified by manufacturer. Do not feather edge.
- F. Consolidation: After each lift is placed, consolidate material and screed surface.
- G. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
- H. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a surface matching adjacent concrete.
- I. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray, water-saturated absorptive cover, or approved curing compound.

3.7 DRY-PACK-MORTAR APPLICATION

- A. Use dry-pack mortar for deep cavities. Place as specified in this article unless otherwise recommended in writing by manufacturer.
 - 1. Provide forms where necessary to confine patch to required shape.
 - 2. Wet substrate and forms thoroughly and then remove standing water.
- B. Place dry-pack mortar into cavity by hand, and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.
- C. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete. A thin coat of patching mortar may be troweled into the surface of patch to help obtain required finish.
- D. Wet-cure patch for not less than seven days as per section 3.11

3.8 CONCRETE PLACEMENT

- A. Place concrete according to Section 033000 "Cast-in-Place Concrete" and as specified in this article.
- B. Pretreatment: Apply mortar scrub coat to concrete substrate as per Section 3.5.
- C. Standard Placement: Place concrete by form-and-pump method unless otherwise indicated.
 - 1. Use vibrators to consolidate concrete as it is placed.
 - 2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.
- D. Form-and-Pump Placement: Place concrete by form-and-pump method where indicated.
 - 1. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.
 - 2. Pump concrete into place from bottom to top, releasing air from forms as concrete is introduced. When formed space is full, close air vents and pressurize to 14 psi.
- E. Wet-cure concrete for not less than seven days by leaving forms in place or per section 3.11.
- F. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.9 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

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- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 396D. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A 780. Use galvanized-steel wire ties to fasten zinc-coated steel reinforcement.
- H. The minimum concrete protection for reinforcement shall be in accordance with ACI 318.
 - 1. Minimum cover for non-prestressed and non post-tensioned cast in place concrete
 - a. Cast against and permanently in contact with ground – 3”
 - b. Exposed to weather or in contact with ground
 - 1) No. 6 through No.18 bar – 2”
 - 2) No. 5 bar, W31 or D31 wire and smaller – 1½”
 - c. No exposed to weather or in contact with ground
 - 1) Slabs, joists and walls
 - a) No 14 through No. 18 bars – 1½”
 - b) No. 11 bar and smaller – ¾”
 - 2) Beams, columns, pedestals, and tension ties - 1½”
 - 2. Minimum cover for post-tensioned cast in place concrete
 - a. Cast against and permanently in contact with ground – 3”
 - b. Exposed to weather or in contact with ground - 1½”
 - c. No exposed to weather or in contact with ground
 - 1) Slabs, joists and walls – ¾”
 - 2) Beams, columns, pedestals, and tension ties - 1½”

3.10 MIXING AND APPLICATION

- A. Concrete Repair Materials
 - 1. Mix and place concrete in accordance with manufacturer's directions.
 - 2. Apply concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. Deposit concrete to avoid segregation.
 - a. Do not exceed formwork design pressures.
 - b. Consolidate placed concrete with mechanical vibrating equipment.

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- c. For vertical and overhead applications, trowel apply in lifts in accordance with manufacturer's instructions.

B. Finishing

1. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces
2. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.11 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.12 SHORING AND BRACING

- A. Install shoring and bracing in accordance with sequencing documentation provided by specialty engineer

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- B. Establish and maintain survey controls and benchmarks in an undisturbed condition
- C. Maintain and adjust shoring and bracing during the repair process to comply with Section 1.4 - 1.2.
- D. Unless otherwise specified, remove shoring and bracing after concrete repairs achieve specified strength.
- E. Remove shoring and bracing after completion of all stressing operations.
- F. Inspect shoring and temporary bracing before beginning the repair process and at appropriate intervals throughout the process.
- G. Specialty engineer who designed the shoring shall inspect the installation and certify that the shoring and bracing, as installed, meets the intent of their design.

3.13 FIELD QUALITY CONTROL

- A. Concrete: As specified in Section 033000 "Cast-in-Place Concrete" or in drawing general notes.
- B. Prepare test and inspection reports.
- C. Tensile Bond Strength:
 - 1. Required minimum pull-off tensile bond strength: minimum direct tension strengths of 100 psi for nonstructural repair and 175 to 215 psi for structural repairs.
- D. Inspect completed Work, including visually examining repairs for cracks, testing for de-bonded repair materials, and verifying conformance with repair performance requirements. Correct defective Work.

END OF SECTION

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SECTION 040120 - MAINTENANCE OF MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes maintenance of unit masonry consisting of [brick] [and] [terra cotta] clay masonry restoration and cleaning as follows:
 - 1. Unused anchor removal.
 - 2. Repairing unit masonry, including replacing units.
 - 3. Painting steel uncovered during the work.
 - 4. Reanchoring veneers.
 - 5. Repointing joints.
 - 6. Preliminary cleaning, including removing plant growth.
 - 7. Cleaning exposed unit masonry surfaces.
- B. Owner-Furnished Material: Salvaged brick.
- C. Related Sections:
 - 1. Division 01 Section "Historic Treatment Procedures."

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2. Division 04 Section "Maintenance of Stone Assemblies."
3. Division 04 Section "Unit Masonry" for new clay masonry construction.
4. Division 07 Section "Water Repellents" for water repellents applied to clay masonry.
5. Division 07 Section "Sheet Metal Flashing and Trim" for metal flashing installed in or on restored clay masonry.

1.3 ALLOWANCES

- A. Allowances for clay masonry restoration and cleaning are specified in Division 01 Section "Allowances."
 1. Perform clay masonry restoration and cleaning work under quantity allowances and only as authorized. Authorized work includes [**work required by Drawings and the Specifications and**] [**only**] work authorized in writing by Architect.
 2. Notify Architect [**weekly**] **<Insert time interval>** of extent of work performed that is attributable to quantity allowances.
 3. Perform work that exceeds quantity allowances only as authorized by Change Orders.
- B. Provide preconstruction testing as part of testing and inspecting allowance.
- C. Remove unused anchors as part of **<Insert name of allowance>**.
- D. Remove and replace brick as part of brick removal and replacement allowance.
- E. Remove and replace terra cotta as part of terra cotta removal and replacement allowance.
- F. Reanchor veneers as part of reanchoring veneers allowance.
- G. Patch masonry units as part of masonry unit patching allowance.

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- H. Clean [brickwork] [and] [terra cotta] [, including preliminary cleaning,] [, including preliminary and final cleaning,] as part of masonry cleaning allowance.
- I. Repoint masonry as part of repointing masonry allowance.

1.4 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."
 - 1. Unit prices apply to authorized work covered by [quantity allowances] [estimated quantities].
 - 2. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.

1.5 DEFINITIONS

- A. Very Low-Pressure Spray: Under [100 psi (690 kPa)] <Insert value>.
- B. Low-Pressure Spray: [100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s)] <Insert range of values>.
- C. Medium-Pressure Spray: [400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s)] <Insert range of values>.
- D. High-Pressure Spray: [800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s)] <Insert range of values>.

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- E. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: **[Owner will engage] [Engage]** a qualified testing agency to perform preconstruction testing on masonry units as follows.
1. Provide test specimens as indicated and representative of proposed materials and construction.
 2. Existing **[Brick] [and] [Terra Cotta]**: Test each type of existing masonry unit indicated for replacement, according to testing methods in ASTM C 67 for compressive strength, 24-hour cold-water absorption, 5-hour boil absorption, saturation coefficient, and initial rate of absorption (suction). Carefully remove **[five] <Insert number>** existing units from locations designated by Architect. Take testing samples from these units.
 3. Existing Mortar: Test according to ASTM C 295, modified as agreed by testing service and Architect for Project requirements, to determine proportional composition of original ingredients, sizes and colors of aggregates, and approximate strength. Use X-ray diffraction, infrared spectroscopy, and differential thermal analysis as necessary to supplement microscopical methods. Carefully remove existing mortar from within joints at **[five] <Insert number>** locations designated by **[Architect] [or] [testing service]**.
 4. Temporary Patch: As directed by Architect, provide temporary materials at locations from which existing samples were taken.
 5. Replacement **[Brick] [and] [Terra Cotta]**: Test each proposed type of replacement masonry unit, according to sampling and testing methods in ASTM C 67 for compressive strength, 24-hour cold-water absorption, 5-hour boil absorption, saturation coefficient, and initial rate of absorption (suction).

1.7 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Shop Drawings: For the following:

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1. Full-size patterns with complete dimensions for new **[terra cotta units] [specially molded brick shapes] [and] [brick arches]** and their jointing, showing relation of existing to new units.
2. Setting number of each new terra cotta unit and its location on the structure in annotated plans and elevations.
3. Provisions for expansion joints or other sealant joints.
4. Provisions for flashing, lighting fixtures, conduits, and weep holes as required.
5. Replacement and repair anchors. Include details of anchors within individual masonry units, with locations of anchors and dimensions of holes and recesses in units required for anchors.

C. Samples for Initial Selection: For the following:

1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, **6 inches (150 mm)** long by **[1/4 inch (6 mm)] [1/2 inch (13 mm)]** wide, set in aluminum or plastic channels.
 - a. Have each set contain a close color range of at least **[three] [six] <Insert number>** Samples of different mixes of colored sands and cements that produce a mortar matching the cleaned masonry when cured and dry.
 - b. Submit with precise measurements on ingredients, proportions, gradations, and sources of colored sands from which each Sample was made.
2. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.
 - a. Have each set contain a close color range of at least **[three] [six] <Insert number>** Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.
3. Sealant Materials: See Division 07 Section "Joint Sealants."
4. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For the following:

1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.
 - a. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.

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- b. Patterns for Terra Cotta: Before manufacturing terra cotta units, submit the actual patterns from which molds will be made for casting new units. Package and ship to prevent loss or damage or make patterns available for inspection by Architect at fabrication plant.
 - c. For terra cotta, provide one of each shape, color, and texture of unit, suitable and ready for installation. **[Make this submittal after acceptance of patterns for terra cotta.]**
 - 2. Each type of sand used for pointing mortar; minimum **1 lb (0.5 kg)** of each in plastic screw-top jars.
 - a. For blended sands, provide Samples of each component and blend.
 - b. Identify sources, both supplier and quarry, of each type of sand.
 - 3. Each type, color, and texture of pointing mortar in the form of sample mortar strips, **6 inches (150 mm)** long by **[1/4 inch (6 mm)] [1/2 inch (13 mm)]** wide, set in aluminum or plastic channels.
 - a. Include with each Sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.
 - 4. Each type of masonry patching compound in the form of briquettes, at least **3 inches (75 mm)** long by **1-1/2 inches (38 mm)** wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
 - 5. Sealant Materials: See Division 07 Section "Joint Sealants."
 - 6. Accessories: Each type of anchor, accessory, and miscellaneous support.
- E. Qualification Data: For **[restoration specialists] [including field supervisors and restoration workers] [terra cotta manufacturer] [chemical-cleaner manufacturer] [and] [testing service]**.

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- F. Preconstruction Test Reports: For **[existing] [and] [replacement]** masonry units.
- G. Quality-Control Program.
- H. Restoration Program.
- I. Cleaning Program.

1.8 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced[, **preapproved**] masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.
 - 1. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for repair work.
 - 2. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.
 - 3. Restoration Worker Qualifications: Persons who are experienced[**and specialize**] in restoration work of types they will be performing.[**When masonry units are being patched, assign at least one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.**]
- B. Terra Cotta Manufacturer Qualifications: A firm regularly engaged in manufacturing custom architectural terra cotta units for building restoration purposes, of same type and of similar size, complexity, and tolerances as those required for the Work.
- C. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.

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- D. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- E. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.
- F. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
1. Include methods for keeping pointing mortar damp during curing period.
 2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- G. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.
1. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- H. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from [20 feet (6 m)] [50 feet (15 m)] <Insert distance> away by Architect. Perform additional paint and stain removal, general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.
- I. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
1. Masonry Repair: Prepare sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than 2 adjacent whole units or approximately 48 inches (1200 mm) in least dimension.

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Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

- a. Replacement:
 - 1) [Four] <Insert number> brick units replaced.
 - 2) [Four] <Insert number> terra cotta units replaced.
 - b. Reanchoring Veneers: Install three masonry repair anchors in mockup wall assembly of each anchor type required.
 - c. Patching: Three small holes [at least 1 inch (25 mm) in diameter] [as directed] <Insert size> for each type of masonry material indicated to be patched, so as to leave no evidence of repair.
 - d. Widening Joints: Widen a joint in 2 separate locations [, each approximately 12 inches (300 mm) long] [as directed] <Insert length>.
2. Repointing: Rake out joints in 2 separate areas [, each approximately 36 inches (900 mm) high by 48 inches (1200 mm) wide] [as indicated] <Insert dimensions> for each type of repointing required and repoint one of the areas.
 3. Cleaning: Clean an area [approximately 25 sq. ft. (2.3 sq. m)] [as indicated] <Insert dimension> for each type of masonry and surface condition.
 - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect.
 - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 5. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

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- J. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.
1. Review methods and procedures related to masonry restoration and cleaning including, but not limited to, the following:
 - a. Construction schedule. Verify availability of materials, Restoration Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application, sequencing, tolerances, and required clearances.
 - c. <**Insert agenda items**>.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry units to Project site strapped together in suitable packs or pallets or in heavy-duty cartons.
- B. Deliver each piece of terra cotta with code mark or setting number on unexposed face, corresponding to Shop Drawings, using nonstaining paint.
- C. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
- D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- E. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- F. Store lime putty covered with water in sealed containers.
- G. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.

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- B. Repair masonry units and repoint mortar joints only when air temperature is between **40 and 90 deg F (4 and 32 deg C)** and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing unless otherwise indicated:
 - 1. When air temperature is below **40 deg F (4 deg C)**, heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between **40 and 120 deg F (4 and 49 deg C)**.
 - 2. When mean daily air temperature is below **40 deg F (4 deg C)**, provide enclosure and heat to maintain temperatures above **32 deg F (0 deg C)** within the enclosure for 7 days after repair and pointing.
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of **90 deg F (32 deg C)** and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
- F. Clean masonry surfaces only when air temperature is **40 deg F (4 deg C)** and above and is predicted to remain so for at least 7 days after completion of cleaning.

1.11 COORDINATION

- A. Coordinate masonry restoration and cleaning with public circulation patterns at Project site. Some work is near public circulation patterns [**and active railroad track**] **<Insert item of concern>**. Public circulation patterns cannot be closed off entirely, and in places can be only temporarily redirected around small areas of work. [**Railroad traffic will not be stopped.**] Plan and execute the Work accordingly.

1.12 SEQUENCING AND SCHEDULING

- A. Order replacement materials at earliest possible date to avoid delaying completion of the Work.

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- B. Order sand[**and gray portland cement**] for pointing mortar immediately after approval of [Samples] [mockups]. Take delivery of and store at Project site a sufficient quantity to complete Project.
- C. Perform masonry restoration work in the following sequence:
1. Remove plant growth.
 2. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
 3. Remove paint.
 4. Clean masonry surfaces.
 5. Where water repellents, specified in Division 07, are to be used on or near masonry work, delay application of these chemicals until after pointing.
 6. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
 7. Repair masonry, including replacing existing masonry with new masonry materials.
 8. Rake out mortar from joints to be repointed.
 9. Point mortar[**and sealant**] joints.
 10. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
 11. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
 12. Remove paint.
 13. Clean masonry surfaces.

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- D. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units to comply with "Masonry Unit Patching" Article. Patch holes in mortar joints to comply with "Repointing Masonry" Article.

1.13 TERRA COTTA MOLDS

- A. On completion of the manufacturing of units, deliver one unused mold of each shape and size of unit delivered to Project site. Deliver to a location and at a time determined by Owner, to become property of Owner.
- B. Have molds delivered carefully packed; protected from dirt, moisture, and breakage; so as to arrive in usable, undamaged condition and enable long-term storage and possible future use.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

- A. Face Brick: Provide face brick, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.
 - 1. Provide units with colors, color variation within units, surface texture, size, and shape to match existing brickwork and with physical properties [**within 10 percent of those determined from preconstruction testing of selected existing units.**] [as listed below:]
 - a. Physical Properties per ASTM C 67:
 - 1) Compressive Strength: **<Insert requirement>**.
 - 2) 24-Hour Cold-Water Submersion Absorption: **<Insert requirement>**.
 - 3) 5-Hour Boil Absorption: **<Insert requirement>**.
 - 4) Saturation Coefficient: **<Insert requirement>**.
 - 5) Initial Rate of Absorption: **<Insert requirement>**.

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- b. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.
 2. Provide units with colors, color variation within units, surface texture, and physical properties to match Architect's sample. Match existing units in size and shape.
 - a. Physical Properties per ASTM C 67:
 - 1) Compressive Strength: **<Insert requirement>**.
 - 2) 24-Hour Cold-Water Submersion Absorption: **<Insert requirement>**.
 - 3) 5-Hour Boil Absorption: **<Insert requirement>**.
 - 4) Saturation Coefficient: **<Insert requirement>**.
 - 5) Initial Rate of Absorption: **<Insert requirement>**.
 - b. For Architect's sample that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range rather than brick that matches an individual color within that range.
 3. Special Shapes:
 - a. Provide specially molded, 100 percent solid shapes for applications where core holes or "frogs" could be exposed to view or weather when in final position and where shapes produced by sawing would result in sawed surfaces being exposed to view.
 - b. Provide specially ground units, shaped to match patterns, for arches and where indicated.
 - c. Mechanical chopping or breaking brick, or bonding pieces of brick together by adhesive, are not acceptable procedures for fabricating special shapes.
 4. Tolerances as Fabricated: **[Comply with tolerance requirements in ASTM C 216, Type FBX] [Comply with tolerance requirements in ASTM C 216, Type FBS] <Insert requirement>**.
 5. Date Identification: Emboss in the clay body on an interior surface of each unit in easily read **1/2-inch- (13-mm-)** high characters, "MADE **<Insert year>**." Manufacturer's name may also be embossed.
- B. Building Brick: Provide building brick complying with ASTM C 62, of same vertical dimension as face brick, for masonry work concealed from view.

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1. Grade SW where in contact with earth.
 2. Grade SW, MW, or NW for concealed backup.
 3. Date Identification: Emboss in the clay body on an interior surface of each unit in easily read ~~1/2-inch-~~ (13-mm-) high characters, "MADE <Insert year>." Manufacturer's name may also be embossed.
- C. Salvaged Brick: Obtain salvaged brick from Owner from location shown on Drawings. Clean off residual mortar.
- D. Glazed Terra Cotta: Provide new terra cotta units to match existing terra cotta units in body composition, physical properties, color, gloss, surface texture, thickness, profile, dimensions, and composition of surface glaze.
1. Manufacturers: Subject to compliance with requirements, **[provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. Boston Valley Terra Cotta.
 - b. Gladding, McBean; a Division of PABCO Building Products, LLC.
 - c. Studio S Pottery.
 - d. Superior Clay Corporation.
 - e. <Insert manufacturer's name>.
 2. Physical Properties: Provide units with tested physical properties **[within 10 percent of those determined from preconstruction testing of selected existing units.] [as listed below:]**
 - a. Physical Properties per ASTM C 67:
 - 1) Compressive Strength: <Insert requirement>.
 - 2) 24-Hour Cold-Water Submersion Absorption: <Insert requirement>.

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- 3) 5-Hour Boil Absorption: **<Insert requirement>**.
 - 4) Saturation Coefficient: **<Insert requirement>**.
 - 5) Initial Rate of Absorption: **<Insert requirement>**.
 3. Tolerances as Fabricated: **[Comply with tolerance requirements in ASTM C 212, Type FTX] <Insert requirement>**.
 4. Date Identification: Emboss in the clay body on an interior surface of each unit in easily read ~~1/2-inch-~~ **(13-mm-)** high characters, "MADE **<Insert year>**." Manufacturer's name may also be embossed.
- E. Brownstone Terra Cotta: Provide new, unglazed, brownstone terra cotta units to match existing terra cotta units in body composition, physical properties, colors, color variation within units, surface texture, unit profile, and dimensions.
1. Manufacturers: Subject to compliance with requirements, **[provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. Boston Valley Terra Cotta.
 - b. Studio S Pottery.
 - c. Superior Clay Corporation.
 - d. **<Insert manufacturer's name>**.
 2. Physical Properties: Provide units with tested physical properties **[within 10 percent of those determined from preconstruction testing of selected existing units.] [as listed below:]**
 - a. Physical Properties per ASTM C 67:
 - 1) Compressive Strength: **<Insert requirement>**.
 - 2) 24-Hour Cold-Water Submersion Absorption: **<Insert requirement>**.
 - 3) 5-Hour Boil Absorption: **<Insert requirement>**.
 - 4) Saturation Coefficient: **<Insert requirement>**.
 - 5) Initial Rate of Absorption: **<Insert requirement>**.
 3. Tolerances as Fabricated: **[Comply with tolerance requirements in ASTM C 212, Type FTX] <Insert requirement>**.

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4. For existing terra cotta that exhibits a range of colors or color variation within units, provide terra cotta that proportionally matches that range and variation rather than terra cotta that matches an individual color within that range.
5. Date Identification: Emboss in the clay body on an interior surface of each unit in easily read ~~1/2-inch-~~ (13-mm-) high characters, "MADE <Insert year>." Manufacturer's name may also be embossed.

2.2 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II, white[**or gray or both**] where required for color matching of exposed mortar.
 1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Factory-Prepared Lime Putty: ASTM C 1489.
- D. Quicklime: ASTM C 5, pulverized lime.
- E. Mortar Sand: ASTM C 144 unless otherwise indicated.
 1. Color: Provide natural sand[**or ground marble, granite, or other sound stone**] of color necessary to produce required mortar color.
 2. For pointing mortar, provide sand with rounded edges.
 3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

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- F. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.
- G. Water: Potable.

2.3 MANUFACTURED REPAIR MATERIALS

- A. Masonry Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching masonry.
 - 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. Cathedral Stone Products, Inc.; Jahn M100 Terra Cotta and Brick Repair Mortar.
 - b. Conproco Corporation; **[Mimic] [Matrix]**.
 - c. Edison Coatings, Inc.; Custom System 45.
 - d. **<Insert manufacturer's name; product name or designation>**.
 - 2. Use formulation that is vapor- and water permeable (equal to or more than the masonry unit), exhibits low shrinkage, has lower modulus of elasticity than the masonry units being repaired, and develops high bond strength to all types of masonry.
 - 3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
 - 4. Formulate patching compound used for patching **[brick] [and] [terra cotta]** in colors and textures to match each masonry unit being patched. Provide **[sufficient number of] [not less than three] <Insert number>** colors to enable matching the color, texture, and variation of each unit.
- B. Terra Cotta Glaze Replacement: A high-solids, nonyellowing, fade-resistant, waterborne polyurethane or epoxy coating intended for exterior use as terra cotta glaze replacement. Product shall be custom mixed by manufacturer to match color and gloss of existing terra cotta glaze.

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1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]**:
 - a. Cathedral Stone Products, Inc.; Jahn M100 TerraCoat with SpanCoat primer.
 - b. Conproco Corporation; Terra Cotta Finish.
 - c. Edison Coatings, Inc.; **[Aquathane UA-210] [Aqua-Spex 220 Multi-Color Finish System]**.
 - d. **<Insert manufacturer's name; product name or designation>**.

2.4 PAINT REMOVERS

- A. Alkaline Paste Paint Remover: Manufacturer's standard alkaline paste formulation for removing paint coatings from masonry.
 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]**:
 - a. ABR Products, Inc.; 800 Brush Grade.
 - b. Diedrich Technologies Inc.; 606 Multi-Layer Paint Remover or 606X Extra Thick Multi-Layer Paint Remover.
 - c. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean HT-716 Heavy Duty Paint Remover.
 - d. Price Research, Ltd.; Price Heavy Duty Paint Stripper.
 - e. PROSOCO; **[Enviro Klean Safety Peel 2] [Sure Klean Heavy-Duty Paint Stripper] [or] [Sure Klean Heavy-Duty Paint Stripper D]**.
 - f. **<Insert manufacturer's name; product name or designation>**.
- B. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming alkaline formulation for removing paint coatings from masonry.
 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]**:
 - a. ABR Products, Inc.; Grip 'N Strip 800 Fast Acting.
 - b. Diedrich Technologies Inc.; 606 Multi-Layer Paint Remover or 606X Extra Thick Multi-Layer Paint Remover with pull-off removal system.

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- c. Dumond Chemicals, Inc.; Peel Away 1 System.
 - d. PROSOCO; [Enviro Klean Safety Peel 1] [or] [Enviro Klean Safety Peel 3] with Enviro Klean Overcoat.
 - e. <Insert manufacturer's name; product name or designation>.
- C. Solvent-Type Paint Remover: Manufacturer's standard water-rinsable, solvent-type gel formulation for removing paint coatings from masonry.
- 1. Products: Subject to compliance with requirements, [provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:
 - a. ABR Products, Inc.; Super Bio Strip Gel.
 - b. Diedrich Technologies Inc.; 505 Special Coatings Stripper.
 - c. Dumond Chemicals, Inc.; Peel Away 2.
 - d. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean HT-300 Solvent Paint Remover.
 - e. Price Research, Ltd.; Price Strip-All.
 - f. PROSOCO; Sure Klean Fast Acting Stripper.
 - g. <Insert manufacturer's name; product name or designation>.
- D. Low-Odor, Solvent-Type Paint Remover: Manufacturer's standard low-odor, water-rinsable solvent-type gel formulation, containing no methanol or methylene chloride, for removing paint coatings from masonry.
- 1. Products: Subject to compliance with requirements, [provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:
 - a. ABR Products, Inc.; Super Bio Strip Gel.
 - b. Cathedral Stone Products, Inc.; [S-301] [S-303] [or] [S-305].
 - c. Dumond Chemicals, Inc.; [Peel Away 6] [Peel Away 7] [or] [Peel Away 21].
 - d. PROSOCO; [Enviro Klean Safety Peel 1] [or] [Enviro Klean Safety Peel 3].
 - e. <Insert manufacturer's name; product name or designation>.

2.5 CLEANING MATERIALS

- A. Water: Potable.

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- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.
- E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.
1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
- a. Price Research, Ltd.; Price Marble Cleaner-Gel.
 - b. PROSOCO; Sure Klean 942 Limestone and Marble Cleaner.
 - c. <Insert manufacturer's name; product name or designation>.
- F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
- a. Diedrich Technologies Inc.; Diedrich 910PM Polished Marble Cleaner.
 - b. Dominion Restoration Products, Inc.; Bio-Cleanse.
 - c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
 - d. Price Research, Ltd.; Price Non-Acid Masonry Cleaner.

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- e. PROSOCO; Enviro Klean 2010 All Surface Cleaner.
 - f. **<Insert manufacturer's name; product name or designation>.**
- G. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
- 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. ABR Products, Inc.; X-190 Limestone & Concrete Cleaner.
 - b. Diedrich Technologies Inc.; Envirorestore 100.
 - c. Dominion Restoration Products, Inc.; DR-60 Stone and Masonry Cleaner.
 - d. PROSOCO; Enviro Klean BioWash.
 - e. **<Insert manufacturer's name; product name or designation>.**
- H. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.
- 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. ABR Products, Inc.; 801 Heavy Duty Masonry Cleaner.
 - b. Diedrich Technologies Inc.; **[Diedrich 101 Masonry Restorer] [or] [Diedrich 101G Granite, Terra Cotta, and Brick Cleaner]**.
 - c. Dumond Chemicals, Inc.; **[Safe n' Easy Ultimate Stone and Masonry Cleaner] [or] [Safe n' Easy Heavy Duty Restoration Cleaner]**.
 - d. EaCo Chem, Inc.; **[GS-Restoration] [or] [HD-Acid]**
 - e. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean Brick, Granite, Sandstone and Terra Cotta Cleaner (HT-626).
 - f. Price Research, Ltd.; **[Price Heavy Duty Restoration Cleaner] [or] [Price Restoration Cleaner]**.
 - g. PROSOCO; **[Enviro Klean Restoration Cleaner] [Sure Klean Restoration Cleaner] [or] [Sure Klean Heavy-Duty Restoration Cleaner]**.
 - h. **<Insert manufacturer's name; product name or designation>.**

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- I. Two-Part Chemical Cleaner: Manufacturer's standard system consisting of potassium or sodium hydroxide based, alkaline prewash cleaner and acidic afterwash cleaner that does not contain hydrofluoric acid.
 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. ABR Products, Inc.; 500 Limestone Prewash Cleaner followed by 500 Limestone Afterwash.
 - b. Diedrich Technologies Inc.; **[Diedrich 808 Limestone Pre-Wash] [or] [Diedrich 808X Black Encrustation Remover - Super Strong]** followed by 707N Limestone Neutralizer After-Rinse.
 - c. PROSOCO; **[Enviro Klean BioKlean followed by Sure Klean Limestone & Masonry Afterwash] [or] [Sure Klean 766 Limestone Prewash followed by SureKlean Limestone & Masonry Afterwash].**
 - d. **<Insert manufacturer's name; product name or designation>.**

2.6 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
 1. Products: Subject to compliance with requirements, **[provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:**
 - a. ABR Products, Inc.; Rubber Mask.
 - b. Price Research, Ltd.; Price Mask.
 - c. PROSOCO; Sure Klean Strippable Masking.
 - d. **<Insert manufacturer's name; product name or designation>.**

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- B. Terra Cotta Anchors: Type and size indicated or, if not indicated, to match existing anchors in size and type. Fabricate anchors from **[Type 304]** **[Type 316]** stainless steel.
- C. Masonry Repair Anchors, Expansion Type: Mechanical fasteners designed for masonry veneer stabilization consisting of ~~1/4-inch-~~ ~~(6-mm-)~~ diameter, **[Type 304]** **[Type 316]** stainless-steel rod with brass expanding shells at each end and water-shedding washer in the middle. Expanding shells shall be designed to provide positive mechanical anchorage to veneer on one end and backup masonry on the other.
1. Products: Subject to compliance with requirements, **[provide the following]** **[provide one of the following]** **[available products that may be incorporated into the Work include, but are not limited to, the following]**:
 - a. BLOK-LOK Limited; Torq-Lok.
 - b. Dur-O-Wal, a division of Dayton Superior; **[Dur-O-Wal Repair Anchor]** **[Dur-O-Wal Panel Anchor]**.
 - c. Hohmann & Barnard, Inc.; #521RA-B Restoration Anchor.
 - d. **<Insert manufacturer's name; product name or designation>**.
- D. Masonry Repair Anchors, Spiral Type: **[Type 304]** **[Type 316]** stainless-steel spiral rods designed to anchor to backing and veneer. Anchors are flexible in plane of veneer but rigid perpendicular to it.
1. Provide adhesive-installed anchors complete with manufacturer's standard epoxy adhesive and injection tubes, or other devices required for installation.
 2. Provide driven-in anchors designed to be installed in drilled holes and relying on screw effect rather than adhesive to secure them to backup and veneer.
 3. Products: Subject to compliance with requirements, **[provide the following]** **[provide one of the following]** **[available products that may be incorporated into the Work include, but are not limited to, the following]**:
 - a. BLOK-LOK Limited; Spira-Lok.
 - b. Dur-O-Wal, a division of Dayton Superior; **[Dur-O-Pair Resin Anchor]** **[or]** **[Dur-O-Flex Friction Pin Anchor]**.
 - c. Heckmann Building Products Inc.; #391 Remedial Tie.

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- d. Hohmann & Barnard, Inc.; Helix Spiro-Ties.
 - e. **<Insert manufacturer's name; product name or designation>.**
- E. Masonry Repair Anchors, Rod/Screen Tube Type: Stainless-steel screen tube with or without **[Type 304]** **[Type 316]** stainless-steel rod, adhesive installed by injection with manufacturer's standard epoxy adhesive, complete with other devices required for installation.
 - 1. Products: Subject to compliance with requirements, **[provide the following]** **[provide one of the following]** **[available products that may be incorporated into the Work include, but are not limited to, the following]**:
 - a. BLOK-LOK Limited; Chem-Lok.
 - b. Hohmann & Barnard, Inc.; #520RA.
 - c. **<Insert manufacturer's name; product name or designation>.**
- F. Sealant Materials:
 - 1. Provide manufacturer's standard chemically curing, elastomeric sealant(s) of base polymer and characteristics indicated below that comply with applicable requirements in Division 07 Section "Joint Sealants."
 - a. **[Single-component, nonsag urethane sealant]** **<Insert type>.**
 - 2. Colors: Provide colors of exposed sealants to match colors of masonry adjoining installed sealant unless otherwise indicated.
 - 3. Ground-Mortar Aggregate: Custom crushed and ground pointing mortar sand or existing mortar retrieved from joints. Grind to a particle size that matches the adjacent mortar aggregate and color. Remove all fines passing the **[100]** **<Insert number>** sieve.
- G. Joint-Sealant Backing:
 - 1. Cylindrical Sealant Backings: ASTM C 1330, **[Type C (closed-cell material with a surface skin)]** **[or]** **[Type B (bicellular material with a surface skin)]**, and of size and

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- density to control sealant depth and otherwise contribute to producing optimum sealant performance.
2. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where acceptable.
- H. Setting Buttons: Resilient plastic buttons, nonstaining to masonry, sized to suit joint thicknesses and bed depths of masonry units without intruding into required depths of pointing materials.
- I. Masking Tape: Nonstaining, nonabsorbent material, compatible with pointing mortar, joint primers, sealants, and surfaces adjacent to joints; that will easily come off entirely, including adhesive.
- J. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer complying with [**MPI #79, Alkyd Anticorrosive Metal Primer**] [or] [**SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating**] <Insert manufacturer's name; product name or designation>.
1. Use coating requiring no better than [**SSPC-SP 2, "Hand Tool Cleaning"**] [**SSPC-SP 3, "Power Tool Cleaning"**] [or] [**SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning"**] <Insert surface preparation standard> surface preparation according to manufacturer's literature or certified statement.
 2. Use coating with a VOC content of [**420 g/L (3.5 lb/gal.)**] <Insert VOC limit> or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- K. Miscellaneous Products: Select materials and methods of use based on the following, subject to approval of a mockup:
1. Previous effectiveness in performing the work involved.
 2. Little possibility of damaging exposed surfaces.
 3. Consistency of each application.
 4. Uniformity of the resulting overall appearance.
 5. Do not use products or tools that could do the following:
 - a. Remove, alter, or in any way harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in contract.

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- b. Leave a residue on surfaces.

2.7 MORTAR MIXES

- A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.
- B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
 - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
 - 1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.
- D. Do not use admixtures in mortar unless otherwise indicated.
- E. Mortar Proportions: Mix mortar materials in the following proportions:
 - 1. Pointing Mortar for Brick: [**1 part portland cement, 2 parts lime, and 6 parts sand**] [**1 part portland cement, 6 parts lime, and 12 parts sand**] <Insert proportions>.
 - a. Add mortar pigments to produce mortar colors required.
 - 2. Pointing Mortar for Terra Cotta: 1 part white portland cement, 1 part lime, and 6 parts sand.

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- a. Add mortar pigments to produce mortar colors required.
- 3. Rebuilding (Setting) Mortar: Same as pointing mortar[**except mortar pigments are not required**].
- 4. Rebuilding (Setting) Mortar: [**1 part portland cement, 2 parts lime, and 6 parts sand**] [**1 part portland cement, 6 parts lime, and 12 parts sand**] <Insert proportions>.
- 5. Rebuilding (Setting) Mortar: Comply with ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime.

2.8 CHEMICAL CLEANING SOLUTIONS

- A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.
- B. Acidic Cleaner Solution for [**Brick**] [**and**] [**Brownstone Terra Cotta**]: Dilute with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended by chemical-cleaner manufacturer.
- C. Acidic Cleaner Solution for Glazed Terra Cotta: Dilute with water to concentration demonstrated by testing that does not etch or otherwise damage terra cotta surface, but not greater than that recommended by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.1 RESTORATION SPECIALISTS

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- A. Restoration Specialist Firms: Subject to compliance with requirements, **[provide masonry restoration and cleaning by one of the following] [firms that may provide masonry restoration and cleaning include, but are not limited to, the following]:**

1. **<Insert, in separate subparagraphs, names of preapproved restoration specialist firms>.**

3.2 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.

1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.

- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Keep wall wet below area being cleaned to prevent streaking from runoff.
3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

- C. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and projections to protect from mortar droppings.
2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
3. Immediately remove mortar in contact with exposed masonry and other surfaces.
4. Clean mortar splatters from scaffolding at end of each day.

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- D. Remove[**gutters and**] downspouts adjacent to masonry and store[**where indicated**] during masonry restoration and cleaning. Reinstall when masonry restoration and cleaning are complete.
1. Provide temporary rain drainage during work[**as indicated**] to direct water away from building.

3.3 UNUSED ANCHOR REMOVAL <**Insert drawing designation**>

- A. Remove masonry anchors, brackets, wood nailers, and other extraneous items no longer in use unless identified as historically significant or indicated to remain.
1. Remove items carefully to avoid spalling or cracking masonry.
 2. Where directed, if an item cannot be removed without damaging surrounding masonry, do the following:
 - a. Cut or grind off item approximately [**3/4 inch (20 mm)**] <**Insert dimension**> beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.
 - b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.
 3. Patch the hole where each item was removed unless directed to remove and replace the masonry unit.

3.4 BRICK REMOVAL AND REPLACEMENT <**Insert drawing designation**>

- A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated[**or are to be reused**]. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.
1. When removing single bricks, remove material from center of brick and work toward outside edges.

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- B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Remove in an undamaged condition as many whole bricks as possible.
 - 1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
 - 2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
 - 3. Store brick for reuse. Store off ground, on skids, and protected from weather.
 - 4. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.
- E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
- F. Replace removed damaged brick with other removed brick[**and salvaged brick**] in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.
- G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
 - 1. Maintain joint width for replacement units to match existing joints.
 - 2. Use setting buttons or shims to set units accurately spaced with uniform joints.
- H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than **30 g/30 sq. in. per min. (30 g/194 sq. cm per min.)**. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.
 - 1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
 - 2. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.
 - 3. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

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3.5 TERRA COTTA REMOVAL AND REPLACEMENT <Insert drawing designation>

- A. At locations indicated, remove terra cotta units that are damaged, spalled, or deteriorated. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.
- B. Support and protect remaining masonry that was supported by removed units. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
- E. Install replacement units into bonding and coursing pattern of existing units.
 - 1. Do not cut or grind glazed terra cotta.
 - 2. If minor cutting of replacement brownstone terra cotta is required, use a motor-driven grinder or saw designed to cut masonry with clean, sharp, unchipped edges. Do not cut or grind more than [**1/8 inch (3 mm)**] <Insert dimension> along any edge.
 - 3. Use setting buttons or shims to set units accurately spaced with uniform joints.
- F. Set replacement units in a full bed of mortar. Replace existing anchors with new anchors of size and type indicated.
 - 1. Embed anchors in mortar and fill voids behind units with mortar.
 - 2. Tool exposed mortar joints in repaired areas to match joints of surrounding existing terra cotta.
 - 3. Rake out mortar used for laying terra cotta before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.
 - 4. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

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3.6 REANCHORING VENEERS <Insert drawing designation>

- A. Install masonry repair anchors in horizontal mortar joints and according to manufacturer's written instructions. Install at not more than **16 inches (400 mm)** o.c. vertically and **32 inches (800 mm)** o.c. horizontally unless otherwise indicated. Install at locations to avoid penetrating flashing.
- B. Recess anchors at least **5/8 inch (16 mm)** from surface of mortar joint and fill recess with pointing mortar.

3.7 PAINTING STEEL UNCOVERED DURING THE WORK <Insert drawing designation>

- A. Inspect steel exposed during masonry removal. Where Architect determines that it is structural, or for other reasons cannot be totally removed, prepare and paint it as follows:
 - 1. Remove paint, rust, and other contaminants according to [SSPC-SP 2, "**Hand Tool Cleaning**"] [SSPC-SP 3, "**Power Tool Cleaning**"] [or] [SSPC-SP 6/NACE No. 3, "**Commercial Blast Cleaning**"] <Insert surface preparation standard>, as applicable to meet paint manufacturer's recommended preparation.
 - 2. Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry film thickness per coat).
- B. If on inspection and rust removal, the cross section of a steel member is found to be reduced from rust by more than [**1/16 inch (1.6 mm)**] <Insert dimension>, notify Architect before proceeding.

3.8 MASONRY UNIT PATCHING <Insert drawing designation>

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A. Patch the following masonry units unless another type of replacement or repair is indicated:

1. Units indicated to be patched.
2. Units with holes.
3. Units with chipped edges or corners.
4. Units with small areas of deep deterioration.

B. Remove and replace existing patches unless otherwise indicated or approved by Architect.

C. Patching Bricks:

1. Remove loose material from masonry surface. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least **1/4 inch (6 mm)** thick, but not less than recommended by patching compound manufacturer.
2. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of masonry unit.
3. Mix patching compound in individual batches to match each unit being patched. Combine one or more colors of patching compound, as needed, to produce exact match.
4. Rinse surface to be patched and leave damp, but without standing water.
5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
6. Place patching compound in layers as recommended by patching compound manufacturer, but not less than **1/4 inch (6 mm)** or more than **2 inches (50 mm)** thick. Roughen surface of each layer to provide a key for next layer.
7. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the masonry unit. Shape and finish surface before or after curing, as determined by testing, to best match existing masonry unit.
8. Keep each layer damp for 72 hours or until patching compound has set.

D. Patching Terra Cotta:

1. Remove deteriorated material as determined by sounding gently with a small hammer. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least **1/4 inch (6 mm)** thick, but not less than recommended by patching compound manufacturer.

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2. Where mortar joints adjacent to patch are open, fill back of joints with pointing mortar and allow to cure before patching terra cotta. Leave space for pointing joints according to "Repointing Masonry" Article.
3. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of unit.
4. Rinse surface to be patched and leave damp, but without standing water.
5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
6. Place patching compound in layers as recommended by patching compound manufacturer, but not less than **1/4 inch (6 mm)** or more than **2 inches (50 mm)** thick. Roughen surface of each layer to provide a key for next layer.
7. Do not apply patching compound over mortar joints. If patching compound bridges mortar joints, cut out joints after patching compound hardens.
8. Trowel, scrape, or carve surface of patch to match texture, details, and surrounding surface plane or contour of terra cotta. Shape and finish surface before or after curing, as determined by testing to best match existing terra cotta.
9. Keep each layer damp for 72 hours or until patching compound has set.
10. After final layer of patching compound has cured, apply glaze replacement according to manufacturer's written instructions. Apply two or more coats, as needed, to match glaze of adjacent terra cotta units.

3.9 WIDENING JOINTS <Insert drawing designation>

- A. Do not widen a joint, except where indicated or approved by Architect.
- B. Location Guideline: Where an existing masonry unit abuts another or the joint is less than [**1/8 inch (3 mm)**] <Insert dimension>, widen the joint for length indicated and to depth required for repointing after obtaining Architect's approval.
- C. Carefully perform widening by cutting, grinding, routing, or filing procedures demonstrated in an approved mockup.
- D. Widen joint to width equal to or less than predominant width of other joints on building. Make sides of widened joint uniform and parallel. Ensure that edges of units along widened joint are in alignment with joint edges at unaltered joints.

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3.10 CLEANING MASONRY, GENERAL

- A. Proceed with cleaning in an orderly manner; work from [**bottom to top**] [**top to bottom**] of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Use only those cleaning methods indicated for each masonry material and location.
 - 1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
 - 2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
 - a. Equip units with pressure gages.
 - 3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
 - 4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
 - 5. For high-pressure water-spray application, use fan-shaped spray tip that disperses water at an angle of at least 40 degrees.
 - 6. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.
 - 7. For steam application, use steam generator capable of delivering live steam at nozzle.

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- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Water Application Methods:
 - 1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
 - 2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least **6 inches (150 mm)** from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- E. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry material. Hold nozzle at least **6 inches (150 mm)** from surface of masonry and apply steam in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush[**or spray**] application.[**Do not spray apply at pressures exceeding 50 psi (345 kPa).**] Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
- G. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
 - 1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- H. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

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3.11 PRELIMINARY CLEANING

- A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing to dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.
- B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.
 - 1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
 - 2. Remove paint and calking with alkaline paint remover.
 - a. Comply with requirements in "Paint Removal" Article.
 - b. Repeat application up to two times if needed.
 - 3. Remove asphalt and tar with solvent-type paint remover.
 - a. Comply with requirements in "Paint Removal" Article.
 - b. Apply paint remover only to asphalt and tar by brush without prewetting.
 - c. Allow paint remover to remain on surface for 10 to 30 minutes.
 - d. Repeat application if needed.

3.12 PAINT REMOVAL <Insert drawing designation>

- A. Paint Removal with Alkaline Paste Paint Remover:
 - 1. Remove loose and peeling paint using [**low**] [**medium**] [**high**]-pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
 - 2. Apply paint remover to dry, painted masonry with brushes.
 - 3. Allow paint remover to remain on surface for period recommended by manufacturer.

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4. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and paint residue.
5. Repeat process if necessary to remove all paint.
6. Apply acidic cleaner or manufacturer's recommended afterwash to masonry, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterwash remain on surface as a neutralizing agent for period recommended by chemical cleaner or afterwash manufacturer.
7. Rinse with cold water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.

B. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:

1. Remove loose and peeling paint using [**low**] [**medium**] [**high**]-pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
2. Apply paint remover to dry, painted masonry with trowel, spatula, or as recommended by manufacturer.
3. Apply cover, if required by manufacturer, per manufacturer's written instructions.
4. Allow paint remover to remain on surface for period recommended by manufacturer or as determined in test panels.
5. Scrape off paint and remover and collect for disposal.
6. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and paint residue.
7. Use alkaline paste paint remover, according to "Paint Removal with Alkaline Paste Paint Remover" Paragraph, if necessary to remove remaining paint.
8. Apply acidic cleaner or manufacturer's recommended afterwash to masonry, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterwash remain on surface as a neutralizing agent for period recommended by chemical-cleaner or afterwash manufacturer.
9. Rinse with cold water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.

C. Paint Removal with Solvent-Type Paint Remover:

1. Remove loose and peeling paint using [**low**] [**medium**] [**high**]-pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.

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2. Apply thick coating of paint remover to painted masonry with natural-fiber cleaning brush, deep-nap roller, or large paint brush.
3. Allow paint remover to remain on surface for period recommended by manufacturer. [**Agitate periodically with stiff-fiber brush.**]
4. Rinse with [cold] [hot] water applied by [low] [medium] [high]-pressure spray to remove chemicals and paint residue.

3.13 CLEANING BRICKWORK <Insert drawing designation>

A. Cold-Water Soak:

1. Apply cold water by intermittent spraying to keep surface moist.
2. Use perforated hoses or other means that will apply a fine water mist to entire surface being cleaned.
3. Apply water in cycles with at least [30 minutes] <Insert time> between cycles.
4. Continue spraying until surface encrustation has softened sufficiently to permit its removal by water wash, as indicated by cleaning tests.
5. Continue spraying for 72 hours.
6. Remove soil and softened surface encrustation from masonry with cold water applied by low-pressure spray.

B. Cold-Water Wash: Use cold water applied by [low] [medium] [high]-pressure spray.

C. Hot-Water Wash: Use hot water applied by [low] [medium] [high]-pressure spray.

D. Steam Cleaning: Apply steam at very low pressures not exceeding [30 psi (207 kPa)] [80 psi (550 kPa)] <Insert pressure>. Remove dirt softened by steam with wood scrapers, stiff-nylon or -fiber brushes, or cold-water wash, as indicated by cleaning tests.

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E. Detergent Cleaning:

1. Wet masonry with **[cold]** **[hot]** water applied by low-pressure spray.
2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
3. Rinse with **[cold]** **[hot]** water applied by **[low]** **[medium]** **[high]**-pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

F. Mold, Mildew, and Algae Removal:

1. Wet masonry with **[cold]** **[hot]** water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush **[or low-pressure spray]**.
3. Scrub masonry with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that masonry surface remains wet.
4. Rinse with **[cold]** **[hot]** water applied by **[low]** **[medium]** **[high]**-pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

G. Nonacidic Gel Chemical Cleaning:

1. Wet masonry with **[cold]** **[hot]** water applied by low-pressure spray.
2. Apply nonacidic gel cleaner in **1/8-inch (3-mm)** thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively so area will be uniformly covered with fresh cleaner and dwell time will be uniform throughout area being cleaned.
3. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
4. Remove bulk of nonacidic gel cleaner by squeegeeing into containers for disposal.

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5. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

H. Nonacidic Liquid Chemical Cleaning:

1. Wet masonry with [**cold**] [**hot**] water applied by low-pressure spray.
2. Apply cleaner to masonry[**in two applications**] by brush[**or low-pressure spray**]. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.
3. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

I. [**Mild Acidic**] [**Acidic**] Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply cleaner to masonry[**in two applications**] by brush[**or low-pressure spray**]. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.

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3. Rinse with cold water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use a steam cleaning.

3.14 CLEANING BROWNSTONE TERRA COTTA <**Insert drawing designation**>

A. Cold-Water Soak:

1. Apply cold water by intermittent spraying to keep surface moist.
2. Use perforated hoses or other means that will apply a fine water mist to entire surface being cleaned.
3. Apply water in cycles with at least [**30 minutes**] <**Insert time**> between cycles.
4. Continue spraying until surface encrustation has softened sufficiently to permit its removal by water wash, as indicated by cleaning tests.
5. Continue spraying for 72 hours.
6. Remove soil and softened surface encrustation from masonry with cold water applied by low-pressure spray.

B. Cold-Water Wash: Use cold water applied by [**low**] [**medium**] [**high**]-pressure spray.

C. Hot-Water Wash: Use hot water applied by [**low**] [**medium**] [**high**]-pressure spray.

D. Steam Cleaning: Apply steam at very low pressures not exceeding [**30 psi (207 kPa)**] [**80 psi (550 kPa)**] <**Insert pressure**>. Remove dirt softened by steam with wood scrapers, stiff-nylon or -fiber brushes, or cold-water wash, as indicated by cleaning tests.

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E. Detergent Cleaning:

1. Wet masonry with **[cold]** **[hot]** water applied by low-pressure spray.
2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
3. Rinse with **[cold]** **[hot]** water applied by **[low]** **[medium]** **[high]**-pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

F. Mold, Mildew, and Algae Removal:

1. Wet masonry with **[cold]** **[hot]** water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush **[or low-pressure spray]**.
3. Scrub masonry with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that masonry surface remains wet.
4. Rinse with **[cold]** **[hot]** water applied by **[low]** **[medium]** **[high]**-pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

G. Nonacidic Gel Chemical Cleaning:

1. Wet masonry with **[cold]** **[hot]** water applied by low-pressure spray.
2. Apply nonacidic gel cleaner in **1/8-inch (3-mm)** thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively so area will be uniformly covered with fresh cleaner and dwell time will be uniform throughout area being cleaned.
3. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
4. Remove bulk of nonacidic gel cleaner by squeegeeing into containers for disposal.

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5. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

H. Nonacidic Liquid Chemical Cleaning:

1. Wet masonry with [**cold**] [**hot**] water applied by low-pressure spray.
2. Apply cleaner to masonry[**in two applications**] by brush[**or low-pressure spray**]. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.
3. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

I. [**Mild Acidic**] [**Acidic**] Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply cleaner to masonry[**in two applications**] by brush[**or low-pressure spray**]. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.

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3. Rinse with cold water applied by [low] [medium] [high]-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use a steam cleaning.

3.15 CLEANING GLAZED TERRA COTTA <Insert drawing designation>

- A. Hot-Water Wash: Use hot water applied by [low] [medium] [high]-pressure spray.
- B. Steam Cleaning: Apply steam at very low pressures not exceeding [30 psi (207 kPa)] [80 psi (550 kPa)] <Insert pressure>. Remove dirt softened by steam with wood scrapers, stiff-nylon or -fiber brushes, or cold-water wash, as indicated by cleaning tests.
- C. Nonacidic Gel Chemical Cleaning:
 1. Wet terra cotta with [cold] [hot] water applied by low-pressure spray.
 2. Apply nonacidic gel cleaner in 1/8-inch (3-mm) thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively so area will be uniformly covered with fresh cleaner and dwell time will be uniform throughout area being cleaned.
 3. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 4. Remove bulk of nonacidic gel cleaner by squeegeeing into containers for disposal.
 5. Rinse with [cold] [hot] water applied by [low] [medium] [high]-pressure spray to remove chemicals and soil.

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6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

D. Nonacidic Liquid Chemical Cleaning:

1. Wet terra cotta with [**cold**] [**hot**] water applied by low-pressure spray.
2. Apply cleaner to terra cotta[**in two applications**]. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.
3. Rinse with [**cold**] [**hot**] water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

E. Mild Acidic Chemical Cleaning:

1. Wet terra cotta with cold water applied by low-pressure spray.
2. Apply cleaner to terra cotta[**in two applications**]. Let cleaner remain on surface for period indicated below:
 - a. As recommended by chemical-cleaner manufacturer.
 - b. As established by mockup.
 - c. Two to three minutes.
3. Rinse with cold water applied by [**low**] [**medium**] [**high**]-pressure spray to remove chemicals and soil.

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4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

F. Two-Part Chemical Cleaning:

1. Wet terra cotta with [**cold**] [**hot**] water applied by low-pressure spray.
2. Apply alkaline prewash cleaner to terra cotta by brush or roller. Let cleaner remain on surface for period recommended by chemical-cleaner manufacturer unless otherwise indicated.
3. Rinse with [**cold**] [**hot**] water applied by medium-pressure spray to remove chemicals and soil.
4. Apply acidic afterwash cleaner to terra cotta[**in two applications**], while surface is still wet, using[**low-pressure spray equipment**,] deep-nap roller or soft-fiber brush. Let neutralizer remain on surface for period recommended by manufacturer unless otherwise indicated.
5. Rinse with cold water applied by medium-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

3.16 REPOINTING MASONRY <**Insert drawing designation**>

- A. Rake out and repoint joints to the following extent:

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1. All joints in areas indicated.
 2. Joints where mortar is missing or where they contain holes.
 3. Cracked joints where cracks can be penetrated at least **1/4 inch (6 mm)** by a knife blade **0.027 inch (0.7 mm)** thick.
 4. Cracked joints where cracks are **[1/16 inch (1.6 mm)] [1/8 inch (3 mm)]** **<Insert dimension>** or more in width and of any depth.
 5. Joints where they sound hollow when tapped by metal object.
 6. Joints where they are worn back **1/4 inch (6 mm)** or more from surface.
 7. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
 8. Joints where they have been filled with substances other than mortar.
 9. Joints indicated as sealant-filled joints.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved mockup:
1. Remove mortar from joints to depth of **[joint width plus 1/8 inch (3 mm)] [2 times joint width] [2-1/2 times joint width]** **<Insert dimension>**, but not less than **1/2 inch (13 mm)** or not less than that required to expose sound, unweathered mortar.
 2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.
 - a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders without Architect's written approval based on approved quality-control program.
 - b. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
- D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- E. Pointing with Mortar:

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1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than **3/8 inch (9 mm)** until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than **3/8 inch (9 mm)**. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
 - a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
 - b. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Pointing with Sealant:

1. After raking out, keep joints dry and free of mortar and debris.
2. Clean and prepare joint surfaces according to Division 07 Section "Joint Sealants." [**Prime joint surfaces unless sealant manufacturer recommends against priming.**] Do not allow primer to spill or migrate onto adjoining surfaces.

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3. Fill sealant joints with specified joint sealant according to Division 07 Section "Joint Sealants" and the following:
 - a. Install cylindrical sealant backing beneath the sealant, except where space is insufficient. There, install bond-breaker tape.
 - b. Install sealant using only proven installation techniques that will ensure that sealant will be deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding masonry and matching the contour of adjoining mortar joints.
 - c. Install sealant as recommended by sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:
 - 1) Fill joints to a depth equal to joint width, but not more than **1/2 inch (13 mm)** deep or less than **1/4 inch (6 mm)** deep.
 - d. Immediately after first tooling, apply ground-mortar aggregate to sealant, gently pushing aggregate into the surface of sealant. Retool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant and aggregate from surfaces adjacent to joint.
 - e. Do not allow sealant to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces, particularly rough textures. Remove excess and spillage of sealant promptly as the work progresses. Clean adjoining surfaces by the means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.
4. Cure sealant according to Division 07 Section "Joint Sealants."

- G. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.17 FINAL CLEANING

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- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.
 - 1. Do not use metal scrapers or brushes.
 - 2. Do not use acidic or alkaline cleaners.
- B. Wash adjacent woodwork and other nonmasonry surfaces. Use detergent and soft brushes or cloths.
- C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- D. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

3.18 FIELD QUALITY CONTROL

- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare test reports. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.
- B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- C. Notify **[inspectors]** **[and]** **[Architect's Project representatives]** in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until **[inspectors]** **[and]** **[Architect's Project representatives]** have had reasonable opportunity to make **[inspections]** **[and]** **[observations]** of work areas at lift device or scaffold location.

END OF SECTION 040120

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 - Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. The extent of structural steel work is shown on the drawings.
 B. Structural steel is that work defined in the AISC "Code of Standard Practice" and as otherwise shown on the drawings.

1.03 RELATED SECTIONS

- A. The provisions of the following Sections apply to the work of this Section:
1. Section 03 01 30 - Maintenance of Cast-in-Place Concrete
 2. Section 05 50 00 - Metal Fabrications
 4. Section 09 91 00 - Painting

1.04 QUALITY ASSURANCE

- A. Codes and Standards:
1. Comply with the provisions of the following except as otherwise indicated:
 - a. AISC "Code of Standard Practice for Steel Buildings and Bridges".
 - b. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" and including the "Commentary" and supplements thereto as issued.
 - c. AISC "Specifications for Structural Joints using ASTM A325 OR A490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
 - d. AWS D1.1 "Structural Welding Code".
 - e. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
- B. Qualifications:
1. Qualify welding processes and welding operators in accordance with AWS D1.1.
 2. Provide certification that welders to be employed in the work have satisfactorily passed AWS qualification tests within the previous 12 months.
 - a. If recertification of welders is required, retesting will be the Contractor's responsibility.
 3. All welders working on this project will be assigned an identifying symbol or mark. Each welder will be required to mark or stamp his symbol on each weldment completed for identification. Contractor shall maintain a record of welders employed, date of qualification and symbol or identification mark assigned to each.
 4. Steel Fabricator
 - a. Fabricator shall AISC certified.
 - b. Fabricator shall have not less than five (5) years experience in the fabrication of structural steel.
 - c. Submit a written description of fabrication ability including fabricating and surface preparation facilities, personnel and list of similar completed projects.
 5. Steel Erector:
 - a. Erector shall have not less than five (5) years experience in the erection of structural steel.
 - b. Submit a written description of structural steel erection ability including equipment,

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personnel and a list of similar completed projects.

- C. Source Quality Control:
 - 1. Materials and fabrication procedures are subject to inspection and tests in the mill, shop, and field by the Architect. Such inspections and tests will not relieve the Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
- D. Design of Members and Connections:
 - 1. All details shown are typical, similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at the site whenever possible without causing delay in the work.
 - 2. Promptly notify the Architect whenever design of members and connections for any portion of the structure are not clearly indicated.
- E. Steel Testing:
 - 1. Materials and installed work may require testing and retesting, as directed by the Architect, at any time during the progress of the work. Allow free access to material stockpiles and facilities at all times. Tests, not specifically indicated to be done at the Owner's expense, including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.
- F. Testing Agency:
 - 1. Agency shall not have less than five (5) years experience performing the structural steel tests and inspection services, including coating systems and related surface preparation.
 - 2. Submit a written description illustrating the ability to perform the structural steel tests and inspection services including qualifications of personnel with scope of each qualification tests, laboratory and field facilities and a list of similar projects.

1.05 SUBMITTALS

- A. Manufacturer's Data:
 - 1. Submit five (5) copies of producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data as required to show compliance with these specifications.
 - a. Structural steel (each type), including certified copies of mill reports covering the chemical and physical properties.
 - b. High-strength bolts (each type), including nuts and washers.
 - c. Unfinished bolts and nuts.
 - d. Paint products.
 - e. Shrinkage-resistant grout.
 - f. Description of each type of welding stud and arc shield.
- B. Shop Drawings:
 - 1. Submit shop drawings including complete details and schedules for fabrication and shop assembly of members, and details, schedules, procedures and diagrams showing the sequence of erection.
 - 2. Architect's review of shop drawings will be for general considerations only. Compliance with requirements for materials fabrication and erection of structural steel is the Contractor's responsibility.
 - a. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size, length, and type of each weld.
 - b. Provide setting drawings, templates, and directions for the installation of anchor bolts and other anchorages to be installed by others.
 - c. Shop drawings shall include complete details of the painting work to be performed.
- C. Erection Procedure:
 - 1. Submit data, illustrative and written to describe the structural steel erection procedure, including the sequence of erection and temporary staying and bracing. Contractor shall

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provide sufficient bracing, etc. so that the erected steel is stable during construction or until all the concrete slabs are poured.

D. Welding Procedure and Equipment:

1. Submit written description as required to illustrate each welding procedure to be performed in the specified work.
2. Submit descriptive data for field welding equipment, including type, voltage and amperage.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site at such intervals to insure uninterrupted progress of the work.
 1. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not delay that work.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.
 1. Do not store materials on the structure in a manner that might cause distortion or damage to the members of the supporting structures. Repair or replace damaged materials or structures as directed.
- C. Handling, shipping, and erecting of painted steel shall not be performed until thoroughly dry. Special care shall be exercised to avoid abrasion or other damage to the coated surfaces. Stacking and storing of painted members - in the shop, in transit, and at the job site - shall be done using softeners and timbers to keep individual members free from contact with the ground, and with each other; and shall be protected from soiling by adjacent fabrication of construction operations.

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS

- A. Steel Base Plates: ASTM A36, Grade 36, except where other type steel is shown.
- B. Structural Steel Beams, Columns, and Cross Bracing Members, Low Alloy Steel: ASTM A992 Grade 50 or 50W.
- C. Cold-Formed Steel Tubing: ASTM A500, Grade B, Fy 46 ksi.
- D. Steel Pipe: ASTM A53, Type E or S, Grade B, double extra strong.
- E. Carbon Steel Castings: ASTM A27, Grade 65-35, medium-strength carbon steel.
- F. Anchor Bolts: ASTM A307, nonheaded type unless otherwise indicated.
- G. Headed Stud Type Shear Connectors: ASTM A108, Grade 1015 or 1020, cold finished carbon steel; with dimensions complying with AISC Specifications.
 1. Studs shall be end welded, spacing as per drawings or the number of studs per beam length to be uniformly distributed in a zig-zag pattern along the length of the beam.
 2. Mechanical properties of finished studs, ASTM A370, shall be:
 - a. Minimum tensile strength, 60,000 psi.
 - b. Minimum yield strength, 50,000 psi (2% offset).
 - c. Minimum elongation, 20% in 2 inches.
 - d. Minimum reduction in area, 50%.
- H. High-Strength Bolts and Nuts: Heavy hexagonal structural bolts, heavy hexagon nuts, and hardened washers, all galvanized and complying with ASTM A325.
- I. Electrodes for Welding: Comply with AWS Code.
- J. Filler Material for Welding:
 1. Shielded metal-arc welding AWS A5-5.
 2. Welded joints designed using E7016 low hydrogen electrodes.
 3. Fabricator or Erector may substitute filler material in accordance with Section 1.17.2 of AISC Specification for Structural Steel for Buildings after obtaining Architect's approval.
- K. The coatings materials specified are products of the Carboline Company or approved equal.

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Minimum dry film thickness herein specified shall hold precedence over whatever recommendations are made for other supplier's products. Colors shall be as selected by the Architect.

- L. The coatings system shall consist of the following:
 - 1. Shop Applied Primer: Carboline Carbozinc 11 at 2.0 to 3.0 mils dry film thickness.
 - 2. Shop Applied Topcoat: Carboline Carbothane 133LH at 3.5 to 5.0 mils dry film thickness.
 - 3. Field Touch-up: Carboline Carbothane 133LH at 3.5 to 5.0 mils dry film thickness.
- M. The manufacturer's printed label instructions for all handling, applying, and re-coat intervals for the coatings system shall be followed. No work shall be performed when temperature and humidity conditions are outside the limitations stated by the coatings manufacturer.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

- A. The Contractor shall employ an approved testing laboratory to perform field quality control testing.
- B. Provide access for the Architect to places where structural steel work is being fabricated or produced.
- C. The Architect reserves the right, at any time before final acceptance, to reject material not complying with specified requirements.
- D. Correct deficiencies in structural steel work which inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests as may be necessary to reconfirm any non-compliance of the original work, and as may be necessary to show compliance of corrected work.
- E. All certificates and reports as specified shall be submitted to the Architect. A Testing Agency shall be employed by the Contractor for the tests specified below, and for other tests as may be required.
- F. The Testing Agency shall perform the following tests:
 - 1. Shop Welding: Inspect and test during fabrication of structural steel assemblies, as follows:
 - a. Certify welders and conduct inspections and tests as required. Record types and locations of all defects found in the work. Record work required and performed to correct deficiencies.
 - b. Perform visual inspection of all welds.
 - c. Perform tests of welds as follows:
 - Magnetic Particle Inspection: ASTM E109; performed on the root pass and on the finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.
 - Radiographic Inspection: ASTM E94 and ASTM E142; minimum quality level "2-2T".
 - Ultrasonic Inspection: ASTM E164.
 - 2. Field Bolted Connections: Inspect in accordance with AISC specifications.
 - 3. Field Welding: Inspect and test during erection of structural steel as follows:
 - a. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in the work. Record work required and performed to correct deficiencies.
 - b. Perform visual inspection of all welds.
 - c. Perform tests of welds as follows:
 - Magnetic Particle Inspection: ASTM E109; performed on the root pass and on the finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.
 - Radiographic Inspection: ASTM E94 and ASTM E142 minimum quality level

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"2-2T".

4. Determine mechanical properties, in accordance with ASTM A370, of the following materials:
 - a. Anchor bolts.
 - b. Filler metals for welding.
 5. Inspection of Shop Painting:
 - a. Surface preparation prior to painting shall be visually evaluated for degree of cleaning by comparison with SSPC pictorial standards Vis-1.
 6. Testing laboratory shall report test results in writing to the Architect on the same day that tests are made. The reports shall contain the project identification name and number, date, name of Contractor, name of material supplier, name of testing service, type and class of steel, location of test in the structure, and type and results of tests taken.
- G. Defective Work:
1. Steel work which does not conform to the specified requirements, including strength, tolerances, and finishes, shall be corrected at the Contractor's expense. The Contractor shall also be responsible for the cost of corrections to any work affected by or resulting from corrections to the steel work, including but not limited to any additional testing as may be required when unacceptable steel work is suspected and verified.

3.02 FABRICATION

A. Shop Fabrication and Assembly:

1. Fabricate and assemble structural assemblies in the shop to the greatest extent possible. Fabricate items of structural steel in accordance with the governing specifications and as indicated on the final shop drawings. Provide camber in structural members as shown, and fabricate so that the natural camber of the beams is turned upward.
2. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
3. Where finishing is required, complete the assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in the final structure free of markings, burrs, and other defects.
4. Fabricate Structural Steel in accordance with the latest AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

B. Connections:

1. Weld or bolt shop connections, as indicated. Contractor/sub-contractor to provide all design calculations for these connections performed by a registered Professional Engineer.
2. Bolt field connections, except where welded connections or other connections are indicated.
 - a. Provide high-strength threaded fasteners for all principal bolted connections, except where otherwise shown.
3. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A325 or A490 Bolts".
 - a. All high strength bolts shall be tightened by standard impact wrench using the turn-of-the-nut method.
 - b. Other tightening methods, conforming to specifications for structural steel joints may be used only with approval of the Architect.
4. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.
 - a. Assemble and weld built-up sections by methods which will produce true alignment of axes without warp.
5. Shear Connectors: Prepare steel surfaces as recommended by the manufacturer of the shear connectors.

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- a. Provide headed stud type shear connectors welded to beams, girders, and other areas as detailed. Spacing as indicated on the drawings or, if not so indicated, studs to be uniformly spaced in a zig-zag pattern along the length of the member.
 - b. Headed type shear connectors shall be automatically end welded in accordance with Article 431 and 432 of AWS Building Code.
- 6. Bearing Plates:
 - a. Bearing plates shall be provided under beams and girders resting on footings, piers and walls.
 - b. Bearing plates shall be either loose or attached.
- 7. Base Plates:
 - a. Column base plates shall be rolled, pressed and milled as per AISC Specification, Sect. 1.21.3 and furnished attached to the column.
- C. Holes for Other Work:
 - 1. Provide holes required for securing other work to structural steel framing, and for the passage of other work through steel framing members, as shown on the final shop drawings. Provide threaded nuts welded to framing, and other specialty items as shown to receive other work.
 - 2. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

3.03 SURFACE PREPARATION AND PAINTING

- A. It is intended that the primer and finish coats of the protective coatings system be applied in the shop. Provisions shall be made for proper handling at all stages of the painting, shipping, storing at the job site, and erecting that will protect coated surfaces from damage or soiling.
- B. Surface Preparation:
 - 1. All steel shall be cleaned in accordance with Steel Structures Painting Council SP-6; Commercial Blast Cleaning.
 - 2. Surface profile shall not exceed 1.5 mils.
 - 3. Cleaning shall be done after fabrication and no more than six (6) hours prior to shop painting.
- C. Shop paint all structural steel work, except those members or portions of members to be embedded in concrete or mortar. Paint embedded steel which is partially exposed on the exposed portions and the initial 2" of embedded areas only.
- D. Painting:
 - 1. Immediately after surface preparation, apply structural steel primer paint in accordance with the manufacturer's instructions. Use painting methods which will result in full coverage of joints, corners, edges and all exposed surfaces.
 - 2. Application shall be by spray, each coat with care, to thoroughly cleaned surfaces only, in accordance with all provisions of SSPC PA-1 Paint Application, with specified dry film thicknesses maintained on edges and corners. Sharp cut edges shall be uniformly relieved to form a slight radius sufficient to permit proper wrap of the coatings.
- E. Surfaces inaccessible to blast cleaning after assembly shall be blast cleaned and coated beforehand. Paint faying surfaces of high strength bolted friction connections as permitted by AISC Manual of Construction for the specified primer.
- F. A pre-production conference shall be arranged by the Contractor with the Architect, the Fabricator and a representative of the paint manufacturer in attendance, to discuss all details relevant to performing the work in accordance with the requirements.
- G. Mock-up shall be produced on a sample piece or section, for approval before production.
- H. Touch-up after erection shall consist of smoothing all damaged painted or galvanized areas, and building back each coat to achieve initial condition. Where abraded to bare metal, and all other

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bare surfaces such as on field welds, bolts, washers and nuts - the surfaces shall be cleaned to the standard of the shop applied system and painted with the two coat system, in proper re-coating intervals. Galvanized surfaces shall omit the primer except where required for touch-up of damage to galvanize, and shall be spot-primed with Series 66 Epoxoline as a tie-coat for the Series 73 Endurashield III..

3.04 INSPECTION

- A. Examine the areas and conditions under which structural steel work is to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.05 ERECTION

- A. General: Comply with the governing Specifications and as herein specified.
- B. Employ a Professional Engineer, registered in the jurisdiction where the work is performed, to supervise surveys during erection as follows:
1. Check elevations of bearing surfaces.
 2. Check locations of anchor bolts.
 3. Ensure accuracy of erection within specified tolerances.
 4. Individual pieces shall be erected so that deviation from plumb, level and alignment shall not exceed 1 to 500.
- C. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made.
- D. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete the work. Comply with all City, State, and OSHA regulations as required.
- E. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.
1. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations.
 - a. Refer to Division 3 of these specifications for anchor bolt installation requirements in concrete, and Division 4 for masonry installation.
- F. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean the bottom surface of base and bearing plates.
1. Set loose and attached base plates and bearing plates for structural members on wedges or other adjusting devices.
 2. Tighten the anchor bolts after the supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the base or bearing plate prior to packing with grout.
 3. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure in strict compliance with the manufacturer's instructions, or as otherwise required.
- G. Field Assembly: Set structural frames accurately to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of the structure within specified AISC tolerances.
 2. Fastening of splices of compression members shall be done after the abutting surfaces have been brought completely into contact.
 3. Splices shall be permitted only where indicated.
 4. Field connections, including high strength bolted construction, welded construction and

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- shear connectors shall be as specified under "Fabrication".
- H. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.
- I. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and the removal of paint on surfaces adjacent to field welds.
1. Do not enlarge unfair holes in members by burning or by the use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
- J. Gas Cutting: Do not use gas cutting torches in the field for correcting fabrication errors in the structural framing. Cutting will be permitted only on secondary members which are not under stress, as acceptable to the Architect. Finish gas-cut sections equal to a sheared appearance when permitted.

END OF SECTION

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PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The extent of Miscellaneous Metal items are shown on the drawings and called for in the specifications.
- B. Related work specified elsewhere.
 - 1. Carefully read all Sections of this specification and examine all Drawings to determine the extent and nature of Miscellaneous Metal Items that are required. These items are to be supplied whether or not specified in this Section.

1.02 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting wherever taking field measurements before fabrication might delay work.
- B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.

1.03 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's specifications, anchor details and installation instruction for products to be used in the fabrication of miscellaneous metal work, including painting products.
- B. Shop Drawings: Submit shop drawings for fabrication and erection of miscellaneous metal fabrications. Include plans, elevations, and details of sections and connections. Show anchorage and accessory items. Provide templates for anchor bolt installation.

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS

- A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
- B. Steel Plates, Shapes and Bars: ASTM A36.
- C. Steel Plates to be Bent or Cold Formed: ASTM A283, Grade C.
- D. Steel Bars and Bar-Size Shapes: ASTM A663 or A675, Grade 65, or ASTM A36.
- E. Steel Tubing: ASTM A500 or 501, hot or cold rolled.
- F. Gray Iron Castings: ASTM A48, Class 30.
- G. Malleable Iron Castings: ASTM A47, grade as selected.
- H. Steel Pipe: ASTM A53, type as selected; Grade A, black finish unless galvanizing is required; standard weight (Schedule 40).
- I. Concrete Inserts: Threaded type, galvanized ferrous castings, either malleable iron ASTM A47 or cast steel ASTM A27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A153.
- J. Wedge Inserts: Malleable iron insert with stainless steel askew-head 2" bolts, nuts, washers, and horseshoe shims; by Dayton Superior or Gateway or Hohmann & Barnard.
- 11. Nonshrink Nonferrous Grout: DRY PACK by Euclid Chemical, or equal.

2.02 FASTENERS

- A. General: Provide Hot dipped or mechanically zinc-coated fasteners unless otherwise noted. Select fasteners for the type, grade and class required.
- B. Bolts and Nuts: Regular hexagon head type, ASTM A307-86a, Grade A.
- C. Lag Bolts: Square head type, FS FF-B-561C-70.
- D. Machine Screws: Cadmium plated steel, FS FF-S-92B-75B-75.

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- E. Plain Washers: Round, carbon steel, FS FF-W-92B-74B-74.
- F. Masonry Anchorage Devices: Expansion shields, FS FF-S-325-57.
- G. Toggle Bolts: Tumble-wing type, FS FF-B-588C-74, type, class and style as required.
- H. Lock Washers: Helical spring type carbon steel, FS FF-W-84A-69.

2.03 PAINT

- A. Metal Primer Paint: Carboline Carbozinc 11 or approved equal.
 - 1. Primer selected must be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Division 9.
- B. Galvanizing Repair and Primer Paint: Zinc dust, zinc oxide, alkyd paint conforming to FS TT-P-641, Type II.

2.04 FABRICATION, GENERAL

- A. Workmanship:
 - 1. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
 - 2. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
 - 3. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections grind exposed welds smooth and flush to match and blend with adjoining surfaces.
 - 4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts.
 - a. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
 - b. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.
- B. Galvanizing:
 - 1. Provide a zinc coating for those items shown or specified to be galvanized, as follows:
 - a. ASTM A153 for galvanizing iron and steel hardware.
 - b. ASTM 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8 thick and heavier.
 - c. ASTM A386 for galvanizing assembled steel products.
- C. Shop Painting:
 - 1. Shop paint miscellaneous metal work except surfaces and edges to be field welded and members or portions of members to be embedded in concrete or masonry which are galvanized, unless otherwise specified.
 - 2. Remove scale, rust and other deleterious materials before applying shop coat. Clean in accordance with SSPC SP-3-63 "Power Tool Cleaning: to remove all scale, rust, and foreign matter after first solvent cleaning to remove all oil and grease.
 - 3. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 63 "Solvent Cleaning".
 - 4. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions, and at a rate to provide uniform dry film thickness of 2 to 4 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges and exposed surfaces.
 - 5. Apply one shop coat to fabricated metal items, except apply two coats of paint to

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surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

2.05 MISCELLANEOUS METAL FABRICATIONS

- A. **Steel Pipe Railings:** Design and fabricate handrails and guardrails to meet all applicable codes and to support 50 lbs. per linear foot uniform load and 200 lbs. concentrated load at location to cause greatest stress. These two loading conditions do not act concurrently.
1. Fabricate pipe railings to dimensions and details shown, with smooth bends and welded joints ground smooth and flush. Prefabricated systems with openings no greater than sphere of 21" can pass through any opening, made of galvanized or other rust proof material is permitted pending approval in writing by the engineer.
 2. Adjust railings prior to anchoring to ensure proper alignment.
 3. Secure handrails to walls with end fittings. Provide brackets with not less than 1-1/2 inches clearance from inside face of handrail to the finish wall surface. Drill wall plate portion of bracket to receive bolt. Secure wall return fittings to building construction with expansion shields and lag bolts.
 4. Anchor posts in concrete by means of galvanized steel plate or pipe sleeves set and anchored into the concrete. After the posts have been inserted into the sleeves, fill the annular space between post and sleeve solid with non-shrink, nonferrous grout. Do not allow water to remain in sleeves for long periods of time.
- B. **Steel Assembly Fabrication:** Fabricate to sizes shown or indicated on approved shop drawings. For anchoring to structure, provide slotted holes for bolt size specified. Coordinate anchorage with framing drawings to ensure proper location of bolts and fasteners.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Furnish setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.02 INSTALLATION

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, and other connectors as required.
- B. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
- C. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrications, and are intended for bolted or screwed field connections.
- D. Field Welding: Comply with AWS Code for procedures of manual shielded metal arc-welding,

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- E. appearance and quality of welds made, and methods used in correcting welding work.
Touch-up Painting: Cleaning and touch-up painting of field welds, bolted connections and abraded areas of the shop paint on miscellaneous metal is specified in Section 09900 of these specifications.

END OF SECTION

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Expansion Joint Seals
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PART 1 – GENERAL

1.01 Work Included

- A. The work shall consist of furnishing and installing waterproof expansion joints in accordance with the details shown on the plans and the requirements of the specifications. Preformed sealant shall be silicone pre-coated, preformed, compressible, resilient, closed cell sealant system.
- B. Related Work
 - Division 4 - Masonry
 - Division 7 - Thermal & Moisture Protection
 - Division 7 - Sealants, caulking and waterproofing

1.02 Submittals

- A. General – Submit the following according to Division 1 Specification Section.
- B. Standard Submittal Package – Submit typical expansion joint drawing(s) indicating pertinent dimensions, general construction, expansion joint opening dimensions and product information.
- C. Certified by manufacturer to have no vertical laminations proven not to delaminate.
- D. Certified by manufacturer to be constructed of a monolithic body, free of heat laminations throughout the structure of the foam.
- E. Certified by the manufacturer to not rely on the silicone coating to provide the primary waterproofing function.
- F. Sample of material is required at time of submittal.
- G. Quality control, manufacturer shall be ISO-9001, certified and shall provide written confirmation that a formal Quality management System and Quality Processes have been adopted in the areas of, (but not limited to) Manufacturing, Quality Control and Customer Service for all processes, products and their components. Alternate manufacturers will be considered provided they submit written proof that they are ISO 9001, certified prior to the project bid date.
- H. Product must be certified by independent laboratory test report to exceed the requirements of curtain wall performance tests ASTM E330, E283-04, and E331. Product must meet or exceed hurricane-force wind loading with no deflection at both positive and negative pressures up to 4954 Pascals - equal to 200 mph winds (TAS 202/203).
- I. Manufactured in the USA

1.03 Product Delivery, Storage and Handling

- A. Deliver products to site in Manufacturer's original, intact, labeled containers. Handle and protect as necessary to prevent damage or deterioration during shipment, handling and storage. Store in accordance with manufacturer's installation instructions.

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1.04 Basis-of-Design

- A. All joints shall be designed to meet the specified performance criteria of the project as manufactured by: Willseal LLC, 34 Executive Drive, Hudson, NH 03051, 800-274-2813. Willseal.com, custserv@willseal.com.
- B. Alternate manufacturers must demonstrate that their products meet or exceed the design criteria and must submit certified performance test reports performed by recognized independent laboratories as called for in section 1.02 Submittals. Submittal of alternates must be made three weeks prior to bid opening to allow proper evaluation time.

1.05 Quality Assurance

- A. The General Contractor will conduct a pre-construction meeting with all parties and trades involved in the treatment of work at and around expansion joints including, but not limited to, concrete, mechanical, electrical, HVAC, landscaping, masonry, curtain wall, waterproofing, fire-stopping, caulking, flooring and other finish trade subcontractors. All superintendents and foremen with responsibility for oversight and setting of the joint gap must attend this meeting. The General Contractor is responsible to coordinate and schedule all trades and ensure that all subcontractors understand their responsibilities in relation to expansion joints and that their work cannot impede anticipated structural movement at the expansion joints, or compromise the achievement of watertightness or life safety at expansion joints in any way.
- B. Warranty – Manufacturer's standard warranty shall apply.
- C. LEED Building Performance Requirements:
 - 1) The VOC of the silicone must not exceed 40 grams/liter

PART 2 – PRODUCT

2.01 General

- A. Provide watertight, energy-efficient exterior and interior joints in vertical-plane walls (above-grade). Typical locations include, but are not limited to the following: applications in window perimeters, other façade penetrations such as doors, store fronts, vents, HVAC units, panel to panel joints, curtain walls, control joints, between dissimilar materials, structural expansion joints, acoustic partition barriers, and new-to-existing connections.
- B. Provide Color Coreseal V as manufactured by Willseal LLC and as indicated on drawings for vertical expansion joint locations.
- C. Preformed sealant shall be silicone pre-coated, preformed, sealant system. Compressible foam to be a closed cell EVA cellular foam that is impermeable to water. Seal shall combine factory-applied, low modulus silicone and the closed cell foam into a unified hybrid sealant system.
- D. Material shall be capable of movements of +25%, -25% (50% total) of nominal material size
- E. Silicone external color facing to be factory-applied to the foam. When compressed to final joint dimension, a bellow(s) to handle movement must be created in the silicone coating. Silicone coating to be available in a range of standard colors for coordination with typical building materials.

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- F. Select the sealant system model appropriate to the movement and design requirements at each joint location that meet the project specification or as defined by the structural engineer of record.
- G. Manufacturer's Checklist must be completed by expansion joint subcontractor and returned to manufacturer at time of ordering material.

2.02 Fabrication

- A. Color Coreseal V by Willseal LLC must be supplied 25% larger than the joint size, packaged in 6' lengths (sticks) with the factory supplied adhesive.
- B. Directional changes and terminations into horizontal plane surfaces can be provided by factory supplied 90-degree angles containing minimum 12-inch long leg and 6-inch long leg, or custom leg on each side of the direction change, or through field fabrication in strict accordance with published installation instructions. In most cases field conditions are such that the restrictive nature of the factory supplied corners do not conform to as built conditions and may outweigh the benefits. Consult manufacturer for proven field transition methods.

PART 3 – EXECUTION

3.01 Installation

- A. Preparation of the Work Area
 - 1. The contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on manufacturer's standard system drawings or as shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.
 - 2. The contractor shall clean the joint opening of all contaminants immediately prior to installation of expansion joint system. Repair spalled, irregular or unsound joint surfaces using accepted industry practices for repair of the substrates in question. Remove protruding roughness to ensure joint sides are smooth. Ensure that there is sufficient depth to receive the full depth of the size of the Color Coreseal V being installed plus at least 1/8-inch (3mm) for the application of corner beads. Refer to Manufacturers Installation Guide for detailed step-by-step instructions.
 - 3. No drilling, or screwing, or fasteners of any type are permitted to anchor the sealant system into the substrate.

3.02 Clean and Protect

- A. Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the general contractor's expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION

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Exterior Wall Repairs
Joint Sealants
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SECTION 079200 – JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Urethane joint sealants.

B. Related Sections:

- 1. Section 033500 "Concrete Repairs" for concrete requirements.
- 2. Section 071800 "Traffic Coatings" for traffic coating requirements

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1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant, backer rod and indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- D. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Contractor shall submit evidence of Manufacturer's ~~authorized~~ authorization, approval or qualification. for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

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1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C). When temperatures are below 40 deg F but still within acceptable manufacturer limits, additional precautions as outlined by the manufacturer should be followed.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.

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4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 URETHANE JOINT SEALANTS

- A. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25 minimum, for Use NT. (Cove & Garage Interior Vertical Joints and exterior architectural precast joints)
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Master Builders Solutions; MasterSeal NP 2.
 - b. Pecora Corporation; Dynatrol II.
 - c. Sika Corporation, Construction Products Division; Sikaflex - 2c NS.
 - d. Tremco Incorporated; Vulkem 227 or Dymeric 240.
 - e. Mapei Corporation; Mapeflex P2 NS
- B. Multicomponent, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T. (Garage ramps, > 5% slopes)
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Master Builders Solutions; MasterSeal NP 2.
 - b. Pecora Corporation; Dynatred.
 - c. Sika Corporation, Construction Products Division; Sikaflex - 2c NS.
 - d. Tremco Incorporated; Vulkem 227 or THC-901.
 - e. Mapei Corporation; Mapeflex P2 NS
- C. Multicomponent, Self-Leveling, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T. (Garage non-ramps, < 5% slopes)
 1. Products: Subject to compliance with requirements, provide one of the following:

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- a. BASF Building Systems; MasterSeal SL 2.
 - b. Pecora Corporation; Dynatrol II-SG.
 - c. Sika Corporation, Construction Products Division; Sikaflex - 2c SL.
 - d. Tremco Incorporated; THC-900.
 - e. Mapei Corporation; Mapeflex P2 SL
- D. Single component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25 minimum, for Use NT. (Cove & Garage Interior Vertical Joints and exterior architectural precast joints)
- 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Master Builders Solutions; MasterSeal NP 1.
 - b. Sika Corporation, Construction Products Division; Sikaflex – 15LM.
 - c. Mapei Corporation; Mapeflex P1 NS
- E. Single component, Self-Leveling, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T. (Garage non-ramps, < 5% slopes)

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1. Products: Subject to compliance with requirements, provide one of the following:

- a. Master Builders Solutions; MasterSeal SL 1
- b. Sika Corporation, Construction Products Division; Sikaflex – 1c SL.
- c. Mapei Corporation; Mapeflex P1 SL

F.

2.3 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

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- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions.

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Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

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3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

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Joint Sealants

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4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Garage joints in horizontal traffic surfaces < JS-1 >.

1. Joint Locations:

- a. Isolation and contraction joints in cast-in-place concrete slabs on grade.
- b. Joints between plant-precast concrete double tee and floor slab units.
- c. Joints in cast in place concrete toppings on precast superstructure.

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Joint Sealants

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2. Urethane Joint Sealant: Multicomponent, nonsag for > 5% slope or self-leveling for < 5% slope, traffic grade, Class 25.
3. Joint Sealant: Urethane.
4. Joint-Sealant Color: Gray.

B. Joint-Sealant Application: Vertical and cove joints inside garage ≤ JS-2 ≥.

1. Joint Locations:
 - a. Construction joints in cast-in-place concrete (vertical).
 - b. Joints between plant-precast architectural concrete units (vertical).
 - c. Control and expansion joints in unit masonry (vertical).
 - d. Joints at door frames in masonry walls and elevator hoistway frames.
 - e. Joints between different materials listed above.
 - f. Perimeter joints between materials listed above and frames of doors and louvers.
 - g. Cove joints at intersections of horizontal and vertical planes as indicated.
 - h. Joints around tube railing posts at stairs.
 - i. Other joints as indicated.
2. Urethane Joint Sealant: Multicomponent, nonsag, Class 25.
3. Joint Sealant: Urethane.
4. Joint-Sealant Color: Gray.

END OF SECTION

SECTION 09 24 00

REPAIR OF PORTLAND CEMENT PLASTER (STUCCO) WALL ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and Contract Documents, the Contract and General and Supplementary Conditions included in the Contract and Division-1 Specification Sections, apply to this Section.
- B. Section 03300 – Cast-In-Place Concrete
- C. Section 03930 – Concrete Rehabilitation

1.2 SECTION INCLUDES

- A. Repair distress and construction deficiencies in portland cement-based plaster (stucco) walls.
- B. Repair nonstructural cracks in stucco brown coat and finish.
- C. Repair flashing and waterproofing deficiencies at stucco system terminations.
- D. Resurface wall to provide uniform appearance in accordance with owner's requirements.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Cement Stucco – Wall or Soffit: By the square foot or as described in the bid form.

1.4 REFERENCES

- A. ASTM Standards
 - 1. ASTM C 926 Specification for Portland Cement Plaster
 - 2. ASTM C 1063 Specification of Installation of Lath and Furring to Receive Portland Cement-based Plaster
 - 3. ASTM C 920 Specification for Elastomeric Joint Sealants
- B. Other References
 - 1. NWCB Northwest Wall and Ceiling Bureau (NWCB) Portland Cement Plaster Resource Guide
 - 2. ICRI International Concrete Repair Institute (ICRI) Guidelines for Surface Preparation
 - 3. SWRI Sealant Waterproofing and Restoration Institute (SWRI) Validation Program for Wall Coatings
(<http://www.swrionline.org/validation/>)

1.5 SUBMITTALS

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- A. General: Submit the following in accordance with Section 01300 of this specifications and conditions of Contract.
- B. Repair and coating manufacturers' specifications, details, installation instructions and product data.
- C. Samples for approval as directed by architect, engineer, or owner.
- D. Manufacturer's standard material warranty.
- E. A list of minimum three job references.

1.6 QUALITY ASSURANCE

- A. Manufacturer's requirements
 - 1. Stucco and finish material manufacturer shall be experienced provider of cementitious and polymer-based materials for use in stucco construction and repair for minimum 15 years.
- B. Contractor requirements
 - 1. Contractor shall be licensed and insured and shall have been engaged in stucco and stucco repair construction for minimum three years.
 - 2. Contractor shall be knowledgeable in the proper handling, use and installation of applicable materials.
 - 3. Contractor shall employ skilled mechanics who are experienced and knowledgeable in the repair procedures and requirements of the specified project.
 - 4. Contractor shall have completed minimum three projects of similar size, scope and complexity to the project being specified.
 - 5. Contractor shall provide the proper equipment, manpower and supervision on the job site to perform the repair procedures in accordance with manufacturer's published repair specifications, applicable manufacturer details and the contract documents.
- C. Inspection requirements
 - 1. Quality control inspections shall be provided for by the owner or owner's representative.
 - 2. Inspectors shall be qualified by experience to evaluate field conditions before and during the repair process and shall be familiar with the specified repair procedures prior to commencement of work.
 - 3. Inspections shall be provided at key intervals during each repair.
 - 4. Inspect locations for flashing repair and other locations where existing stucco must be removed after demolition of the cementitious stucco is completed; before any existing flashing is removed; and before any new materials are installed. Verify that the proposed repair is constructible and will function in the manner intended based on the visible conditions. Resolve any visible construction detail conflicts with the repair designer before allowing the contractor to proceed with the repair.
 - 5. Inspect the conditions of newly installed or replaced flashing, water-resistive barrier components and replacement lath (if applicable) before installing the replacement scratch coat. Verify that flashing and water-resistive barrier installation is in accordance with the repair detail design. Verify visible continuity of the water-resistive barrier system to direct water to the exterior of the wall via the flashing.
 - 6. Inspect the final appearance of each repair location to verify compliance with owner requirements.

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1.7 CONTRACTOR'S QUALIFICATIONS

- A. The general Contractor, decorative stucco work shall have a minimum of five years of experience in performing work similar to that shown in the drawings and specifications. A statement of qualification should be submitted at time of bidding.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and product identification.
- B. Protect liquid products (pails) from freezing and temperatures greater than 90 degrees F (32 degrees C). Do not store in direct sunlight.
- C. Protect portland cement-based materials (bag products) from moisture and humidity. Store under cover and off of the ground in a dry location.

1.9 FIELD CONDITIONS

- A. Apply materials only when surface and ambient temperatures are above 40 degrees F (4 degrees C) and are expected to remain above 40 degrees F (4 degrees C) for 24 hours after application.
- B. Provide supplementary heat for installation in temperatures less than 40 degrees F (4 degrees C).
- C. Provide protection of surrounding areas and adjacent surfaces from spillage, splatter, overspray or other unintended contact with the materials that are being applied.

1.10 COORDINATION AND SCHEDULING

- A. Schedule repairs to permit inspections where specified in Section 1.6.
- B. Do not start repairs in an area unless sufficient work can be completed such that the area is weather-tight at the end of the work shift. Alternatively allow sufficient time before the end of the work shift to provide weather protection until work can resume.
- C. Coordinate with all trades involved to schedule work to result in the proper sequencing of materials within the repair (proper lapping of water resistive system components and flashing).
- D. Schedule finish and coating application to large areas such that each day's application will end at an architectural break.

1.11 WARRANTY

- A. Provide manufacturer's standard warranty for products used.

PART 2 - PRODUCTS

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2.1 MANUFACTURERS

- A. Provide stucco, surface leveling, primer, waterproofing, and coatings (as applicable) from single manufacturer:
 - 1. Sto Corp., 3800 Camp Creek PKWY, Building 1400, Suite 120, Atlanta, GA 30331; www.stocorp.com, 1-800-221-2397
 - 2. Dryvit, 3735 Green Rd, Beachwood, OH 44122; www.dryvit.com 1-800-556-7752
- B. Provide galvanized metal lath and stucco accessory components from qualified manufacturer.

2.2 SURFACE CONDITIONER

- A. Provide acrylic polymer surface conditioner for pretreatment of friable, chalking, or heavily weathered existing coating surfaces.

2.3 GLASS FIBER MESH REINFORCEMENT

- A. Provide alkali resistant, open weave glass fiber mesh reinforcing for surface leveling and waterproof base coat.

2.4 ACRYLIC CRACK FILLER

- A. Provide acrylic crack filler.

2.5 LEVELER/BASE COAT/SKIM COAT

- A. Provide high-build polymer-modified portland cement-based base coat for surface leveling over cementitious finishes and brown coat.
- B. Provide acrylic surface leveler/base coat for surface leveling over elastomeric finishes.
- C. Provide waterproof polymer-modified portland cement-based base coat.

2.6 WATER-RESISTIVE BARRIER

- A. Provide water-resistive barrier coating and transition membrane system.

2.7 PORTLAND CEMENT PLASTER

- A. Provide portland cement stucco scratch and brown coat.
 - 1. Products:
 - a. ASTM C 926-compliant field-mixed stucco
 - b. ASTM C 926-compliant pre-packaged stucco mix

2.8 PORTLAND CEMENT

- A. Provide ASTM C 150 Type I, Type II, or Type I-II cement

2.9 PRIMER

- A. Provide pH resistant acrylic primer to be used on stucco brown coat.

2.10 MIXING

- A. Mix in accordance with manufacturer's printed instructions.
- B. Mix cementitious products with clean, potable water.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect locations identified on the project drawings for repair.
- B. Establish clear understanding of the repair scope and process with the mechanics that will perform the work for each individual location.

3.2 SELECTIVE DEMOLITION

- A. Use hearing, eye, ear and respiratory personal protective equipment when performing demolition.
- B. Provide adequate protection to persons and property from potential falling debris from demolition and repair construction.
- C. Stucco Removal:
 - 1. Saw cut perimeter of repair area with a masonry blade set to a depth that will not cut into the sheathing.
 - 2. Chip stucco at the edges of the saw cut to provide a minimum ½-inch perimeter of exposed lath where lath is to be repaired or replaced.
 - 3. Remove stucco such that patches will be square or rectangular shaped. Avoid re-entrant corners within patches and constructing patches with greater than 2.5: 1 length-to-width ratios.
- D. Finish removal:
 - 1. Remove finish where required to cosmetically match finish texture with surrounding unaltered stucco. Finish shall be removed minimum 1-inch (25mm) around the perimeter of saw-cut or chipped areas, and on both sides of cracks to be repaired using crack-filling and bridging techniques. (Note: removal of finish can be omitted along crack repairs. However, a trial area should be done to verify that the finished appearance will comply with owner requirements because the crack repair will likely be visible.)

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2. Finish removal shall be by grinding, scraping, or chemical stripping product approved by the design professional.
3. Use chemical stripping products in accordance with the product manufacturer's written instructions.
4. Dispose of waste and rinse water from chemical stripping of finish in accordance with local regulations.

3.3 REPAIR OF CRACKS 1/16-INCH (1.6 MM) WIDE AND SMALLER

- A. Cracks not wider than 1/32-inch (0.8 mm) (hairline cracks).
 1. Clean existing surface in accordance with manufacturer requirements.
 2. Coat wall surface with Elastomeric Coating in accordance with written product instructions.
- B. Cracks not wider than 1/16-inch (1.6 mm)
 1. Remove finish along crack as specified in section 3.03.C.
 2. Clean crack using oil-free compressed air.
 3. Seal crack with Crack Filler and tool surface flush with brown coat.
 4. Apply new finish to match surrounding texture and color.

3.4 REPAIR OF CRACKS 1/16-INCH (1.5MM) WIDE TO MAXIMUM 1/8-INCH (3.2MM) WIDE

- A. Remove finish along crack as specified in section 3.03.C.
- B. Clean crack using oil-free compressed air.
- C. Fill crack with Flexible Crack Filler and tool surface flush.
- D. Apply skim coat material (selected from section 2.05 of this specification) along both sides of crack and tool flat. Embed 2-inch wide (50 mm) strip mesh generally centered on crack and tool into fresh skim coat material using taping knife. Tool smooth to the thickness required to fully embed the mesh (approximately 1/16-inch (1.6 mm) thick). Allow skim coat to dry completely before applying finish.
- E. Apply new finish to match surrounding texture and color.

3.5 FLASHING REPLACEMENT

- A. Repair flashing and/or correct conditions in locations indicated on the project drawings and as described in section 1.4 of this specification.
- B. Remove stucco in accordance with section 3.2 of this specification.
- C. Remove enough area to permit proper installation of flashing as detailed by manufacturer.
- D. Inspect the condition of the water-resistive barrier membrane and transition materials.
- E. Repair or replace damaged water resistive barrier system components.

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- F. Install replacement components in a sequence and manner to provide shingle-laps and provide a continuous path for moisture drainage to the exterior of the wall via the flashing.
- G. Install new flashing components such that finished repair will comply with manufacturer guideline details for stucco construction.
- H. Mix and apply stucco scratch and brown coats in accordance with ASTM C 926 to match existing stucco thickness. Cover with polyethylene sheeting or otherwise moist-cure for minimum 48-hours.
- I. Where finish is specified directly to new stucco, prime the new stucco brown coat surfaces prior to finish application.
- J. Where further surface leveling or surface applied waterproofing is specified, apply leveler or waterproof base coat after completion of the 48-hour cure period.

3.6 SURFACE DEFECT REPAIR

- A. Localized finish repair
 - 1. Remove affected finish in accordance with section 3.2.D of this specification.
 - 2. Clean exposed brown coat surface to remove all dust, dirt, and other bond-inhibiting materials.
 - 3. Apply primer in accordance with written product instructions.
 - 4. Apply finish to match surrounding stucco texture and color.
- B. Localized brown coat repair within field of wall
 - 1. Remove stucco in accordance with section 3.2 of this specification.
 - 2. Remove stucco minimum 2-inch (50 mm) in all directions beyond area of concern where lath replacement is required.
 - 3. Remove and replace damaged or corroded lath.
 - a. Remove damaged lath minimum 1-inch (25 mm) in all directions beyond area of concern.
 - b. Repair water-resistive barrier system as necessary to correct any damage that is either existing or caused by stucco and lath removal actions.
 - c. Cut replacement lath to provide minimum 1/2-inch (12.5 mm) overlap on all sides.
 - d. Wire tie new lath to existing lath at maximum spacing of 8-inches (203 mm).
 - e. Provide minimum 4 wire ties for small lath replacements.
 - 4. Mix and apply stucco scratch and brown coats in accordance with ASTM C 926 to match existing stucco thickness. Cover with polyethylene sheeting or otherwise moist-cure for minimum 48-hours.
 - 5. Where finish is specified directly to new stucco, prime the new stucco brown coat surfaces with primee prior to finish application.
 - 6. Where further surface leveling or surface applied waterproofing is specified, apply leveler or waterproof base coat after completion of the 48-hour cure period.
- C. Remedial accessory installation
 - 1. Remove stucco in accordance with section 3.2 of this specification.
 - 2. Remove stucco a sufficient distance from accessory to permit removal of the existing accessory and wire-tie connection of new accessory.
 - 3. Remove and replaced damaged accessories
 - a. Cut damaged section of existing accessory and remove from wall.

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- b. Repair water-resistive barrier system if damage is present or occurs as a result of the accessory removal.
 - c. Wire tie new accessory to existing lath at maximum spacing of 8-inches (203 mm).
 - d. Provide minimum 4 wire ties for small lengths of replacement.
 4. Align new sections of corner and casing beads carefully to match adjacent accessories.
 5. Set both ends of all accessory replacements pieces in wet sealant. Mix and apply stucco scratch and brown coats in accordance with ASTM C 926 to match existing stucco thickness. Cover with polyethylene sheeting or otherwise moist-cure for minimum 48-hours.
 6. Where finish is specified directly to new stucco, prime the new stucco brown coat surfaces with primer prior to finish application.
 7. Where further surface leveling or surface applied waterproofing is specified, apply leveler or waterproof base coat after completion of the 48-hour cure period.
- D. New accessory installation
1. Remove stucco in accordance with section 3.2 of this specification in locations where required accessories are not present.
 2. Install new corner beads, casing beads, weep screeds or other accessories in accordance with ASTM C 1063.
 3. Set ends of accessories in wet sealant.
 4. Mix and apply stucco scratch and brown coats in accordance with ASTM C 926 to match existing stucco thickness. Cover with polyethylene sheeting or otherwise moist-cure for minimum 48-hours.
 5. Where finish is specified directly to new stucco, prime the new stucco brown coat surfaces with primer prior to finish application.
 6. Where further surface leveling or surface applied waterproofing is specified, apply leveler or waterproof base coat after completion of the 48-hour cure period.

3.7 STUCCO DELAMINATION FROM CONCRETE SUBSTRATES

1. Define repair area based on sounding and remove stucco to sound substrate.
2. Extend repairs laterally to adjacent well-bonded material.
3. Scarify or chip concrete substrates to provide a surface profile sufficient for bonding of new stucco application.
4. ICRI surface profile minimum SP-3
5. Clean prepared surface to remove all dust, dirt, laitance, oils and other potentially bond inhibiting materials.
6. Check ability of surface to receive directly bonded stucco by checking for absorption of water into the concrete. If water does not readily absorb into concrete, provide additional surface preparation or mechanical anchorage for stucco.
7. Install stucco in accordance with product instructions.

3.8 SURFACE SKIM COAT

- A. Surface leveling
1. Apply unreinforced polymer modified cementitious leveling coat to correct for profile variations of 1/8-inch (3.2 mm) to 1/4-inch (6.4 mm).
 2. Apply unreinforced skim coat to existing finish surfaces to level surface in preparation for new finish application.

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- B. Skim Coat for Crack remediation
 - 1. Apply glass-fiber mesh reinforced base coat to remediate frequent fine cracks (less than 1/16-inch (1.6 mm) wide) and provided additional crack prevention.
- C. Skim Coat Surface-Applied Waterproofing
 - 1. Apply glass fiber mesh reinforced waterproof base coat to areas specified on the project drawings.

3.9 FINISH

- A. Apply finish in accordance with manufacturer written instructions for the specified product.

END OF SECTION

BENJAMIN MOORE & COMPANY

SPECIFICATIONS & PRODUCT DATA



**Benjamin
Moore®**
Paints

Century Plaza Condominium Exterior Repainting



EXTERIOR PAINTING SPECIFICATIONS

FOR

**Century Plaza Condominium
1012 N Ocean Blvd.
Pompano Beach FL 33062**

Prepared by:

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MEDALLION PAINT CENTERS
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Century Plaza Condominium Exterior Repainting

Revised: September 7th, 2022

Century Plaza Condominium
1012 N. Ocean Blvd.
Pompano Beach FL 33062

An inspection has been made by a Benjamin Moore Representative and/or an authorized dealer representative on the above listed address. This specification has been written for the purpose of offering a **ten (10) year** non-prorated (material and labor) warranty on the painting of the exterior stucco of these buildings.

A Benjamin Moore Representative or an authorized dealer representative will inspect the work in progress to help ensure proper preparation and application of all products.

SCOPE OF WORK: Repainting of exterior surfaces of a (1) building (16 stories) with a total of 187 units.

1. Bleach wash all mildew areas.
2. Completely pressure clean all exterior surfaces to be painted.
3. Completely clean all cast stone attachments.
4. **Seal all** exterior stucco surfaces.
5. Remove and Replace all Caulking Stucco to metal on all windows, doorframes. **(As Needed or as engineer specified)**
6. Apply a intermediate coat of TexCrete Smooth Water-proofer to all roof stucco structures and parapet wall and cap.
7. Apply a intermediate coat of TexCrete Smooth Water-proofer to all new repairs.
8. Paint all roof structures and parapet wall and cap.
9. Paint all sheer walls.
10. Paint stair towers.
11. Paint all balcony walls and ceilings.
12. Paint all catwalk walls and ceilings.
13. Paint all concrete balusters and rail caps. (apply Multiply Semigloss Enamel to rail caps)
14. Paint covered entry walls and ceilings.
15. Paint porte Cochere walls, ceilings and columns.
16. Paint knee walls, pool area walls, perimeter walls, and retaining walls.
17. Paint all exterior parking garage walls. (Including block retaining wall on parking deck.
18. Paint all decorative bands and blocks.
19. Paint sea wall (both sides)
20. Paint all utility doors and frames (exterior side)
21. Paint both sides of trash room and fire doors and frames.
22. Paint dumpster corral.
23. Paint carports

OPTIONS:

1. Bid to prepare and paint all stucco with Aura Coating for 10 Years and Ultra Spec Coating for 8 years.

EXCLUSIONS:

1. All hurricane shutters.
2. Shuffle board courts.
3. All Ocean cement furniture.
4. All interior surfaces of parking garage.
5. All roof membrane.
6. All window and slider doors and frames.
7. All floors, decks, sidewalks and parking areas.
8. Any area not specifically specified.

Century Plaza Condominium Exterior Repainting

TERMS AND CONDITIONS

A. EXTRAS & CHANGES

1. It is anticipated that the aforementioned work shall be inclusive and that there will not be extras or changes. The need for extra work and changes in the specifications will be the sole responsibility and determination of the Owner and will be submitted as a written work order to the Painting Contractor. No extra work will be done or changes made in the work as specified without a written work order from the Owner.

B. LICENSE AND PERMITS

1. The Painting Contractor shall include with your proposal a copy of any valid Occupational and Professional Licenses necessary to operate in the State of Florida, the County and the City where the project is located. Further the Painting Contractor is responsible for obtaining all necessary permits as required by the State of Florida, the County and the City where the project is located.

C. INSURANCE

1. The Painting Contractor will be required to furnish suitable insurance certificates covering liability and property damage, Worker's Compensation coverage and they shall be kept in force during the course of the work. The Painting Contractor shall hold the Owner(s) harmless from all liens or damages arising from or caused by the work. Please include documentation of all such coverage or show the ability to obtain such coverage.

D. SAFETY RELATED PRECAUTIONS

1. It is the Painting Contractor's responsibility to read and follow all label and technical data directions and information and all safety requirements from the Manufacturer of the products being used.
2. The Painting Contractor will be responsible for roping off and erecting signs in areas where any painting is occurring.
3. The Painting Contractor shall be responsible for all aspects of safety administration on the job and must be in compliance with all OSHA safety regulations.

Century Plaza Condominium Exterior Repainting

PAINING**PART 1 GENERAL****1.01 QUALITY ASSURANCE**

- A. The Painting Contractor shall furnish all labor, materials, tools, and equipment necessary for the cleaning, preparation, sealing and painting of all specified surfaces.
- B. All work is to be done in a workmanlike manner by skilled workers and carried out in such a way as to minimize any inconvenience to the occupants and tenants. The Painting Contractor shall maintain a full work force from the start to the completion of work and shall leave a qualified foreman on the job at all times. The Painting Contractor will be responsible for making sure that all the Painting Contractor's employees be fully and properly clothed in identifiable uniforms while working on the premises or entering any part of the facilities. The skilled workers will be thoroughly trained and experienced in their necessary trade and will be completely familiar with the specification requirements and methods for proper performance of the work in this Specification.
- C. The Painting Contractor once having started the job will continuously and expeditiously proceed with its vigorous prosecution until completion.
- D. The Painting Contractor will not sub-contract any of their work. If the Painting Contractor proposes to sub-contract any work the Painting Contractor shall submit a complete list of any work proposed to sub-contract and proposed sub-contractors along with all licenses and proofs of insurance for each. The Owner(s) or an authorized representative prior to the execution of the Contract shall review the list. The Owner(s) reserves the right to reject any proposed subcontractor.
- E. The Painting Contractor must include a price per square foot for all repairs as needed to all undiscovered spalling stucco and all other stucco in need of repair other than visible restoration. Visible deterioration must be repaired.
- F. All materials shall be applied free from runs, sags, wrinkles, streaks, shiners and brush marks.
- G. All materials shall be applied uniformly.
- H. The Painting Contractor shall be responsible for and use utmost care in the protection of the occupants property including all balconies, screens, windows, walkways, shrubbery, parked vehicles and any other property in the area from paint and/or any other damage.
- I. The Painting Contractor shall be solely responsible for the rectification of any such damage, the cleanup involved from work outlined in this specification, and their employees during the performance of their labor. Payment to the Painting Contractor will be withheld until settlement is reported.

1.02 LIASON

- A. The Owner's Representative and the Painting Contractor shall transmit all information pertaining to the job and shall not permit unauthorized interference from residents of the Owner's Property or from the Painting Contractor's employees.

1.03 INSPECTION

- A. In order to avoid any dispute over existing damage it is suggested that before the commencement of any work that the Painting Contractor along with the Owner or the Owner's Representative together walk the project and make a list of all existing damage. This list should contain the names and/or numbers of any units showing signs of any kind of damage. Each party should keep a dated copy. In the event of a claim, the Owner and the Painting Contractor can use this list to resolve any disputed damage.
- B. The Painting Contractor shall schedule all required tests, approvals and inspections at appropriate times so as not to delay the progress of the work. The Painting Contractor shall bear all expenses associated with tests, inspections and approvals required which, unless otherwise agreed to, shall be conducted by an independent testing laboratory or entity approved by the Contractor and Owner. Inspections conducted the Benjamin Moore & Company representative does not dismiss the Painting Contractor of responsibility for the prescribed preparation and application of specified products.

Century Plaza Condominium Exterior Repainting

1.03 INSPECTION (continued)

- C. The Painting Contractor is required to correct in a timely fashion any work reasonably rejected by the Benjamin Moore Representative or owner for failing to comply with the Specification Documents whether observed prior to the commencement of the warranty period or during the warranty period. Benjamin Moore & Company accepts no responsibility for any increase in cost due to the any unforeseen or undiscovered condition that may arise.

1.04 RELEASE OF LIEN AND WARRANTY CERTIFICATE

- A. The successful completion of the project, while meeting all the necessary requirements to satisfy the issuance of a warranty, must be approved by an Authorized Benjamin Moore Dealer Representative of the store selling all the materials for said project, a Representative of the Benjamin Moore & Company and the Owner or the Owner's Representative.
- B. All monies owed to all suppliers selling any materials for said project must be paid in full and the Painting Contractor must furnish a Final Release of Lien from all suppliers that have filed Notice to Owners against any and all properties covered in these Specifications.
- C. After above criteria has been met the Warranty will be issued and final payment to the Painting Contractor will be made.

1.05 BENJAMIN MOORE & COMPANY LIMITED WARRANTY

- A. The Painting Contractor shall be required to warranty the workmanship for period of time to correspond to the length of the material warranty as supplied by the Manufacturer. Please include a sample of "YOUR" warranty.
- B. The multi year exterior only limited warranty will apply only on the condition that the procedures stated and required in the Benjamin Moore & Company Limited Warranty are followed. *A sample copy of the Benjamin Moore & Company's Limited Warranty Program is attached.* The warranty extends only to the exterior masonry surfaces only not including floors and roofs.
- C. In order to control and properly document the required material usage, all materials must be purchased from a single Benjamin Moore Paints Authorized Dealer. This Dealer must be determined and agreed upon prior to the commencement of the work.
- D. The warranty states that any peeling, blistering, cracking or deterioration of the *new* paint film caused by a failure or defect in the structure or previous coatings is not covered.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Bids are to be based solely on coatings manufactured by the Benjamin Moore & Company, except as otherwise noted or specified.
- B. Colors are to be those as approved by the Owner(s). A duplicate color chip schedule will be supplied to the Painting Contractor.
- C. All paint and coatings must be delivered to the job site in the manufacturer's original sealed containers.
- D. The Owner reserves the right to take a representative sample of any materials the Painting Contractor brings on the job and have it tested by an approved laboratory to verify the materials conform to the specification set forth herein.
- E. Due to different conditions of surfaces being painted the Painting Contractor must assume responsibility for coverage of paint. One coat coverage cannot be guaranteed due to different absorption rates of the surfaces painted. Test patches should be completed prior to beginning of work to assure satisfactory coverage of material.
- F. Color differences due to different batches are inherent in the paint industry. The Painting Contractor should try to order as much of any custom mixed color at one time ready made from the factory or the paint store in order to avoid "batch color differences". As this might not be feasible in all circumstances, if smaller batches do need to be taken for whatever reason, the Painting Contractor should retain an amount needed from a particular batch to touch up those areas painted in that batch of paint to help avoid "touch up" problems.

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2.01 MATERIALS (continued)

- G. If any reduction of the coating's viscosity is necessary, it shall be done in accordance with manufacturer's label directions.

PART 3 EXECUTION**3.01 ACCESS**

- A. The Owner agrees to and shall be responsible for the trimming and/or removal of all foliage clinging to or otherwise obstructing the building and permit adequate access to the areas to be painted.
- B. The Owner agrees to notify all occupants of the property to remove any personal items, patio furniture and vehicles as necessary to permit the Painting Contractor to proceed without delay.
- C. The Painting Contractor must give tenants a three to four day notice prior to commencement of work in their area in order to have all crafts or objects removed from any area that will hinder the progress of the work in any way. Parked vehicles are also to be moved from the area described.
- D. The Painting Contractor must be allowed easy access to all locked areas that have been included to be painted.

3.02 STAGING AREA

- A. The Painting Contractor is to submit their requirements for a staging area (shop and storage areas) and parking area for their employees and the Owner will make every effort to provide a suitable area. At the end of each working day, all equipment, ladders, paint, supplies, vehicles, etc. must be returned to the staging area and the working area must be left clean. Protection of this area is the sole responsibility of the Painting Contractor and shall be left in a clean, safe and acceptable manner.

3.03 REMOVAL

- A. Upon completion of an area, it shall be left in a clean and orderly condition and all paint splatters contaminated rags and trash shall be removed.
- B. The Paint contractor shall be responsible for the proper disposal of any hazardous waste generated during the course of work. Upon completion of the job, the Painting Contractor must remove all surplus materials, scaffolds etc., from the premises that relate to their trade. The Painting Contractor shall clean all window glass free of excess paint and splatters and remove paint that has been misplaced on any other surfaces.

3.04 PREPARATION OF THE SURFACES

- A. The Painting Contractor shall be wholly responsible for the quality of their work and is not to commence any part of it until all surfaces are in proper condition.
- B. All surfaces are to be clean of mildew, chalk, peeling paint and other residues. If, for any reason, the surface cannot be cleaned this condition must be promptly reported to the Owner or the Painting Contractor will assume responsibility for the condition.
- C. If the Painting Contractor considers any surface unsuitable for proper finishing, they are to notify the Owners of this fact in writing. The Painting Contractor is not to apply material until corrective measures have been taken or the Owners have instructed them to proceed under the current conditions.
- D. Occasionally the Painting Contractor's cleaning technique develops or reveals an unforeseen condition that requires additional labor and materials. The Painting Contractor must either negotiate their contract or assume the responsibility for properly correcting the condition.
- E. The prime coat shall be applied soon after surface preparation has been completed, so as to prevent contamination of the substrate.

3.05 MOLD AND MILDEW REMOVAL

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- A. If any mold or mildew is apparent the Painting Contractor must provide a sanitized surface free of mold and mildew spores prior to applying any coating to any surface. Should there be a question of chlorinating any surface the inspector's decision will be final.
- B. **NOTE: USE RUBBER GLOVES, PROTECTIVE GOGGLES AND PROTECTIVE CLOTHING.** Using a garden type of pressure pot and spray wand, saturate the surface with a diluted solution of chlorine or bleach consisting of one volume of bleach or chlorine to three times volumes of water. As some solutions of chlorine and bleach are already diluted tests should be done to verify that the above-recommended solution will be strong enough to remove any mold and mildew present. If not the solution should be increased or decreased as to properly remove all mold and mildew.
- C. The solution must then be washed off with clean water. A water pressure cleaner can be used. If washing off wood surfaces or roofs care must be taken not to damage the surface or create leaks especially on roofs and windows.
- D. Repeat as necessary where needed. Sometimes the staining caused by mold and mildew contamination cannot be removed even after multiple applications of the removal solution. These surfaces if needed can be coated with a stain killing type of primer sealer such as our Benjamin Moore's Fresh Start Acrylic Primer 023 series to prevent bleed through. This primer must be applied after the primers that are specified below for each type of surface.
- E. The possibility of plant damage must be considered. If the mold and mildew removing solution run-off cannot be controlled or directed from vegetation, then it must be diluted with enough fresh water to render it harmless or another method of mold and mildew removal must be utilized.

3.06 GRAFFITI AND ROOFING MATERIAL STAINING

- A. The Painting Contractor shall be required to prepare surfaces where graffiti or asphalt material is present providing for complete blockage of visible traces of the said material through the specified coatings. The Painting Contractor shall remedy any physical damage to the substrate in the form of gouges or excessive build of the graffiti element to match adjacent surfaces. Should remedy fall outside the scope of this specification, the Painting Contractor will notify the Owner in writing or be responsible for these areas.
- B. The following methods for graffiti removal/blocking are suggested dependent on the extent of damage.
 - 1. Clean away all traces of mildew if present to eliminate deep contamination of the substrate.
 - 2. Scrub surfaces with a suitable solvent or detergent to remove graffiti element.
 - 3. Pressure clean, hot water pressure clean or abrasive blast stubborn stains on masonry to eliminate traces. Sand wood surfaces that have been gouged or carved to provide a smooth transition from the damaged areas to adjacent surfaces.
 - 4. Use a blocking primer such as **Benjamin Moore's Fresh Start 100% Acrylic All-Purpose Stain Blocking Primer 023** to prevent migration of color through to the specified finish coats.

3.07 DELAMINATING COATINGS

- A. Surfaces to be painted shall be made free of loose and delaminating coatings by the Paint Contractor. Delaminating that occurs as a result of insufficient preparation will be the sole responsibility of the Painting Contractor.
- B. Masonry Surfaces
 - 1. Power Tool Clean using sufficient power at angles that will remove loose coatings without damage to the surface.
 - 2. Test all edges of remaining coatings by Hand Tool Cleaning using a thin bladed sharp steel scraper.
- C. Smooth surfaces
- D. Doors, windows, and handrails shall be Hand or Power Tool Cleaned to remove loose coatings without damage to the surface.
- E. Prime surface with the specified materials
- F. Taper edges of remaining coatings to a smooth transition between levels using the specified patching materials.

3.07 DELAMINATING COATINGS (continued)

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- G. Prime patching material with the specified material.
- H. Surfaces that cannot be properly prepared without damage to the surface shall be brought to the attention of the Owner or their agent immediately upon discovery. These surfaces will be noted and withheld from the warrantee areas.

3.08 EXTERIOR SUBSTRATE PREPARATION

APPROXIMATELY 90% OF ALL PAINT FAILURES CAN BE DIRECTLY ATTRIBUTED TO IMPROPER SURFACE PREPARATION. STRICTLY FOLLOWING ALL SURFACE PREPARATION INSTRUCTIONS ON ALL SURFACES IS ESSENTIAL TO ACHIEVE MAXIMUM BENEFITS OF THE COATINGS TO BE USED. ALTHOUGH INSPECTIONS ARE CONDUCTED ON A REGULAR BASIS, IT IS THE PAINTING CONTRACTOR'S ULTIMATE RESPONSIBILITY TO ASSURE THAT ALL SURFACES TO BE PAINTED ARE PROPERLY AND COMPLETELY PREPARED PRIOR TO APPLICATION OF ANY AND ALL COATINGS.

A. EXTERIOR PREVIOUSLY PAINTED MASONRY AND STUCCO SURFACES

1. Preparation
 - a. Any mold and mildew must be removed as described in the section titled **MOLD AND MILDEW REMOVAL**.
 - b. Any areas exhibiting efflorescence deposits shall be treated with a 25% solution of Muriatic Acid to water, scrubbed and then thoroughly rinsed with clear water to neutralize any acidity. A pH test should then be conducted to verify if any further actions should be taken.
2. Cleaning
 - a. Pressure clean all stucco and masonry surfaces with pressure washing equipment of at least 3000 P.S.I. or greater being sufficient enough to remove as much existing deteriorating coating as possible. It is recommended to use a rotating nozzle on the pressure cleaner to facilitate removal of the existing deteriorating coating and to help identify any areas that are not presently deteriorating. All masonry surfaces must be free of dirt, grease, oil and chalk. All surfaces are to dry thoroughly. If necessary, repeat procedure. Surfaces are to be tested with phenothelien (chemically) to make sure stucco has cured before any coating is applied.
 - b. Areas exhibiting rust leaching from reinforcing steel are to be chipped to the reinforcing rods and primed with Benjamin Moore's Alkyd Metal Primer OP06 series.
 - c. Rust stains must be thoroughly removed. After wetting the surface with water, apply a solution of 2% oxalic acid or appropriate oxalic acid compound in water. It is important to observe the precautions listed on the container or these compounds for safe handling and storage. Wash with sponge and scrub brush until stain is removed, then rinse with clean water. Where rust staining was evident spot prime areas with one coat of Benjamin Moore's Corotech Coatings Acrylic Metal Primer V110 series. Apply two coats if necessary.
3. Surface Sealer
 - a. After proper surface preparation, prime the entire exterior masonry surface with one coat of the Benjamin Moore recommended masonry conditioner according to the manufacturer's label instructions.
 - b. Certain colors may require a pigmented sealer.
 - c. Contractor is responsible for testing sealer coverage. The Painting Contractor may choose to use a pigmented sealer.
 - d. Ceiling and soffit areas that do not exhibit chalky residue do not require sealer.
4. Joint Sealant
 - a. All loose or deteriorated perimeter sealant around exterior side of doors and windows is to be removed.
 - b. Apply surface sealer to stucco surfaces, along the entire joint to receive sealant.
 - c. Apply a solvent wipe to metal surface, along the entire joint to receive sealant. Do not contaminate stucco substrate with solvent.
 - d. Apply sealant to full perimeter of door frames and windows to form a complete seal between metal and stucco. Tool the application of sealant in a manner to insure proper adhesion.

3.08 EXTERIOR SUBSTRATE PREPARATION (continued)

5. Stucco Repair

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- a. All loose, broken or spalling stucco must be removed and adjacent areas of suspect areas “sounded” for deteriorated stucco.
 - b. Visible restoration must be discussed prior to bid due date and a determination should be made whether to bid separately or engage the services of a structural engineer.
 - c. Prior to repairing stucco the affected area will be prepared with a bonding agent. Stucco work shall conform to ASTM standards and have surface texture to match the surrounding area.
 - d. All cracks in masonry larger than hairline (over 1/16”) are to be ground out mechanically to form a “V” or “U” shape measuring ¼” blown or brushed out to remove all dust, dried of all moisture. The resultant opening shall have Urethane Acrylic Sealant caulked in to completely fill the void.
 - e. Once cured, the filled crack shall be overcoated with Knife Grade Elastomeric Patching, crowed in the center approximately 1/16” and feathered at least 3” on either side of the crack to match the surrounding surface as closely as possible.
 - f. All hairline cracks (less than 1/16”) will be filled using Brush Grade Elastomeric Patching Compound over a properly primed surface, crowing the application approximately 1/16” over the center of the crack and feathering the edges approximately 2” on either side to match the adjacent surface.
 - g. After proper surface repair, spot prime patching material with one coat of the Benjamin Moore recommended masonry conditioner according to the manufacturer's label instructions.
6. Finish Coat
- a. After all crack repairs have fully cured, apply as needed the number of coats of the recommended Benjamin Moore & Co. Latex Paint (unless stated otherwise), at a rate of application as stated on the label directions and to achieve uniformity of sheen and opacity of color . **NOTE:** Previously repaired cracks, which have reopened, shall have all existing patch material removed and the crack treated as described above.

B. EXTERIOR PREVIOUSLY PAINTED WOOD SURFACES TO BE PAINTED

1. Remove all blistered, peeling paint to a sound substrate by scraping and sanding. Where bare wood is exposed spot prime with Alkyd Wood Primer 094.
2. Surfaces that exhibit moderate to heavy chalk must be cleaned by power wash. Any mold and mildew must be removed as described in the section titled **MOLD AND MILDEW REMOVAL**.
3. Glossy areas under eaves and all protected areas not exposed to normal weathering should be dulled by sanding. Crystalline deposits under eaves are a major cause of peeling and must be removed by flushing with a strong stream of water from a garden hose.
4. To the properly sealed surface apply the coats needed to achieve uniformity of sheen and opacity of color using the Benjamin Moore recommended topcoat as described below according to the manufacturers label instructions.

C. EXTERIOR PREVIOUSLY PAINTED METAL SURFACES

1. Surfaces to be painted shall be cleaned with an appropriate solvent or detergent solution to remove all traces of dirt, dust, grime, and oily residues prior to application of the specified coatings in accordance with SSPC-SP1-63 “Solvent Cleaning”.
2. Surfaces that exhibit moderate to heavy chalk must be cleaned by power wash. Any mold and mildew must be removed as described in the section titled **MOLD AND MILDEW REMOVAL**.

B. EXTERIOR PREVIOUSLY PAINTED METAL SURFACES (continued)

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3. Loose, peeling, blistering and flaking paint and rust shall be removed by power tool cleaning with wire brush, needle gun, scraping, or sanding in accordance with SSPC-SP3-63 "Power Tool Cleaning". Surfaces with a hard shiny finish should be dulled by sandpaper or other abrasive methods to insure adhesion of succeeding coats. The surfaces should be blown off with compressed air to remove traces of blast products and primed within 24 hours with the specified primer.
4. Glossy surfaces should be dulled by sanding.
5. After proper preparation, apply one coat of Benjamin Moore Recommended Rust Pretreatment to the exposed rusted surfaces according to the manufacturer label instructions.
6. To the properly prepared surface prime or spot prime as necessary with the recommended Benjamin Moore COROTECH COATINGS RUST INHIBITIVE PRODUCTS according to the manufacturer label instructions.
7. To the properly sealed surface apply the coats needed to achieve uniformity of sheen and opacity of color using the Benjamin Moore recommended topcoat as described below according to the manufacturers label instructions.

D. PREVIOUSLY PAINTED CONCRETE FLOORS

1. Scaling and peeling paint should be removed by scraping and sanding.
2. Surface should be washed thoroughly with strong detergent solution or Benjamin Moore's Oil and Grease Emulsifier V600 to remove all grease, oil and soap residue. Rinse thoroughly and allow to dry completely before painting.
3. All shiny surfaces must be dulled and scoured prior to application of any coatings.
4. Floors that have been subjected to long term oil and grease must first be aggressively scrubbed with proprietary grease-dissolving compounds, then rinsed thoroughly and allowed to dry completely before etching, below. **CAUTION: FOLLOW MANUFACTURER'S DIRECTIONS; USE RUBBER GLOVES, WORK GOGGLES AND PROTECTIVE CLOTHING.**
5. Unpainted and/or non-porous steel-troweled floors must be etched with Benjamin Moore's Concrete Pretreatment and Etch, V620 reduced according to label directions then rinsed thoroughly. The surface must be porous prior to application of any coatings. The Painting Contractor is responsible for the proper preparation of the floor to allow proper adhesion of the floor coating. Test porosity of surface even after etching by spraying mist of water on floor and examining whether water beads on surface (which would signify non-porosity) or soaks in the concrete (which would signify porosity). Properly etched floors after appropriate drying times should feel like fine grit sandpaper. If floors do not demonstrate this characteristic and does not appear porous per above test the floor is not ready to coat irregardless of preparation already completed and further actions must be taken to achieve proper adhesion of floor coating.
6. Due to the incompatibility of many floor coatings to each other after preparing concrete decks as described above a sample area must be painted and allowed to dry and cure to assure of compatibility of floor paint with existing substrate.
7. To the properly prepared surface apply the coats needed to achieve uniformity of sheen and opacity of color using the Benjamin Moore recommended topcoat as described below according to the manufacturers label instructions.

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3.10 COATINGS SCHEDULE**A. EXTERIOR STUCCO**

Areas to be painted: Exterior masonry elevations, balcony walls, roof structures, pool area stucco, perimeter walls-planters, and previously painted attachments with latex.

- 1) Primer – Benjamin Moore's Latex Masonry Conditioner 608 series according to manufacturer's label directions. **(apply at 4 mils WFT)**
- 2) Intermediate-Coating- Benjamin Moore's Coronado Texcrete Smooth Coating 3194 series according to manufacturer's label directions **(apply at 100 sq. ft. per gl.)**
Over new repairs and roof structures and parapet wall and cap.
- 3) Finish Coat- Benjamin Moore's Aura Low Lustre Exterior Coating #634
10 year warranty According to manufacturer's label directions. **(apply at 6 mils WFT)**
- 4) Finish Coat - Benjamin Moore's Ultra Spec Satin N448 series according to
8 year warranty manufacturer's label directions. **(apply at 4mils WFT)**

Areas to be painted: Ceilings and under-hangs.

- 1) Primer - Benjamin Moore's Ultra Spec Latex Masonry Sealer 608 series according to manufacturer's label directions. **(apply at 2 mils WFT) If Chalky**
- 2) Finish Coat - Benjamin Moore's Ultra Spec Satin N448 series according to manufacturer's label directions. **(apply at 4mils WFT)**

B. EXTERIOR METAL (SPRAY OR HAND PAINTING)

Areas to be painted: Common Utility doors and frames,

Surface prep to include sanding and solvent wiping before painting.

- 1) Primer Metal- Benjamin Moore's Corotech Acrylic Metal Primer V110 series according to manufacturer's label directions. (New Doors and Bare Metal)
- 2) Finish Coat – Benjamin Moore's Corotech Command Gloss Waterborne Urethane 390 series according To manufacturer's label directions

C. CAULK & PATCHING MATERIALS

- 1) Caulk- Bostik 915
- 2) Sealant- Bostik Pro-MS50
- 3) Patching- Elastomeric Patching Compounds

D. CLEANING AGENTS

- 1) Benjamin Moore & Company Oil & Grease Emulsifier V620 series

By definition of the Benjamin Moore & Company warranty, the Painting Contractor is limited to solely the above paint, patching and sealants. Any substitutions of specified products must have prior approval for use by the Benjamin Moore & Company Authorized Representative prior to project commencement. Substitution of any product without pre-authorization may cause stoppage of the project and void the warranty. MSDS and Tech Data sheets are available upon request.

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PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Coating systems for steel.

1.2 RELATED SECTIONS

- A. Section 05 50 00 – Metal Fabrications.
- B. Section 09 90 00 - Painting

1.3 REFERENCES

- A. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
- B. SSPC-SP 1 - Solvent Cleaning.
- C. SSPC-SP 2 - Hand Tool Cleaning.
- D. SSPC-SP 3 - Power Tool Cleaning.
- E. SSPC-SP 6/NACE 3 - Commercial Blast Cleaning.

1.4 DEFINITIONS

- A. Definitions of Painting Terms: ASTM D 16, unless otherwise specified.
- B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state measured in mils (1/1000 inch).

1.5 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, and application instructions.
- C. Color Samples: Submit manufacturer's color samples showing full range of standard colors.
- D. Manufacturer's Quality Assurance: Submit manufacturer's certification that coatings comply with specified requirements and are suitable for intended application.
- E. Applicator's Quality Assurance: Submit list of a minimum of 5 completed projects of similar size and complexity to this Work. Include for each project:
 - 1. Project name and location.
 - 2. Name of owner.
 - 3. Name of contractor.
 - 4. Name of architect.
 - 5. Name of coating manufacturer.
 - 6. Approximate area of coatings applied.
 - 7. Date of completion.

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- F. Warranty: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
1. Specialize in manufacture of coatings with a minimum of 10 years successful experience.
 2. Able to demonstrate successful performance on comparable projects.
 3. Single Source Responsibility: Coatings and coating application accessories shall be products of a single manufacturer.
- B. Applicator's Qualifications:
1. Experienced in application of specified coatings for a minimum of 5 years on projects of similar size and complexity to this Work.
 2. Applicator's Personnel: Employ persons trained for application of specified coatings.
- C. Preapplication Meeting: Convene a preapplication meeting 2 weeks before start of application of coating systems. Require attendance of parties directly affecting work of this section, including Contractor, Engineer, applicator, and manufacturer's representative. Review the following:
1. Environmental requirements.
 2. Protection of surfaces not scheduled to be coated.
 3. Surface preparation.
 4. Application.
 5. Repair.
 6. Field quality control.
 7. Cleaning.
 8. Protection of coating systems.
 9. One-year inspection.
 10. Coordination with other work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
1. Coating or material name.
 2. Manufacturer.
 3. Color name and number.
 4. Batch or lot number.
 5. Date of manufacture.
 6. Mixing and thinning instructions.
- B. Storage:
1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
 2. Keep containers sealed until ready for use.
 3. Do not use materials beyond manufacturer's shelf life limits.
- C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Weather:
1. Air and Surface Temperatures: Prepare surfaces and apply and cure coatings within air and surface temperature range in accordance with manufacturer's instructions.
 2. Surface Temperature: Minimum of 5 degrees F (3 degrees C) above dew point.

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3. Relative Humidity: Prepare surfaces and apply and cure coatings within relative humidity range in accordance with manufacturer's instructions.
 4. Precipitation: Do not prepare surfaces or apply coatings in rain, snow, fog, or mist.
 5. Wind: Do not spray coatings if wind velocity is above manufacturer's limit.
- B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.
- C. Dust and Contaminants:
1. Schedule coating work to avoid excessive dust and airborne contaminants.
 2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Carboline Company Coating System for Galvanized Steel, Plain Steel and Iron
- a. Epoxy Primer: Carbomastic 615AL, 7 to 10 mils DFT
 - b. Epoxy Intermediate Coat: Carbogard 635, 4 to 6 mils DFT
 - c. Polyurethane Top/Finish Coat: Carbothane 133LH; 3 – 5 mils DFT. Color to match existing surface as closely as possible from standard colors
- B. Substitutions: Approved Equal by Carboline subject to approval of applicability by the engineer and the manufacturer for substrate and exposure level

2.2 ACCESSORIES

- A. Coating Application Accessories:
1. Accessories required for application of specified coatings in accordance with manufacturer's instructions, including thinners.
 2. Products of coating manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions under which coating systems are to be applied. Notify engineer of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

3.2 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

- A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.
- B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.3 SURFACE PREPARATION OF STEEL

- A. Prepare steel surfaces in accordance with manufacturer's instructions
Surface Prep at locations to be coated shall be sandblast cleaned to a minimum cleanliness specification SSPC-SP6.

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- B. Fabrication Defects:
 - 1. Correct steel and fabrication defects revealed by surface preparation.
 - 2. Remove weld spatter and slag.
 - 3. Round sharp edges and corners of welds to a smooth contour.
 - 4. Smooth weld undercuts and recesses.
 - 5. Grind down porous welds to pinhole-free metal.
 - 6. Remove weld flux from surface.
- C. Ensure surfaces are dry.
- D. Interior Steel Surfaces, Mild Exposure: Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 2 or SP 3.
- E. Interior Steel Surfaces, Moderate to Severe Exposure: Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 6/NACE 3.
- F. Exterior Steel Surfaces: Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 6/NACE 3.
- G. Totally Spray-Applied Shop Coating Systems for Steel: Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 6/NACE 3.
- H. Abrasive Blast-Cleaned Surfaces: Coat abrasive blast-cleaned surfaces with primer before visible rust forms on surface. Do not leave blast-cleaned surfaces uncoated for more than 8 hours.
- I. Shop Primer: Prepare shop or field primer to receive field coat in accordance with manufacturer's instructions.

3.4 SURFACE PREPARATION OF GALVANIZED STEEL AND NONFERROUS METAL

- A. Prepare galvanized steel and nonferrous metal surfaces in accordance with manufacturer's instructions. Surface preparation recommendations will vary depending on substrate and exposure conditions.

3.5 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.
- C. Keep containers closed when not in use to avoid contamination.
- D. Do not use mixed coatings beyond pot life limits.
- E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.
- F. Uniformly apply coatings at spreading rate required to achieve specified DFT.
- G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.
- H. Stripe paint with brush critical locations on steel such as welds, corners, and edges using specified

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primer.

3.6 REPAIR

- A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.
- B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.
- C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.7 FIELD QUALITY CONTROL

- A. Inspector's Services:
 - 1. Verify coatings and other materials are as specified.
 - 2. Verify surface preparation and application are as specified.
 - 3. Verify DFT of each coat and total DFT of each coating system are as specified using wet film and dry film gauges.
 - 4. Coating Defects: Check coatings for film characteristics or defects that would adversely affect performance or appearance of coating systems.
 - a. Check for holidays on interior steel immersion surfaces using holiday detector.
 - 5. Report:
 - a. Submit written reports describing inspections made and actions taken to correct nonconforming work.
 - b. Report nonconforming work not corrected.
 - c. Submit copies of report to Architect and Contractor.
- B. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of coating systems.

3.8 CLEANING

- A. Remove temporary coverings and protection of surrounding areas and surfaces.

3.9 PROTECTION OF COATING SYSTEMS

- A. Protect surfaces of coating systems from damage during construction.

END OF SECTION

EXTERIOR WALL REPAIR
CARLTON HOUSE CONDOMINIUMS
2701 S. OCEAN BLVD , HIGHLAND BEACH, FL 33487

NO.	DATE	REVISIONS	BY

DESIGN:	J.B.
DRAWN:	A.L.B.
CHECKED:	J.B.
SCALE:	AS SHOWN
DATE:	JANUARY 13, 2023
PROJECT No.:	07-220033-02

DOB STAMP AND SIGNATURE:

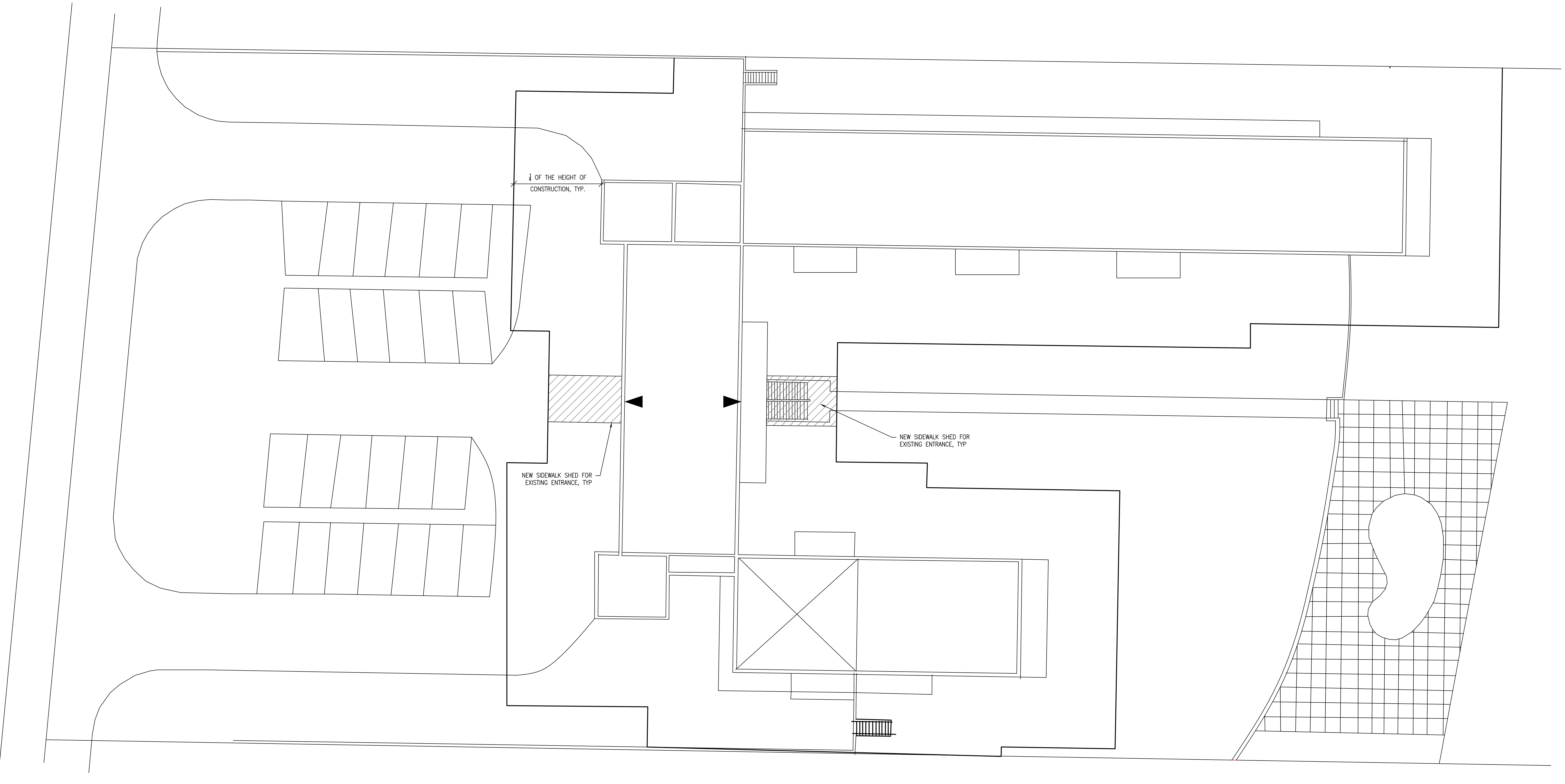
DRAWING TITLE:

SITE PLAN

DRAWING No.

R-100

ISSUED FOR BIDDING - APRIL 17, 2023



LEGEND

SYMBOL	DESCRIPTION
◀	MAINTAIN EGRESS AT ALL BUILDING ENTRANCES
▨	NEW SIDEWALK SHED
—	FENCE (8FT HT. MIN.) FOR AREA BLOCKED DURING CONSTRUCTION
	APPROX. OUTLINE OF HAZARD ZONE BASED ON 1/4 HEIGHT OF DEMOLITION OR LOOSE STRUCTURE

NOTES:

1. PROTECT PUBLIC DURING CONSTRUCTION INSIDE "HAZARD ZONE". PROVIDE SIDEWALK SHED AT ALL HATCHED SIDEWALKS. PROVIDE FENCING AS REQUIRED TO MAINTAIN SAFETY.
2. MAINTAIN PEDESTRIAN CIRCULATION AT ALL SIDEWALKS. MAINTAIN ACCESS TO ALL BUILDING ENTRANCES.
3. DIMENSIONS AND LAYOUT ARE SCHEMATIC FOR CONVENIENCE. VERIFY EXTENT OF WORK AND SIZES IN FIELD.
4. VERIFY AND COORDINATE LOCATION OF STANDPIPES, HYDRANTS, AND SIAMESE CONNECTIONS WITH LIGHTING AND OTHER REQUIREMENTS.
5. CONTRACTOR SHALL COMPLY WITH FL BUILDING CODE REQUIREMENTS FOR SAFETY DURING CONSTRUCTION AND DEMOLITION.
6. CONTRACTOR SHALL SUBMIT SIGNED AND SEALED DESIGN DRAWINGS FROM AN EXPERIENCED SCAFFOLDING ENGINEER WHO IS FAMILIAR WITH THIS TYPE OF WORK.
7. BARRIER PROTECTION REQUIRED FOR BETWEEN 1/4 AND 1/2 THE HEIGHT OF CONSTRUCTION

1 SITE PLAN
R-1 SCALE : 1/8" = 1'-0"



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Project # 07-220033-00

NOTES:

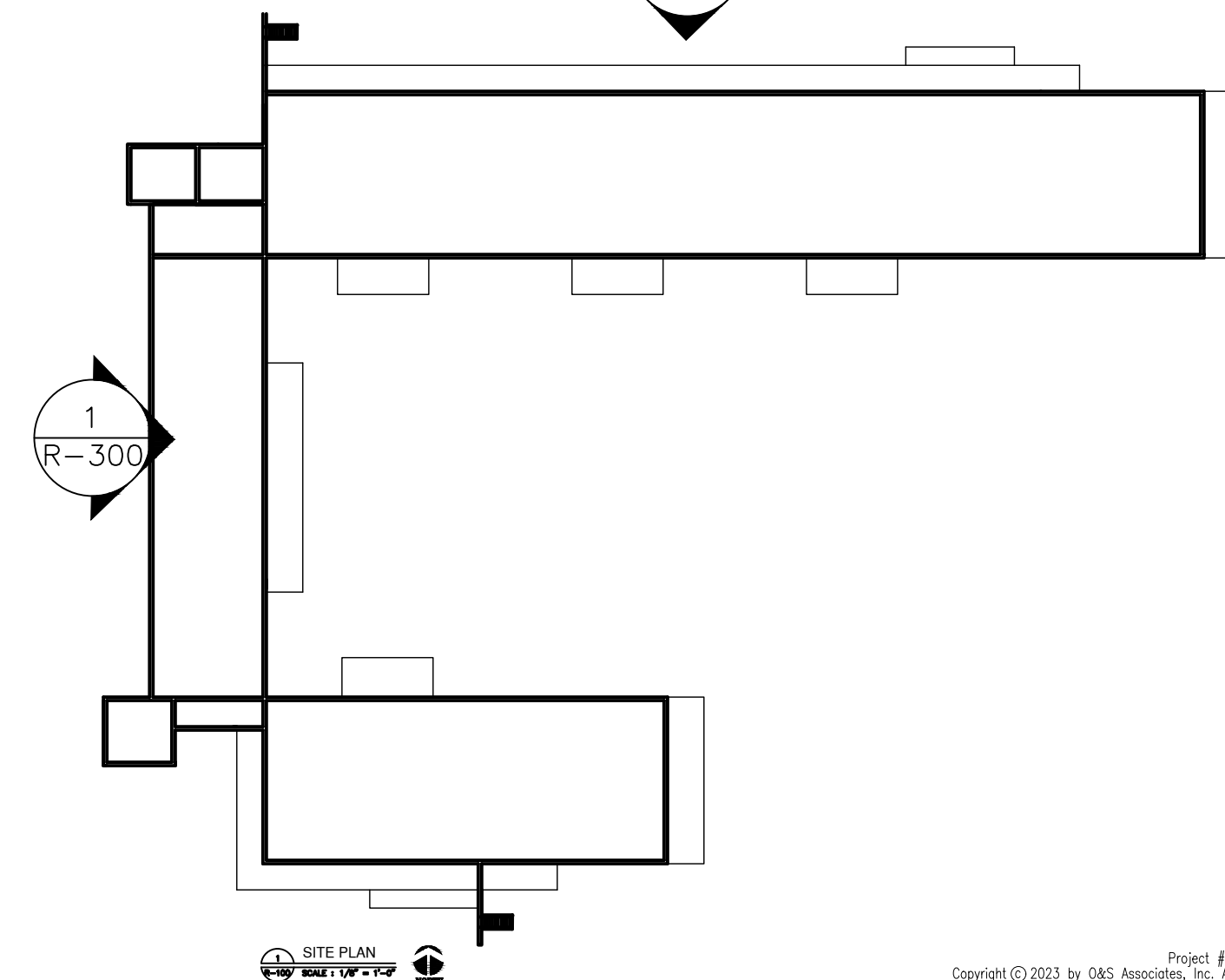
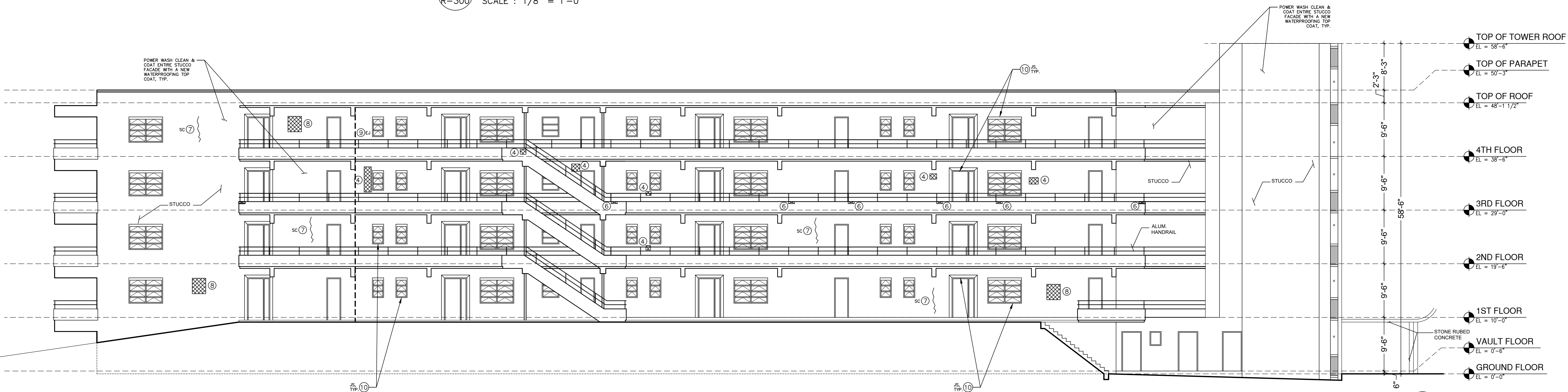
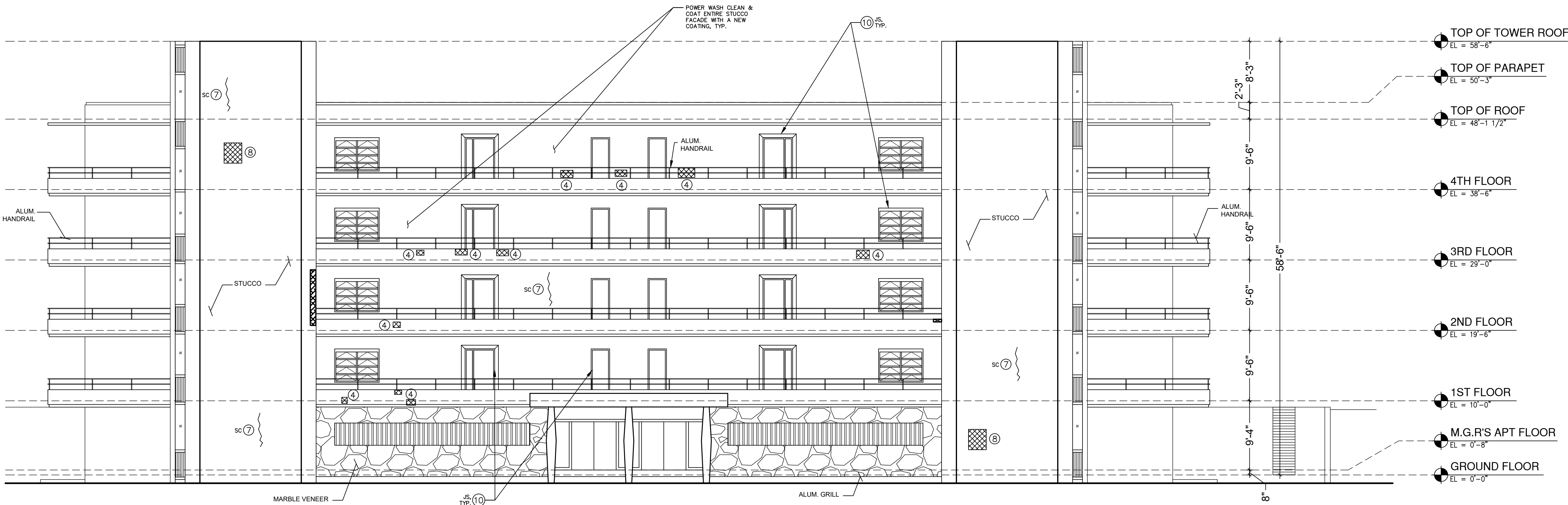
1. WORK SHOWN ON DRAWINGS IS DIAGRAMMATIC ONLY. ACTUAL REPAIR LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. FOR CLARITY SEVERAL OF THE WORK ITEMS ARE SHOWN WITH LESS MAGNITUDE THAN IS ACTUALLY PRESENT IN THE FIELD.
2. DO NOT SCALE OF DRAWINGS. VERIFY ALL DIMENSIONS IN THE FIELD.
3. CONTRACTOR SHALL PROVIDE BARRIERS, SIGNAGE, FENCING, ETC. AS NEEDED TO ISOLATE REPAIR AREAS FROM PUBLIC.
4. CONTRACTOR SHALL PROTECT ALL EXISTING MEP, ETC. FOR THE DURATION OF CONSTRUCTION SO AS NOT TO DISTURB SERVICE.
5. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND IMMEDIATELY INFORM THE ENGINEER OF ANY DISCREPANCIES.
6. CONTRACTOR SHALL DOCUMENT EXISTING STRIPING LAYOUT AND FLOOR SIGNAGE PRIOR TO SHOTBLAST FLOOR SLABS.
7. (X) WORK SHOWN THUS REFERS TO CODED NOTES. SEE LEGEND ABOVE RIGHT.

LEGEND			
#	SYMBOL	DESCRIPTION	DETAIL
1		OVERHEAD(OH) SLAB CONCRETE REPAIRS	2/R-400
2		CONCRETE SLAB REPAIRS	1/R-400
3		CONCRETE BEAM REPAIRS	3/R-400
4		VERTICAL WALL REPAIRS	4/R-400
5		CONCRETE CRACK REPAIRS	5/R-401
6		POST POCKET REPAIRS	5/R-400
7		STUCCO CRACK REPAIR	2/R-401
8		STUCCO REPAIR	1/R-401
9		EXPANSION JOINT REPLACEMENT	6/R-401
10		JOINT SEALANT REPLACEMENT	7/R-2

O&S
ASSOCIATES
ENGINEERS & ARCHITECTS
2500 HOLLYWOOD BLVD. STE 212
HOLLYWOOD, FL
303.676.9888
NEW JERSEY • NEW YORK • PENNSYLVANIA
OHIO • D.C. • FLORIDA

SEAL: JASON BORDEN
FL PE #83583

EXTERIOR WALL REPAIR
CARLTON HOUSE CONDOMINIUMS
2701 S. OCEAN BLVD., HIGHLAND BEACH, FL 33487



ISSUED FOR BIDDING - APRIL 17, 2023

NO.	DATE	REVISIONS	BY
-----	------	-----------	----

DESIGN:	J.B.
DRAWN:	A.L.B.
CHECKED:	J.B.
SCALE:	AS SHOWN
DATE:	JANUARY 13, 2023
PROJECT No.:	07-220033-02

DOB STAMP AND SIGNATURE:


DRAWING TITLE:

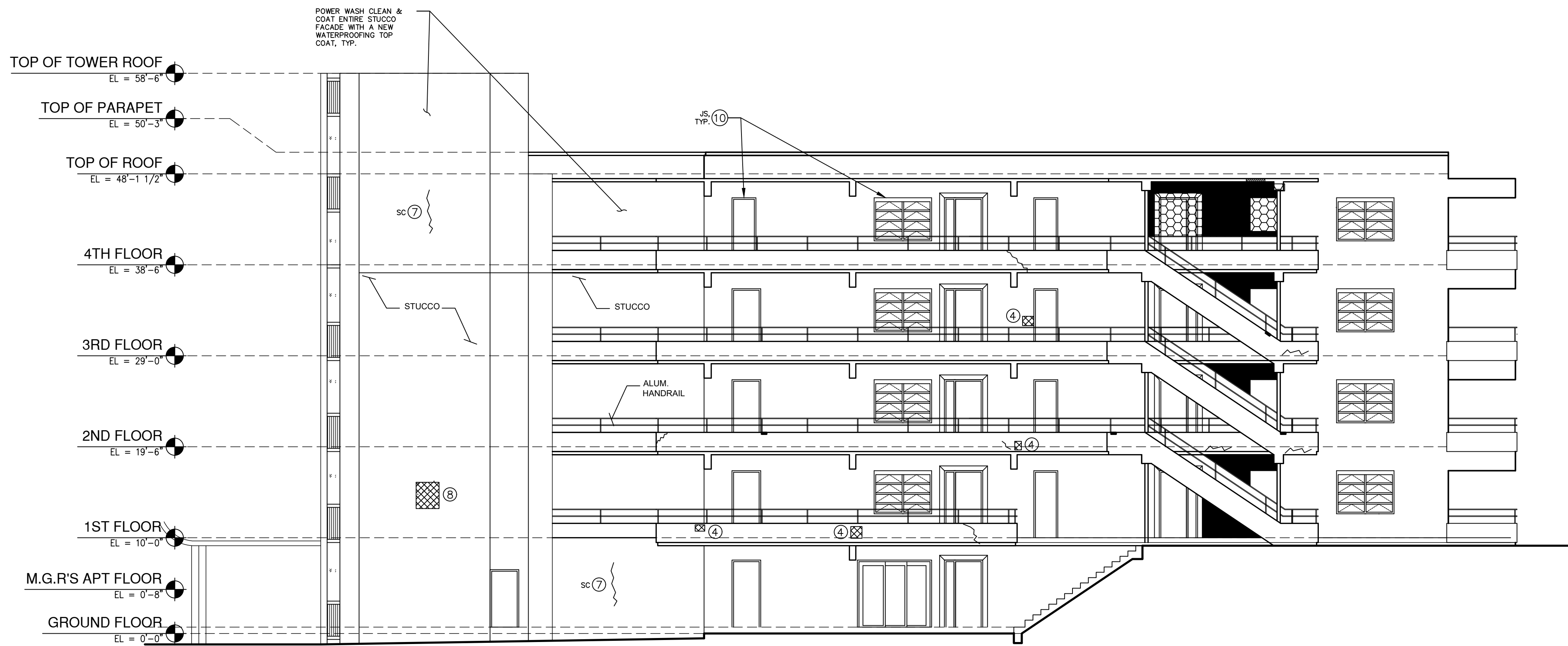
NORTH AND WEST ELEVATIONS

DRAWING No.

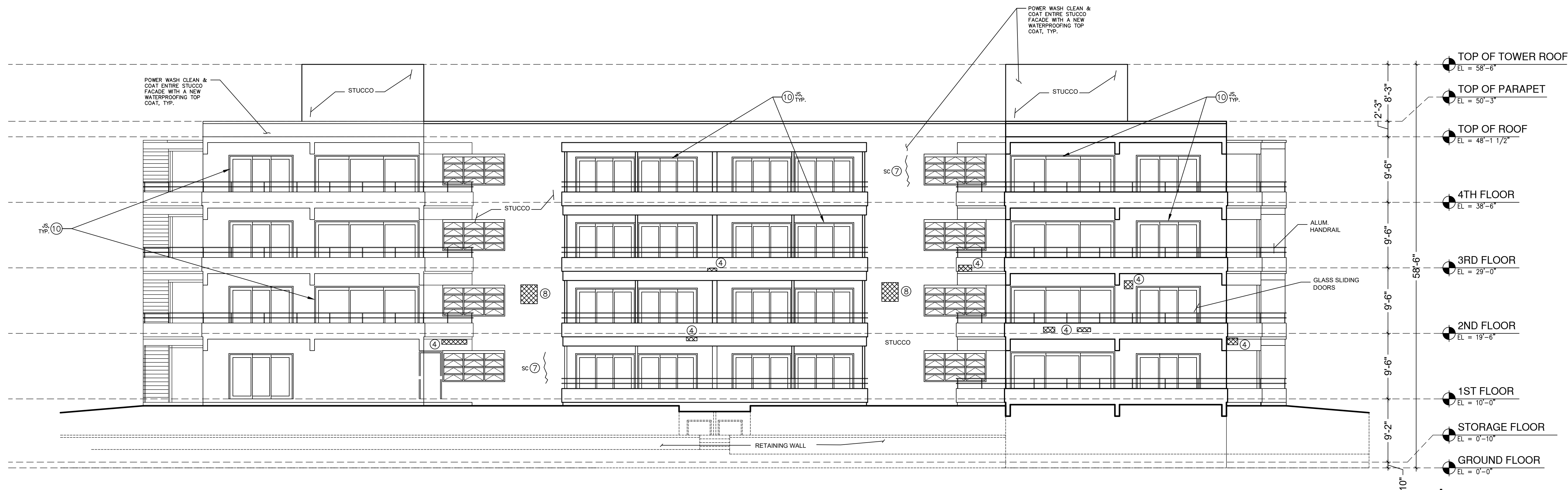
R-300

NOTES:

1. WORK SHOWN ON DRAWINGS IS DIAGRAMMATIC ONLY. ACTUAL REPAIR LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER. FOR CLARITY SEVERAL OF THE WORK ITEMS ARE SHOWN WITH LESS MAGNITUDE THAN IS ACTUALLY PRESENT IN THE FIELD.
2. DO NOT SCALE OF DRAWINGS. VERIFY ALL DIMENSIONS IN THE FIELD.
3. CONTRACTOR SHALL PROVIDE BARRIERS, SIGNAGE, FENCING, ETC. AS NEEDED TO ISOLATE REPAIR AREAS FROM PUBLIC.
4. CONTRACTOR SHALL PROTECT ALL EXISTING MEP, ETC. FOR THE DURATION OF CONSTRUCTION SO AS NOT TO DISTURB SERVICE.
5. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND IMMEDIATELY INFORM THE ENGINEER OF ANY DISCREPANCIES.
6. CONTRACTOR SHALL DOCUMENT EXISTING STRIPING LAYOUT AND FLOOR SIGNAGE PRIOR TO SHOTBLAST FLOOR SLABS.
7.  WORK SHOWN THUS REFERS TO CODED NOTES. SEE LEGEND ABOVE RIGHT.



1 SOUTH ELEVATION
R-301 SCALE : 1/8" = 1'-0"



2 EAST ELEVATION
R-301 SCALE : 1/8" = 1'-0"

LEGEND			
#	SYMBOL	DESCRIPTION	DETAIL
1		OVERHEAD(OH) SLAB CONCRETE REPAIRS	2/R-400
2		CONCRETE SLAB REPAIRS	1/R-400
3		CONCRETE BEAM REPAIRS	3/R-400
4		VERTICAL WALL REPAIRS	4/R-400
5		CONCRETE CRACK REPAIRS	5/R-401
6		POST POCKET REPAIRS	5/R-400
7		STUCCO CRACK REPAIR	2/R-401
8		STUCCO REPAIR	1/R-401
9		EXPANSION JOINT REPLACEMENT	6/R-401
10		JOINT SEALANT REPLACEMENT	7/R-2

O&S
ASSOCIATES
ENGINEERS & ARCHITECTS
2500 HOLLYWOOD BLVD. STE 212
HOLLYWOOD, FL 303.676.9888
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OHIO • D.C. • FLORIDA

SEAL: JASON BORDEN
FL PE #83583

EXTERIOR WALL REPAIR
CARLTON HOUSE CONDOMINIUMS
2701 S. OCEAN BLVD., HIGHLAND BEACH, FL 33487

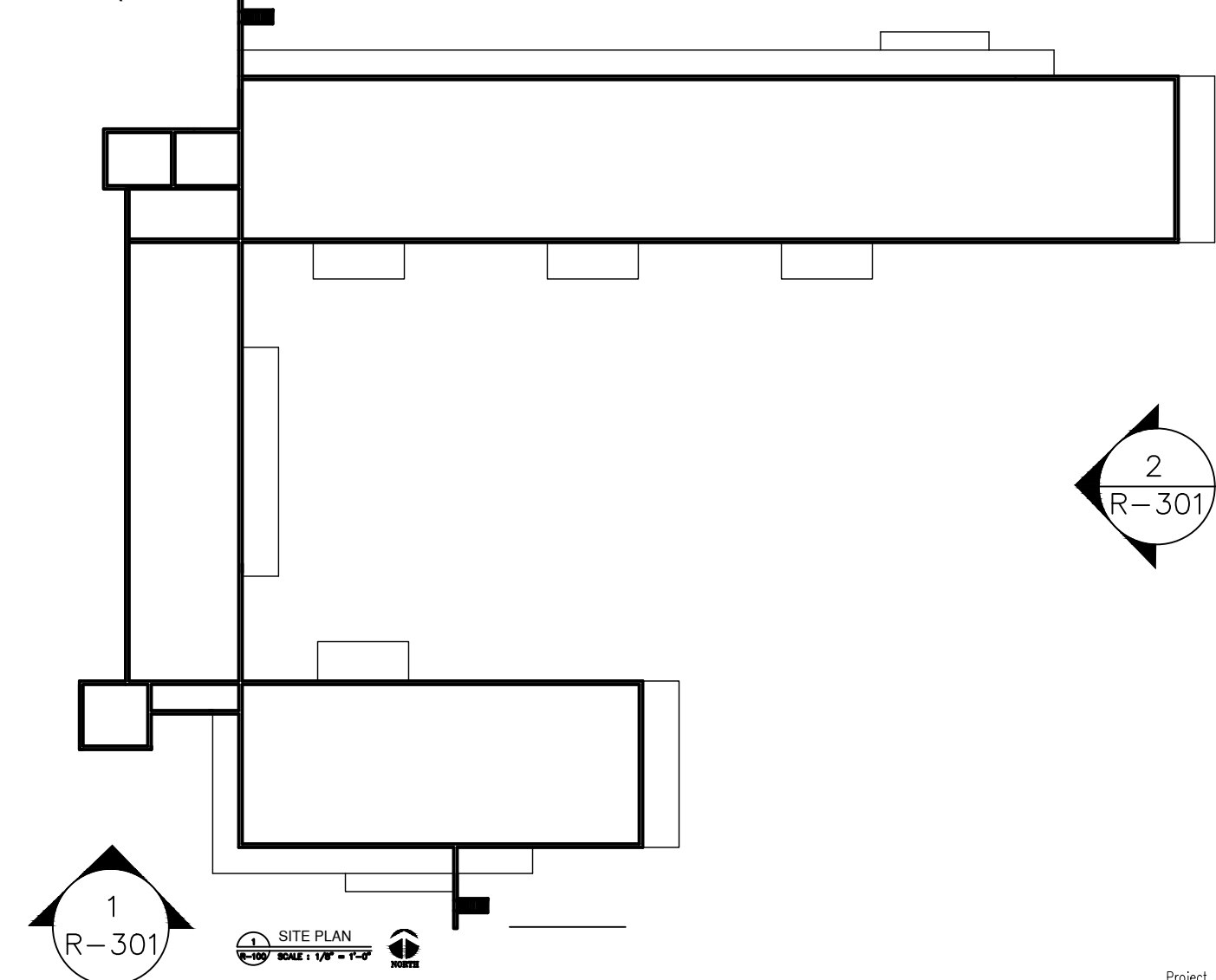
NO.	DATE	REVISIONS	BY

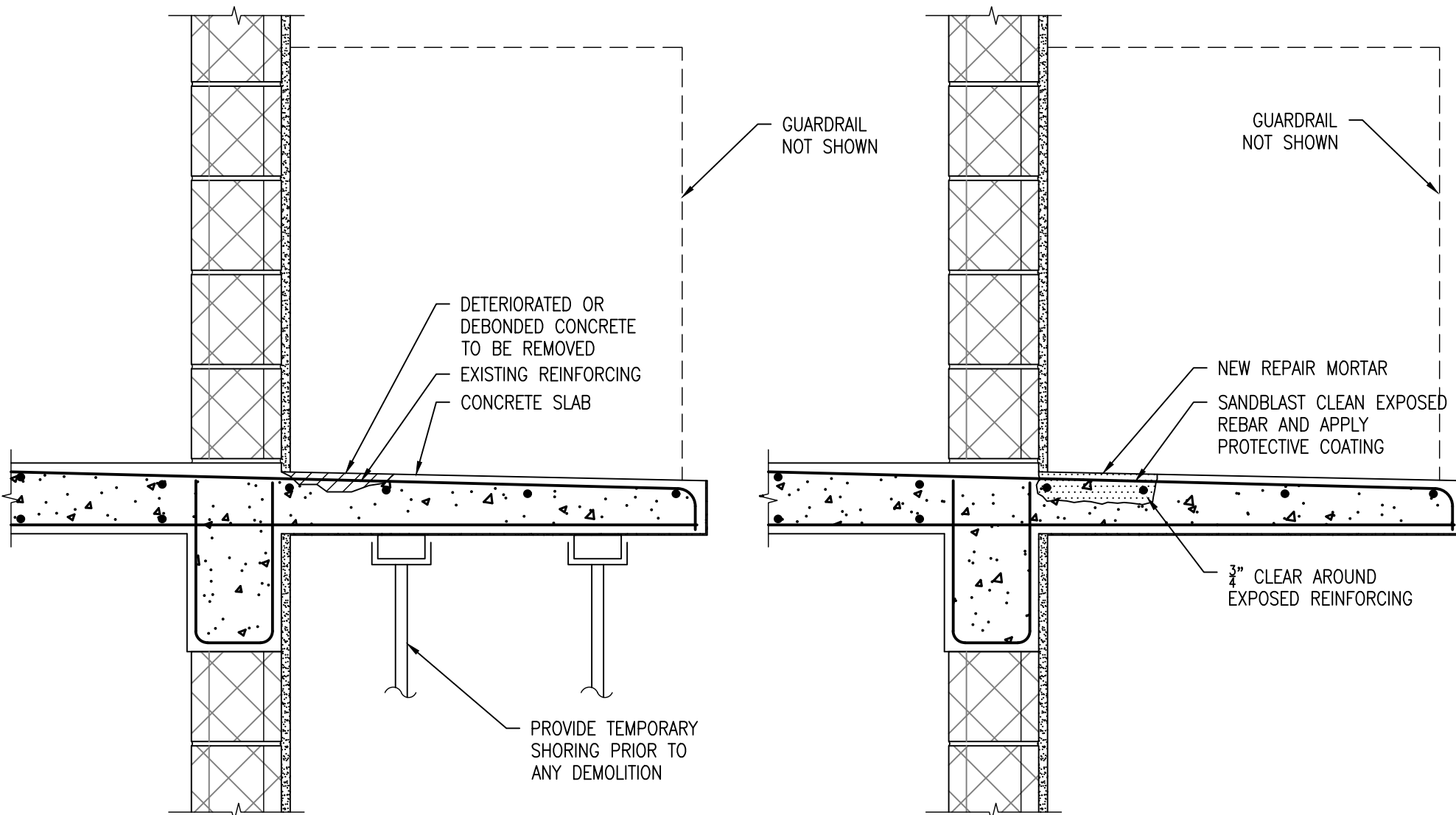
DESIGN: J.B.
DRAWN: A.L.B.
CHECKED: J.B.
SCALE: AS SHOWN
DATE: JANUARY 13, 2023
PROJECT No.: 07-220033-02
DOB STAMP AND SIGNATURE:

DRAWING TITLE:
SOUTH AND EAST ELEVATIONS

DRAWING No.
R-301

ISSUED FOR BIDDING - APRIL 17, 2023





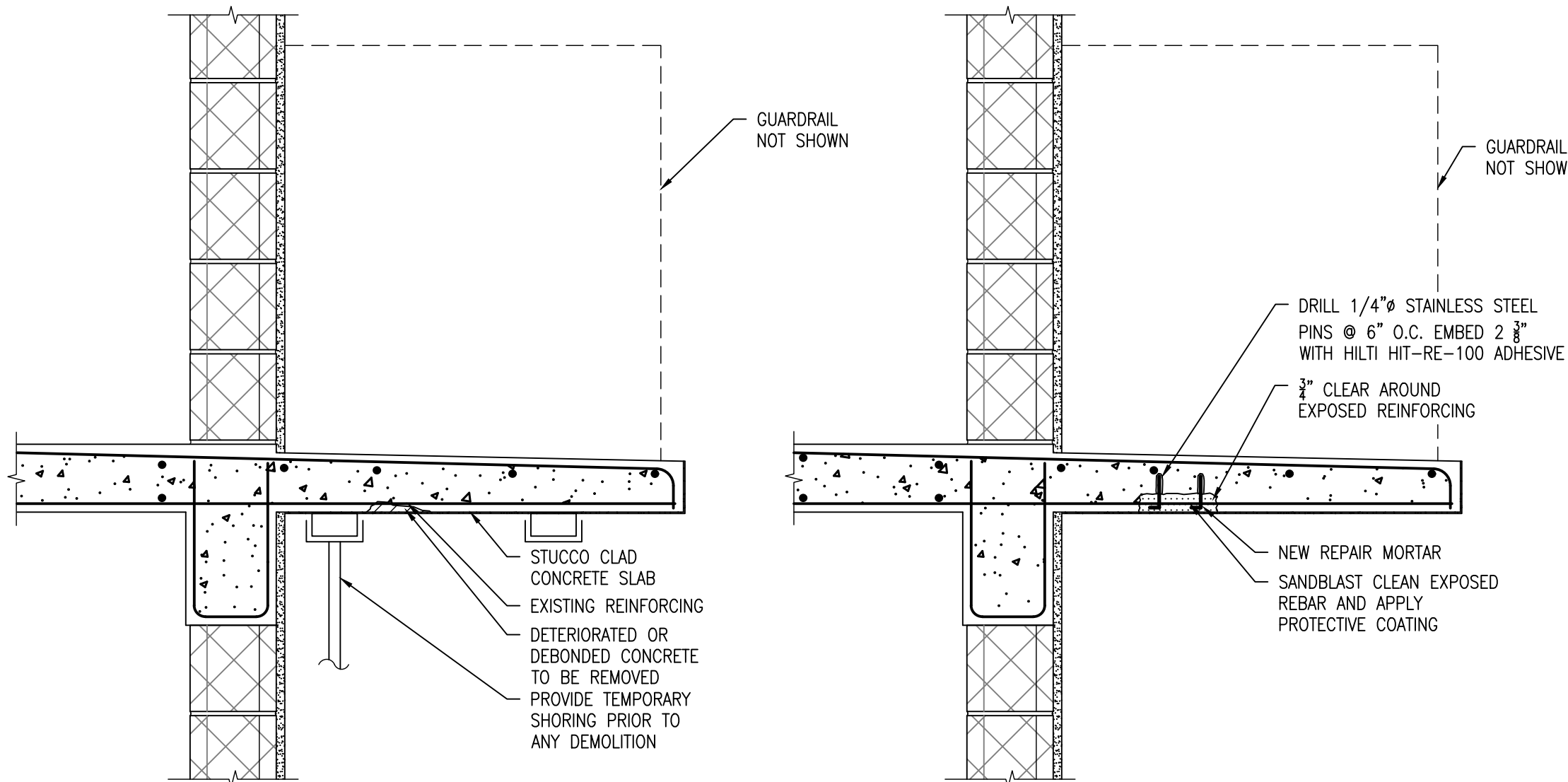
EXISTING CONDITION

REPAIRED CONDITION

REPAIR PROCEDURE:

1. DETERMINE THE EXACT PERIMETER OF DELAMINATED AREA OF CONCRETE WITH ENGINEER.
2. SAWCUT (1/4" DEPTH) THE PERIMETER OF AREA WITHOUT CUTTING EXISTING REBARS.
3. REMOVE ALL SPALLED/DETERIORATED CONCRETE (USING CHIPPING HAMMERS) 3/4" MIN. BEYOND EXISTING REINFORCING STEEL.
4. SANDBLAST CLEAN EXPOSED REINFORCING STEEL AND INSTALL SUPPLEMENTAL REINFORCING AS DIRECTED.
5. APPLY PROTECTIVE COATING TO CLEANED REBARS.
6. PATCH WITH NEW HIGH STRENGTH CONCRETE PATCHING MATERIAL IN ACCORDANCE WITH SPECIFICATIONS.
7. FINISH AND CURE REPAIR AREAS WITH PROPER CURING METHOD.

1 PARTIAL DEPTH CONCRETE REPAIR
R-400/ SCALE: N.T.S.



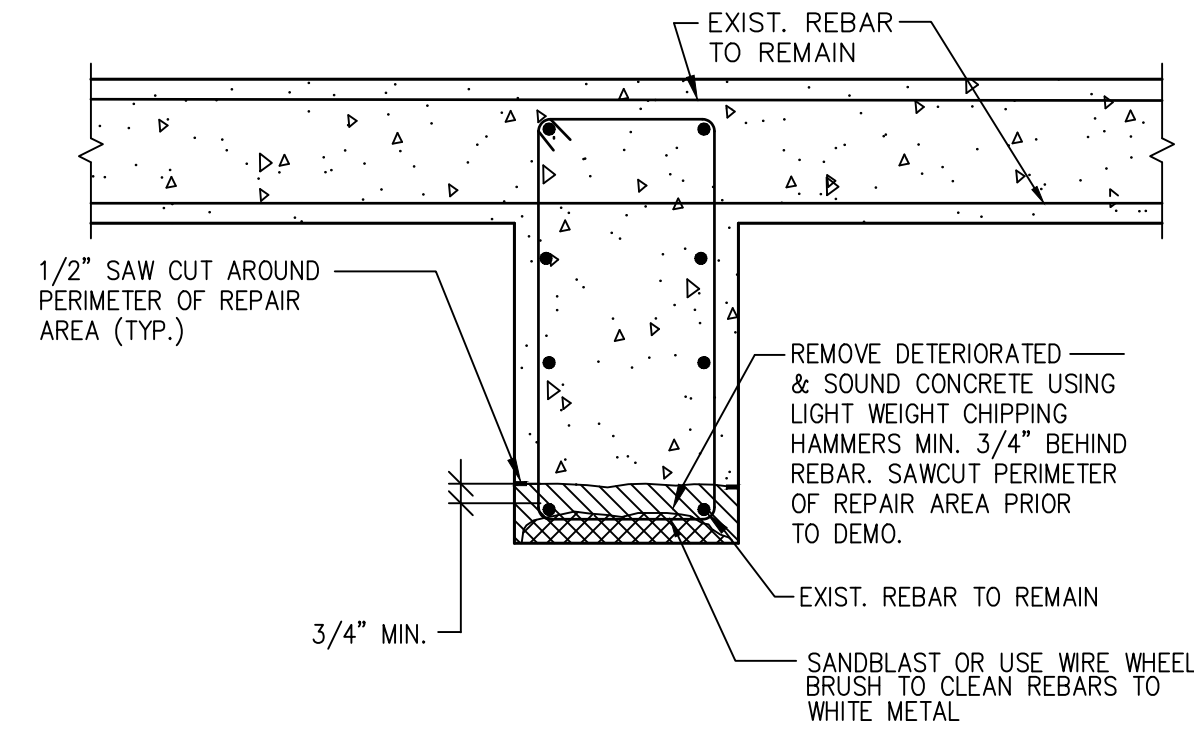
EXISTING CONDITION

REPAIRED CONDITION

REPAIR PROCEDURE:

1. DETERMINE THE EXACT PERIMETER OF DELAMINATED AREA OF CONCRETE WITH ENGINEER.
2. SAWCUT (1/4" DEPTH) THE PERIMETER OF AREA WITHOUT CUTTING EXISTING REBARS.
3. REMOVE ALL SPALLED/DETERIORATED CONCRETE (USING CHIPPING HAMMERS) 3/4" MIN. BEYOND EXISTING REINFORCING STEEL.
4. SANDBLAST CLEAN EXPOSED REINFORCEMENT AND SUPPLEMENT WITH NEW REBARS AS REQUIRED AND DIRECTED BY ENGINEER.
5. APPLY PROTECTIVE COATING TO CLEANED REBARS.
6. PATCH WITH APPROVED PATCHING MATERIAL IN ACCORDANCE WITH SPECIFICATIONS.
7. FINISH AND CURE REPAIR AREAS WITH PROPER CURING METHOD.
8. REPLACE STUCCO FROM REPAIR AREA. STUCCO REPAIR TO BE PAID VIA STUCCO REPAIR WORK ITEM.

2 OVERHEAD CONCRETE REPAIR
R-400/ SCALE: N.T.S.



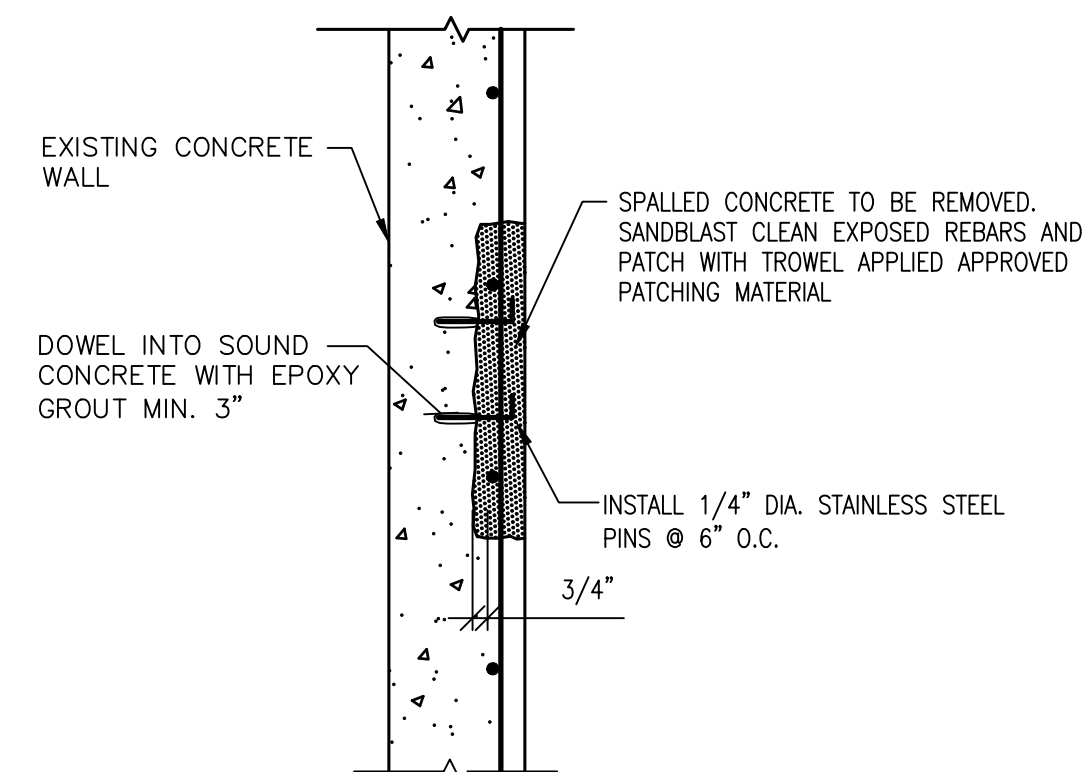
EXISTING CONDITION

REPAIRED CONDITION

REPAIR PROCEDURE:

1. REMOVE CONCRETE USING LIGHT WEIGHT CHIPPING HAMMERS, TAKING CARE NOT TO DAMAGE EXISTING REINFORCING BARS.
2. SANDBLAST/WIREBRUSH CLEAN ALL EXPOSED REBARS.
3. INSTALL NEW 1/4" DIA. STAINLESS STEEL PINS @ 6" O.C., STAGGERED, MIN. 3" EMBEDMENT USING APPROVED HILTI EPOXY SYSTEM.
4. PATCH WITH APPROVED HIGH STRENGTH POLYMER MODIFIED CONCRETE PATCHING MATERIAL.

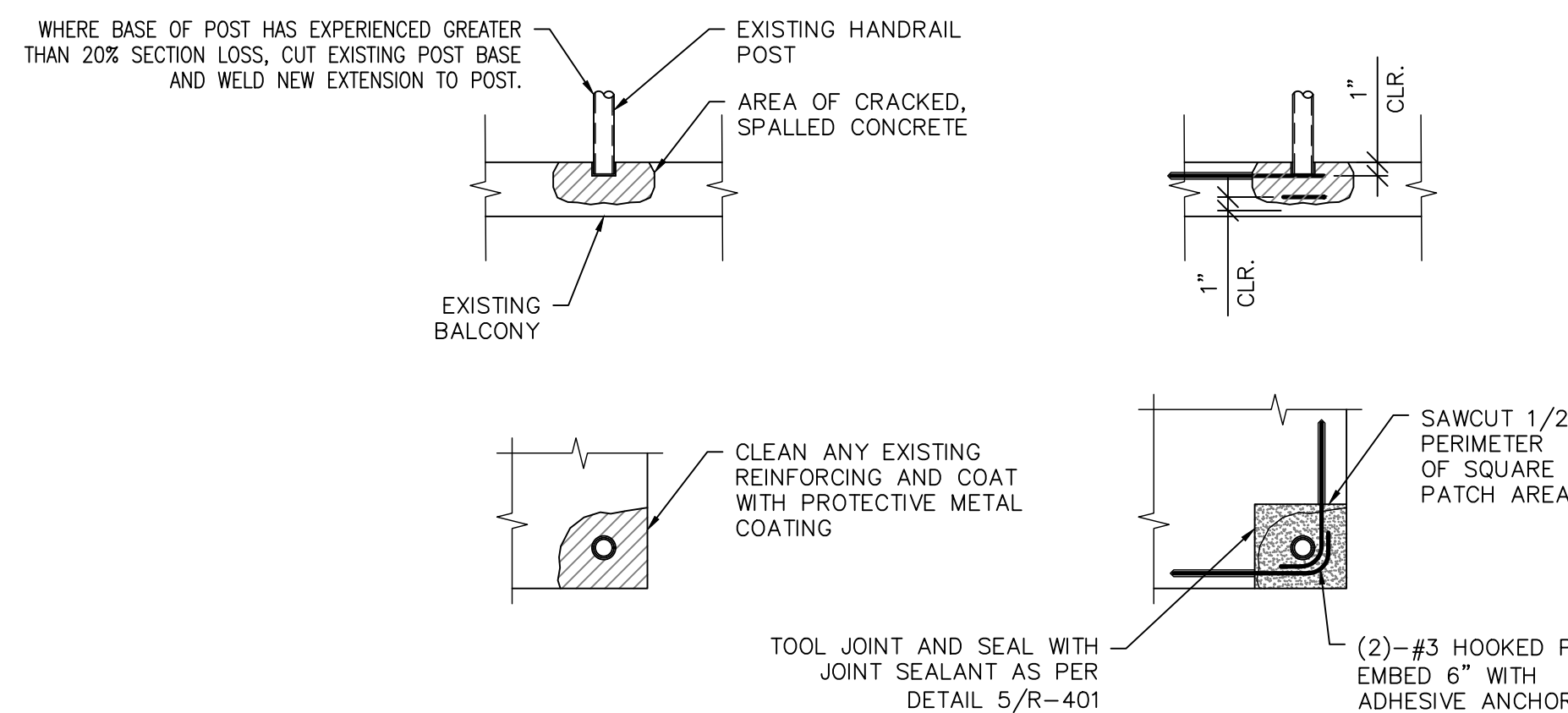
3 OVERHEAD REPAIR DETAIL
R-400/ SCALE: N.T.S.



REPAIR PROCEDURE:

1. REMOVE LOOSE AND DELAMINATED CONCRETE FROM THE VERTICAL SURFACES TO A MINIMUM 3/4" BEHIND REBAR USING CHIPPING HAMMERS.
2. SANDBLAST CLEAN EXPOSED REBARS AND SUPPLEMENT AS REQUIRED.
3. PATCH WITH APPROVED TROWEL APPLIED PATCHING MATERIAL.
4. AREAS LARGER THAN 5 SF SHALL BE FORMED AND POURED.

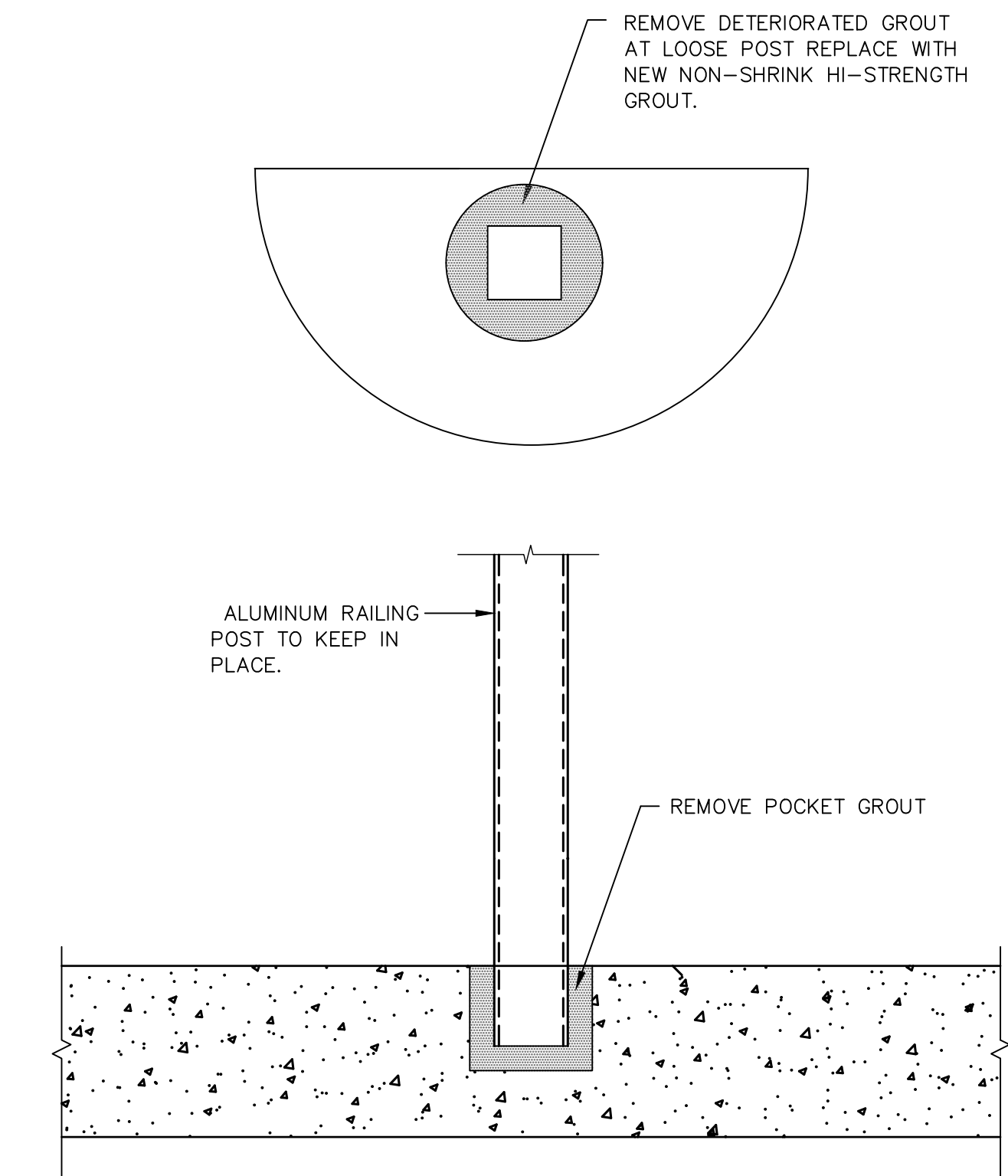
4 VERTICAL CONCRETE REPAIR
R-400/ SCALE: N.T.S.



EXISTING CONDITION

REPAIRED CONDITION

5 RAILING POST CONCRETE REPAIR
R-400/ SCALE: N.T.S.



6 GROUT POCKET REPLACEMENT
R-400/ SCALE: N.T.S.

ISSUED FOR BIDDING - APRIL 17, 2023

SEAL: JASON BORDEN
FL PE #83583

EXTERIOR WALL REPAIR
CARLTON HOUSE CONDOMINIUMS
2701 S. OCEAN BLVD , HIGHLAND BEACH, FL 33487

NO.	DATE	REVISIONS	BY

DESIGN:	J.B.
DRAWN:	A.L.B.
CHECKED:	J.B.
SCALE:	AS SHOWN
DATE:	JANUARY 13, 2023
PROJECT No.:	07-220033-02

DOB STAMP AND SIGNATURE:

DRAWING TITLE:

DETAILS

DRAWING No.

R-400



5383 Sandhurst Circle North
Lake Worth, FL 33463
CGC 060027 WWW.PromarBuilding.com
Office (561) 819-3900 Fax (561) 431-0238

Carlton House Management Association, Inc.
2701 S Ocean Blvd Highland Beach, FL 33487
EXTERIOR WALL REPAIR

W.I. #	Description	Contract Quantity	Unit	Unit Price	Extension
	GENERAL CONDITIONS:				
0.1A	Mobilization	1.00	LS	\$74,000.00	\$74,000.00
0.1B	General Conditions	1.00	LS	\$32,000.00	\$32,000.00
0.1C	Demobilization	1.00	LS	\$8,500.00	\$8,500.00
0.2	Access (Swing Stage) and Overhead Protection	1.00	LS	\$12,500.00	\$12,500.00
0.3	Permits /Expediter cost pass through owner	1.00	COST	\$0.00	\$0.00
0.4	Payment and Performance Bonds For Budget Only - will charge cost only	\$925,454.12	%	3.00%	\$27,759.12
	STRUCTURAL CONCRETE REPAIR WORK:				
1.1	Partial Depth Slab Repair	350.00	SF	\$105.00	\$36,750.00
1.2	Full Depth Slab Repair	150.00	SF	\$150.00	\$22,500.00
1.3	Partial Depth Overhead Slab Repair	250.00	SF	\$120.00	\$30,000.00
1.4	Overhead Concrete Beam or Tie-Beam Repair	40.00	CF	\$350.00	\$14,000.00
1.5	Vertical Concrete Repair at Columns or Tie-Columns	40.00	CF	\$310.00	\$12,400.00
1.6	Vertical Concrete Repair at Walls	75.00	CF	\$190.00	\$14,250.00
1.7	Concrete Repair at Top or Bottom of Steel Column	5.00	CF	\$310.00	\$1,550.00
1.8	Concrete Repair at Guardrail or Handrail Post	35.00	EA	\$50.00	\$1,750.00
	STUCCO MAINTENANCE:				
2.1	Stucco Crack Repair	500.00	LF	\$14.00	\$7,000.00
2.2	Stucco Patch Repair	1,500.00	SF	\$20.00	\$30,000.00
	WATERPROOFING				
3.1	Remove Existing Finish and Prepare Catwalk Floor for Waterproofing	9,750.00	SF	\$11.50	\$112,125.00
3.2	Install Waterproofing Membrane at Catwalk	9,750.00	SF	\$14.00	\$136,500.00
3.3	Remove Existing Finish and Prepare Balcony Floor for Waterproofing	5,250.00	SF	\$11.50	\$60,375.00
3.4	Install Waterproofing Membrane at Balconies	5,250.00	SF	\$14.00	\$73,500.00
3.5	Removal and Replacement of Expansion Joint Sealant at Catwalk	225.00	LF	\$210.00	\$47,250.00
3.6	Removal and Replacement of Building Expansion Joints	125.00	LF	\$55.00	\$6,875.00
3.7	Remove and Replace Window Perimeter Sealant at Catwalk	2,360.00	LF	\$8.50	\$20,060.00
3.8	Remove and Replace Sliding Door Perimeter Sealant at Balconies	830.00	LF	\$8.50	\$7,055.00
3.9	Clean and Recoat Building (Approx 40,000 S.F.)	1.00	LS	\$91,725.00	\$91,725.00
	MISCELLANEOUS				
4.1A	Remove Shutters at Balconies	6.00	EA	\$65.00	\$390.00
4.1B	Reinstall EXISTING Shutters at Balconies	6.00	EA	\$65.00	\$390.00
4.2	Clean and Repaint Corroded Steel Post at Catwalk	8.00	EA	\$45.00	\$360.00
4.3	Clean and Repaint Corroded Steel Post at Balconies	7.00	EA	\$45.00	\$315.00

PROMAR BUILDING SERVICES, LLC

Carlton House Management Association, Inc.

AAAR

DS

BTD

4.4	Welded Steel Column Repair at Catwalk or Balcony	3.00	EA	\$650.00	\$1,950.00
4.5A	Remove Wood Privacy Screen	9.00	EA	\$450.00	\$4,050.00
4.5B	Replace Wood Privacy Screen	9.00	EA	\$550.00	\$4,950.00
4.6	Install/Replace Drip Pipes at Balcony and Catwalk Weeps	325.00	EA	\$85.00	\$27,625.00
	ELECTRICAL REPAIRS				
5.1	Allowance for Misc. Electrical Work	1.00	ALLOW	\$5,000.00	\$5,000.00
	TOTAL COST OF BASE BID				\$925,454.12
CALANDER DAYS TO COMPLETE		216			

PROMAR BUILDING SERVICES, LLC

^{DS}
AAAR

^{DS}
BTD

Carlton House Management Association, Inc.

PROMAR BUILDING SERVICES, LLC

**5383 SANDHURST CIRCLE NORTH
LAKE WORTH, FL 33463
561-598-4549
CGC06060027**



PROMAR
BUILDING SERVICES LLC
DBA PROMAR PAINTING AND WATERPROOFING

ALFREDO AMADOR
MANAGING MEMBER, OWNER
Aamador@Promarbuilding.com

Mariann Gerwig
CFO, CGC, HI, CFCAM
Mgerwig@Promarbuilding.com

APPLICATION AND CERTIFICATE FOR PAYMENT

PAGE ONE

Project	Carlton House Management Association, Inc. 2701 S Ocean Blvd Highland Beach, FL 33487 Promar Building Services LLC	Application No:	EXHIBIT 3
Attention:	BOARD OF DIRECTORS	Period From:	
	DS AAAR	Period To:	
		Contract For:	Exterior Wall Repair
		Contract Date:	

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet is attached.

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief in Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work which previous Certificates for payment were issued and payments received from the Owner, and that current payment shown herein is now due.

1. ORIGINAL CONTRACT SUM	\$925,454.12
2. Net change by change orders & Additional Unit cost	\$0.00
3. CONTRACT SUM TO DATE	\$925,454.12
4. TOTAL COMPLETED & STORED TO DATE	\$0.00
RETAINER: 10% of Total Completed & Stored to Date Less	
Completed to date	Less Permit, Mob, G.C., Demob, shoring
\$0.00	\$0.00
Maximum Retainer Calculation	Less Permit, Mob, G.C., Demob, shoring
\$942,956.94	\$172,261.94
TOTAL RETAINER	
\$0.00	
6. TOTAL EARNED LESS RETAINAGE	\$0.00
7. LESS PREVIOUS AMOUNT BILLED	\$0.00
8. CURRENT PAYMENT DUE	\$0.00
9. BALANCE TO FINISH (INCLUDING RETAINER UNBILLED)	\$925,454.12

PAYMENT DUE NO LATER THEN 10 DAYS AFTER SUBMITTED TO ENGINEER

CHANGE ORDER & ADDTL UNIT SUMMARY	CHANGES TO BASE CONTACT AND ALTERNATES	CHANGE ORDERS
Total changes approved in previous months	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
SUB TOTAL	\$0.00	\$0.00
TOTAL CHANGES	\$0.00	

CONTRACTOR: PROMAR BUILDING SERVICES, LLC

By: DATE

Arnaldo Alfredo Amador, Owner

CERTIFICATE FOR PAYMENT

In accordance with Contract Documents, based on on-site observations and the data comprising application, the Engineer certifies to the Owner that to the best of the Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the

AMOUNT CERTIFIED.\$

ENGINEER SIGNATURE

DATE

WAIVER AND RELEASE OF LIEN UPON PARTIAL PAYMENT

The undersigned lienor, in consideration of the sum of _____ hereby waives and releases its lien and right to claim a lien for labor, services, or materials furnished to Carlton House Management Association, Inc.. Waiver and Release of Lien is conditional upon receipt and clearance of the consideration described above; it shall not become effective payment and funds have been release to the undersigned.

Dated this ___ day of _____, 2023.

Arnaldo Alfredo Amador, Owner
Promar Building Services, LLC

STATE OF} Florida
COUNTY OF} Palm Beach

Sworn to and subscribed before me this ___ day of _____, 2023. by Arnaldo Alfredo Amador, who is personally known to me and certified that he has vested authority required to execute this Release of Lien.

Mariann Gerwig, Notary Public
My Commission Expires:

	Description	Est. Qty	Unit	Unit Price	Previous Qty Billed	Quantity This Period	Total Quantity Billed	Amount Previous Billed	Amount This Period	Total Billed to Date	Original Contract	Retainage	Balance to Finish	Amount Over (Under) Contract
	GENERAL CONDITIONS:													
0.1A	Mobilization	1	LS	\$74,000.00	-	-	-	\$ -	\$ -	\$ -	\$ 74,000.00		\$ 74,000.00	
0.1B	General Conditions	1	LS	\$32,000.00	-	-	-	\$ -	\$ -	\$ -	\$ 32,000.00		\$ 32,000.00	
0.1C	Demobilization	1	LS	\$8,500.00	-	-	-	\$ -	\$ -	\$ -	\$ 8,500.00		\$ 8,500.00	
0.2	Access (Swing Stage) and Overhead Protection	1	LS	\$12,500.00	-	-	-	\$ -	\$ -	\$ -	\$ 12,500.00		\$ 12,500.00	
0.3	Permits /Expediter cost pass through owner	1	COST	\$0.00	-	-	-	\$ -	\$ -	\$ -	\$ -		\$ -	
0.4	Payment and Performance Bonds Est. Only will pass thru at cost	\$925,304.12	%	3.00%	-	-	-	\$ -	\$ -	\$ -	\$ 27,759.12		\$ 27,759.12	
	STRUCTURAL CONCRETE REPAIR WORK:													
1.1	Partial Depth Slab Repair	350	SF	\$105.00	-	-	-	\$ -	\$ -	\$ -	\$ 36,750.00		\$ 36,750.00	
1.2	Full Depth Slab Repair	150	SF	\$150.00	-	-	-	\$ -	\$ -	\$ -	\$ 22,500.00		\$ 22,500.00	
1.3	Partial Depth Overhead Slab Repair	250	SF	\$120.00	-	-	-	\$ -	\$ -	\$ -	\$ 30,000.00		\$ 30,000.00	
1.4	Overhead Concrete Beam or Tie-Beam Repair	40	CF	\$350.00	-	-	-	\$ -	\$ -	\$ -	\$ 14,000.00		\$ 14,000.00	
1.5	Vertical Concrete Repair at Columns or Tie-Columns	40	CF	\$310.00	-	-	-	\$ -	\$ -	\$ -	\$ 12,400.00		\$ 12,400.00	
1.6	Vertical Concrete Repair at Walls	75	CF	\$190.00	-	-	-	\$ -	\$ -	\$ -	\$ 14,250.00		\$ 14,250.00	
1.7	Concrete Repair at Top or Bottom of Steel Column	5	CF	\$310.00	-	-	-	\$ -	\$ -	\$ -	\$ 1,550.00		\$ 1,550.00	
1.8	Concrete Repair at Guardrail or Handrail Post	35	EA	\$50.00	-	-	-	\$ -	\$ -	\$ -	\$ 1,750.00		\$ 1,750.00	
	STUCCO MAINTENANCE:													
2.1	Stucco Crack Repair	500	LF	\$14.00	-	-	-	\$ -	\$ -	\$ -	\$ 7,000.00		\$ 7,000.00	
2.2	Stucco Patch Repair	1,500.00	SF	\$20.00	-	-	-	\$ -	\$ -	\$ -	\$ 30,000.00		\$ 30,000.00	
	WATERPROOFING													
3.1	Remove Existing Finish and Prepare Catwalk Floor for Waterproofing	9,750.00	SF	\$11.50	-	-	-	\$ -	\$ -	\$ -	\$ 112,125.00		\$ 112,125.00	
3.2	Install Waterproofing Membrane at Catwalk	9,750.00	SF	\$14.00	-	-	-	\$ -	\$ -	\$ -	\$ 136,500.00		\$ 136,500.00	
3.3	Remove Existing Finish and Prepare Balcony Floor for Waterproofing	5,250.00	SF	\$11.50	-	-	-	\$ -	\$ -	\$ -	\$ 60,375.00		\$ 60,375.00	
3.4	Install Waterproofing Membrane at Balconies	5,250.00	SF	\$14.00	-	-	-	\$ -	\$ -	\$ -	\$ 73,500.00		\$ 73,500.00	
3.5	Removal and Replacement of Expansion Joint Sealant at Catwalk	225	LF	\$210.00	-	-	-	\$ -	\$ -	\$ -	\$ 47,250.00		\$ 47,250.00	
3.6	Removal and Replacement of Building Expansion Joints	125	LF	\$55.00	-	-	-	\$ -	\$ -	\$ -	\$ 6,875.00		\$ 6,875.00	
3.7	Remove and Replace Window Perimeter Sealant at Catwalk	2,360.00	LF	\$8.50	-	-	-	\$ -	\$ -	\$ -	\$ 20,060.00		\$ 20,060.00	
3.8	Remove and Replace Sliding Door Perimeter Sealant at Balconies	830	LF	\$8.50	-	-	-	\$ -	\$ -	\$ -	\$ 7,055.00		\$ 7,055.00	
3.9	Clean and Recoat Building (Approx 40,000 S.F.)	1	LS	\$91,725.00	-	-	-	\$ -	\$ -	\$ -	\$ 91,725.00		\$ 91,725.00	
	MISCELLANEOUS													
4.1A	Remove Shutters at Balconies	6	EA	\$65.00	-	-	-	\$ -	\$ -	\$ -	\$ 390.00		\$ 390.00	
4.1B	Reinstall EXISTING Shutters at Balconies	6	EA	\$65.00	-	-	-	\$ -	\$ -	\$ -	\$ 390.00		\$ 390.00	
4.2	Clean and Repaint Corroded Steel Post at Catwalk	8	EA	\$45.00	-	-	-	\$ -	\$ -	\$ -	\$ 360.00		\$ 360.00	
4.3	Clean and Repaint Corroded Steel Post at Balconies	7	EA	\$45.00	-	-	-	\$ -	\$ -	\$ -	\$ 315.00		\$ 315.00	
4.4	Welded Steel Column Repair at Catwalk or Balcony	3.00	EA	\$650.00	-	-	-	\$ -	\$ -	\$ -	\$ 1,950.00		\$ 1,950.00	
4.5A	Remove Wood Privacy Screen	9	EA	\$450.00	-	-	-	\$ -	\$ -	\$ -	\$ 4,050.00		\$ 4,050.00	
4.5B	Replace Wood Privacy Screen	9	EA	\$550.00	-	-	-	\$ -	\$ -	\$ -	\$ 4,950.00		\$ 4,950.00	
4.6	Install/Replace Drip Pipes at Balcony and Catwalk Weeps	325	EA	\$85.00	-	-	-	\$ -	\$ -	\$ -	\$ 27,625.00		\$ 27,625.00	
	ELECTRICAL REPAIRS													
5.1	Allowance for Misc. Electrical Work	1	ALLOW	\$5,000.00	-	-	-	\$ -	\$ -	\$ -	\$ 5,000.00		\$ 5,000.00	
	TOTAL BASE CONTRACT							\$ -	\$ -	\$ -	\$ 925,454.12	\$ -	\$ 925,454.12	\$ -
	Description	Est. Qty	Unit	Unit Price	Previous Qty Billed	Quantity This Period	Total Quantity Billed	Amount Previous Billed	Amount This Period	Total Billed to Date	Original Contract	Retainage	Balance to Finish	Amount Over (Under) Contract
	CHANGE ORDERS													
					-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
					-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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					-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	TOTAL CHANGE ORDERS							\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	TOTAL CONTRACT & CHANGE ORDERS							\$ -	\$ -	\$ -	\$ 925,454.12	\$ -	\$ 925,454.12	\$ -



5383 Sandhurst Circle North
Lake Worth, FL 33463
CGC 060027 WWW.PromarBuilding.com
Office (561) 819-3900 Fax (561) 431-0238

EXHIBIT 4

HURRICANE PLAN

In the event such as a severe storm or hurricane seems possible within seventy-two (72) hours the Contractor will begin the following precautions:

- Stop any forward movement of the Scope of Work, such as excavation of repair areas.
- The construction site will be cleaned of any contractor materials that could become flying debris.
- Remove any pipe scaffolding, secure all swing stage scaffolding on the ground (if applicable).
- Contractor will call and have all contractor dumpsters removed. If this is not possible, they will be covered and tied down to secure them.
- Contractor will call and have temporary toilets removed. If this is not possible, they will be weighted and tied down to secure them.
- Contractor will remove all tools, toolboxes, and trailers if they cannot be secured in place.
- All material deliveries will stop.
- All screen or fencing installed by the contractor will be removed

No later than forty eight hours prior to an expected event of a hurricane or other severe weather, the Engineer or Owner may submit a written request to the contractor to execute additional work to protect exposed areas. If the contractor is directed to protect building openings, such protection will not be less effective than plywood sheathing suitable to withstand one hundred thirty (130) mile per hour winds and resultant driven rains.

The additional work that the Engineer and/or Owner directs the contractor to do will be done on a Time and Material Basis \$75.00 per man hour and cost plus twenty (20%) for material) The cost for which shall be borne by the Owner.

For such charges, Contractor shall provide the Owner with complete supporting documentation including a detail of man hours billed, and material invoices. The Owner may, at its option, supply its own material for use by the Contractor in accordance with this paragraph as long as it meets the requirements of the contractor.

Any costs billed to the Owner in this situation will be submitted as soon as possible and payable within ten (10) days from contractor submitting the invoice. This work will be billed separate from the Contract Work and will not be subject to retainage.

Promar Building Services LLC

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Carlton House Management Association, Inc.

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EXHIBIT 5A CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

9/12/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION** IS **WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Insurance Office of America, Inc. 2056 Vista Parkway, Suite 350 West Palm Beach FL 33411	CONTACT NAME: Heidi McGuire PHONE (A/C, No, Ext): 561-868-9015 E-MAIL ADDRESS: heidi.mcguire@ioausa.com FAX (A/C, No):														
INSURED Promar Building Services LLC aka Promar Painting and Waterproofing LLC 5383 Sandhurst Circle N Lake Worth FL 33463	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">INSURER(S) AFFORDING COVERAGE</th> <th style="text-align: center;">NAIC #</th> </tr> <tr> <td>INSURER A : Kinsale Insurance Company</td> <td style="text-align: center;">38920</td> </tr> <tr> <td>INSURER B : Federal Insurance Company</td> <td style="text-align: center;">20281</td> </tr> <tr> <td>INSURER C : Auto-Owners Insurance Company</td> <td style="text-align: center;">18988</td> </tr> <tr> <td>INSURER D :</td> <td></td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A : Kinsale Insurance Company	38920	INSURER B : Federal Insurance Company	20281	INSURER C : Auto-Owners Insurance Company	18988	INSURER D :		INSURER E :		INSURER F :	
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INSURER D :															
INSURER E :															
INSURER F :															

COVERAGES**CERTIFICATE NUMBER:** 408235416**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> 15,000 GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			0100095988-3	9/13/2023	9/13/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
C	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			53-530386-00	9/13/2023	9/13/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ PIP \$ 10,000
A	<input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 0			0100104658-4	9/13/2023	9/13/2024	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A				<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
B	Leased/Rented Equipment			45471915	9/13/2023	9/13/2024	Leased/Rented 100,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

If required by written contract, the following apply in favor of the Certificate Holder:

General Liability:

Blanket Additional Insured (On-Going Operations) as required by written contract per form CG 20 10 12 19

Blanket Additional Insured (Completed Operations) as required by written contract per form CG 20 37 12 19

Blanket Primary Non-Contributory as required by written contract per form CAS5003 0717

Blanket Waiver of Subrogation as required by written contract per form CAS4002 0110

Auto:

Blanket Additional Insured as required by written contract per form 58504 01 15

CERTIFICATE HOLDER

Carlton House Management Association, Inc.
Promar Building Services, LLC

Carlton House Management Association, Inc.
 2701 South Ocean Blvd
 Highland Beach FL 33487

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2015 ACORD CORPORATION. All rights reserved.

CERTIFICATE OF LIABILITY INSURANCEDate
7/21/2023**Producer:** Plymouth Insurance Agency
2739 U.S. Highway 19 N.
Holiday, FL 34691
(727) 938-5562**This Certificate is issued as a matter of information only and confers no rights upon the Certificate Holder. This Certificate does not amend, extend or alter the coverage afforded by the policies below.****Insured:** South East Personnel Leasing, Inc. & Subsidiaries
2739 U.S. Highway 19 N.
Holiday, FL 34691

Insurers Affording Coverage

NAIC #

Insurer A: Lion Insurance Company

11075

Insurer B:

Insurer C:

Insurer D:

Insurer E:

Coverages

The policies of insurance listed below have been issued to the insured named above for the policy period indicated. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of such policies. Aggregate limits shown may have been reduced by paid claims.

INSR LTR	ADDL INSRD	Type of Insurance	Policy Number	Policy Effective Date (MM/DD/YY)	Policy Expiration Date (MM/DD/YY)	Limits	
		GENERAL LIABILITY <input type="checkbox"/> Commercial General Liability <input type="checkbox"/> Claims Made <input type="checkbox"/> Occur General aggregate limit applies per: <input type="checkbox"/> Policy <input type="checkbox"/> Project <input type="checkbox"/> LOC				Each Occurrence	\$
						Damage to rented premises (EA occurrence)	\$
						Med Exp	\$
						Personal Adv Injury	\$
						General Aggregate	\$
						Products - Comp/Op Agg	\$
		AUTOMOBILE LIABILITY <input type="checkbox"/> Any Auto <input type="checkbox"/> All Owned Autos <input type="checkbox"/> Scheduled Autos <input type="checkbox"/> Hired Autos <input type="checkbox"/> Non-Owned Autos				Combined Single Limit (EA Accident)	\$
						Bodily Injury (Per Person)	\$
						Bodily Injury (Per Accident)	\$
						Property Damage (Per Accident)	\$
		EXCESS/UMBRELLA LIABILITY <input type="checkbox"/> Occur <input type="checkbox"/> Claims Made Deductible				Each Occurrence	
						Aggregate	
A		Workers Compensation and Employers' Liability Any proprietor/partner/executive officer/member excluded? NO If Yes, describe under special provisions below.	WC 71949	01/01/2023	01/01/2024	<input checked="" type="checkbox"/> WC Statutory Limits	<input type="checkbox"/> OTH-ER
						E.L. Each Accident	\$1,000,000
						E.L. Disease - Ea Employee	\$1,000,000
						E.L. Disease - Policy Limits	\$1,000,000
Other			Lion Insurance Company is A.M. Best Company rated A (Excellent). AMB # 12616				

Descriptions of Operations/Locations/Vehicles/Exclusions added by Endorsement/Special Provisions:

Client ID: 90-68-421

Coverage only applies to active employee(s) of South East Personnel Leasing, Inc. & Subsidiaries that are leased to the following "Client Company":

Promar Building Services, LLC

Coverage only applies to injuries incurred by South East Personnel Leasing, Inc. & Subsidiaries active employee(s), while working in: FL.

Coverage does not apply to statutory employee(s) or independent contractor(s) of the Client Company or any other entity.

A list of the active employee(s) leased to the Client Company can be obtained by emailing a request to certificates@lioninsurancecompany.com

Project Name:

ISSUE 07-21-23 (BP)

Carlton House Management Association, Inc.

Promar Building Services, LLC

Begin Date: 1/5/2020

CERTIFICATE HOLDER**CANCELLATION**

CARLTON HOUSE MANAGEMENT ASSOCIATION, INC.

Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will endeavor to mail 30 days written notice to the certificate holder named to the left, but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives.

2701 SOUTH BLVD.
HIGHLAND BEACH, FL 33487



5383 Sandhurst Circle North
Lake Worth, FL 33463
CGC 060027 WWW.PromarBuilding.com
Office (561) 819-3900 Fax (561) 431-0238

EXHIBIT 6

CONTRACTOR SAMPLE WARRANTY FORM

PROMAR BUILDING SERVICES, LLC. and its successors and assigns, hereby warrants to - _____, and its owners, successors and assigns (hereinafter collectively referred to as "Owner"), that the Work performed and materials supplied by the Contractor relating to the "Work" as referenced in the Contract entered into by and between the Contractor and Owner dated _____ ("Contract") relating to that certain residential community known as _____ in _____, Florida ("Project"), shall be free of defects or failures for the period of time hereinafter specified. Contractor further agrees as follows:

1. Contractor warrants that all Work performed, and materials supplied pursuant to the Contract are new, merchantable, fit for the Owner's intended use, conforms to the standards set forth in the Contract, are free from defects in workmanship, materials, and functioning order for a period of Five (5) year for the Work commencing from the date of Final Completion as referenced in the Contract. This Warranty excludes those claims resulting from misuse, improper maintenance, abuse as well as damages arising from work performed by third parties not acting at the direction of the Contractor. All warranties will be delivered to the Owner at Final Completion notwithstanding if the Owner withholds an amount from Final Payment in accordance with this Contract. However, if the Owner is in breach of payment in accordance with this Contract, no warranties will be issued.
2. This Warranty excludes remedy for damage or defect caused by defective design by others than Contractor, normal attributes of building, abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear, and normal usage as well as damages arising from work performed by third parties not acting at the direction of the Contractor.
3. In the event of a defect, malfunction or other failure of the Work performed and materials furnished or any part or portion thereof, to be in conformity with its use by the Owner, the Contractor shall remedy the failures, malfunctions and defects, without charge to Owner, at Contractor's own cost and expense, within a reasonable time not to exceed fifteen (15) days from the date of Contractor's receipt of notification of any such failure or defect. The Owner's remedy shall consist of the repair or replacement of the defective workmanship or materials. In the event Contractor certifies it is unable to provide a replacement or that the repair is not commercially practicable or cannot be made within the time of period stated herein, then at the option of the Owner it may, at its sole discretion, elect to accept an amount of money equal to the reasonable repair or replacement costs of the failed or defective item(s), or Owner may repair or replace such items and Contractor shall immediately upon receipt of Owner's statement of the costs of such replacements or repairs pay to Owner the full amount listed in said statement(s).
4. In order to obtain performance of any obligation under this Warranty, the Owner shall notify Contractor and by certified mail, return receipt requested or ordinary mail, at the election of Owner, at the following address:

As to Owner:	
Additional Notice To:	
As to Contractor:	Promar Building Services, LLC. 5383 Sandhurst Circle North Lake Worth, FL 33463
As to Engineer:	

PROMAR BUILDING SERVICES, LLC
CARLTON HOUSE MANAGEMENT ASSOCIATION, INC.

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5. This Warranty provides the Owner specific legal rights which are in addition to other rights the Owner may have under Florida law.

6. Contractor binds itself and its respective successors and assigns to this Warranty.

7. This Warranty shall incur to the benefit of the Owner and its unit owners. This Warranty shall commence upon its execution by the Contractor. In addition, the Contractor hereby assigns and transfers to the Owner, all warranties of manufacturers, subcontractors, sub-subcontractors, materialmen, and others herein provided with respect to the Work performed and materials supplied pursuant to the Contract, but such assignment shall not relieve the Contractor of its warranty obligations hereunder or pursuant to the Contract.

8. This Warranty shall in no way be compromised by the issuance of any warranties, from manufacturers, subcontractors, sub-subcontractors, materialmen, and others with respect to the Project.

IN WITNESS WHEREOF, the Contractor has executed this Warranty this ____ day of _____, 20__.

Signed, Sealed and Delivered in the Presence of:

Arnaldo Alfredo Amador, President
Promar Building Services LLC

STATE OF FLORIDA
COUNTY OF

The foregoing instrument was acknowledged before me this ____ day of _____, 202_ by Arnaldo Alfredo Amador as President, of Promar Building Services LLC on behalf of said corporation who is personally known to me or who has presented as evidence of identification, and who did not take an oath.

NOTARY PUBLIC STATE OF FLORIDA

Signature of Notary Public

My Commission Expires:

Printed Name of Notary Public

PROMAR BUILDING SERVICES, LLC
CARLTON HOUSE MANAGEMENT ASSOCIATION, INC.

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