

CARPENTER FIELD COMPLEX - 2026 REPAIRS

CONSTRUCTION DOCUMENTS

DATE OF ISSUANCE: March 24, 2026

REVISED: June 15, 2026

OWNER:

CITY OF CLEARWATER, FLORIDA



CLEARWATER
BRIGHT AND BEAUTIFUL • BAY TO BEACH

PROJECT:

CARPENTER FIELD

CLUBHOUSE AND TRAINING COMPLEX- 2026 REPAIRS

651 OLD COACHMAN ROAD

CLEARWATER, FLORIDA 33765

PENNONI PROJECT NUMBER: CLWRC25022

BEAM PROJECT NUMBER: 26000.01



5755 RIO VISTA DRIVE
CLEARWATER, FL 33760

BEAM PROFESSIONALS (A DIVISION OF PBK)

5201 W. KENNEDY BLVD. TAMPA, FL 33609

813-286-8206

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SECTION 00 01 01 - PROJECT TITLE PAGE

CARPENTER FIELD

**CLUBHOUSE AND TRAINING COMPLEX- 2026 REPAIRS
CONSTRUCTION DOCUMENTS**

CITY OF CLEARWATER, FLORIDA

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PART 1 GENERAL

1.1 DESIGN PROFESSIONAL - ARCHITECT OF RECORD

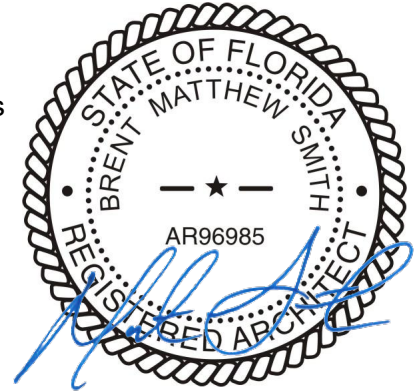
Name: **Brent Matthew Smith, AR 96985**

Firm Name: Beam Professionals a Division of PBK Architects

Firm Address:

5201 West Kennedy Blvd, Suite 502
Tampa, FL 336

Divisions 1 - 14 Sections except
where indicated as prepared by other
design professionals of record.



PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

1.1 DESIGN PROFESSIONAL - ENGINEER OF RECORD

Name: **Chakradhar Gondi, PE #93753**

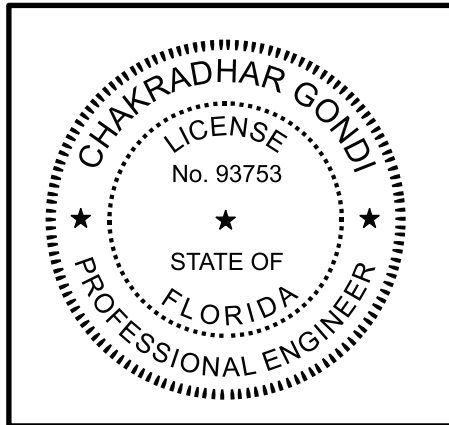
Firm Name: **Pennoni Associates Inc**

Firm Address:

5755 RIO VISTA DRIVE
CLEARWATER, FL 33760

Divisions 1 - 14 Sections except
where indicated as prepared by other
design professionals of record.

INSERT PROFESSIONAL SEAL ABOVE



This item has been electronically signed and sealed by Chakradhar Gondi PE using a Digital Signature and date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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SECTION 00 41 13 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: Carpenter Field Training Complex - 2026 Repairs
- C. Project Location: 651 Old Coachman Road, Clearwater, , Florida 33765
- D. Owner: City of Clearwater, Florida
- E. Architect: BEAM Professionals.
- F. BEAM Project Number: 26000.01
- G. Engineer: Pennoni Associates Inc.
- H. Pennoni Project Number: CLWRC25022

1.2 CERTIFICATIONS AND BASE BID

- A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by PBK Architects, Inc. and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:
 - 1. _____ Dollars
(\$ _____), which sum is hereinafter called the base bid.
- B. For and in consideration of the sum of \$1.00, the receipt of which is hereby acknowledged, the undersigned agrees that this bid may not be revoked or withdrawn after the time set for opening of bids but shall remain open for acceptance for a period of sixty (60) days following such time.

1.3 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 5 days after a written Notice of Award, if offered within 60 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:
 - 1. _____ Dollars
(\$ _____).
- B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the bid bond.

1.4 CONTRACT AND PERFORMANCE AND PAYMENT BONDS

- A. In case he be notified in writing by mail, telegraph, or delivery of the acceptance of this bid within sixty (60) days after the time set for opening of bids, the undersigned agrees to execute within five (5) days a Contract (AIA Standard Form of Agreement Between Owner and Contractor, A101-2007) for the work for the above stated compensation and at the same time to furnish and deliver to the Owner a Performance Bond and a Payment Bond as specified both in the amount of 100% of the Contract Sum.

1.5 TIME OF COMPLETION

- A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Owner, and to substantially complete all work on or before 12/31/26.

1.6 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of Addendum(a) No.(s) _____ in the preparation of this Bid:

1.7 BID SUPPLEMENTS

- A. The following supplements are a part of this Bid Form and are attached hereto.
1. Bid Form Supplement - Bid Bond Form (AIA Document A310).
2. Bid Form Supplement – Subcontractor Listing Form.

1.8 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, for this project.

1.9 SUBMISSION OF BID

- A. Respectfully submitted this ____ day of _____, 20____.
- B. Submitted By: _____ (Name of bidding firm or corporation).
- C. Authorized Signature: _____ (Handwritten signature).
- D. Signed By: _____ (Type or print name).
- E. Title: _____ (Owner/Partner/President/Vice President).
- F. Witness By: _____ (Handwritten signature).
- G. Attest: _____ (Handwritten signature).
- H. By: _____ (Type or print name).
- I. Title: _____ (Corporate Secretary or Assistant Secretary).
- J. Street Address: _____.
- K. City, State, Zip: _____.
- L. Phone: _____.
- M. License No.: _____.
- N. Federal ID No.: _____ (Affix Corporate Seal Here).

SECTION 01 10 00 - SUMMARY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Requirements include, but not limited to:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Owner-furnished Construction Manager installed products.
 - 4. Type of Contract.
 - 5. Work by Owner and under separate contracts.
 - 6. Access to site.
 - 7. Coordination with occupants.
 - 8. Work restrictions.
 - 9. Construction and sequencing scheduling.
 - 10. Protection of work and adjacent property.
 - 11. Owner occupancy.
 - 12. Specification and Drawing conventions.
 - 13. Construction Schedule.

1.3 PROJECT INFORMATION

- A. Project Name: Carpenter Field - 2026 Repairs
- B. Project Location:
 - 651 Old Coachman Road, .
 - Clearwater, , Florida
- C. City of Clearwater, Florida
- D. Architect: Beam Professionals
- E. Engineer: Pennoni Associates Inc.
- F. Pennoni Project Number: CLWRC25022
- G. Project Description:

The Carpenter Complex includes the 20,700 square foot indoor, climate-controlled training center (David P. Montgomery Baseball Performance Center) and the two-story 11,000 square foot clubhouse building surrounded by an open porch of approximately 3,000 SF. All work in this scope is for the David Montgomery Training Building and the club house.

Training Building

Tilt walls (above stem wall)

- 1) Remove the existing wall treatment down to the bare concrete and clean away any dust, dirt and residual contaminants using high pressure equipment with a minimum of 2500 psi.
- 2) All hair line cracks are to be located and using a handheld grinder prepare the "crack" by cutting a "V" into the concrete. Remove all dust, dirt and debris.
- 3) Hair line cracks are to be repaired as per the construction drawings or with Sika Emanco 425 gel-patch and allowed to cure per manufacturer's written instructions.
- 4) There is one (1) large crack on the southeast corner of the building that will need

to be repaired as per the construction drawings (Repair detail 9/S3.0).

- 5) Repair concrete spalling at embedded plate connections per the construction drawings (Repair detail 7/S3.0).
- 6) Remove existing control joint sealant and replace as needed.
- 7) Using a garden sprayer, apply an even application of a light mixture of water and vinegar. Muratic acid is not recommended for this application.
- 8) Once repaired and thoroughly dry, apply one coat of Sika Thorocoat 150 Primer and allow it to dry. Primer can be sprayed or roller applied.
- 9) When dry, apply one (1) coat of Sika Thorocoat HB200, evenly over the primed surface.
- 10) Apply final application of Sika Aquasol finish coat.
- 11) Apply new elastomeric wall coating; color as selected by Owner.
- 12) Miscellaneous concrete and stucco cracks per the construction drawings.

Stem Walls

- 1) Remove existing wall treatment down to the bare concrete surface and clean away any dust, dirt and residual contaminants using pressure equipment with a minimum of 2500 psi.
- 2) All hair line cracks are to be located and using a handheld grinder prepare the "crack" by cutting a "V" into the concrete. Remove all dust, dirt and debris.
- 3) Hair line cracks are to be repaired repaired as per the construction drawings or with Sika Emanco 425 gel-patch and allowed to cure per the manufacturer's written instructions.
- 4) There is poured concrete on top of the stem wall that covers the steel anchor and fastening points of the tilt walls. All sealants between the pour and the wall must be removed, the gap between the two cleaned and dried. Install SOF urethane backing rod into the gap leaving approximately 1/2 inch below the top of the pour.
- 5) Install new Sika Flex urethane sealant over to fill the gap and tool to create a smooth, well adhered application.
- 6) Apply a coat of Xypex cementitious crystalline waterproofing and allow ample time for drying (refer to manufacturer's installation guidelines).
- 7) City of Clearwater approved paint manufacturer, and specifications will be used for application of the final painted surfacing.

First Floor

- 1) Repair cracking at interior slab on grade on first floor at one location per the construction drawings (10/S3.0).

Roof

- 1) Clean the roof areas (A&B) by removing all loose granules, dirt, debris and other contaminants on the roof surface.
- 2) Inspect the penetration and repair any loose edges, loose or damaged flashings, etc.
- 3) Apply Siplast Para-coat flexible PMMA at rate recommended by manufacturer.

Clubhouse Building

Exterior Walls

- 1) New wall coatings per specifications.
- 2) Miscellaneous concrete and stucco cracks per the construction drawings and specifications.
- 3) Remove existing control joint sealant and replace as needed.

Second Floor

- 1) Steel corrosion repairs as needed at floor metal deck, steel joists, beams and exterior walkway framing.
- 2) Rout and seal concrete cracks in exterior walkway decks per construction drawings 2/S3.0.
- 3) Paint all exterior walkways as per specifications.
- 4) Paint all exterior handrails as per specifications.

1.4 WORK COVERED BY THE CONTRACT DOCUMENTS

- A. Contract Documents: Contract documents are defined in the General Conditions of the Contract, and include the following:
 1. Drawings as listed on Index.
 2. Specification Sections as listed on Table of Contents in Project Manual.
 3. All addenda issued prior to Bid Opening

1.5 WORK BY OWNER AND UNDER SEPARATE CONTRACTS

- A. Cooperate fully with Owner so Work may be carried out smoothly, without interfering with or delaying the work or work by Owner. Coordinate the Work with Work performed by Owner.
- B. Owner reserves the right to let separate contract for Work outside of the scope of this Contract. Cooperate fully with separate contractors so Work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with Work performed under separate contracts.
- C. Purchase Contracts: Owner reserves the right to negotiate purchase contracts with suppliers of material and equipment that may be incorporated into the Work. Owner will assign these purchase contracts to Contractor. Include costs for purchasing, receiving, handling, storage if required, and installation of material and equipment in the Contract Sum, unless otherwise indicated.
 1. Contractor's responsibilities are same as if Contractor had negotiated purchase contracts, including responsibility to renegotiate purchase and to execute final purchasing agreements.
- D. Owner-Furnished, Contractor-Installed Products (OFCI): Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner furnished products and making building services connections when applicable.
- E. Owner Furnished Products: Coordinate with Owner.

1.6 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to Work in areas and areas within the Contract limits indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 1. Limits:
 - a. Drawings indicate the limits of the construction operations.

- b. Limit site disturbance, including earthwork and clearing of vegetation, to 40 feet (12.2 m) beyond building perimeter; 10 feet (3 m) beyond surface walkways, patios, surface parking, and utilities less than 12 inches (300 mm) in diameter; 15 feet (4.5 m) beyond primary roadway curbs and main utility branch trenches; and 25 feet (7.6 m) beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities, and playing fields) that require additional staging areas in order to limit compaction in the constructed area.
 - 2. Driveways, Walkways, and Entrances: Keep driveways, parking areas, drop off points, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, students, 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.
- D. Construction access path, contractor parking area(s), dumpster locations, temporary office location, and material storage/staging areas are to be provided as indicated on the construction drawings or if not shown, shall be approved by the Facilities Operations Representative in advance of starting work.
- E. Condition of Existing Building: Maintain portions of existing building affected by construction operations in weathertight condition throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform Work to prevent interference with Owner's day to day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.
- B. Limited Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
 - 1. Architect shall prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
 - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
 - 3. Before limited Owner occupancy, ensure mechanical and electrical systems are fully operational, and required tests and inspections and start up procedures are successfully completed. On occupancy, Owner shall operate and maintain mechanical and electrical systems serving occupied portions of Work.
 - 4. Upon occupancy, Owner shall assume responsibility for maintenance and custodial service for occupied portions of Work.

1.8 WORK RESTRICTIONS

- A. Work Restrictions: Comply with restrictions on construction operations. Comply with limitations on use of public streets and with other requirements of Authority Having Jurisdiction.
- B. On-Site Work Hours: Limit Work in the existing building to normal working hours, Monday through Friday, unless otherwise indicated. Coordinate with Owner when it is necessary to extend working

hours or Work on weekends.

- C. Work and storage areas are to be fenced with 6' high temporary chain link fencing unless otherwise noted on these plans or approved in writing, in advance of construction. Temporary fencing and barricades are to be maintained through substantial completion. The Contractor is responsible to ensure that the work area is secure, and to ensure the safety of students and staff.
- D. Roll-off dumpsters are to be City of Clearwater Solid Waste roll-off containers only. Contact City of Clearwater Solid Waste Department for pricing and availability.
- E. Use of Owner's existing toilet facilities is not permitted. Contractor to provide portable restrooms for workers
- F. Provide a written request for a minimum of eight (8) business days in advance when the work may impact on occupancy and use of any facility, including systems noted above.
- G. Work may not be performed, and materials may not be delivered to the job site during times when the Construction Superintendent is not on site. The Construction Superintendent is defined as a direct employee of the Contractor. This role may not be delegated to a subcontractor.
- H. Noise, Vibration, and Odors: Coordinate operations that result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two weeks in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- I. Any work that must be done outside of the designated construction area or phase limit to accomplish the Work of the project or phase of the project must have prior written approval from the Owner's project representative and must be scheduled so as to avoid disrupting the Owner's operations.
- J. Controlled Substances, Firearms, and Explosive Devices: Use of tobacco products, controlled substances, firearms, and explosive devices on the site is not permitted.
- K. Employee Identification: Provide identification tags for Contractor personnel working on site. Require personnel to always use identification tags.
- L. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on site.
 - 1. Maintain list of approved screened personnel with ..

1.9 CONSTRUCTION AND SEQUENCE SCHEDULING

- A. Generally, to accommodate the uninterrupted operation of the existing facility during the various phases of construction, the sequence of construction operations shall be as follows:
 - 1. Make necessary provisions to allow the occupied portions of the facility to function during construction, including provisions for temporary utilities, temporary walkways, erection of temporary barricades and fencing, and the like.
 - 2. Complete and turn over for occupancy the project or portions of the project, as phased. Unless otherwise specified or specifically approved during construction, work of subsequent phases cannot begin prior to substantial completion of the previous phase.
 - 3. Upon final completion, Owner acceptance of the project.
- B. Some overlapping of construction operations may occur, and where necessary the Contractor may request permission to start certain portions of the work before the previous operations are completed in their entirety. Such detailed scheduling shall be done as the work progresses, provided that the Owner's operations remain uninterrupted, but in all cases must receive Owner approval.
- C. Where it is not possible to complete certain mechanical and electrical services to make the work complete and ready for occupancy, temporary services may be approved to permit occupancy by the Owner at the earliest possible date.
- D. Detailed construction scheduling is the responsibility of the Contractor.

1.10 PROTECTION OF WORK AND ADJACENT PROPERTY

- A. Buildings and adjacent areas may be subject to damage due to construction operations. At the Completion of the project, the Contractor shall restore existing buildings, landscaping, turf, parking facilities, sidewalks, etc., to the same or better condition as prior to the start of the work.
- B. In addition to requirements of the General Conditions of the Contract for Construction, the Contractor shall:
 - 1. Notify, in writing, the Facilities Operations Representative when equipment or property interferes with the Work and arrange for disposition of such property.
 - 2. Provide coverings over inlets, area drains, drywells, etc. to prevent soil and construction debris from running into the storm system. In the event of a failure of a covering, the Contractor is required to clean the affected piping and structure(s) prior to substantial completion.
 - 3. Provide protection from rain, wind, and extreme temperatures to protect new work, materials, equipment, fixtures and adjacent areas from damage.
 - 4. Provide protection against stormwater back-ups when the storm system is affected by the work. Maintain flows as needed to avoid damage to the work and to surrounding areas.
 - 5. Provide temporary protection around openings through and on floors, roofs and other openings.
 - 6. Per the Florida Trench Safety Act (ss. 553.60-553.64): Provide and maintain proper shoring and bracing for excavations to prevent collapse or other damage until they can be properly backfilled upon completion of the new work.
- C. The Contractor is required to photograph existing conditions related to existing conditions and to provide photographs in electronic format to the Design Professional and Facilities Operations Representative a minimum of 7 days prior to starting work on site. Sufficient photos with adequate detail to thoroughly document existing conditions shall be provided.

1.11 OWNER OCCUPANCY

- A. The Owner reserves the right to occupy and to install equipment in completed areas of the building prior to Substantial completion, provided that such occupancy does not interfere with completion of the work. Such occupancy shall not constitute acceptance of the work.
- B. Upon Substantial Completion of the project or portions thereof, the Owner will take occupancy. The Contractor is required to adjust work hours as needed in occupied areas so as to avoid disrupting Owner's operations.
 - 1. Access to the facility and work area will be controlled by the Owner beginning at Substantial Completion. Refer also to the Close Out Procedures section.

1.12 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: Specifications use certain conventions for style of language and intended meaning of certain terms, words, and phrases when used in situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in Specifications. The words "shall," "shall be," or "shall comply with," depending on context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of each Specification section.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the

individual Specifications Sections.

2. Abbreviations: Materials and products are identified by abbreviations.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 CONSTRUCTION SCHEDULE

- A. Owner has a critical need for the Work to begin upon Notice to Proceed and shall be Substantially Complete by as agreed to in the Contract. There will be no Extensions of Time due to weather except in cases of extreme weather (hurricane, tornado, etc.). The impact of each extreme weather event on schedule shall be discussed by the Architect, Owner, and Contractor.

END OF SECTION

SECTION 01 25 13.0 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for substitutions.
- B. Instructions to Offerors: Product options and procedures for submitting requests for substitutions during the Proposal period.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Substitutions for Cause.
 - 2. Substitutions for Convenience.

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:
 - a. Use facsimile of form provided in Project Manual in Section 01 25 13.1 - Substitution Request form.
 - 2. Include complete information as required in the Substitution Form. Incomplete information will result in automatic rejection of the substitution request.
 - 3. 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 Construction Managers, 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.

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 fifteen (15) days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect 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. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. 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: Architect will consider requests for substitution if received ten (10) days prior to Bid and within thirty (30) days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. 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.
 - k. Additional requirements as indicated on the Substitution Request Form.

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 25 13.1 - REQUEST FOR SUBSTITUTION FORM

PROJECT INFORMATION

PROJECT NAME AND NUMBER: _____

CONTRACT AWARD DATE: _____

TO: _____

SUBSTITUTION REQUESTED BY: _____

REQUEST MADE DURING:

_____ Bidding

_____ Construction Period

CAUSE FOR REQUEST: _____

SUBSTITUTION INFORMATION

SUBMIT IN ACCORDANCE WITH SECTION 01 25 13.0 - SUBSTITUTION PROCEDURES.

1. Technical data, cost, and time information relating to changes to Construction Documents required by proposed substitution.
2. Detailed comparison of proposed substitution and specified product including but not limited to warranty, significant variations, qualifications of manufacturers, and maintenance.
3. Complete technical data, detailed shop drawings, samples, installation procedures, warranty, and substantiating data marked to indicate equivalent quality and performance to that specified. Manufacturer sell sheets are not acceptable submittals.

BASIS OF DESIGN

Specified Manufacturer: _____

Specified Product: _____

Where Specified:

Drawing (Sheet Number and Detail/Schedule): _____

Specification: (Section Number and Paragraph): _____

PROPOSED SUBSTITUTION

We submit for consideration the following manufacturer / product in lieu of the specified item for the above referenced project:

Proposed Manufacturer: _____

Proposed Product: _____

COST AND TIME

Does proposed substitution affect adjacent work, Construction Documents, Cost, Schedule, Quality, or related submittals?

_____ No

_____ Yes

Contractor is responsible for costs and additional time associated with proposed substitution including costs incurred by Architect for evaluation of substitution and changes to the documents. Describe costs for changes to design, including engineering and detailing costs caused by requested substitution.

Cost Savings Realized by Owner (\$ US): _____

WARRANTY

Is warranty for proposed substitution the same as for specified product?

_____ Yes

_____ No

If No, Explain Differences: _____

CONTRACTOR CERTIFICATION:

In making this request for substitution, Contractor certifies that:

1. Proposed substitution has been thoroughly researched and evaluated and determined as equivalent or superior to specified product or material, will fit into space provided, and is compatible with adjacent materials.

2. Proposed substitution will provide the same or better warranty at no additional cost to the Owner.

3. Cost data is complete and includes related costs under the Contract. Claims for additional costs related to the proposed substitution that may subsequently become apparent are waived.

4. Contractor will assume responsibility for delays and costs caused by acceptance proposed substitution, if approved, are accepted by the Contractor unless delays and costs are specifically mentioned and approved in writing by Owner and Architect.

5. Contractor will assume liability for performance of the substitution.

6. Installation of the proposed substitution is coordinated with the Work and with changes required to the Work.

7. Contractor will reimburse Owner and Architect for evaluation and redesign services associated with the substitution request and, when required, for approval by authorities having jurisdiction.

PREVIOUS USE

Has the proposed substitute manufacturer / product been installed on previous PBK Architects, Inc. projects within the past two years?

_____ No

_____ Yes

If Yes, list project(s):

Project: _____

Owner: _____

Contact: _____

Project: _____

Owner: _____

Contact: _____

SUBMITTED BY:

Contractor's Signature: _____

Signature shall be by the individual authorized to legally bind the Contractor to the above terms. Failure to provide legally binding signature will result in retraction of acceptance.

Firm: _____

Telephone: _____ Date: _____

SUBSTITUTION EVALUATION

FOR USE BY ARCHITECT:

____Accepted ____Accepted as Noted ____Not Accepted ____Received too Late

By: _____ Date: _____

Remarks: _____

FOR USE BY OWNER:

_____Accepted _____Not Accepted

By: _____Date: _____

Remarks: _____

END OF SECTION

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SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 REFERENCE STANDARDS

- A. AIA G709 - Proposal Request; 2018.

1.4 REFERENCES

- A. Refer to specification Section 014100 - Regulatory Requirements for code requirements and code standards applicable to all materials and work necessary to complete the scope of work.

1.5 MINOR CHANGES IN WORK

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

1.6 ARCHITECTURAL SUPPLEMENTAL CHANGES

- A. Architect will issue Architectural Supplemental Instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."
- B. In the event a change in Contract Sum or Contract Time is required by the Construction Manager, he shall so inform the Architect in writing within one (1) week of receipt of Supplemental Instruction or Clarification. A subsequent Proposal Request and Change Order will be issued prior to the Construction Manager proceeding with the work unless a specific cost and/or time change has been agreed to and authorization to proceed is included in the Supplemental Instruction or is subsequently issued.
- C. Architect will sign and date the Supplemental Instruction or Clarification as authorization for the Contractor to proceed with changes.
- D. Construction Manager will sign and date the Supplemental Instruction to indicate agreement with the terms therein and return to the Architect.

1.7 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect 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 Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within twenty (20) days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - 3. 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.
 - 4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 5. Include costs of labor and supervision directly attributable to the change.

6. 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.
 7. Proposal Requests are not valid until Architect and Owner approve in writing. Upon approval the Proposal Request will be incorporated into a Contingency Adjustment Authorization.
 8. Quotation Form:
 - a. Use AIA G709 – "Proposal Request" Owner's form.
- 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 Architect.
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, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in specification section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 7. Proposal Requests are not valid until Architect and Owner approve in writing. Upon approval the Proposal Request will be incorporated into a Contingency Adjustment Authorization.
 8. Proposal Request Form:
 - a. Use AIA G709 – "Proposal Request".

1.8 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714 – "Construction Change Directive" instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction 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 Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.9 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701 – "Change Order".
- B. Change Order will constitute authorization to proceed with additions and deletions as defined by Proposal Request.
- C. Change Order will provide an accounting of the adjustment in the Contract Sum and/or Contract Time.
- D. Content of Change Order will be based on either:
1. Architect's Proposal Request and Contractor's responsive Proposal as mutually agreed between Owner and Contractor.
 2. Contractor's Proposal for a change as recommended by Architect.

3. Owner authorized Construction Change Directive as mutually agreed between Owner and Contractor and recommended by Architect.
4. Executed Architect's Supplemental Instructions.
- E. Owner will sign and date the Change Order as authorization for the Contractor to proceed with the changes.
- F. Contractor will sign and date the Change Order to indicate agreement with the terms therein.

1.10 CORRELATION WITH CONTRACTOR'S SUBMITTAL

- A. Periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum. Submit along with Applications for Payment.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time:
 1. Revise schedules to show changes for other items of work affected by the changes.
 2. Submit revised Schedule to Architect and Owner; submit revised schedules to sub-contractors of other work affected by the changes.

1.11 EXECUTION OF CONSTRUCTION CHANGE DIRECTIVES AND PROPOSAL REQUESTS

- A. Construction Manager shall, upon receipt of either document, proceed in a timely fashion to execute the documents and incorporate required items into the project when so indicated. Execute documents within two (2) weeks.
- B. Construction Manager shall inform all affected trades immediately upon receipt of above mentioned documents and receive written indication of either no change in Contract Price, or a fully itemized breakdown of costs to be incurred. Price breakdowns shall be documented as indicated.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 EXECUTION OF CONSTRUCTION CHANGE DIRECTIVES AND PROPOSAL REQUESTS

- A. Construction Manager shall, upon receipt of either document, proceed in a timely fashion to execute the documents and incorporate required items into the project when so indicated. Execute documents within two (2) weeks.
- B. Construction Manager shall inform all affected trades immediately upon receipt of above mentioned documents and receive written indication of either no change in Contract Price, or a fully itemized breakdown of costs to be incurred. Price breakdowns shall be documented as indicated.

END OF SECTION

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SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements necessary to prepare and process Applications for Payment.
 - 1. Schedule of values.
 - 2. Applications of payment.

1.3 DEFINITIONS

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

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Construction Manager's construction schedule.
- B. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - 1. Application for Payment forms with continuation sheets.
 - 2. Submittal schedule.
 - 3. Items required to be indicated as separate activities in Construction Manager's construction schedule.
- C. Submit the schedule of values to Architect at earliest possible date, but no later than ten days after the Notice to Proceed.
- D. Sub schedules of Values
 - 1. sub schedules: Provide sub schedules in a form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.
 - a. The unit values for the materials shall be broken down into:
 - b. Cost of the material delivered and unloaded at the site, with taxes paid.
 - c. Installation costs, including Construction Manager's overhead and profit.
 - 2. Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
 - 3. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 - 4. Unit Costs: Submit a Sub-schedule of unit cost and quantities for products on which progress payments will be requested for stored products.
 - a. The unit quantity for bulk materials shall include an allowance for normal waste.
 - b. The installed unit value, multiplied by the quantity listed, shall equal the cost of that item in the Schedule of Values.
- E. Format and Content
 - 1. 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 and one line for each product listed in the Summary section where applicable.

- a. When the project contains more than one facility or school, provide a full breakdown for each facility/school with the total of each facility/school added together to equal the base bids.
 - 1) Breakdown for each facility/school shall include labor, material, allowances, etc., as indicated below
 - b. Identification: Include the following Project identification on the schedule of values:
 - 1) Project name and location.
 - 2) Name of Architect.
 - 3) Architect's project number.
 - 4) Construction Manager's name and address.
 - 5) Date of submittal.
 - c. Arrange schedule of values consistent with format of AIA Document G703 or Construction Manager's form as approved by the Architect.
 - d. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - 1) Related Specification Section or Division.
 - 2) Description of the Work.
 - 3) Change Orders (numbers) that affect value.
 - 4) Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - (a) Labor.
 - (b) Materials.
 - (c) Equipment.
 - e. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - 1) Include separate line items under Construction Manager and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
 - f. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- F. 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 APPLICATION FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect 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. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- C. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect 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 are made.
 - 2. Include amounts for work completed following previous Application for Payment, whether 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.

- D. When Architect finds Application properly completed and correct, he will transmit Certificate for Payment to Owner. Incorrect or incomplete Certificates will not be reviewed until they have been corrected and resubmitted by the Contractor.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored on site 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 four (4) signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. 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 liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 - 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. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - 4. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.
- H. 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. Products list (preliminary if not final).
 - 5. Submittal schedule (preliminary if not final).
 - 6. List of Contractor's staff assignments.
 - 7. List of Contractor's principal consultants.
 - 8. Copies of building permits.
 - 9. Report of preconstruction conference.
 - 10. Certificates of insurance and insurance policies.
 - 11. Performance and payment bonds.
 - 12. Data needed to acquire Owner's insurance.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, apply 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.
3. Administrative actions and submittals that shall proceed or coincide with this application include:
 - a. Occupancy permits and similar approvals.
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Meter readings.
 - f. Start-up performance reports.
 - g. Change-over information, including door lock change over, related to Owner's occupancy, use, operation and maintenance.
 - h. Final cleaning.
 - i. Application for reduction of retainage and consent of surety.
 - j. Advice on shifting insurance coverage.
 - k. Final progress photographs.
 - l. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.
4. After the Certificate of Substantial Completion has been carried out by all parties concerned and before payment is made the Contractor shall submit the following documents:
 - a. Submit CONSENT OF SURETY TO FINAL REDUCTION IN OR PARTIAL RELEASE OF RETAINAGE, A.I.A. Document G707A, if not previously submitted.
- J. 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."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.
 10. Four (4) signed and notarized original copies and noted as Final Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 11. Final schedule of values.
 12. Power of attorney from Surety for release of final payment, signed and sealed and dated same as Consent of Surety.
 13. Certificate of Contract Completion:
 14. Page one completed by the Construction Manager, submit original plus three copies
 15. Page two completed by the Architect, submit original plus three copies
 16. Construction Manager's certification letter for the Guarantee of Construction for one year from substantial completion.

17. Copy of the approval and verification of transmittal by the Construction Manager to the Architect of manuals, shop drawings, as-builts (one set of sepias and two sets prints), brochures, warranties and list of subcontractors with telephone numbers and addresses.
18. Verification that the owner's personnel have been trained in the operation of their new equipment (HVAC, controls, fire alarm, etc.) with list of attendees at each training section.
19. Fully executed warranties in the name of the owner.
20. Architect's Certificate of Specification of Asbestos Containing Materials.
21. Construction Manager's Certificate of Asbestos Use.
22. Copy of Certificate of Occupancy.
- K. City of Clearwater Parks & Recreation Closeout Document Requirements:
 1. The City of Clearwater is to receive three binders and a minimum of three thumb drives including the following:
 - a. Job Photos – Thumb drives only
 - b. Survey DWG and PDF – Thumb drives only
 - c. As-Built drawings DWG and PDF – Thumb drives only
 - d. RFI and Change Orders – Thumb drives and Binders
 - e. Concrete, asphalt and any material testing – Thumb drives and Binders
 - f. Building Permit Placard – Thumb drives and Binders
 - g. SWFWMD permit information – Thumb drives and Binders
 - h. Certificate of Completion from Building Department – Thumb drives and Binders
 - i. Consent of Surety Bond if the project meets bond threshold – Thumb drives and Binders
 - j. Information Summary – Thumb drives and Binders
 - k. Contractor Letter of Completion – Thumb drives and Binders
 - l. List of Subcontractors – Thumb drives and Binders
 - m. Submittal Transmittal – Thumb drives and Binders
 - n. Closeout and Pay Apps – Thumb drives and Binders
 - o. Warranty information from Contractor – Thumb drives and Binders
 - p. Warranty information from Subcontractors – Thumb drives and Binders

1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Architect, it is not practical to remove and/or replace the Work at the time of application for payment, the Architect will direct one of the following remedies:
 1. The defective Work may remain, but the unit sum/price will be reduced (50%) or an amount at the discretion of the Architect.
 2. The defective Work will be partially repaired to the instructions of the Architect, and the unit sum/price will be adjusted to a new sum/price at the discretion of the Architect.
- C. The authority of the Architect to assess the defect and identify payment adjustment, is final.
- D. Reduction of the amount requested in the "application for payment" does not constitute Owner's acceptance of the Work or release the Contractor from his obligation to complete and/or correct the work before the next application for payment unless specifically agreed by the Architect and processed via a Change Order.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

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.

1.3 DEFINITIONS

- A. RFI: Request from Construction Manager 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 entities 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 fifteen (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. Post copies of list in temporary field office. Always keep list current.

1.5 PROJECT USE SITE PLAN

- A. The Construction Manager shall prepare a proposed project using the site plan.
- B. Construction Manager shall confine operations at the site to areas within the areas indicated and as approved on the use of the site plan, and as permitted by law, ordinances, and permits. Site shall not be unreasonably encumbered with materials, products, or construction equipment.
- C. The Construction Manager in reviewing his use of the site shall include access to proposed building for construction purposes, storage of materials and products, parking, where possible, for employees, temporary facilities including offices, storage, and workshop sheds or portable trailers, and unloading space.
- D. Where a temporary fence is to be provided, the Construction Manager shall show any additional area needed in the Construction Manager's use of the site beyond that which may be indicated on the Drawings. Where additional fencing is required, such fencing shall be included at no additional cost to the Owner.

1.6 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.
 - 1. Schedule construction operations in sequence are 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 Construction Manager'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. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.7 COORDINATION DRAWINGS

- A. Coordination Drawings: 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. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.

- e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on the drawings. Specifically note dimensions that appear to conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
- 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustic ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 - 2. Plenum Space: Indicate sub framing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on drawings. Indicate areas of conflict between light fixtures and other components.
 - 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 - 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 - 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 - 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts, and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 - 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 - 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 - 9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
 - 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
- 1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.

2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to drawings.
 - b. Contractor shall execute a waiver agreement in the form acceptable to Owner and Architect.

1.8 REQUESTS FOR INFORMATION (RFIS)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Construction Manager shall prepare and submit an RFI in the form specified.
 1. Architect will return RFIs submitted to Architect by other entities controlled by Construction Manager with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Construction Manager'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 Construction Manager.
 5. Name of Architect.
 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. Construction Manager's suggested resolution. If Construction Manager's suggested resolution impacts the Contract Time or the Contract Sum, Construction Manager shall state impact in the RFI.
 12. Construction Manager'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: AIA Document G716 or Construction Manager's form if acceptable and approved by the Architect.
 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 1. The following Construction Manager-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Construction Manager'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 Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time, or the Contract Sum may be eligible for Construction Manager to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Construction Manager believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within ten (10) days of receipt of the RFI response.
- E. RFI Tracking Log:
1. Prepare, maintain, and submit a tracking log of RFIs organized by a tracking number. Submit log with not less than the following:
 - a. Project name.
 - b. Name and address of Construction Manager.
 - c. Name and address of Architect.
 - d. Provide sequential tracking numbers including RFIs that were returned without action or withdrawn.
 - e. RFI description.
 - f. Date the RFI was submitted.
 - g. Date Architect's response was received.
 - h. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven (7) days if Construction Manager disagrees with response.
 - i. Provide identification of related Proposal Requests, Construction Manager Initiated Proposals and Construction Change Directives as appropriate.

1.9 TRACKING LOGS – COS, CCDS, PRS, AND ASIS

- A. Prepare, maintain, and submit individual tracking logs for Change Orders (COs), Construction Change Directives (CCDs), Proposal Requests (PRs) and Architects Supplemental Instructions (ASIs), organized by a tracking number. Submit log with not less than the following:
1. Project name.
 2. Name and address of Construction Manager.
 3. Name and address of Architect.
 4. Provide sequential tracking numbers.
 5. Item description.
 6. Date the item was submitted for review.
 7. Date Architect's response was received.
 8. Date the item was revised if applicable.
 9. The tracking number shall remain part of the log even if the item was deemed to be denied or un-needed.
 10. Provide documentation of the links and progressions of related CDs, CCDs, PRs and ASIs as appropriate.
 11. The PR log shall list all items which may become a CD at a later date but have not yet been approved.
 12. The CCA log shall also contain contingency logs for the Owner's and Construction Manager's which includes initial amounts, approved revisions, and remaining balances in each contingency.
 13. Update the logs and distribute the response to affected parties.

1.10 TRACKING LOG – CONTINGENCIES

- A. Prepare, maintain, and submit a tracking log with initial total project contingency amounts and amounts used through the construction process organized by a tracking number. The tracking log shall contain contingency logs for the separate Owner's and Construction Manager's

contingencies if applicable which includes initial amounts, approved revisions, and remaining balances in each contingency. Submit log with not less than the following:

1. Project name.
2. Name and address of Construction Manager.
3. Name and address of Architect.
4. Provide sequential tracking numbers.
5. Item description.
6. Date the item was submitted for review.
7. Date Architect's response and Owner's approval was received.
8. Date the item was revised if applicable.
9. The tracking number shall remain part of the log even if the item was deemed to be denied or un-needed.
10. Update the log and distribute the response to affected parties.

1.11 TRACKING LOG – VALUE ENGINEERING

- A. Prepare, maintain, and submit a tracking log for value engineering items organized by a tracking number. Submit log with not less than the following:
 1. Project name.
 2. Name and address of Construction Manager.
 3. Name and address of Architect.
 4. Provide sequential tracking numbers.
 5. Item description.
 6. Date the item was submitted for review.
 7. Date Architect's response and Owner's approval was received.
 8. Date the item was revised if applicable.
 9. The tracking number shall remain part of the log even if the item was deemed to be denied.
 10. Update the logs and distribute the response to affected parties.

1.12 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three (3) days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 10 days after Notice to proceed.
 1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Contractor, Architect, and their consultants; Construction Manager and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at 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 Architectural Supplemental Instruction.
- i. Procedures for testing and inspecting.
- j. Procedures for processing Applications for Payment.
- k. Distribution of the Contract Documents.
- l. Submittal procedures.
- m. Preparation of recorded documents.
- n. Use of the premises and existing building.
- o. Work restrictions.
- p. Working hours.
- q. Responsibility for temporary facilities and controls.
- r. Procedures for moisture and mold control.
- s. Procedures for disruptions and shutdowns.
- t. Construction waste management and recycling.
- u. Parking availability.
- v. Office, work, and storage areas.
- w. Equipment, deliveries and priorities.
- x. First aid.
- y. Security.
- z. Progress cleaning.
- aa. Sustainable design requirements
- bb. Owner's occupancy requirements.
- 4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Sustainable Design Coordination Conference: Schedule and conduct a sustainable design coordination conference before starting construction, at a time convenient to Owner, Construction Manager, and Architect.
 - 1. Attendees: Authorized representatives of Owner, Commissioning Authority, Construction Manager, Architect, and their consultants; Construction Manager and its superintendent and sustainable design coordinator; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect meeting sustainable design requirements, including the following:
 - a. Sustainable design Project checklist.
 - b. General requirements for sustainable design-related procurement and documentation.
 - c. Project close-out requirements and sustainable design certification procedures.
 - d. Role of sustainable design coordinator.
 - e. Construction waste management.
 - f. Construction operations and sustainable design requirements and restrictions.
 - 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- D. Preinstallation Conferences: Conduct and schedule a preinstallation conference at Project site prior to thirty (30) days before each type of construction activity indicated.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Contractor of scheduled meeting dates.

2. List of Required Preinstallation Meetings: See Specification Section 01 33 00.1 Submittal Register.
3. Agenda: Review of the progress of other construction activities and preparations for the activity under consideration, including requirements for the following:
 - a. Contract Documents
 - 1) Drawing Revisions.
 - 2) Related RFIs.
 - 3) Related Change Orders.
 - 4) Value Engineering.
 - 5) Options.
 - b. General Conditions
 - 1) Submittals.
 - 2) Manufacturer's written instructions.
 - 3) Testing and inspecting requirements.
 - 4) Coordination with other work.
 - 5) Weather limitations.
 - 6) Deliveries.
 - 7) Time schedules.
 - 8) Required performance results.
 - 9) Compatibility requirements.
 - 10) Regulations of authorities having jurisdiction.
 - c. Products
 - 1) Primary items indicated in specifications.
 - 2) Accessory items listing in specifications.
 - d. Execution
 - 1) Protection of adjacent work.
 - 2) Protection of construction and personnel.
 - 3) Possible conflicts.
 - 4) Temporary facilities and controls.
 - 5) Space and access limitations.
 - 6) Review of mockups
 - 7) Installation procedures.
 - 8) Acceptability of substrates.
 - 9) Installation of primary items indicated in specifications.
 - 10) Installation of accessory items listing in specifications.
4. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
5. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
6. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- E. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 60 days prior to the scheduled date of Substantial Completion.
 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Contractor, and Architect, and their consultants; Construction Manager and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of recorded documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Construction Manager's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 - j. Coordination of separate contracts.
 - k. Owner's partial occupancy requirements.
 - l. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
 - n. Requirements for completing sustainable design documentation.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- F. Progress Meetings: Conduct progress meetings at weekly, biweekly, monthly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Contractor and Architect, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. 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. Construction Manager'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 Construction Manager'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.
 - 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) Status of sustainable design documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of proposal requests.

- 16) Pending changes.
- 17) Status of Change Orders.
- 18) Pending claims and disputes.
- 19) Documentation of information for payment requests.
- 20) Tracking logs.
- c. Schedule Updating: Revise Construction Manager'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 APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Construction Manager's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Daily construction reports.
 - 5. Bi-Weekly Construction reports.
 - 6. Field condition reports.
 - 7. Special reports.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Activity:
 - a. Critical Activity.
 - b. Predecessor Activity.
 - c. Successor Activity.
 - 2. Cost Loading.
 - 3. Critical Path.
 - 4. Critical Path Method (CPM).
 - 5. Float.
 - 6. Look-Ahead Schedule.
 - 7. Milestones.
 - 8. Recovery Schedule.
 - 9. Resource Loading.

1.4 ACTION SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article and in-house scheduling personnel to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names, and addresses of architects and owners, and other information specified.
- B. Submittals Schedule: Submit three (3) copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Submittal number.
 - 3. Resubmittal number
 - 4. Specification Section number and title.
 - 5. Submittal category (action or informational).
 - 6. Name of subcontractor.
 - 7. Description of the Work covered.
 - 8. Scheduled date for Architect's final release or approval.
- C. Preliminary Construction Schedule: Submit three (3) printed copies; one, a single sheet of reproducible media, and two prints.

- D. Preliminary Network Diagram: Submit three (3) printed copies; one, a single sheet of reproducible media, and two prints; large enough to show entire network for entire construction period.
- E. Contractor's Construction Schedule: Submit three (3) printed copies of initial schedule, one a reproducible print and two blue- or black-line prints, large enough to show entire schedule for entire construction period.
- F. CPM Reports: Concurrent with CPM schedule, submit three (3) printed copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- G. Daily Construction Reports: Submit two (2) copies at weekly intervals.
- H. Field Condition Reports: Submit two (2) copies at time of discovery of differing conditions.
- I. Special Reports: Submit two (2) copies at time of unusual event.

1.5 QUALITY ASSURANCE

- A. Pre-Scheduling Conference: Conduct conference at site. Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, Work stages, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner furnished products.
 - 5. Review schedule for Work of Owner's separate contracts, if any.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and re-submittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those 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.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Time is of the essence to the Owner. Commence Work immediately upon issuance of the Notice to Proceed. There is a critical need for the Work to be substantially complete within the time frame identified in the Agreement.
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion and date of final completion.
 1. Contract completion date shall not be changed by submission of schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each separate area or story as a separate numbered activity for each main element of the Work. Comply with the following:
 1. Activity Duration: Define activities in terms of number of days anticipated.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and re-submittal times indicated in Section 01 33 00 - Submittal Procedures in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include number of days anticipated for startup and testing.
 5. Substantial Completion: Indicate completion of all conditions as in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include a maximum of 30 days for completion of punch list items and final completion.
 7. Inspections required by Authorities Having Jurisdiction (AHJ).
- D. Constraints: Include constraints and Work restrictions indicated in the Contract Documents and show how the sequence of the Work is affected.
 1. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 2. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 - i. Rain days are to be included in project schedule; refer to Section 01 10 00 - Summary for additional weather information.
 3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

- a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
- 4. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Permanent space enclosure.
 - c. Completion of mechanical installation.
 - d. Completion of electrical installation.
 - e. Substantial Completion.
 - f. Final Completion.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, interim milestones indicated below, Substantial Completion, and Final Completion.
 - 1. Pre-construction Conference.
- F. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
 - 1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.
- G. Six (6) week, lookahead schedule: Prepare schedule indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
 - 6. Inspections by Authorities Having Jurisdiction (AHJ).
 - 7. Trade pre-installation conference.
- H. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time impact analysis to demonstrate the effect of the proposed change on the overall project schedule.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven (7) days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first sixty (60) days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Preliminary Network Diagram: Submit diagram within ten (10) days of date established for Notice of Award. Outline significant construction activities for the first sixty (60) days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than thirty (30) days after date established for the Notice of Award.
 - 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 4. Use "one workday" as the unit of time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization
 - c. Utility interruptions
 - d. Purchase of materials.
 - e. Delivery.
 - f. Fabrication.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by the Construction manager's activities.
 - i. Punch list and final completions
 - j. Tests and inspections
 - k. Startup and placement into final use and operation.
 - 2. Processing: Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 - 3. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Sub-networks on separate sheets are permissible for activities clearly off the critical path.
- E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
 - 1. Contractor or subcontractor and the Work or activity.
 - 2. Description of activity.
 - 3. Principal events of activity.
 - 4. Immediately preceding and succeeding activities.
 - 5. Early and late start dates.
 - 6. Early and late finish dates.
 - 7. Activity duration in workdays.
 - 8. Total float or slack time.
 - 9. Average size of workforce.
 - 10. Dollar value of activity (coordinated with the Schedule of Values).

- F. Schedule Updating: Concurrent with revising schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.5 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording information concerning events at the site and submit it each month to Architect:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Rental equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events (see special reports).
- B. Monthly Construction Reports: Prepare a monthly construction report recording the following information concerning events at the Project Site.
1. Stoppages, delays, shortages, and losses.
 2. Meter readings and similar recordings.
 3. Emergency procedures.
 4. Orders and requests of Authorities Having Jurisdiction (AHJ).
 5. Change Orders received and implemented.
 6. Construction Change Directives received and implemented.
 7. Services connected and disconnected.
 8. Equipment or system tests and startups.
 9. Partial completions and occupancies.
 10. Substantial Completions authorized.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- D. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.
- E. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

- A. Submit special reports directly to Owner within 24 hours of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, and response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner and Architect in advance when these events are known or predictable.

PART 3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule with a pencil copy of pay application.
 - 1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 - 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one (1) day before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- C. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and interested parties identified by Contractor with a need to know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

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SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.

1.3 INFORMATION SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph or video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

1.4 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.5 FORMATS AND MEDIA

- A. Many cameras can provide GPS location data using internal or external GPS location sensors. This data may be especially useful on larger sites to help determine location.
- B. Metadata: Record accurate date and time from camera.

1.6 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
 - 1. Take 4 photographs to show existing conditions adjacent to property before starting the Work.
- C. Periodic Construction Photographs: Take 4 aerial photographs monthly coinciding with the cutoff date associated with each Application for Payment. Four views (north, south, east, and west) to show status of construction and progress since last photographs were taken.
- D. Final Completion Construction Photographs: Take 4 photographs after date of Substantial Completion for submission as Project Record Documents.
- E. Additional Photographs: Owner may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.
 - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Substantial Completion of a major phase or component of the Work.

- d. Extra record photographs at time of final acceptance.
- e. Owner's request for special publicity photographs.

1.7 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Electronic Images and Photographs: Submit current electronic images and photographic prints with each current payment requisition.
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels minimum.
 - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of each image, accompanied by key plan file.
 - 3. Monthly Photograph Format: 8-by-10-inch smooth-surface matte prints on single-weight, commercial-grade photographic paper; enclosed back to back in clear plastic sleeves that are punched for standard three-ring binder.
 - 4. Identification: Provide the following information with each electronic image description in file metadata tag and on the back of each photographic print:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

PART 3 EXECUTION

3.1 PRECONSTRUCTION CONSTRUCTION PHOTOGRAPHS

- A. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 10 photographs to show existing conditions where work is to be performed and adjacent conditions before starting the Work.
 - 3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

3.2 PERIODIC CONSTRUCTION PHOTOGRAPHS

- A. Take 20 photographs monthly, within one week of the cutoff date associated with each Application for Payment. Provide a minimum of four (4) predetermined vantage points as coordinated with Architect to show status of construction and progress since last photographs were taken.

3.3 FINAL COMPLETION CONSTRUCTION PHOTOGRAPHS:

- A. Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
- B. Aerial Photograph: Take four (4) aerial photographs from different locations and views with one to be selected by the Owner for framing.

3.4 CONSTRUCTION VIDEO RECORDINGS

- A. Confirm date and time at beginning and end of recording.

- B. Begin each video recording with name of Project, Construction Manager's name, videographer's name, and project location.
- C. Preconstruction Video Recording: Before starting construction, record video recording of Project site, surrounding properties and existing building conditions from different vantage points, as directed by Architect. Minimum recording time shall be 10 minutes.
 - 1. Flag construction limits before recording construction video recordings.
 - 2. Show existing conditions before starting the Work.

END OF SECTION

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SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Section Includes: Requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Partial submittals without prior approval or incomplete submittals will be returned without review.
 - 1. Prior approval from the Architect shall be obtained for partial submittals prepared for a specific product submittal.
- C. Submittals will be deemed complete if all items required in the submittal sections of the subject specification section have been assembled into a single submittal package.
- D. Submittals will not be accepted for review until the Schedule of Submittals, per article 1.4 has been submitted to the Architect.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Submittals.
 - 2. File Transfer Protocol (FTP).
 - 3. Portable Document Format (PDF).

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by date 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 Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, schedule of values, and the Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with 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. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals concurrently with each construction schedule update.
 - 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 Architect's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.

- i. Scheduled dates for installation.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. The Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by the Architect for the Contractor's use in preparing submittals.
 - 1. Upon request, the Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
 - a. The Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Digital Drawing Software Program: Contract Drawings are available in Revit.
 - c. Contractor shall execute a data licensing agreement in the form of AIA Document AIA C106, Digital Data Licensing Agreement.
 - d. The following digital data files will be furnished for each appropriate discipline:
 - 1) Floor plans.
 - 2) Reflected ceiling plans.
 - e. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
 - 1) File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
- 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 submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 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. The Architect 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. Time for review shall commence on the Architect'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 ten (10) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process in same manner as initial submittal.
 - 3. Resubmittal Review: Allow ten (10) days for review of each resubmittal.
 - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 - 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to the Architect and to the Architect's consultants, allow ten (10) days for review of each submittal. Submittal will be returned to the Architect before being returned to the Contractor.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.

2. Name file with submittal number or other unique identifier, including revision identifier:
 - a. File name shall use Project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., SLOHSM-06 10 00.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., SLOHSM-06 10 00.01.A).
3. Provide means for insertion to permanently record the Contractor's review and approval markings and action taken by the Architect.
4. Transmittal Form for Electronic Submittals: Use software generated form from electronic project management software acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Name and address of the Architect.
 - c. Name of the Construction Manager Spec Term.
 - d. Name of the Contractor.
 - e. Name of firm or entity that prepared submittal.
 - f. Names of subcontractor, manufacturer, and supplier.
 - g. Category and type of submittal.
 - h. Submittal purpose and description.
 - i. Specification Section number and title.
 - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Related physical samples submitted directly.
 - n. Indication of full or partial submittal.
 - o. Transmittal number, numbered consecutively.
 - p. Submittal and transmittal distribution record.
 - q. Other necessary identification.
 - r. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by the Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on the Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect 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 Architect's action stamp.
- 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 Architect's action stamp.

PART 2 PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. 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. The Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Certificates and Certifications Submittals: Provide 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.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- 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:
 - 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.
 - 6. Submit Product Data in PDF electronic file.
- 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. Relationships and attachment to adjoining construction are 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 sheet size indicated in specification section.
 - 3. Submit Shop Drawings in PDF electronic file.

4. BIM File Incorporation: Develop and incorporate Shop Drawing files into Building Information Model established for Project.
 - a. Prepare Shop Drawings in same digital data software program, version, and operating system as the original Drawings.
 - b. Refer to Section 01 31 00 - Project Management and Coordination for requirements for coordination drawings.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of 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:
 - 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. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. 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 undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of the Contractor.
 5. Samples: Submit full size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Key Items Review Time: Submit samples to the Architect at least 30 days prior to date Contractor needs reviewed submittals returned. The Contractor shall be prepared to submit color samples on any key items in Division 09 finishes within 30 days of the award of Contract. Once samples of all key items are received, the Architect will finalize color selections.
 - b. Number of Samples: Submit three sets of Samples. The Architect will retain two Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- 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 the 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 PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 01 31 00 - Project Management and Coordination.
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 00 - Construction Progress Documentation.
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 29 00 - Payment Procedures.
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 40 00 - Quality Requirements.
- J. 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 architects and owners, and other information specified.
- K. 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.
- L. 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.
- M. 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.
- N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- P. 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.
- Q. 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.
- R. 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.

- S. 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.
- T. 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.
- U. 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.
- V. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

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 it to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in specification section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with uniform approvals. 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 ARCHITECT'S ACTION

- A. Submittals: The Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. The Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
 - 1. Reviewed: Indicates the Architect has reviewed the submittal and takes no exceptions as submitted.
 - 2. Rejected: Work covered by the submittal is not complete or does not conform the Contract Documents and cannot proceed. A new submittal needs to be made according to the notations and resubmitted for approval prior to fabrication or construction.
 - 3. Revise and Resubmit: Modifications are required prior to approval. Work cannot proceed until the submittal is revised and resubmitted for further review.
 - 4. Furnish as Corrected: Submittal is approved, provided modifications noted are properly incorporated. Resubmission is not usually necessary.
- B. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from the Architect.
- C. Incomplete submittals are not permitted, will be considered non-responsive, and will be returned for resubmittal without review.
- D. Submittals not required by the Contract Documents will be returned by the Architect without action.

END OF SECTION

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DIGITAL DATA RELEASE FORM

Project: Carpenter Field Training Complex
2026 Repairs
Clearwater, FL
26000.10

Project Number:

Architect of Record: Beam Professionals
5201 W. Kennedy Blvd.
Tampa, FL 33609

Date: MM/DD/YYYY

Contractor: {Insert Contractor Name}
{Insert Contractor's Address}
{Insert Contractor's Address}

Digital Data refers to electronic representation of information, drawings, and designs created and stored in digital form including Building Information Modeling (BIM) files, CAD files, and other formats that are digital representations of the project. BEAM will provide the following {Revit / CAD} dated {MM/DD/YYYY} for the convenience of the Contractor after purchase of the building.

Digital Data were prepared on the following:

Computer Hardware/Operating System – {Microsoft Windows 10}

Software Application and Version – {type here}

Contractor shall pay BEAM a service fee of \$00.00.

TERMS & CONDITIONS

1. BEAM makes no representation as to the compatibility of Digital Data with any hardware or software.
2. Since the information set forth on the Digital Data can be modified unintentionally or otherwise, BEAM reserves the right to remove all indicia of its ownership and/or involvement from each electronic display.
3. All information on the digital data is considered Instruments of Service of BEAM and shall not be used for other projects, for additions to this project, or completion of this project by others. The Digital Data shall remain the property of BEAM and in no case shall the transfer of these files be considered a sale.
4. BEAM makes no representation regarding the accuracy, completeness, or permanence of the Digital Data, or for their merchantability or fitness for a particular purpose. Addenda information or revisions made after the date indicated on the Digital Data may not have been incorporated. In the event of a conflict between BEAM's sealed contract drawings and the Digital Data, the sealed contract drawings shall govern. It is the Contractor's responsibility to determine if any conflicts exist. The Digital Data shall not be considered to be Contract Documents as defined by the General Conditions of the Contract for Construction.
5. The use of Digital Data prepared by BEAM shall not in any way obviate the Contractor's responsibility for the proper checking and coordination of dimensions, details, and quantities of materials as required to facilitate complete and accurate fabrication and erection.
6. The Contractor shall, to the fullest extent permitted by law, indemnify, defend, and hold harmless BEAM and its consultants from all claims, damages, losses, expenses, penalties, and liabilities of any kind, including attorney's fees, arising out of or resulting from the use of the Digital Data by the Contractor, or by third party recipients of the Digital Data from the Contractor.
7. BEAM believes that no licensing or copyright fees are due to others on account of the transfer of the Digital Data, but to the extent any are, the Contractor will pay the appropriate fees and hold BEAM harmless from such claims.
8. Payment of the service fee is due upon receipt of the Digital Data.

Name & Title (Architect)

Name & Title (Contractor)

Signature

Date

Signature

Date

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Construction Manager 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 Construction Manager's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Construction Manager to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, Construction Manager or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.
- B. Submittals.
- C. Quality assurance.
- D. References and standards.
- E. Testing and inspection agencies and services.
- F. Control of installation.
- G. Mock-ups.
- H. Tolerances.
- I. Manufacturers' field services.
- J. Defect Assessment.
- K. Administrative and procedural requirements for quality assurance and quality control.
- L. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Construction Manager 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 Construction Manager's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Construction Manager to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.

1.3 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).

- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2025a.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025a.
- F. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.
- G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2021.

1.4 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Contractor's Quality Control Plan.
 - 2. Contractor's Professional Design Services.
 - a. Design Services Types Required:
 - 1) Construction-Related.
 - 2) Design-Related.
 - 3. Design Data.
 - 4. Experienced.
 - 5. Source Quality-Control Testing.
 - 6. Field Quality-Control Testing.
 - 7. Installer/Applicator/Erector.
 - 8. Testing Agency.
 - 9. Pre-construction Testing.
 - 10. Product Testing.
 - 11. Quality Assurance Services.
 - 12. Quality-Control Services.
 - 13. Mockups.
 - a. Integrated Exterior Mockups.

1.5 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 Architect 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 Architect for a decision before proceeding.

1.6 ACTION SUBMITTALS

- A. Shop Drawings:
 - 1. For mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 2. Provide plans, sections, elevations, and details indicating materials and size.
 - 3. Indicate manufacturer and model number of individual components.
 - 4. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

- A. Construction Manager's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Construction Manager's quality-control personnel.
- C. Construction Manager's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - 1. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- D. 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.
- E. See Section 01 30 00.0 - Administrative Requirements, for submittal procedures.

1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Description of the Work and test and inspection method.
 - a. Identification of product and specifications section.
 - 6. Location in the Project.
 - 7. Complete test or inspection data.
 - 8. Date of test/inspection.
 - 9. Results of test/inspection.
 - 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.
 - 14. Compliance with Contract Documents.
 - a. When requested by Architect, provide interpretation of results.
 - 15. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections 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 comply 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 payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.9 CONSTRUCTION MANAGER'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within ten (10) days of Notice to Proceed, and not less than five (5) days prior to preconstruction conference. Submit in format is acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Construction Manager's quality-assurance and quality-control responsibilities. Coordinate with Construction Manager's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.
 - 2. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements.

- F. Monitoring and Documentation: Maintain testing and inspection reports including approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.10 QUALITY ASSURANCE

- A. Provide where required by Specifications.
- B. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- C. 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.
- D. 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.
- E. 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.
- F. 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.
- G. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- H. Testing Agency Qualifications: 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.
- I. 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.
- J. 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.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect seven (7) working days in advance of dates and times when mockups will be constructed.
 - 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven (7) days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed unless otherwise indicated.
- L. Integrated Exterior Mockups: Construct integrated exterior mockup in accordance with approved shop drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.
- M. Testing Agency Qualifications:
 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
- N. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- O. Contractor's Quality Control (CQC) Plan:
 1. Prior to start of work, submit a comprehensive plan describing how contract deliverables will be produced. Tailor CQC plan to specific requirements of the project. Include the following information:
 - a. Management Structure: Identify personnel responsible for quality. Include a chart showing lines of authority.
 - 1) Include qualifications (in resume form), duties, responsibilities of each person assigned to CQC function.
 - b. Management Approach: Define, describe, and include in the plan specific methodologies used in executing the work.
 - 1) Management and control of documents and records relating to quality.
 - 2) Communications.
 - 3) Coordination procedures.
 - 4) Resource management.
 - 5) Process control.
 - 6) Inspection and testing procedures and scheduling.
 - 7) Control of noncomplying work.
 - 8) Tracking deficiencies from identification, through acceptable corrective action, and verification.
 - 9) Control of testing and measuring equipment.
 - 10) Project materials certification.
 - 11) Managerial continuity and flexibility.
 - c. Owner will not make separate payment for providing and maintaining a Quality Control Plan. Include associated costs in Bid price.
 - d. Acceptance of the plan is required prior to start of construction activities not including mobilization work. Owner's acceptance of the plan will be conditional and predicated on continuing satisfactory adherence to the plan. Owner reserves the right to require Contractor to make changes to the plan and operations, including removal of personnel, as necessary, to obtain specified quality of work results.
- P. Quality-Control Personnel Qualifications. Engage a person with requisite training and experience to implement and manage quality assurance (QA) and quality control (QC) for the project.

1.11 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. 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 Section 013300 "Administration Requirements."
- C. 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.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 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.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notifying agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to 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. Assisting agency in obtaining samples.
 - 4. Facilities for storage and field curing 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.
 - 8. Provide a rain gauge on site acceptable to the testing agency and log daily rainfall. Copies of log shall be made to testing agency and local authorities upon demand.
- F. 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.

1.12 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.13 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. As indicated in individual specification sections, Owner shall employ and pay for services of an independent testing agency to perform specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- C. Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.

- D. Notify Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.
- E. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- G. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow-up review of each mock-up.
 - 2. Make corrections as necessary until Architect's approval is issued.
- H. Architect will use accepted mock-ups as a comparison standard for the remaining Work.
- I. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 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 Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.5 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 - 6. Perform additional tests and inspections required by Architect.
 - 7. Attend preconstruction meetings and progress meetings.
 - 8. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.6 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.7 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.
- B. Protect construction exposed by or for quality-control service activities.
- C. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

SECTION 01 42 16 - DEFINITIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions relate to terms used in individual specification sections.

1.3 CONTRACTING DEFINITIONS

- A. General: Basic Contract definitions included in the General Conditions:
 - 1. Change Order.
 - 2. Construction Change Directive.
 - 3. Contract Documents.
 - 4. Contract.
 - 5. Drawings.
 - 6. Instruments of Service.
 - 7. Initial Decision Maker.
 - 8. Project.
 - 9. Specifications.
 - 10. Subcontractor.
 - 11. Substantial Completion.
 - 12. Work.
- B. Miscellaneous Other Definitions:
 - 1. Addenda, Addendum.
 - 2. Alternate Proposal(s).
 - 3. Approved, Approved Equivalent, Approved Equal, or Equal.
 - 4. Base Proposal.
 - 5. Contract Time.
 - 6. Date of Agreement.
 - 7. Date of Commencement of the Work.
 - 8. Date of Final Completion.
 - 9. Day.
 - 10. Notice to Proceed.
 - 11. Provide.
 - 12. Punch List.
 - 13. Unit Prices.

1.4 DEFINITIONS

- A. **AAADM:** American Association of Automatic Door Manufacturers.

Absorptive Materials: Gypsum board, acoustic ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.

Accessible: In accordance with the accessibility standard.

Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.

Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

Predecessor Activity: An activity that precedes another activity in the network.

Successor Activity: An activity that follows another activity in the network.

ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

Adaptable Laboratory Furniture System: Modular furniture assemblies consisting of individual components, including support structures; cabinets and storage units; worksurfaces; shelving; accessories.

Adequate Ventilation: Ventilation, including air circulation and air changes, required for curing materials, dissipate humidity, and prevent accumulation of dust fumes, vapors, or gases.

Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

AESS: Refer to Architecturally Exposed Structural Steel.

Alteration Work: Remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.

Alternate: An amount proposed by bidders and stated on the Bid Form for certain Work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

Alternates described are part of the Work when enumerated in the Agreement.

The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

Anchorage Connector: A component or subsystem that functions as an interface between the anchorage and a fall protection, work positioning, rope access, or rescue system for the purpose of coupling the system to the anchorage.

Architectural Woodwork: Custom millwork that includes wood furring, blocking, shims, and hanging strips for installing woodwork items, unless concealed within other construction before woodwork installation.

Architecturally Exposed Structural Steel (AESS): Structural steel complying with designated AESS category as defined in AISC 303.

Category 1 AESS: AESS that is within 96 inches vertically and 36 inches horizontally of a walking surface and that is visible to a person standing on that walking surface or is designated as "Category 1 architecturally exposed structural steel" or "AESS-1" in the Contract Documents.

Category 2 AESS: AESS that is within 20 feet vertically and horizontally of a walking surface and that is visible to a person standing on that walking surface or is designated as "Category 2 architecturally exposed structural steel" or "AESS-2" in the Contract Documents.

Category 3 AESS: AESS that is not defined as Category 1 or Category 2 or that is designated as "Category 3 architecturally exposed structural steel" or "AESS-3" in the Contract Documents or that is indicated to receive intumescent mastic fireproofing.

Approved: The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

- B. **Basis of Design (BOD) [Document]:** A document that records the concepts, calculations, decisions, and product selections used to meet the Owner's Project Requirements and to satisfy applicable regulatory requirements, standards and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

Basis of Design (BoD) [Product]: A product selected by the designer to define the characteristics around which the project is designed.

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 other manufacturers named in the specification.

Bio-Based Material: Commercial or industrial products (other than food or feed) that are composed in whole, or in significant part, of biological products, renewable agricultural materials (including plant, animal, and marine materials), or forestry materials. For the purposes of LEED, this excludes leather and other animal hides.

Boards or Strips: Lumber of less than [2] inches ([50.8] mm) nominal size in least dimension.

- C. **Carbon Fiber Reinforced Polymer:** Composite material comprising a polymer matrix reinforced with carbon fiber cloth, mat, or strands.

Casework: Products including, but not limited to framework, doors, drawers, hardware, and finishes which constitute cabinets and cases.

Concealed: Sleepers, web frames, dust panels and other surfaces not generally visible after installation and cabinets less than 30 inches (762 mm) above finished floor.

Exposed: Portions of casework visible when drawers and cabinet doors are closed, including end panels, bottoms of cases more than 42 inches (1.066 m) above finished floor, tops of cases less than 72 inches (1.82 m) above finished floor and all members visible in open cases or behind glass doors.

Semi-Exposed: Portions of casework and surfaces behind solid doors, tops of cases more than 72 inches (1.828 m) above finished floor and bottoms of cabinets more than 30 inches (0.762 m) but less than 42 inches (1.066 m) above finished floor.

Cast Stone: Refined architectural concrete building unit manufactured to simulate natural cut stone, used in unit masonry applications.

Dry Cast Concrete Products: Manufactured from zero slump concrete:

Vibrant Dry Tamp (VDT) casting method: Vibratory ramming of earth moist, zero slump concrete against a rigid mold until densely compacted.

Wet Cast Concrete Products: Manufactured from measurable slump concrete:

Wet casting method: Manufactured from measurable slump concrete and vibrated into a mold until densely consolidated.

Certified Wood: Wood based materials and products certified in accordance with Forest Stewardship Council's (FSC) Principles and Criteria for wood building components.

Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001. Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body. A chain-of- custody certification is not required by distributors of a product that is individually labeled with the Forest Stewardship Council logo and manufacturer's chain of custody number. Chain of Custody certification requirements are determined by Forest Stewardship Council Chain of Custody Standard 40-004 v2-1.

Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

Commissioning (Cx): A systematic process confirming that building systems have been installed, properly started, and consistently operated in strict accordance with the Project Documents, that all systems are complete and functioning in accordance with the Contract Documents at Substantial Completion, and the Contractor has provided the Owner adequate system documentation and training.

Commissioning Authority (CxA): Party having a contractual agreement with the Owner to provide third party commissioning services as defined herein under Commissioning Authority's Role and Responsibilities. Commissioning Authority may represent the Owner and is authorized to act on behalf of the Owner. The Commissioning Authority does not have authority to alter design or installation procedures without the written approval of the Owner or the design team.

Comparable Product: Product demonstrated and approved through submittal process, or were indicated as a produce substitution, 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.

Composite Materials: Materials made from two or more constituent materials with significantly different physical or chemical properties that, when combined, produce materials with characteristics different from the individual components.

Composite Wood (also referred to as "Engineered Wood"): Examples of Composite Wood are particleboard; flake-board; plywood; fiberboard; MDF; agrifiber products; millwork substrates; flooring substrates; equipment backboards; door cores.

Concealed Portions of Casework: Include panels and other surfaces not usually visible after installation.

Consolidate: To strengthen loose or deteriorated materials in place.

Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

Containment Areas: As determined by Owner's Representative and as shown on drawings. Includes area of construction, adjacent staging and storage areas, for contractors, supplies and waste: includes ceiling spaces above and adjacent to construction, if shown.

Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.

Contaminant Producing Activities: Activities that include but are not limited to:

- Demolition and removal of walls, floors, ceilings, and other finish materials.
- Demolition of plumbing, mechanical and electrical systems and equipment.
- Finish operations such as sanding, painting, and application of special surface coatings.
- All routine construction activity which can generate dust.
- Sitework operations.

Contract Documents: General Conditions, Drawings, Specifications, Addenda, and other documents developed by the A/E Team and approved by the Owner that constitute the contractual obligations of the project scope.

Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.

Design Services Types Required:

Construction-Related: Services Contractor needs to provide to carry out the Contractor's sole responsibilities for construction means, methods, techniques, sequences, and procedures.

Design-Related: Design services explicitly required to be performed by another design professional due to highly technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.

Control Point and Sensor Calibration Verification: Process of verifying the point integrity and/or sensor calibration from the physical point of monitoring (sensor, contact, actuator, etc.) to the digital point location at the Operator's interface within the respective control system (Building Automation, Lighting Controls, Power Status and Monitoring, etc.).

Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.

Cradle-to-Gate Assessment: Analysis of a product's partial life cycle from extraction (cradle) to gate (factory completion prior to distribution).

Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

Critical Path Method (CPM): A method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

Custom Hollow Metal Work: Hollow metal work fabricated according to ANSI/NAAMM-HMMA 861.

Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

- D. **Deconstruct:** To remove by disassembling or detaching an item from a surface, using methods and equipment to successfully prevent damage to the item and surfaces, and dispose of items unless indicated as salvaged or for reinstallation.

Deferred Testing: Functional Performance or Integrated System Tests performed after Substantial Completion due to partial occupancy, partial equipment acceptance, seasonal requirements, design, or other site conditions that prohibit the test from being performed prior to Substantial Completion.

Deficiency: Condition of a component, piece of equipment, or system that is not in compliance with the Project Documents.

Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

Design Reference Sample: A sample that represents the Architect's pre-bid selection of Work to be matched; it may be existing Work or Work specially produced for the Project.

Dimension Lumber: Lumber of [2] inches ([50.8] mm) nominal or greater size but less than [5] inches ([127] mm) nominal size in least dimension.

Directed: A command or instruction by Architect. Other terms including "requested," "authorized", "selected", "required", and "permitted" have the same meaning as "directed."

Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged.

Disposal: Removal of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

Double-Egress (Doors): A pair of doors that simultaneously swing with the two doors moving in opposite directions with no mullion between them.

Double-Swing (Doors): A pair of doors that swing with the two doors moving in opposite directions with a mullion between them; each door functioning as a single-swing door.

Drainable Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

E. **Engineered Wood:** Refer to Composite Wood.

Equipment: A product with operational parts, regardless of whether motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.

Existing to Remain: Leave existing items that are not scheduled for salvage or reuse, as- is; Do not remove.

Experienced: When used with an entity or individual, experienced means having successfully completed a minimum of five years documented experience with projects similar in nature, size, and extent; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction. **Exposed Portions of Casework:** Bottoms of casework more than two feet above floor shall be considered as exposed. Visible members in open cases also should be considered as exposed portions.

Exposed Portions of Casework: Bottoms of casework more than two feet above floor shall be considered as exposed. Visible members in open cases also should be considered as exposed portions.

F. **Face Size:** Actual tile size, excluding spacer lugs.

Fall Arrest System: A system designed to stop you in the process of a fall, typically including an anchor point or series of anchor points, a safety lanyard or self-retracting lifeline, and a harness.

Fall Protection System: System can be either a fall arrest or a fall restraint system.

Fall Restraint System: A system designed to keep you from getting close enough to the fall hazard to fall, typically including an anchor point or series of anchor points, a safety lanyard or self-retracting lifeline, and a harness.

Fiber-Reinforced Polymer (FRP): Material that consists of polymer resin-based matrix with fibers of either glass, carbon or aramid, and hybrid combinations of these fiber types.

Field Quality Control Testing: Tests and inspections performed onsite for work scheduled to be performed and upon completed Work.

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.

Float: The measure of leeway in starting and completing an activity.

Float time: Not for the exclusive use or benefit of either Owner or Contractor, but a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

Free float: The amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

Total float: The measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

Formaldehyde: Naturally occurring VOC, found in small amounts in animals and plants; carcinogenic and irritant to humans when present in high concentrations. (Levels above 0.1 ppm).

Urea Formaldehyde: Combination of urea and formaldehyde, used in glue, and readily decomposed at room temperature.

Phenol formaldehyde: Type of formaldehyde that off gases only at high temperature; used for exterior products and suitable for interior applications.

Forest Stewardship Council (FSC) Certified Content: Permanently installed wood content that has been harvested in accordance with forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Recycled wood fiber that qualifies as contributing to MR Credit 4 (Recycled Content) is excluded from FSC Certified Content.

Functional Performance Test (FPT): Test of dynamic function and operation of equipment and systems executed by the Contractor and witnessed by the CxA. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, life safety conditions, power failure, etc. Systems are operated through all specified sequences of operation. Components are verified to be responding in accordance with requirements in the Project Documents.

Functional Performance Testing Procedures: Commissioning protocols, detailed test procedures and instructions in tabular and script-type format that fully describe system configuration and steps required to determine if the system is performing and functioning properly.

Furnish: To supply, deliver, unload, and inspect for damage.

- G. **Glass Manufacturers:** Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

General: Considering or including the main features or elements of something, and disregarding exceptions; overall.

Green Building Certification Institute (GBCI): An organization that provides third-party credentialing and verification for several rating systems relating to the built environment

- H. **Hazardous:** Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

Hazardous Materials: Material regulated as hazardous material in accordance with 49 CFR 173, requiring Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation, or disposal meets or has components which meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261. Hazardous material includes hazardous chemicals.

Hazardous materials include but are not limited to: Pesticides, biocides, and carcinogens listed by the Environmental Protection Agency (EPA) and International Agency for Research on Cancer (IARC) and recognized authorities.

Horizontal Louver: Louver with horizontal blades (i.e., the axes of the blades are horizontal).

- I. **Indicated:** Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown", "noted", "scheduled", and "specified" have the same meaning as "indicated."

Integrated Systems Test (IST): Test of dynamic function and operation of multiple systems. Integrated Systems Tests are tested under various modes, such as fire alarm and emergency situations, life safety conditions, power failure, etc. Systems are integrally operated through all specified sequences of operation. Systems and interconnections are verified to be responding in accordance with the requirements in the Project Documents.

Integrated Systems Testing Procedures: Commissioning protocols and detailed test procedures and instructions in tabular and script-type format that fully describe system

configurations and steps required to determine if the interacting systems are performing and functioning properly.

Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

Installer/Applicator/Erector: Construction or another entity engaged by Construction Manager as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

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).

IBC: International Building Code.

Indicated: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown", "noted", "scheduled", and "specified" have the same meaning as "indicated."

Indoor Air Quality (IAQ): Composition and characteristics of air in an enclosed space affecting occupants of space. The indoor air quality refers to relative quality of air in a building with respect to contaminants and hazards and is determined by levels of indoor air pollution and characteristics of air, including those that impact thermal comfort such as air temperature, relative humidity, and air speed.

Informational Submittals: Written and graphic information and physical samples that do not require Architect'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."

Integrated Systems Test (IST): Test of dynamic function and operation of multiple systems. Integrated Systems Tests are tested under various modes, such as fire alarm and emergency situations, life safety conditions, power failure, etc. Systems are integrally operated through all specified sequences of operation. Systems and interconnections are verified to be responding in accordance with the requirements in the Project Documents.

Integrated Systems Testing Procedures: Commissioning protocols and detailed test procedures and instructions in tabular and script-type format that fully describe system configurations and steps required to determine if the interacting systems are performing and functioning properly.

Interior Final Finishes: Materials and products exposed at interior, occupied spaces including flooring, wallcovering, finish carpentry, and ceilings.

Install: Operations at Project site include unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform construction operations, including installation, erection, application, and similar operations.

The term "**experienced,**" when used with the term "installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those

operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.

This requirement shall not be interpreted as conflicting with enforcing building codes and similar regulations governing the Work.

Interior (of Building): Within the weatherproof membrane.

Interspace: Space between lites of an insulating-glass unit.

Interior: Within the weatherproof membrane.

J. Not Used

K. **Knowing act:** Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

L. **Leadership in Engery and Environmental Design (LEED):** USGBC's "LEED Version 4 for Building Design and Construction."

Definitions that are a part of "LEED Version 4 and 4.1 for Building Design and Construction" (LEED v4 and v4.1 BD+C) apply to this Section.

LEED Online: GBCI's online portal for project certification documentation.

Lead Equivalence: The thickness of lead that provides the same attenuation (reduction of radiation passing through) as the material in question under the specified conditions.

Leadership in Energy and Environmental Design (LEED): USGBC's Building Rating System
Refer to the applicable LEED Reference Guide for additional definitions.

LEED Online: GBCI's online portal for project certification documentation.

LEED Project Administrator: Responsible for administration of LEED Certification Application.

Life-Cycle Inventory: Database that defines environmental input and output for each step in a material or assembly's life cycle.

Lifeline: A component of a fall protection system consisting of a flexible line designed to hang vertically, a vertical lifeline, or connecting to anchorages or anchorage connectors at both ends to span horizontally, a horizontal lifeline.

Look-Ahead Schedule: Prepare schedule indicating activities scheduled to occur or commence prior to submittal of next schedule update.

Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

M. **Match:** To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.

Materials: Products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, or installed to form units of work.

MERV: Minimum Efficiency Reporting Value: Arrestance rating of filter at three MERV Rating Explanation particle sizes of 0.3 microns to 10 microns at a determined face velocity.

Milestones: measurable and observable and serve as progress markers (flags) but, by definition, are independent of time (have zero durations) therefore no work or consumption of resources is associated with them.

Millwork: Ready-made wood products manufactured at a wood-planing mill or woodworking plant: moldings, doors, door frames, window sashes, stair work, cabinets, etc. excluding flooring, ceilings, and sidings.

Minimum Thickness: Minimum thickness of base metal without coatings.

“Minor” ceiling access: Visual observation or minor adjustments or other activity that does not disturb dust. Acoustic panels shall be replaced or access panel shall be closed immediately when the contractor leaves the work site.

“Major” ceiling access: Any other access not defined as “minor”.

Mobile Cabinet: Free-standing base cabinet storage device mounted on casters or glides.

Mock-Ups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

Laboratory Mock-Ups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.

Integrated Exterior Mock-Ups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.

Room Mock-Ups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

Module Size: Actual tile size plus joint width indicated.

- N. **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.

Negative Air Machine: Portable mechanical units to provide a negative air pressure in the Containment Areas.

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.

Non-Hazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

Non-Toxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

- O. **Operational Testing:** Activities and testing occurring after initial energizing and/or start-up of equipment that determine whether equipment is operating within the manufacturer's recommendations and the design requirements. These activities are intended to ensure that equipment and systems meet all warranty requirements and are ready for Functional Performance Testing. Common examples are Testing, Adjusting and Balancing of HVAC systems and initial load testing of electrical equipment.

Owner's Project Requirements (OPR): A written document that details the functional requirements of a project and the expectations of how the facility will be used and operated. These include project goals, measurable performance criteria, cost considerations, benchmarks, success criteria and supporting information.

Owner's Project Requirements (OPR): A written document that details the functional requirements of a project and the expectations of how the facility will be used and operated. These include project goals, measurable performance criteria, cost considerations, benchmarks, success criteria and supporting information.

- P. **Packaged Dry Products:** Materials and products installed in dry form and delivered in manufacturer's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.

Particulates: Dust, dirt, and other airborne solid matter.

Patching: Fitting and repair Work required to restore surfaces to original conditions after installation of other Work.

Pencil Copy: A preliminary review copy of the application for payment for review by Architect and Owner prior to submission of final copy.

Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

Permeable Surface: Surfaces which allow storm water to pass through and infiltrate the soil below.

Plastic Composites, or Wood-Plastic Composites: Composite materials made primarily from wood- or cellulose-based materials and plastics.

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.

Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

Product: Item 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", "assembly", and terms of similar intent.

Comparable Product: A 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.

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 current as of date of the Contract Documents.

Specified Products: Same as Named Products.

New Products: Items that have not previously been incorporated into another project or facility, except products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

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.

Project Documents: Consists of the Contract Documents, Approved Submittals, Requests for Information (RFI), Vendor documentation, Operations and Maintenance (O&M) information and other documentation that determines the requirements for acceptable installation and operation of the specific equipment and systems on the project.

Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

Project Site: Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

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”, “assembly”, and terms of similar intent.

Protection Areas: As determined by Owner’s Representative and as shown on drawings as Protection areas. Includes hospital areas adjacent to Containment Area, either occupied or used for passage, as well as areas connected to construction area by mechanical system air intake, exhaust and ductwork.

Provide: Furnish and install, complete and ready for the intended use.

- Q. **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.

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 Architect.

- R. **Rapidly Renewable Materials:** Materials and products made from plants that are typically harvested within a 10-year or shorter cycle.

Recovery Schedule: Submittal of a revised critical path method (CPM) schedule and a written plan.

Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

Recycled Content: Defined in accordance with the International Organization of Standards document ISO 14021, Environmental labels and declarations, Self-declared environmental claims (Type II environmental labeling).

Postconsumer Recycled Material: Material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.

Pre-consumer Recycled Material: Material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials, such as rework, regrind, or scrap, generated in a process and capable of being reclaimed within the same process that generated it.

Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles (160 km) of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

Green Globes requirement for Regionally Extracted, Harvested, or Recovered Materials: Materials that are extracted, harvested, or recovered and manufactured within a radius of [500] miles ([804.67] kilometers) from the Project site.

Green Globes requirements for Regionally Manufactured Materials: Materials that are manufactured within a radius of [500] miles ([804.67] kilometers) from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.

Regulations: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

Remove: Detach items from existing construction and dispose off-site unless indicated as salvaged or reinstallation.

Remove and Salvage: Detach items from existing construction, in a manner to prevent damage and turn over to owner.

Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

Repair: To correct damage and defects, retain existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

Request for interpretation (RFI): A request seeking one of the following:

An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.

A resolution to an issue which has arisen due to field conditions and affects design intent.

Resource Loading: The allocation of manpower and equipment necessary for completion of an activity as scheduled.

Retain: To keep existing items that are not to be removed or dismantled.

Return: To give back reusable items or unused products to vendors for credit.

Reuse: To reuse construction waste material in some manner on the project site.

S. **Safety Device:** A control that, to avoid injury, prevents a door from opening or closing, as appropriate.

Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

Scheduling Specialist (SS): An internal or third-party entity contracted to the Owner providing scheduling advice (if applicable).

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.

Scheduling Specialist (SS): An internal or third-party entity contracted to the Owner providing scheduling advice (if applicable).

Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

Semi-Exposed Portions of Casework: Include those members such as divisions, interior faces of ends, case back, backs and bottoms.

Solar Reflectance Index (SRI): The measure of a constructed surface's ability to stay cool in the sun by reflecting solar radiation and emitting thermal radiation. SRI values range from zero (solid black surface) to 100 (solid white surface). SRI value of a material is calculated according to ASTM E1980 and based on the aged, tested values of solar reflectance and thermal emittance.

Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

Source Separation: Separating waste materials from the time they become waste.

Specified Products: Products listed as to be supplied as specified.

Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

Start-Up: The activities where equipment is initially energized, tested and operated. Start-up is completed prior to Operational Testing and Functional Performance Testing and is an integral item documented in the System Verification Checklist (SVC).

Strip: To remove existing finish down to base material unless otherwise indicated.

Submittal: Written and graphic information and physical samples that require Architect's responsive action or are for information and do not require the architect's action.

Action Submittal: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

Informational Submittals: Written and graphic information and physical samples that do not require Architect'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."

Substitutions: Changes from the Contract Document requirements proposed by the CONTRACTOR after the award of the Contract. Changes include products, assemblies, materials, equipment, and methods of construction. Proposed substitutions by the CONTRACTOR are considered to be requests for substitutions. Substitutions will be considered by the OWNER as a special request.

Substitutions for Cause: Proposed substitutions due to changed Project circumstances beyond Contractor's control, such as unavailability or regulatory changes.

Substitutions for Convenience: Proposed substitutions due to possibility of offering substantial advantage to the Project.

The following are not considered to be requests for substitutions:

Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements for substitutions listed in Section "Substitution Procedures."

Revisions to the Contract Documents requested by the OWNER.

Specified options of products and construction methods included in Contract Documents.

The CONTRACTOR'S determination of and compliance with governing regulations and orders issued by governing authorities.

Subsystem: A portion of a system with characteristics similar to a system.

Supply: Same as Furnish.

System: An organized collection of parts, equipment, or subsystems united by regular interaction.

System Verification Checklist (SVC): List of static inspections and material or component tests that verify proper installation of equipment (e.g., belt tension, oil levels, labels affixed, gages in place, sensors calibrated, etc.), start-up activities and documentation, as well as operational testing results. The checklists are meant to document all activities for an individual piece of

equipment from procurement on the project through operational testing are performed in accordance with the requirements in the project documents.

T. Testing:

Field Quality Control Testing: Tests and inspections performed on site for installation of the Work and for completed Work.

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.

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.

Source Quality Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

Testing Agency: An independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

Testing Laboratory: Refer to Testing Agency.

“Thorough” cleaning of surfaces: Cleaning of surfaces which become exposed to dust shall be accomplished by the use of either a HEPA filtered vacuum cleaner or a wet mop.

Toxic: Poisonous to humans either immediately or after a long period of exposure.

Training Plan: A detailed plan prepared by the Contractor and reviewed by the Owner and Commissioning Authority that outlines the training activities, instructors, time durations, and system requirements in accordance with the Contract Documents and Commissioning Plan.

Trending: Data collection of monitored points using the Building Automation System, Lighting Controls System, Power Status and Monitoring System or independent data acquisition instrumentation.

- U. **Unit price:** 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.

- V. **Vapor Retarder:** Airtight barrier made of material that is relatively water vapor impermeable, to degree specified, with seams and joints sealed to adjacent surfaces.

Vapor Retarder Class: A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class is defined using Procedure A, Desiccant Method at 73 degrees F (23 degrees C) and 50 percent Relative Humidity (RH), in accordance with ASTM E96/E96M and ICC (IBC)-2018, as follows:

Class I: 0.1 perm or less.

Class II: Greater than 0.1 perm to 1.0 perm.

Class III: Greater than 1.0 perm to 10 perms.

Vapor Permeable: 5 perms or greater.

Vertical Illuminance: Illuminance levels calculated at a point on a vertical service or plane.

Vertical Louver: Louver with vertical blades (i.e., the axes of the blades are vertical).

Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame.

Visual Display Surface: Surfaces that are used to convey information visually, including surfaces of markerboards and surfacing materials that are not fabricated into composite panel form but are applied directly to walls.

Volatile Organic Compound (VOC): A carbon compound that vaporizes at normal room temperatures.

W. **Waste:** Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

Wet Products: Materials and products installed in wet form, including paints, sealants, adhesives, and special coatings.

Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

Wind Driven Rain Resistant Louver: Louver provides specified wind driven rain performance determined by testing according to AMCA 500-L.

Wood-Plastic Composites: Refer to Plastic Composites.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 45 00 - TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, materials, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Selection and payment.
 - 2. Quality Assurance.
 - 3. Laboratory reports.
 - 4. Limits on testing laboratory authority.
 - 5. Testing.
 - 6. Welding and Quality Control.
 - 7. Bolted Structural Connections Quality Control.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1910.7 - Definition and Requirements for a Nationally Recognized Testing Laboratory, Current Edition.
- B. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2025b.
- C. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2025a.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025a.

1.4 SELECTION AND PAYMENT

- A. Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing.
- B. Employment of testing laboratory shall in no way relieve Construction Manager of obligation to perform work in accordance with requirements of Contract Documents.
- C. Retest Responsibility: Where results of required inspection, test, or similar service are unsatisfactory (do not indicate compliance of related work with requirements of Contract Documents), retests are responsibility of the Contractor. Retesting of work revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original work.
 - 1. Arrange with laboratory and pay for additional samples and tests required by Construction Manager beyond specified requirements and pay compensation for Architect's additional services made necessary by failed tests and inspections.

1.5 SUBMITTALS

- A. Schedule of Tests and Inspections: Prepare and submit in tabular form and include the following:
 - 1. Specification section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.

6. Number of tests and inspections required.
 7. Time schedule or time span for tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.
- B. Testing service will submit two (2) copies of test reports directly to the Architect from the testing service, with one copy to the Construction Manager.

1.6 QUALITY ASSURANCE

- A. Laboratory, authorized to operate in State of Florida.
- B. Laboratory maintains a full-time registered Engineer on staff to review services.
- C. Testing Equipment, calibrated at reasonable intervals with devices of accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.
- D. Laboratory: Conform to applicable requirements of ASTM C1077 and ASTM E329. Meet "Recommended Requirements for Independent Laboratory Qualifications", published by American Council of Independent Laboratories.
- E. Personnel: Minimum of two (2) years' experience performing testing that meets requirements of these Specifications. Agent of laboratory performing field sampling and field testing of concrete shall be certified by the American Concrete Institute (ACI) as a Concrete Field Testing Technician Grade 1, by an equivalent recognized national authority for an equivalent level of competence or shall be a licensed Professional Engineer.

1.7 LABORATORY REPORTS

- A. Testing service is required to immediately notify Architect of discrepancies observed in the Work performed and to be performed in accordance to the Contract Documents.
- B. After each inspection and test, submit 2-copies of laboratory report to Owner, Architect, and Construction Manager.
- C. Provide where required by Specification Test and Inspection Reports: Prepare and submit certified written reports 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.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.

- C. Laboratory may not assume any duties of Construction Manager.
- D. Laboratory has no authority to stop the Work.

1.9 TESTING

A. Construction Manager Responsibilities:

1. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
2. Deliver to laboratory at designated location, adequate samples of materials used, which require testing, along with proposed mix designs.
3. Cooperate with laboratory personnel and provide access to the Work and to manufacturer's facilities.
4. Provide incidental labor and facilities to provide access to Work to be tested, to obtain, and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.
5. Where quality-control services are indicated as Construction Manager's responsibility, submit a certified written report, in duplicate, of each quality-control service.
6. Testing and inspecting requested by Construction Manager and not required by the Contract Documents are Construction Manager's responsibility.
7. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
8. Employ and pay for the services of Testing Laboratory to perform additional inspections, sampling and testing required:
 - a. For the Construction Manager's convenience.
 - b. When initial tests indicate work does not comply with Contract Documents.
 - c. Plan with Laboratory and pay for additional samples and tests required for Construction Manager's convenience.
9. Do not place or install any material which does not meet specified requirements. Do not place or install any material over or on a substrate that has not met test requirements.

B. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority, and Construction Manager in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Commissioning Authority, and Construction Manager promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Cooperate with Architect, Engineer and Construction Manager; provide qualified personnel after due notice.
3. Perform specified inspections, sampling and testing of materials and methods of construction.
 - a. Comply with specified standards.
 - b. Ascertain compliance of materials with requirements of Contract Documents.
 - c. Utilize properly calibrated equipment, calibrated within past twelve (12) months by devices of accuracy conforming to National Bureau of Standards or within accepted values of natural physical constants.
4. Perform additional test(s) as required by Architect or Owner.
5. Submittals: Submit qualifications of technicians, inspectors, engineers, and the organization to perform services for this Project. Include copies of certificates and license numbers to confirm compliance.
6. Keep time and cost separate for additional testing and inspection as outlined herein. Notify the Architect of additional testing and inspection required.
7. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
8. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

9. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Construction Manager.
10. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
11. Do not perform any duties of Construction Manager.
12. 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.
 - a. Schedule times for tests, inspections, obtaining samples, and similar activities.
 - b. Testing requirements indicated in specific specification sections shall take precedence over testing requirements indicate in this section which relate to the same specific specification section.
13. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Construction Manager's quality-control plan. Coordinate and submit concurrently with Construction Manager's construction schedule. Update as the Work progresses.
 - a. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 1. Construction Manager responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, with copy to Construction Manager.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
 - a. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 - b. Notifying Architect and Construction Manager promptly of irregularities and deficiencies observed in the Work during performance of its services.

- c. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Construction Manager and to authorities having jurisdiction.
- d. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
- e. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- f. Retesting and reinspecting corrected work.
- g. Special Testing or Inspections required:
 - 1) Test No. 1
 - 2) Inspection No. 1.

1.12 CONCRETE TESTING

- A. The Construction Manager for the Work of Specification Section "Cast In Place Concrete", shall coordinate with a separate testing laboratory to perform field quality control testing during concrete work under Division 3 and shall follow testing required in the Cast-In-Place Concrete section and if none is indicated provide the following:
- B. Quality Control Testing During Construction: Perform sampling and testing for field quality control during the placement of concrete, as follows:
 - 1. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
 - 2. Slump: ASTM C143, one test for each concrete load at point of discharge, and one for each set of compressive strength test specimens.
 - 3. Air Content: ASTM C231, pressure method; one for every other concrete load at point of discharge or when the indication of change requires.
 - 4. Compression Test Specimens: ASTM C31, one set of 6 standard cylinders for each compressive strength test, unless otherwise directed.
 - a. Cast and store 3 cylinders for laboratory cured test specimens and 3 field-cured test specimens as specified in ASTM C31.
 - b. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below and when 80 degrees F. and above; and each time a set of compressive test specimens is made.
 - 5. Compressive Strength Tests: ASTM C39, one set for each 50 cu.yds. or fraction thereof, of each mix design placed in a day or for each 5,000 sq.ft. of surface area placed; 2 specimens (one field cured and one lab cured) tested at 7 days, 2 specimens (one field cured and one lab cured) tested at 28 days, and 2 specimens (one field cured and one lab cured) retained in reserve for later testing if required.
 - a. When the frequency of testing will provide less than 5 strength tests for a given mix design, conduct testing strength tests for a given mix design, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
 - b. When the strength of field cured cylinders is less than 85 percent of companion laboratory cured cylinders, evaluate current operations, and provide corrective procedures for protecting and curing the in-place concrete.
 - 6. Report test results in writing to the Architect, Engineer, Construction Manager, and ready mix supplier on the same day that tests were made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of construction manager, name of concrete supplier and truck number, name of concrete testing service, concrete type and class, location of concrete batch in the structure, design compressive strength at 28 days, concrete mix proportions and materials, type and amount of fibrous reinforcement, compressive breaking strength, and type of break for both 7 day tests and 28 day tests.
 - a. Compressive strength tests for laboratory-cured cylinders will be considered satisfactory if the averages of all sets of three consecutive compressive strength tests results equal

or exceed the 28-day design compressive strength of the type or class of concrete; and no individual strength test falls below the required compressive strength by more than 500 psi.

- b. Strength tests of specimens cured under field conditions may be required by the Architect to check the adequacy of curing and protecting of the concrete placed. Specimens shall be molded by the field quality control laboratory at the same time and from the same samples as the laboratory cured specimens.
 - 1) Provide improved means and procedures for protecting concrete when the 28-day compressive strength of field cured cylinders is less than 85 percent of companion laboratory cured cylinders.
 - 2) When laboratory cured cylinder strengths are appreciably higher than the minimum required compressive strength, field cured cylinder strengths need not exceed the minimum required compressive strength by more than 500 psi even though the 85 percent criterion is not met.
 - 3) If individual tests of laboratory cured specimen produce strengths more than 500 psi below the required minimum compressive strength or if tests of field cured cylinders indicate deficiencies in protection and curing, provide additional measures to assure that the load-bearing capacity of the structure is not jeopardized. If the likelihood of low-strength concrete is confirmed and computations indicate the load-bearing capacity may have been significantly reduced, tests of cores drilled from the area in question may be required.
 - (a) If the compressive strength tests fail to meet the minimum requirements specified, the concrete represented by such tests will be considered deficient in strength.

1.13 CONCRETE MATERIALS AND MIX DESIGN TESTING

A. CONCRETE MATERIALS AND MIX DESIGN

- 1. Ready-mixed concrete shall be mixed and delivered in accordance with ASTM C94.
- 2. Product Data: Submit 2 copies of manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures, bonding agents, water stops, joint systems, chemical floor hardeners, and dry shake finish materials.
- 3. Laboratory Test Reports: Submit 2 copies of laboratory test reports for concrete materials and mix design tests. The Architect's review will be for general information only. Production of concrete to comply with specified requirements is the Construction Manager's responsibility.
- 4. Mix Design: Submit 6 copies of concrete mix designs for each type of mix required by the Concrete Schedule indicating the amount of each ingredient (by weight) in one cubic yard of concrete, the calculated water/cement ratio, and the slump.
 - a. Tests for Concrete Materials
- 5. For normal weight concrete, test aggregates by the methods of sampling and testing of ASTM C33.
- 6. For lightweight concrete, test aggregates by the methods of sampling and testing of ASTM C330.
- 7. For Portland cement, sample the cement and determine the properties by the methods of test of ASTM C33.

- B. Submit written reports for each material sampled and tested, prior to the start of Work. Provide the project identification name and number, date of report, name of Construction Manager, name of concrete testing service, source of concrete aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.

1.14 WELDING QUALITY CONTROL

- A. Welding operators shall be qualified under the provisions of the AWS Structural Welding Code, on test pieces in positions and with clearances equivalent to those to be encountered in construction and shall follow testing required in the applicable section and if none is indicated provide the following.
- B. Welds requiring inspection shall be so indicated in the drawings.
 - 1. Welds indicted as requiring visual inspection shall be visually inspected by an independent inspector, acceptable to the Architect, prequalified to make the weld being inspected. Welders and inspectors shall be prequalified by the American Welding Society Qualification Test.
- C. The Construction Manager performing the welding requiring inspection shall coordinate with an independent testing service, acceptable to the Architect to perform weld testing.
- D. Submit written reports for each weld test. Provide project identification and number, date of report, name of Welding Subcontractor, name of testing service, location of weld, type of weld, and test results. Indicate whether weld is acceptable for intended use.
- E. If by inspection welds fail to meet minimum acceptable criteria, the welds shall be cut out and replaced.
- F. Welders shall make only those types of welds for which they are specifically certified.

1.15 BOLTED STRUCTURAL CONNECTIONS QUALITY CONTROL

- A. The Construction Manager for the work of specification section "Structural Metal Framing", shall coordinate with a separate testing laboratory, to perform field quality control inspection of slip-critical and snug-tight bolted connections and shall follow testing required in the applicable section and if none is indicated provide the following.
- B. Inspection of slip-critical connections shall be visual. The inspector shall be present at the beginning of steel erection to ensure that the erector is conforming to the Contract Documents and AISC Specifications. The inspector shall verify that the erector is marking the bolts and nuts prior to the turn-of-nut procedure. Ten percent of all slip-critical bolted connections shall be observed as they are installed. Any connections which, in the opinion of the inspector, do not meet the tightening requirements of the Contract Documents shall be corrected by the erector.
 - 1. Inspection of snug-tight connections shall be made by use of a spud wrench. Ten percent of all snug-tight bolted connections selected randomly over the entire limits of the building structure shall be tested to verify tightness. If more than 20 percent of the bolts tested do not meet the General Requirements of the Contract Documents, the erector shall be required to retighten all snug-tight bolted connections on the Project.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking, and similar services performed on Work, repair damaged Work and restore substrates and finishes to eliminate deficiencies including defects in visual qualities of exposed finishes. Except as otherwise indicated, comply with requirements of Contract Documents. Protect Work exposed by or for service activities and protect repaired Work. Repair and protection are Construction Manager's responsibility, regardless of assignment of responsibility for inspection, testing, or similar service.

END OF SECTION

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SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 01, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Sanitary facilities, including drinking water.
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage sheds.
 - 2. Temporary enclosures.
 - 3. Waste disposal services.
 - 4. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, and lights.
 - 3. Sidewalk bridge or enclosure fence for the site.
 - 4. Environmental protection.

1.3 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.4 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
 - 1. Implementation and Termination Schedule: Within 15 days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

1.5 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, fire department, and rescue squad rules.
 - 5. Environmental protection regulations.
- B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
 - 1. Verify with Owner how Use Charges will be paid.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.
- C. Verify with Owner if Educational Facilities Inspector's (EFI) Trailer is required for Project. Provide location and access in accordance with Owner's requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials. If acceptable to the Architect/Owner, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended. These materials shall not create unsafe conditions and shall not violate requirements of applicable codes and standards.
- B. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry."
 - 1. For job-built temporary offices, shops, and sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.
 - 2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
 - 3. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- (16-mm-) thick exterior plywood.
- C. Gypsum Wallboard: Provide gypsum wallboard on interior walls of temporary offices.
- D. Roofing Materials: Provide UL Class A standard-weight asphalt shingles or UL Class C mineral-surfaced roll roofing on roofs of job-built temporary offices, shops, and sheds.
- E. Paint: Comply with requirements of Sections 09 91 13 - "Exterior Painting" and 09 91 23 - "Interior Painting."
 - 1. For job-built temporary offices, shops, sheds, fences, and other exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior primer.
 - 2. For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
 - 3. For interior walls of temporary offices, provide 2 coats interior latex-flat wall paint.
- F. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- G. Water: Provide potable water approved by local health authorities.
- H. Open-Mesh Fencing: Provide 0.120-inch (3-mm-) thick, galvanized 2-inch (50-mm) chainlink fabric fencing 6 feet (2 m) high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1 1/2 inches (38 mm) I.D. for line posts and 2 1/2 inches (64 mm) I.D. for corner posts.
- I. All temporary facilities of any type shall comply with all O.S.H.A. requirements. The Contractor is solely responsible for compliance.

2.2 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
 - 1. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- E. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- F. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- G. Provide an additional office trailer for exclusive use by the Owner.
- H. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar non-absorbent material.
- I. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

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

3.2 SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.
 - 1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

- B. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Field Offices: Provide insulated, weathertight temporary offices, minimum size of 10' x 14', of sufficient size to accommodate required office personnel, Owners/Architects/Engineers at the Project Site. Provide a separate trailer for the Owner's exclusive use. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:
 - 1. Furnish with (2) desks and (4) chairs, a 4-drawer lockable file cabinet, plan table, plan rack, a 6-shelf bookcase, four (4) duplex outlet, separate telephone lines with two (2) handsets and adequate lighting.
 - 2. Equip with a water cooler and private toilet complete with water closet, lavatory, and medicine cabinet unit with a mirror.
 - 3. Maintain temporary structures, offices, and storage in a safe and sanitary condition at all times during construction. Do not violate any local codes or ordinances regarding these facilities.
- D. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.
- E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
 - 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.
 - 3. Close openings through floor or roof decks and horizontal surfaces with load bearing, wood-framed construction.
 - 4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.
- F. Temporary Exterior Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.
- G. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials for more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containing properly. Dispose of material lawfully.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor.
 - 2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- E. Enclosure Fence: Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.
 1. Provide open mesh, chain-link fencing with posts set in a compacted mixture of gravel and earth.
 2. Locate vehicular entrance gates in suitable relation to construction facilities; and to avoid interference with traffic on public thoroughfares.
 3. Locate pedestrian entrance gates as required to provide controlled personnel entry in suitable relation to construction parking facilities.
 4. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
 - a. Theft Prevention: Provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- F. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- G. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.4 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 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.
 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when 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 the 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 the Contractor's property. The Owner reserves the right to take possession of project identification signs.

END OF SECTION

SECTION 01 50 10 - PROJECT CONSTRUCTION SIGN

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 01, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Requirements for Project Construction Sign.
- B. General Requirements: Comply with the following:
 - 1. Schedule for Sign: Erect Project sign at the beginning of construction and it will remain in-place until Certificate of Occupancy has been issued.
 - 2. Location of Project Sign: Unless otherwise directed by Owner, Project sign shall be erected at a location that is visible to the public, which typically is adjacent to the entrance drive of the Project site, and approved by the Architect.
 - a. Bottom face of the Project sign shall be a minimum of 4 ft. above grade.
 - 3. Other Site Signs: Unless required by local, state, or Federal Code or safety standards, no other signs will be permitted at the Project site.

1.3 SUBMITTALS

- A. Signage Information: Architect will provide information for the Project sign electronically.
 - 1. Architect will review with the designated Owner's Representative that the indicated information is correct.
 - 2. Sign fabricator shall be responsible for ensuring that the correct information is indicated on the Project sign.

1.4 QUALITY ASSURANCE

- A. Code Requirement: Project sign shall comply with all applicable Codes, including wind load recommendations and requirements.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Construct Project sign of the following:
 - 1. Plywood Sign Faces: 2, 4 ft. x 8 ft. x 3/4-inch thick, exterior grade plywood.
 - a. Plywood faces shall be constructed into a "V" format on a 90-degree angle.
 - b. Design shall be provided by the Architect.
 - 2. Posts: Not less than 2 posts per 4 ft. x 8 ft. sign face.
 - a. Size of Posts: As required by Florida Building Code wind load requirements.
 - b. Material: Posts may be fabricated of exterior grade, treated lumber or galvanized steel.
 - 3. Fasteners: Use fasteners that are zinc-coated to inhibit rust.
 - a. Number of Fasteners: As required by structural requirements.

PART 3 – EXECUTION

NOT USED

END OF SECTION

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SECTION 01 56 00 - TEMPORARY BARRIERS AND ENCLOSURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References, are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Temporary job-site protection including the following:
 - 1. Temporary floor and wall protection.
 - 2. Small project floor and wall protection.
 - 3. Seaming tape for floor protection.
 - 4. Recyclable, portable job site trash containers.

1.3 ACTION SUBMITTALS

- A. Refer to Section 01 33 00.0 Submittal Procedures for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Minimum Five (5) years' experience manufacturing similar products.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Handle materials to avoid damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer and basis of design shall be the following. However, products of other manufacturers will be considered for acceptance, provided they equal or exceed the material requirements and functional qualities of the specified product, and acceptance is provided by the Architect in writing prior to bidding.
 - 1. Ram Board.
- B. The following manufacturers are acceptable provided they equal or exceed the material requirements and functional qualities of the basis of design product:
 - 1. Surface Shields.
 - 2. Trimaco, Inc.

2.2 TEMPORARY FLOOR AND WALL PROTECTION

- A. Temporary protection board shall comply with the following requirements, as necessary for the use.
 - 1. Materials:
 - 2. Fold lines allowing corner, horizontal and vertical wall protection.
 - a. Wall guard fold lines at 4 inches (101 mm), 8 inches (203 mm) and 12 inches (305 mm) from edge of board.
 - 3. Allow protected substrates and finishes to cure while being protected.
 - 4. Protection against water, paint, mud, and more.
- B. Protection Boards:

1. Basis of Design Products as manufactured by Ram Board.
 - a. Heavy Duty Temporary and Reusable Floor and Wall Protection: Model #RB 38-100.
 - b. Pre-Taped Board: Ram Board Plus Model #RB PLUS 38-100.
 - c. Reusable Protection for Small Projects: Home Edition Model #RBHE 36-50.
 - d. Painter's Board: Ram Board Painter's Board Model #20RB 35-50.

2.3 DOOR JAMB PROTECTION

- A. Door Jamb Protection: Heavy-duty flexible re-usable door jamb protection.
 1. Materials: Recycled and recyclable materials.
 2. Door Jamb Sizes: Fits 4 inches – 9 inches (102 mm – 229 mm).
 3. Basis of Design Product: Model # RBJP 60, or RBJP 36 Ram Jamb, as manufactured by Ram Board.

2.4 SEAMING AND EDGE TAPES FOR FLOOR PROTECTION

- A. Seaming Tape: Used to cover Ram Board seams.
 1. Backing: Unique kraft backing tears easily and creates an extremely durable, smooth finish.
 2. Basis of Design Product: Model #RT 3-164, as manufactured by Ram Board.
- B. Vapor-Cure Tape: Used to cover Ram Board seams which prevents tape lines.
 1. Performance: Allows vapors and moisture to escape from concrete, glue down floors, stained floors, epoxy floors, refinished floors, vinyl composition tile, and most other floor types.
 2. Basis of Design Product: Model #RB VCT 3-108, as manufactured by Ram Board.
- C. Edge Tape: Used to secure Temporary Floor Protection edges to flooring or wall surfaces.
 1. Performance: Easy Release, low tack tape for up to 14 days. Grips tightly to Ram Board while easy release on flooring surfaces up to 14 days.
 2. Basis of Design Product: Model #RB ET 2.5-180, as manufactured by Ram Board.

2.5 PORTABLE JOBSITE TRASH CONTAINERS

- A. Portable Jobsite Trash Containers: Portable, reusable jobsite trash container.
 1. Fits Trash Bags: 42 gal – 50 gal (159 to 189 L).
 2. Quick self-locking assembly, no tape required.
 3. Basis of Design Product: Trash Box Model # RBTB 16-36, as manufactured by Ram Board.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation. Proceed with installation or protection products only after unsatisfactory conditions have been corrected.
- B. Do not begin protection installation until substrates have been properly prepared.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Install protection products in accordance with manufacture's written instructions and approved submittals.

3.3 PROTECTION

- A. Protection installed products may be left in place until completion of project or adjacent work.

END OF SECTION

SECTION 01 56 10 - AIRBORNE CONTAMINANTS CONTROL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Airborne contaminants control policy and procedures.
 - 2. Negative Air Machines.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Contaminant Producing Activities.
 - 2. Containment Areas.
 - 3. Protection Areas.

1.4 POLICY

- A. Aspergillosis and related nosocomial fungal infections are caused through inhalation by immune-compromised patients of aspergillus spores, or other related spores which can be present in the construction environment. The spores are known to be prolifically present in construction dust, debris and earthwork excavation dust. Control of construction dust, debris and excavation dust, as required in this section, is imperative to help prevent outbreaks of aspergillosis or related nosocomial fungal infections in immune-compromised patients.
 - 1. Inhalation of aspergillus spores or other related fungal spores by immune-compromised patients can lead to serious complications and death.
 - 2. Aspergillus and other related spores are present in the natural environment and thus are not a risk to healthy construction workers.
- B. Airborne contaminant control is critical in all areas. Contractors shall limit dissemination of airborne contaminants produced by construction-related activities, in order to provide protection of immune-compromised staff, or sensitive equipment, from possible undesirable effects of exposure to such contaminants.
 - 1. Air-borne dust and construction debris contains fungus spores. Construction activities creating dust, or other airborne contaminants, must be conducted in tight enclosures cutting off any flow of particles into open areas.

1.5 ACTION SUBMITTALS

- A. Progress Schedules: Submit work areas and procedure schedules for containment of airborne contaminants.
- B. Work Plan: Drawings and details of construction of necessary temporary barriers, and description of procedures to be used to achieve and maintain control of construction related airborne contaminants. Refer to Section 01 73 10 – Cutting and Patching.
- C. Certification: Submit Contractor's plan certification as specified.

1.6 QUALITY CONTROL

- A. Preconstruction Meeting: Before any construction on site begins, Contractor and personnel are required to attend a preconstruction orientation session held by Owner's Representative.
- B. Notification: 7 Days notification to Owner's Representative of possible construction activity causing airborne contaminants.

1.7 TESTING

- A. Air Samples: Owner will provide baseline particle counts and conduct periodic air sampling of Protection Area during construction to monitor effectiveness of containment procedures.

1.8 PERFORMANCE REQUIREMENTS

- A. Owner's Representative's Responsibilities
 - 1. Determination of the Containment and Protection Areas, as well as the standard of limitations of the Contractor's responsibilities, required for the project.
 - 2. Statement of Requirements: Description in graphic and written form as required to communicate the above, based on evaluation of the construction area and the impact of the project.
- B. Owner's Responsibilities:
 - 1. Assist Owner's Representative to determine Containment and Protection Areas.
 - 2. Perform testing and monitoring as specified.
- C. Contractor's Responsibilities:
 - 1. To comply with applicable codes and referenced controls and to use installation procedures and methods which satisfy application code requirements and referenced controls and procedures.
 - 2. Specific means and methods of achieving and maintaining control of airborne contaminants during construction.
 - 3. Proposed work plan and procedures for control of airborne contaminants, as noted below.
 - 4. Notification: Contractor shall notify Owner's Representative a minimum of 7 days prior to starting construction activity which might be expected to produce excess levels of airborne contaminants in containment area so that additional precautions may be taken.
 - 5. The Contractor shall provide all dustproof enclosures, warning signs, and warning lights to protect the public, the existing building, storage areas and materials or equipment. Enclosures shall be approved by Owner's Representative.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Negative Air Machines: Model FA200EC manufactured by Advanced Containment Systems, Inc., or equal.
 - 1. Units shall include prefilters, final filters, HEPA filters and filter static pressure gauges.
 - 2. HEPA filters shall be 99.997% efficient at 0.3-micron particle size.
- B. Carpet or Mats: Provide carpets or mats at entrances, vacuumed or changed as often as necessary to prevent accumulation of dust. All vacuuming outside areas not under negative pressure shall be with a certified HEPA-filtered vacuum.
- C. Dust Caps: Block off all existing ventilation ducts within the construction area. Method of capping ducts shall be dust tight and withstand air flow.
- D. Portable Enclosures: Whenever work is done outside existing enclosed work areas, provide 4 mil (0.1016 mm) portable polyethylene enclosure, enclosing ladder and sealing off opening fitted tight to ceiling, or provide prefabricated unit.
- E. Polyethylene: Polyethylene shall be 6 mil (0.1524 mm) fire retardant type listed by Fire Underwriter's Laboratories, Griffolyn #T55R or Star Tex of Lakeville, MN 55044 with Griffolyn fire retardant tape, or equal.

PART 3 EXECUTION

3.1 INSPECTION

- A. Before any demolition or construction begins, a complete field review of all Protection Area (airborne contaminant control areas) and policies will be conducted and work plan revised if required.

3.2 SCHEDULE OF REQUIREMENTS

- A. Baseline levels of dust particles and aspergillus spores in Protection Areas and levels not to be exceeded during construction are as set by the Owner.
- B. Owner will monitor aspergillus count in vicinity of project in Protection Area. Such Areas will be located as indicated on drawings. Whenever safe levels are exceeded. Contractor will be notified to correct conditions immediately to avoid fine and work stoppage described.
 - 1. All work shall be stopped on the project whenever a hazardous airborne contaminant control deficiency exists in occupied areas.
 - 2. The Contractor shall take immediate action to correct all deficiencies.

3.3 CONTAINMENT

- A. Requirements: Maintain levels of airborne contaminants within limits as defined.
- B. Negative air machines as described herein shall provide air flow into construction area at not less than 100 fpm at enclosure entrances with all doors fully open.

3.4 PROTECTION

- A. General: Contractor shall provide and maintain all barriers, filters, ventilation, and cleaning and removal procedures as detailed in work plan.
- B. Sealing and Opening: Use duct-tape or other impenetrable sealant to seal barrier wall seams, cracks around window and door frames, exhaust system ductwork, pipes, joints and ducts.
- C. Dust Control: The Contractor shall take appropriate steps throughout the term of the Project to prevent airborne dust due to work under this contract. Water shall be applied wherever practical to settle and hold dust to a minimum, particularly during demolition and moving of materials. No chemical palliatives shall be used without permission of the Owner's Representative.
 - 1. Spray surfaces with water during dust-producing demolition activities. Hard floors in work area require vacuuming with HEPA-filtered vacuum cleaners and frequent wet-mopping during demolition and construction.
 - 2. Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent airborne dust from dispersing into atmosphere.
- D. Airborne contaminant enclosures or infection control enclosures shall be dust tight. Any dust tracked outside of enclosure shall be removed immediately, as specified. All cleaning outside enclosure should be by HEPA-filtered vacuum or other approved method.
- E. The following procedure shall be implemented when construction personnel are required to pass through a Protected Area to enter the Containment Area:
 - 1. Provide air lock entry vestibules in dustproof enclosures when shown on drawings or required by Owner's Representative.
 - 2. Personnel shall wear protective clothing as required and provided by the Owner's Representative while passing through the Protected Area. The protective clothing shall be removed in the air lock vestibule prior to entering the Containment Area.
 - 3. When exiting the Containment Area, the personnel shall redon the protective clothing before reentering the Protected Area.
- F. Exterior Work: Direct exhaust from equipment away from building air intakes; assure that filters on building air intakes are operational and protected from excessive amounts of airborne contaminants.
- G. All vacuuming outside areas not under negative pressure shall be with a certified, Owner approved, HEPA-filtered vacuum.

3.5 AIRBORNE CONTAMINANT CONTROL ENCLOSURES AND BARRIERS

- A. Contractor shall install dustproof enclosures for work as indicated and when required to protect areas occupied by the Owner from dust, debris and damage.

1. Construction must be conducted in tight enclosures, cutting off any flow of dust particles into patient areas.
- B. It is the Contractor's responsibility to determine when a dustproof enclosure is required to protect any adjoining area; however, the Contractor shall provide a dustproof enclosure where indicated and whenever requested by the Owner.
- C. Airborne Contaminant Control General Requirements: Floor to structure, air-tight enclosures, drywall barriers, using tape and foam padding.
 1. Traffic between Containment Areas and open areas shall be kept to a minimum. Keep door to such areas always closed. Transport materials and refuse into an area from an external site without violating patient care by transporting them in covered containers.
 2. Provide negative pressure in construction area as specified herein.
 - a. Provide adequate forced ventilation of enclosed areas to cure installed materials, to prevent excessive humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
- D. Dustproof Enclosures: Full height, noncombustible construction, with minimum ½ inch gypsum board both sides with 3-1/2 inch (89 mm) R-11 insulation batts to reduce noise. Use 3 – inch wide duct tape to tightly seal top, bottom, and all seams, to prevent spread of dust to occupied areas, including above ceiling.
 1. Enclosure Doors: 4'-0" minimum width, unless shown otherwise, solid core wood with metal frame and hardware, including closer, tightly weather-stripped to prevent flow of dust. Locate as directed and swing into construction area. Keep enclosures locked outside of working hours. Three keys for emergency access shall be furnished to the owner.
 2. Obtain Owner's approval of exact location and details of enclosure construction. Materials for enclosure shall be precut in unoccupied areas. No explosive or pneumatic driven fasteners are allowed. Provide entrance vestibules as detailed. Provide carpets inside vestibule and inside enclosures at door to vestibule and keep vacuumed daily.
- E. Power and Lighting: Provide sufficient temporary lighting and power ventilation equipment to ensure proper workmanship and safety everywhere.
- F. Access Provisions: Provide ramps, stairs, ladders and similar temporary access elements as reasonably required to perform the work and facilitate its inspection during installation.
- G. Dust: Generation of significant quantities of airborne dust will not be tolerated. Clean the work area prior to starting work as necessary to minimize existing dust which may become airborne during construction. Provide drop cloths and dust partition as necessary to contain dust and debris generated by the work.
- H. Demolition material and dust and dirt shall be removed in tightly sealed, covered, rubber-tired plastic dump carts. Containers shall be fitted with clean polyethylene covers, completely sealed at perimeter by wire tying or taping. Before leaving area all containers shall be wiped clean to prevent tracking of dust. Place rugs inside barrier entrance, keep them clean or changed daily. Provide debris chutes if required as specified in Section 01045 – Cutting and Patching. Hot Processes: Hot processes, particularly welding and flame cutting, which generate significant quantities of smoke pose a special concern. These processes have the potential of setting off the building fire alarm system which automatically call the Fire Department as well as disrupting the Owner's operations. Therefore, all work involving hot processes shall be scheduled with the Owner's system deactivated.
- I. Comply with applicable requirements specified in Division 22 – Mechanical and in Division 26 – Electrical.
- J. A space will not be accepted as negatively pressurized unless it passes the toilet paper test.

END OF SECTION

SECTION 01 60 00.0 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; comparable products and substitutions.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Product.
 - a. Comparable Product.
 - b. Named Products.
 - c. New Products.
 - 2. Basis-of-Design Product Specification.
 - 3. Substitutions.
 - a. Substitutions for Cause.
 - b. Substitutions for Convenience.

1.4 SUBMITTALS

- A. Refer to section 01 33 00.0 Submittal Procedures for submittal procedures.
- B. 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:
 - a. Use facsimile of form provided in Project Manual.
 - 2. Include complete information as required in the Substitution Form. Incomplete information will result in automatic rejection of the substitution request.
 - 3. 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 Contractor, 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. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. 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.

- i. 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.
 - j. 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.
 - k. Cost information, including a proposal of change for a credit to the owner, if any, in the Contract Sum.
 - l. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
 - m. Submittals not requested will not be recognized or processed.
4. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven (7) days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
- a. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

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. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.
- B. 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.

1.7 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:

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.

1.8 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. See other Sections for specific content requirements and particular requirements for submitting special warranties.

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 complete installation and indicated use and effect.
 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," Architect 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. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 3. Products:

- a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Non-restricted 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.
- 4. Manufacturers:
 - a. PART 7 Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - b. Non-restricted 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.
- 5. 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 Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect'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 Specification Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 SUBSTITUTIONS

- A. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - 1. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 2. Substitution request is fully documented and properly submitted.
 - a. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - 1) Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - 2) Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and Contractors, that will be necessary to accommodate proposed substitution.
 - 3) 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.

- 4) Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - 5) Samples, where applicable or requested.
 - 6) Certificates and qualification data, where applicable or requested.
 - 7) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - 8) 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.
 - 9) 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.
 - 10) 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.
 - 11) Cost information, including a proposal of change for a credit to the owner, if any, in the Contract Sum.
 - 12) Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
 - 13) Submittals not requested will not be recognized or processed.
3. Requested substitution will not adversely affect Contractor's construction schedule.
 4. Requested substitution has received necessary approvals of authorities having jurisdiction.
 5. Requested substitution is compatible with other portions of the Work.
 6. Requested substitution has been coordinated with other portions of the Work.
 7. Requested substitution provides specified warranty.
 8. 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 Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect 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. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. 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.

- C. Substitutions for Convenience: Architect will consider requests for substitution if received ten (10) days prior to Bid and within thirty (30) days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. 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.
 - k. Additional requirements as indicated on the Substitution Request Form.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 73 00 - EXECUTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Installation of the Work.
 - 3. Progress cleaning.
 - 4. Protection of installed construction.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Cutting.
 - 2. Patching.

1.4 SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified Surveys: Submit two copies signed by land surveyor.
- D. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor legally qualified to practice in the State of Florida, who is experienced in providing land surveying services of the kind indicated.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 PRODUCTS

2.1 MATERIALS

- A. 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 fully match in-place adjacent surfaces possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect 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 warranted. Before beginning site Work, investigate and verify existence and location of underground utilities, mechanical and electrical systems, and 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 the Work that must be performed by public utilities serving the site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions 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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 1. Description of the Work.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation after correcting unsatisfactory conditions. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. 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 Architect according to requirements in Section 01 31 00 - Project Management and Coordination.

3.3 INSTALLATION

- A. 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.
 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions ensuring 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.
- 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 Architect.
 - 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. Materials containing asbestos and BCPs are prohibited.

3.4 PROGRESS CLEANING

- A. Clean 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 for more than seven days during normal weather or three days if the temperature is expected to rise above 80 degrees F (27 degrees 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.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain 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 Section 01 50 00 - Temporary Facilities and Controls.
- 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.
- 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.

3.5 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. Refer to Section 01 56 00 - Temporary Barriers and Enclosures.
- B. Comply with manufacturers' written instructions for temperature and relative humidity.

END OF SECTION

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Procedural requirements for cutting and patching.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Cutting.
 - 2. Patching.

1.4 SUBMITTALS

- A. Refer to Section 01 33 00.0 Submittal Procedures for submittal procedures.
- B. 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 used for patching and firms or entities that will perform patching Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
- B. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect 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.
- C. Operational Elements: Do not cut and patch operating elements and related components that results in reducing the capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - 1. Primary operational systems and equipment.
 - 2. Fire separation assemblies.
 - 3. Air or smoke barriers.
 - 4. Fire suppression systems.
 - 5. Mechanical systems piping and ducts.
 - 6. Control systems.
 - 7. Communication systems.
 - 8. Fire detection and alarm systems.

9. Conveying systems.
 10. Electrical wiring systems.
 11. Operating systems of special construction.
- D. Miscellaneous Elements: Do not cut and patch the following elements or related components that change the load bearing capacity, resulting in a reduction of capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Exterior curtain wall construction.
 4. Equipment supports.
 5. Piping, ductwork, vessels, and equipment.
 6. Noise and vibration control elements and systems.
 7. Sprayed fire resistive material.
- E. Visual Requirements: Do not cut and patch construction resulting in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
1. If possible, retain original Installer or fabricator to cut and patch exposed Work. If possible, engage original Installer or fabricator. If original installer is not available, engage recognized, experienced, and specialized firm for the Work.
- F. Cutting and Patching Conference: Before proceeding, meet at site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- G. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.6 WARRANTY

- A. 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.
- B. Extend a one-year labor and materials warranty against defects in failure of patch work due to material defects or workmanship.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Comply with specified requirements.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
- 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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
1. Description of the Work.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Protection: Protect existing 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.
- B. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- C. Existing Services: Where removal, relocation, or abandonment is necessary, bypass existing services before cutting to avoid interruption of services to occupied areas.

3.3 CUTTING AND PATCHING

- A. Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at earliest feasible time, and complete without delay.
1. Cut existing construction to provide for installation of components or performance of construction and subsequently patch as necessary to restore surfaces to an original condition.
 2. 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 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 minimize interruption to occupied areas.
- C. 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.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. 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.
- F. 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 Section 01 10 00 - Summary.

- G. Cutting: Cut existing 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. Use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from 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 possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction to eliminate 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 are removed, extend one finished area into another, patch and repair surfaces in new space. Provide even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.
 4. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 5. Exterior Building Enclosure: Patch components and restore enclosure to a weathertight condition.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
1. 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.

END OF SECTION

SECTION 01 74 13 - GENERAL CLEANING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES:

- A. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Progress cleaning.
 - 2. Final cleaning.

1.3 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 – EXECUTION

3.1 GENERAL

- A. Execute daily cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris, and rubbish. Construction Manager must utilize services of local waste collection agencies or companies.
- C. Remove waste materials, debris and rubbish from the site periodically, and dispose of at legal disposal areas away from the site. Pay all fees for disposal.

3.2 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 specification 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.
- 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.

3.3 DUST CONTROL

- A. Perform work operations and cleaning in a manner to prevent excessive dust generation.
- B. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- C. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.4 FINAL CLEANING

- A. 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.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition. Polish glossy surfaces to a clear shine.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied spaces.
 - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

- i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. Wipe surfaces of mechanical and electrical equipment [, elevator equipment,] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
 - 2) Clean permanent filters and replace disposable filters if units were operated during construction.
 - 3) Clean surfaces and blades of grilles, diffusers, registers, lenses, louvers, etc.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Enclosed spaces, such as above ceilings and voids in wall assemblies, are to be free from debris.
 - q. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds. Clean roof area and adjacent surfaces of any dirt or debris from construction activities.
 - r. Leave Project clean and ready for occupancy.
- B. Prior to final completion, or Owner occupancy, Construction Manager shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean. Inspect areas adjacent to the work area for any windblown debris and clean as necessary.

END OF SECTION

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SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for the following:
 - 1. Disposing of non-hazardous waste.

1.3 DEFINITIONS

- A. Refer to Section 01 42 16 - Definitions for the following terms:
 - 1. Construction Waste.
 - 2. Demolition Waste.
 - 3. Disposal.
 - 4. Recycle.
 - 5. Salvage.
 - 6. Salvage and Reuse.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

1.5 PERFORMANCE REQUIREMENTS

- A. Conform to applicable regulations regarding Solid Waste Control.
- B. Practice efficient waste management in the use of materials in the course of the Work.

1.6 WASTE MANAGEMENT PLAN

- A. Develop a waste management plan and requirements.
 - 1. Submit plan within 20 days of date established for Notice to Proceed.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PLAN IMPLEMENTATION

- A. Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract:
 - 1. Comply with operation, termination, and removal requirements in Section 01 50 00 - Temporary Facilities and Controls.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Site Access and Temporary Controls:
 - 1. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities:
 - a. Comply with Section 01 50 00 - Temporary Facilities and Controls for the control of dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

- A. 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. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials and dispose of at designated spoil areas on Owner's property.

END OF SECTION

SECTION 01 78 30 - WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Compile specified warranties and bonds.
- B. Compile specified service and maintenance contracts.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit to Architect for review and transmittal to Owner.

1.3 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of respective manufacturers, suppliers and subcontractors in accordance with Division 0 Section "General Conditions and Supplementary Conditions".
- B. Number of original signed copies required: Three (3) each.
- C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item:
 - 1. Product or work item.
 - 2. Firm, with name of principal, address and telephone number.
 - 3. Scope.
 - 4. Date of beginning of warranty, bond or service and maintenance contract. In no case shall the date begin prior to acceptance by Architect of that portion of the work.
 - 5. Duration of warranty, bond or service maintenance contract.
 - 6. Provide information for Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Instances which might affect the validity of warranty or bond.
 - c. Construction Manager, name of responsible principal, address and telephone number.
 - d. Manufacturer: Contact person and telephone number.

1.4 FORM OF SUBMITTALS

- A. Prepare in duplicate packets.
- B. Format:
 - 1. Size: 8-1/2" x 11" punch sheets for standard 3-ring binder:
 - a. Fold larger sheets to fit into binders.
 - 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
 - a. Title of Project.
 - b. Location of Project.
 - c. Name of Construction Manager.
- C. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers, all of same color.

1.5 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during progress of construction:
 - 1. Warranties shall start at the Date of Substantial Completion for each phase of work complete for the items related to that particular phase. The final warranties for the project will list the individual dates for the start date of each warranty per phase.
 - a. Submit documents as indicated with Closeout Documents.

- B. For items of work where acceptance is delayed materially beyond Date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

1.6 SUBMITTALS REQUIRED

- A. Submit warranties, bonds, service and maintenance contracts as specified in respective Sections of Specifications.
- B. Submit additional manufacturer's standard warranties where available at no additional cost, but not specifically indicated in respective Specification Sections.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - INSTALLATION (NOT APPLIABLE)

END OF SECTION

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, material, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Removal of existing finishes on selected portions of building or structure.

1.3 REFERENCE STANDARDS

- A. Comply with NFPA 1 – Chapter 16 and NFPA 241 Standard for Safeguarding Construction Alteration and Demolition Operation Latest Adopted Edition.

1.4 DEFINITIONS

- A. Refer to Section 01 42 16 – Definitions, for the following terms:
 - 1. Remove.
 - 2. Remove and Salvage.
 - 3. Remove and Reinstall.
 - 4. Existing to Remain.
 - 5. Dismantle.

1.5 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.6 SUBMITTALS

- A. Refer to Section 01 33 00.0 - Submittal Procedures for submittal procedures.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- C. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 PRE-DEMOLITION MEETING

- A. The Contractor shall conduct a pre-demolition meeting at the project site a minimum of 30 days prior to any work being installed as indicated in this section and other related sections that require coordination with this section.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.
 - 6. Review and finalize protection requirements.
 - 7. Review procedures for noise control and dust control.
 - 8. Review procedures for protection of adjacent buildings.

1.8 QUALITY ASSURANCE

- A. Demolition Firm: Company specializing in performing the Work of this Section with minimum five years documented experience.

1.9 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and drawings before proceeding with selective demolition.
- D. Maintain fire-protection facilities in service during selective demolition operations.
- E. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.10 HAZARDOUS MATERIALS

- A. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

1.11 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 CLARIFICATION

- A. The drawings do not purport to show all objects existing on the site.

3.2 SCHEDULING

- A. Schedule all work in a careful manner with all necessary consideration for the public and the Owner.
- B. Avoid interference with the use of, and passage to and from, adjacent facilities.

3.3 GENERAL

- A. 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 existing 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. Cutting: Cut existing 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 as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. For Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Proceed with patching after construction operations requiring cutting are complete.
- C. 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 possible. Provide materials and comply with installation requirements specified in other sections of these specifications.
 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate 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 eliminate evidence of patching and refinishing.
 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 existing 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, apply primer and intermediate paint coats 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. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

3.4 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

3.5 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
- B. Remove temporary barricades and protections where hazards no longer exist.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 4. Comply with requirements specified in specification section "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 030130 - MAINTENANCE OF CAST-IN-PLACE CONCRETE

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 patching.
 - 2. Corrosion-inhibiting treatment.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to concrete maintenance including, but not limited to, the following:
 - a. Verify concrete-maintenance specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application, sequencing, tolerances, and required clearances.
 - c. Quality-control program.
 - d. Coordination with building occupants.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For concrete-maintenance specialist.
- B. Field quality-control reports.
- C. Quality-Control Program: Submit before work begins.

1.6 QUALITY ASSURANCE

- A. Concrete-Maintenance Specialist Qualifications: Engage an experienced concrete-maintenance firm that employs installers and supervisors who have a record of experience performing the work specified herein and are trained and approved by manufacturer to apply packaged patching-mortar 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-maintenance specialist firm shall maintain experienced full-time supervisors on Project site during times that concrete-maintenance work is in progress.
- B. Quality-Control Program: Prepare a written plan for concrete maintenance to systematically demonstrate the ability of personnel to properly perform maintenance work, including each phase or process, protection of surrounding materials during operations, and control of debris and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.
- C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Concrete Removal and Patching: Remove and repair an approximately 10 sq. ft. area of deteriorated concrete slab.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 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.

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.
 - 1. Use only Class A epoxies when substrate temperatures are below or are expected to go below 40 deg F within eight hours.
 - 2. Use only Class A or B epoxies when substrate temperatures are below or are expected to go below 60 deg F within eight hours.
 - 3. Use only Class C epoxies when substrate temperatures are above and are expected to stay above 60 deg F for eight hours.
- B. Cold-Weather Requirements for Cementitious Materials: Do not apply unless concrete-surface and air temperatures are above 40 deg F 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 40 deg F, heat patching-material ingredients and existing concrete to produce temperatures between 40 and 90 deg F.
 2. When mean daily air temperature is between 25 and 40 deg F, 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 within the enclosure for 48 hours after repair.
 3. When mean daily air temperature is below 25 deg F, provide enclosure and heat to maintain temperatures above 32 deg F 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 and above.

1.9 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace repair material that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which repair material manufacturer agrees to furnish repair material 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: Two years from date of Substantial Completion.

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.

2.2 BONDING AGENTS

- A. Mortar Scrub Coat: Mix consisting of 1 part portland cement and 1-part fine aggregate complying with ASTM C 144 except 100 percent passing a No. 16 sieve. Provide a w/c ratio of 0.62.

2.3 CORROSION INHIBITING COATING

- A. Single Component, waterborne solution of alkaline corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. MAPEI Corporation: Planibond 3C.
 - b. Sika Corporation: Armatec 110 EpoCem

- c. Euclid Chemical: Duralprep A.C.

2.4 PATCHING MORTAR

A. Patching Mortar Requirements:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
2. Color and Aggregate Texture: Provide patching mortar and aggregates of colors and sizes necessary to produce patching mortar where indicated that matches existing, adjacent, exposed concrete. Blend several aggregates if necessary to achieve suitable matches.
3. Coarse Aggregate for Patching Mortar: ASTM C 33/C 33M, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.
4. Patching mortar to contain microfiber and/or macrofiber reinforcement in repair materials.

B. Single Component, shrinkage compensating, and self-consolidating cementitious repair mortar to be installed at horizontal partial and full depth repair locations.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. MAPEI Corporation: Planitop FD.
 - b. Sika Corporation: SikaEmaco 1061.
 - c. Euclid Chemical: EucoRepair SCC
 - d. If material listed above does not contain microfiber review with product manufacturer for quantities to mix with repair mortar or provide alternate product with microfiber already added.
2. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

C. Two Component, polymer modified cementitious non-sag repair mortar to be installed at vertical and overhead repair locations.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. MAPEI Corporation: Planitop 23.
 - b. Sika Corporation: SikaEmaco 425 Gel Patch.
 - c. Euclid Chemical: Verticoat
 - d. If material listed above does not contain microfiber review with product manufacturer for quantities to mix with repair mortar or provide alternate product with microfiber already added.
2. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

D. Single Component, shrinkage compensating form and pour repair mortar to be installed at vertical and overhead repair locations.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. MAPEI Corporation: Planitop FD.
 - b. Sika Corporation: SikaEmaco 440 CI.
 - c. Euclid Chemical: EucoRepair V100

- d. If material listed above does not contain microfiber review with product manufacturer for quantities to mix with repair mortar or provide alternate product with microfiber already added.
2. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.5 EPOXY CRACK INJECTION MATERIALS

- A. Epoxy Crack-Injection Adhesive: ASTM C 881/C 881M, Type IV, free of VOCs.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Sika Corporation; Construction Product Division: SikaDur 52
 - b. Mapei Headquarters of the Americas: Planibond CR 50.
- B. Capping Adhesive: Product manufactured for use with crack injection adhesive by same manufacturer.
- C. Color: Provide epoxy crack-injection adhesive and capping adhesive that will blend with existing, adjacent concrete and will not stain concrete surface.

2.6 NON-PRESSURE EPOXY GROUT

- A. Epoxy adhesive for cementing dowels:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hilti, Inc. HIT - HY 200 Adhesive Anchoring System
 - b. Mapei Headquarters of the Americas: Planibond AE

2.7 MISCELLANEOUS MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I, II, or III unless otherwise indicated.
- B. Water: Potable.

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.
- D. Concrete: Comply with Section 033000 "Cast-in-Place Concrete."
- E. Grout for Use with Preplaced Aggregate: Proportion according to ASTM C 938. Add grout fluidifier to mixing water followed by portland cement, pozzolan, and fine aggregate.

PART 3 - EXECUTION

3.1 CONCRETE-MAINTENANCE SPECIALIST

- A. Concrete-Maintenance Specialist Firms: Subject to compliance with requirements, have concrete maintenance performed by personnel that have a minimum of three years experience with the repair of concrete and the use of materials specified herein.

3.2 CONCRETE MAINTENANCE

- A. Have concrete-maintenance work performed only by qualified concrete-maintenance specialist.
- B. Comply with manufacturers' written instructions for surface preparation and product application.

3.3 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.
- C. Pachometer Testing: Locate at least three reinforcing bars using a pachometer or other specialized equipment, and drill test holes to determine depth of cover. Calibrate pachometer using depth of cover measurements and verify depth of cover in removal areas using pachometer.
- D. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.4 PREPARATION

- A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance 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 maintenance 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.
 - 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.
 - 7. Protect floors and other surfaces along haul routes from damage, wear, and staining.

8. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
 9. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
 10. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
 11. Dispose of debris and runoff from 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. 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 maintenance 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. Inventory and record the condition of items to be removed for reinstallation or salvage.
 3. 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.
- E. Reinforcing-Bar Preparation: Remove loose and flaking rust from exposed reinforcing bars by abrasive blast cleaning needle scaling or wire brushing until only tightly adhered light rust remains.
1. Where section loss of reinforcing bar is more than 10 percent, notify Engineer, and cut bars and remove and replace as indicated on Drawings.
 2. Remove additional concrete as necessary to provide at least 3/4-inch clearance around existing and replacement bars.
 3. Splice replacement bars to existing bars according to ACI 318 by lapping, welding, or using mechanical couplings.
- F. Surface Preparation for Corrosion-Inhibiting Treatment: Clean concrete to remove dirt, oils, films, and other materials detrimental to treatment application.
1. Use sand blasting or power tool cleaning.
 2. Allow surface to dry before applying corrosion-inhibiting treatment.

3.5 CONCRETE REMOVAL

- A. Do not overload structural elements with debris.
- B. Saw-cut perimeter of areas indicated for removal to a depth of at least 1/2 inch. Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.
- C. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.

- D. Remove additional concrete if necessary, to provide a depth of removal of at least 1" over entire removal area.
- E. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least 3/4-inch clearance around bar.
- F. Test areas where concrete has been removed by tapping with hammer and remove additional concrete until unsound and disbonded concrete is completely removed.
- G. Provide surfaces with a fractured profile to match ICRI Surface Profile CSP 7 that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.
- H. Thoroughly clean removal areas of loose concrete, dust, and debris.

3.6 BONDING AGENT APPLICATION

- A. Mortar Scrub Coat for Job-Mixed Patching Mortar and Concrete: Dampen repair area and surrounding concrete 6 inches beyond repair area. 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. Slurry Coat for Cementitious Patching Mortar: Wet substrate thoroughly and then remove standing water. Scrub a slurry of neat patching mortar into substrate, filling pores and voids.

3.7 PATCHING MORTAR APPLICATION

- A. Place patching mortar 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 specified mortar scrub coat.
- C. General Placement: Place patching mortar 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 2 inches or less than 1/2 inch. Do not feather edge.
- E. Overhead Patching: Place material in lifts of not more than 2 inches or less than 1/2 inch. 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 or water-saturated absorptive cover.

3.8 CONCRETE PLACEMENT

- A. Place concrete according to Section 033000 "Cast-in-Place Concrete" and as specified in this article.
- B. Pretreatment: Apply anticorrosion agent to reinforcement.
- C. Pretreatment: Apply mortar scrub coat to concrete substrate.
- D. 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.
- E. 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.
- F. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover.
- G. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.9 CORROSION-INHIBITING-TREATMENT APPLICATION

- A. Apply corrosion-inhibiting treatment to surfaces indicated on Drawings, from wall-to-wall or curb-to-curb and from joint-to-joint in the perpendicular direction. Apply in two separate layers as indicated by manufacturer.
- B. Apply by brush, roller, or airless spray in two coats at manufacturer's recommended application rate. Remove film of excess treatment by high-pressure washing before patching treated concrete.

3.10 EPOXY INJECTION APPLICATION

- A. Install the injection entry and venting ports using flush mounted or drilled fittings per proprietary manufacturer's instructions.
- B. Space the ports at 8 in. to 12 in..
- C. Inject epoxy using material manufacturer's recommended equipment.
- D. Apply recommended manufacturer's injection pressure.
- E. For vertical or inclined cracks, apply injections by pumping epoxy into entry ports at the lowest elevation, cap, and move upward.

- F. For horizontal cracks, apply injections by proceeding from one end of the crack to the other until the crack is fully sealed.
- G. After 10 min., repeat injection procedure until all ports refuse injection.
- H. Remove ports and remove the surface seal by chipping or grinding or other acceptable means after the injected epoxy has cured.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections:
 - 1. Packaged, Cementitious Patching Mortar: Three (3) randomly selected sets of samples for each type of mortar required, tested according to ASTM C 928/C 928M.
 - 2. Job-Mixed Patching Mortar: Three (3) randomly selected sets of samples for each type of mortar required, tested for compressive strength according to ASTM C 109/C 109M.
 - 3. Concrete: As specified in Section 033000 "Cast-in-Place Concrete."
 - 4. Perform random in-situ tensile pull-off testing to evaluate bond of repair mortar materials at a minimum of three locations. Testing shall be performed in accordance with ICRI Technical Guideline 210.3-2004 and ASTM C1583.
- C. Product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 030130

SECTION 03 10 10 - CAST-IN-PLACE CONCRETE PATCHING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, material, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Concrete patching.
 - 2. Accessories.

1.3 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).
- C. ASTM F1249 - Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor; 2025.
- D. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- E. ASTM A1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. ASTM C33 – Standard Specification for Concrete Aggregates.
- G. ASTM C150 – Standard Specification for Portland Cement.

1.4 SUBMITTALS

- A. Refer to Section 01 33 00.0 Submittal Procedures for submittal procedures.
- B. Product Data: Material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.
- C. Qualification Data: For concrete specialist.
- D. Material Certificates: For each type of portland cement and aggregate supplied for mixing or adding to products at Project site.

1.5 QUALITY ASSURANCE

- A. Concrete-Maintenance Specialist Qualifications: Engage an experienced concrete firm that employs installers and supervisors who are trained 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.

1.6 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.

1.7 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.
- B. 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.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: SikaEmaco 425 Gel Patch as manufactured by Sika Corporation.

2.2 MISCELLANEOUS MATERIALS

- A. Water: Potable.

2.3 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.

PART 3 EXECUTION

3.1 CONCRETE REPAIR MATERIAL REPLACEMENT

- A. Have concrete-repair work performed only by qualified concrete-repair specialist.
- B. Comply with manufacturers' written instructions for surface preparation and product application.

3.2 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.
- C. 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.
- D. Use only proven protection methods appropriate to each area and surface being protected.
- E. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete repair work is being performed.
- F. Contain dust and debris generated by concrete repair work and prevent it from reaching the public or adjacent surfaces.
- G. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape or a liquid strippable masking agent. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
- H. Dispose of debris and runoff from 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.

- I. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect 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.
- J. 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.

3.3 CONCRETE REMOVAL

- A. Thoroughly clean removal areas of loose concrete, dust, and debris.

3.4 PATCHING MATERIAL APPLICATION

- A. Place patching material as specified in this article unless otherwise recommended in writing by manufacturer.
- B. Pretreatment: Apply specified bonding agent if required by manufacturer.
- C. General Placement: Place patching 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. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a smooth surface with a wood or sponge float.
- E. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

END OF SECTION

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SECTION 05 12 23 STRUCTURAL STEEL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. All requirements of the general provisions of the contract including General and Supplementary Conditions, Division 0 and Division 1 form a part of this section.

1.2 DESCRIPTION

A. SCOPE OF WORK

This Section includes fabrication, delivery, unload and store in locations directed and erect all structural steel work, as shown on drawings and specified, including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.

B. Related work not specified under this subdivision:

1. Steel joist
2. Setting of anchor bolts, cast in concrete, or masonry.
3. Metal fabrications.

1.3 SUBMITTALS

A. Submit for review, complete shop drawings covering fabrication and erection of all work under this subdivision, including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.

B. Submitted shop drawings must be checked and signed by the General Contractor.

C. Test reports conducted on shop and field bolted and welded connections. Include data on type(s) of test conducted and test results.

1.4 QUALITY ASSURANCE

A. Codes and standards: Comply with applicable provisions of the latest issue of the following, except as otherwise indicated:

1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges" - except paragraph 4.2.1. AISC "Specification for Structural Steel Buildings", including "Commentary".
2. "Specifications and Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Structural Connections.
3. Structural Welding Code (AWS D1.1)
4. Steel Structures Painting Council (SSPC)

B. Qualifications for welding work: Qualify welding procedures and welding operations in accordance with AWS "Qualification" requirements.

C. Welders to have current certificates, if re-certification of welders is required, re-testing will be Contractor's responsibility.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site at such intervals to ensure uninterrupted progress or work. Store on site only in authorized locations.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground. Protect steel members and packaged materials from exposure to the weather.

PART 2 PRODUCTS

2.1 MATERIALS

A. Misc. structural shapes, plates, etc...: ASTM A 36

B. Structural beams, columns, etc...: ASTM A36 or ASTM A992
GR.50 - Refer to structural drawings.

C. Hot-formed steel tubing: ASTM A 501

D. Steel pipe: ASTM A53, Type E or S, Grade B; or ASTM A501

E. Anchor bolts: ASTM A 307, non-headed type, with nuts and washers.

F. Anchor Rods: ASTM F1554 (55 KSI with S-1 Supplement).

G. High strength threaded fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, complying with ASTM A325.

H. Electrodes for welding: Comply with AWS Code. Use E70XX electrodes.

I. Grout: non-shrink, non-metallic, flowable or plastic with minimum of 7,000 psi at 28 days in accordance with CRD-C 621, Army Corps of Engineers.

2.2 FABRICATION

A. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Properly mark-match materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.

B. Work shall be executed by skilled workmen under experienced supervision.

C. Connections: Weld or bolt shop connections.

D. Bolt field connections with high-strength bolts, except where welded connections are indicated.

E. Field verify all existing dimensions and elevations prior to fabrication.

F. High strength bolted construction: Install high strength threaded fasteners in accordance with AISC "Specifications for Structural Joints Using ASTM A 325 Bolts". Use bearing type bolts with threads included in shear plane.

G. Welded construction: Comply with AWS Code for procedures, appearance, and quality of welds, and methods used in correcting welding work.

H. Holes for other work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.

2.3 SHOP PAINTING

- A. General: Shop paint all structural steel, except anchor bolts and surfaces to be field welded.
- B. Paint all members after fabrication, except where surfaces would be inaccessible for surface prep and painting.
- C. Apply paint in sufficient volume or coats to provide a minimum dry film thickness of 3 but not more than 5 mils.
- D. Surface preparation: Clean steel in accordance with Steel Structures Painting Council (SSPC - SP3 Power Tool Cleaning).

2.4 SOURCE QUALITY CONTROL

- A. General: Materials and fabrication procedures are subject to inspections at tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
- B. Promptly remove and replace materials or fabricated components that do not comply.

PART 3 EXECUTION

3.1 ERECTION

- A. Must conform to the applicable provisions of AISC specifications.
- B. Temporary planking: Provide temporary planking and working platforms as necessary to effectively complete work.
- C. Setting bases and bearing plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates.
- D. All anchor bolts shall be built into connections work in advance.
- E. Set loose and attached base plates and bearing plates for structural members on leveling nuts. Do not use wedges of shims.
- F. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding cut off flush with edge of base or bearing plate prior to packing with grout.
- G. Field assembly: Set structural frame accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- H. All bolts, including anchor bolts, shall have enough projection to expose not less than 1-1/2 threads after nuts is tightened. Level and plumb individual members of structure within specified AISC tolerances.
- I. If steel is damaged or does not fit-up, Contractor shall submit proposed corrective measures for review by Engineer.
- J. Do not enlarge unfair holes in members by burning or by using drift pins. Drill or ream holes that must be enlarged to accommodate next larger fastener, where possible.

K. The use of a gas cutting torch in field for correcting fabrication errors in primary structural members will not be permitted.

L. Immediately after erection, clean field welds, bolted connections, and abraded areas where shop coat was damaged. Spot and prime areas using same material as used for shop coat.

M. Set all members so that, in their final location, level, plumbness and alignment are within the tolerances prescribed by AISC Code.

3.2 QUALITY CONTROL

A. An independent testing and inspection agency shall be retained to inspect structural steel members high strength bolted connections and welded connections.

B. Testing agency shall conduct and interpret tests, state in each report whether test specimens comply with requirements and specifically state any deviations therefrom. Submit 3 copies of each report to Owner's representative.

C. Provide access for testing agency to places where structural steel work is begin fabricated or produced so that required inspection and testing can be accomplished.

D. Minimum required testing:

1. Visually inspect all structural steel beams, columns, etc.
2. Visually inspect all bolted and welded connections.
3. Test all beam or column splices.
4. Test a representative sample of all full or partial penetration welds.

E. Correct deficiencies in structural steel work that inspections have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expenses, as necessary to reconfirm any non-compliance of original work and to show compliance of corrected work.

3.3 FINAL CLEANUP

A. All temporary guys, braces, falsework, cribbing, rubbish and other debris are to be removed upon completion of erection.

END OF SECTION 05 12 23

SECTION 07 53 10 - ELASTOMERIC ROOF COATING

PART I GENERAL

1.1 SECTION INCLUDES:

- A. Preparation of existing roof system to receive coating.
- B. Application of reinforced PMMA coating to prepared roofing membrane surface in areas subject to water/debris accumulation.
- C. Application of PMMA coating to prepared roofing membrane surface.

1.2 REFERENCE STANDARDS

- A. 29 CFR 1910.134 - Respiratory protection; Current Edition.
- B. ISO 9001 - Quality Management Systems - Requirements; 2015, with Amendment (2024).
- C. ASTM American Society for Testing and Materials
Philadelphia, PA
- D. NRCA National Roofing Contractors Association
Rosemont, IL
- E. OSHA Occupational Safety and Health Administration
Washington, DC
- F. CCOHS Canadian Centre for Occupational Health and Safety
- G. Hamilton, ON
- H. UL Underwriters Laboratories
Northbrook, IL
- I. USEPA United States Environmental Protection Agency
Washington, DC

1.3 SUBMITTALS

- A. Submit product data sheets verifying physical and mechanical properties of the coating material.
- B. Submit safety data sheets for the elastomeric coating material and accessory products to be using in conjunction with the coating application.

1.4 QUALITY ASSURANCE

- A. The coating shall be manufactured under a quality management system that is monitored regularly by a third-party auditor under the ISO 9001 audit process.
- B. Furnish competent and full-time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the coating installation in accordance with this specification. Comply with the latest written application instructions of the coating manufacturer.
- C. Conform to regulations of public agencies, including any specific requirements of the city and/or state/province of jurisdiction.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original sealed containers, clearly marked with manufacturer's logo, full product name; and lot number(s).
- B. Store closed containers in a well-ventilated, cool, dry area away from heat, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Do not store resins or catalyst at temperatures below 32°F (0°C) or above 85°F (29°C). Keep away from open fire, flame or any

ignition source. Exposure of product to temperatures outside this range may affect product shelf life and quality of finished product.

- C. Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Keep away from open fire, flame, or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes when above the Threshold Limit Value (TLV). Do not eat, drink, or smoke in areas where roofing materials are stored or applied. Protect the pails of elastomeric coating from temperatures outside the range described in 1.06-B and other damage during transit, handling, storage, and installation.

1.6 PROJECT CONDITIONS

- A. Do not apply materials unless surfaces to receive the coating are clean, dry and prepared as specified.
- B. Install the coating in strict accordance with all published safety, weather, or applicable regulations of the manufacturer and local, state, federal agencies which have jurisdiction. Always follow the coating supplier's application guidelines.
- C. Ensure that the membrane/flashing system to be coated is properly adhered to the substrate, free from blisters/air pockets/wrinkles and in a water-tight condition suitable to receive the coating. Repairs and remedial work shall be performed in accordance with the membrane manufacturer's specifications/details. Allow solvent-based adhesives to cure before coating application.
- D. Verify that penetrations, mechanical equipment, cants, edge metal, flashings and other on-roof items are properly installed. Verify that drainage outlets are clean and in working order.
- E. Verify that HVAC and air intake vents are suitably protected, closed or filtered.
- F. Do not apply catalyzed resin materials if there is a threat of inclement weather or if the ambient temperature is less than 32°F (0°C) or greater than 95°F (35°C). Ensure that the substrate temperature is between 32°F (0°C) and 104°F (40°C) during coating application. Regularly utilize an infrared thermometer to monitor substrate temperatures and record both ambient and substrate temperatures during coating application on an hourly basis. Maintain a record of the temperature readings.
- G. Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, CCOHS, NIOSH, NRCA and other industry or local governmental groups. Workers should wear a long sleeve shirt with long pants and work boots. Workers shall use butyl rubber or nitrile gloves when mixing or applying PMMA products. Safety glasses with side shields are required for eye protection. Use local exhaust ventilation to maintain worker exposure below the published Threshold Limit Value (TLV). If the airborne concentration poses a health hazard, becomes irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements published under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentration. A filtering face piece or dust mask is not appropriate for use with this product if TLV filtering levels have been exceeded.

1.7 WARRANTY

- A. Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's 10-year material warranty. The warranty shall offer replacement products in the event that the coating system requires remediation as a result of the causes listed below. The warranty shall not exclude deterioration resulting from exposure to ponding water.
 - 1. Deterioration of the coating materials resulting from ordinary wear and tear by the elements.
 - 2. Deterioration of the coating materials resulting from manufacturing defects in said materials.

- a. Siplast 10-year Paracoat Materials Warranty

PART II PRODUCTS

2.1 COATING SYSTEM/PRODUCTS

- A. 100% solids, peroxide cured, elastomeric coating system composed of PMMA and other polymers designed for application overqualified and prepared roof systems. The cured coating system shall be in conformance with the following:
1. Thickness (dry film avg. when applied at 1 kg/m²): 30 mils (0.762 mm)
 2. Peak Load (min.) 73F (23C): 600 psi (4136.86 kPa)
 3. Ultimate Elongation (min.) 73F (23C): 250% (ASTM D 412)
 4. Water Swelling (max.): 3% (ASTM D 6083)
- B. Basis of Design Product: Paracoat Roof Coating by Siplast; Dallas, TX

2.2 RELATED/ACCESSORY MATERIALS

- A. A concentrated, non-corrosive, biodegradable, water-soluble cleaner used to prepare membrane surfaces prior to elastomeric coating application.
- B. A clear solvent used to clean and prepare transition areas of in-place catalyzed resin to receive subsequent coats of resin, clean tools and equipment, and remove resin residue.
1. Basis of Design Product: Pro Prep by Siplast; Dallas, TX
- C. Primer for Asphaltic Substrates (for exposed bitumen): A fast-curing, flexible, PMMA-based primer for use asphaltic substrates.
1. Basis of Design Product: Pro Primer R by Siplast; Dallas, TX
- D. Fleece for Coating Reinforcement: A non-woven, 110 g/m², needle-punched polyester fabric reinforcement as supplied by the coating system manufacturer.
1. Basis of Design Product: Pro Fleece by Siplast; Dallas, TX
- E. Catalyst: A peroxide-based reactive agent used to induce curing of PMMA-based resins.
1. Basis of Design Product: Pro Catalyst Liquid by Siplast; Dallas, TX

PART III EXECUTION

3.1 SUBSTRATE EXAMINATION

- A. Inspect the substrate to receive the coating to ensure that surfaces are clean, smooth, sound, and free of moisture, dirt, debris, or contamination. Verify that roof penetrations, mechanical equipment, cants, edge metal, and related on-roof items are properly installed, secure and in a condition suitable for coating application. Verify that air conditioning and air intake vents are suitably protected or closed.

3.2 SUBSTRATE PREPARATION

- A. Protect areas surrounding the area to receive the coating systems by application of masking tape.
- B. Repair damaged or deteriorated areas of the existing membrane/flashing system using materials to match the existing according to the membrane manufacturer's specifications. Ensure that the roof system is in a watertight condition.
- C. Clean the surface of the existing roof, ensuring that the surface is clean, sound, dry and free of any contaminating materials that would interfere with proper adhesion of the coating. This may require power-brooming, power vacuuming, manual brooming or a low-pressure wash/scrub with detergent. If washed, rinse the substrate with copious amounts of clean water to remove residue and allow to dry before application of coating materials.
- D. Use a chalk line to designate areas to receive the reinforced coating system. Grid the substrate to ensure that consistent full-batch coverage can be maintained. Adjust grids if necessary.

3.3 MIXING OF RESIN PRODUCTS

- A. Pour the desired quantity of resin into a clean container and using a spiral mixer or mixing paddle, stir the liquid for the time specified by the resin manufacturer. Calculate the amount of catalyst needed using the manufacturer's guidelines and add the required quantity of catalyst to the resin component. Mix again for the time period specified by the resin manufacturer, ensuring that the product is free from swirls and bubbles. To avoid aeration, do not use a spiral mixer unless the spiral section of the mixer can be fully contained in the liquid during the mixing process. Mix only enough products to ensure that it can be applied before pot life expires.

3.4 APPLICATION OF RESIN PRODUCTS

- A. Continuously monitor and record ambient and substrate temperatures to ensure that the temperatures are acceptable for resin application. Maintain records.
- B. If required for the specific substrate, apply catalyzed primer resin using a roller at the rate specified by the primer manufacturer for the specific substrates. Do not let the primer pool or pond. Do not under-apply or over-apply as this may interfere with proper primer catalyzation. Make allowances for waste, including saturation of roller covers.
- C. Before application of coating over cured primer or previously applied coating, wipe the surface of the cured resin using the specified cleaner/solvent and allow to dry. Treat the surface again if not followed up by coating application within 60 minutes.
- D. In areas that are not subject to water/debris accumulation, apply an even, generous layer of catalyzed coating resin over the prepared roof surface using a crosshatch technique at the rate specified by the coating manufacturer.
- E. In all cases, follow the coating application practices outlined below:
 - 1. Cut-in perimeter areas, penetrations and edges in a uniform manner so as to provide an aesthetically pleasing appearance.
 - 2. Make allowances for waste, including saturation of roller covers. Dispose of roller covers regularly to avoid curing of the resin saturating the cover.
 - 3. Avoid heavy puddles of coating and ensure that the coating is never applied at less than the minimum rate to ensure proper catalyzation/cure.
 - 4. Monitor pot life, and if insufficient to allow for full-batch application, maintain liquid resin at a lower storage temperature and work in smaller batches.
 - 5. Monitor coverage and coating consumption based upon grid areas. Adjust grid size if consumption rates are insufficient to allow for full and even coverage.
 - 6. Following cure, inspect the coating for thin spots and mask/prep/recoat as needed.

3.5 PROTECTION/CLEANING

- A. Protect surfaces not intended to receive the coating during the application of the system. Should this protection not be effective, or not be provided, the respective surfaces shall be restored to their proper conditions by cleaning, repair or replacement.

END OF SECTION

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.

1.3 REFERENCE STANDARDS

- A. ACI 504 R – Guide to Joint Sealants for Concrete Structures.
- B. ASTM D1056 – Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
- C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2024.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.
- G. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2025).
- H. ASTM D1056 - Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber; 2020.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.
- J. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.
- K. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

1.4 ACTION SUBMITTALS

- A. Refer to Section 01 33 00.0 Submittal Procedures for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Backing material recommended by sealant manufacturer.
 - 4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 5. Substrates the product should not be used on.
 - 6. Substrates for which use of primer is required.
 - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 8. Sample product warranty.
 - 9. Certification by manufacturer indicating that product complies with specification requirements.

- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- D. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with ASTM C794.
 - 2. Compatibility Testing: In accordance with ASTM C1087.
 - 3. Allow sufficient time for testing to avoid delaying the work.
 - 4. Deliver sufficient samples to manufacturer for testing.
 - 5. Report manufacturers recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 - 6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.
- E. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or another applicable method as recommended by manufacturer.

1.6 PRE-INSTALLATION MEETING

- A. The Contractor shall conduct a pre-installation meeting at the project site a minimum of thirty (30) days prior to any work being installed as indicated in this section and other related sections that require coordination with this section.

1.7 MOCK-UPS

- A. Mockups: Install sealant in mockups of assemblies specified in other sections that are indicated to receive joint sealants specified in this section. Use materials and installation methods specified in this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials in compliance with manufacturer's requirements to prevent their deterioration or damage due to moisture, temperature, contaminants, or other causes.

1.9 FIELD 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.
 - 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.

1.10 WARRANTY

- A. See Section 01 7830 - Warranties - for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.
- C. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Nonsag Sealants:
 1. Sika Corporation; Sika Flex Urethane Sealant: usa.sika.com/sle.
 2. Substitutions: Not permitted.

2.2 JOINT SEALANT APPLICATIONS

- A. Scope:
 1. Exterior Joints:
 - a. Seal joint between top of stem wall and tilt-up wall.

2.3 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content.

2.4 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and 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) or 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.

2.5 ACCESSORIES

- A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.
- B. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- C. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- D. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.

3.2 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
 - 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.
 - c. Unglazed surfaces of ceramic tile.
 - d. Exterior insulation and finish systems.
 - 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. Porcelain enamel.
 - c. Glazed surfaces of ceramic tile.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.4 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.

3.5 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, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

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SECTION 09 24 10 – CEMENT PLASTERING REPAIRING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications, and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section Includes:
 - 1. Provide labor, material, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - a. Existing interior Portland cement plasterwork (stucco) suspended ceiling repair.
 - b. Existing exterior port land cement plasterwork repair.

1.3 REFERENCES

- A. ASTM C91 – Standard Specification for Masonry Cement
- B. ASTM C150 – Standard Specification for Portland Cement
- C. ASTM C206 – Standard Specification for Finishing Hydrated Lime
- D. ASTM C207 – Standard Specification for Hydrated Lime for Masonry Purposes
- E. ASTM C897 – Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
- F. ASTM C926 – Standard Specification for Application of Portland Cement-Based Plaster
- G. ASTM D1623 – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics
- H. PCA (Portland Cement Association)

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other work.
- C. Samples: For each type of finish coat indicated; 12 by 12 inches and prepared on rigid backing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 FIELD CONDITIONS

- A. Comply with ASTM C 926 requirements.

- B. Interior Plasterwork: Maintain room temperatures at greater than 40 deg F for at least 48 hours before plaster application, and continuously during and after application.
 - 1. Maintain room temperatures at greater than 40 deg F for at least 48 hours before plaster application, and continuously during and after application.
 - 2. Avoid conditions that result in plaster drying out during curing period. Distribute heat evenly; prevent concentrated or uneven heat on plaster.
 - 3. Ventilate building spaces as required to remove water in excess of that required for hydrating plaster in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.
- C. Exterior Plasterwork:
 - 1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
 - 2. Apply plaster when ambient temperature is greater than 40 deg F.
 - 3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer shall be the following in each category however products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product and acceptance is provided by the Architect in writing prior to bidding.
- B. Expanded Metal Lath
 - 1. Clarke Dietrich Building Systems
 - 2. MarinoWARE
 - 3. Amico, A Gibraltar Industries Co.
 - 4. Niles Building Products Co.
- C. Plaster
 - 1. Bonsal American, an Oldcastle Company; Marblesil Stucco Mix.
 - 2. QUIKCRETE; QUIKCRETE Finish Coat Stucco, No. 1201.
 - 3. SonoWall, BASF Wall Systems, Inc.; Thoro Stucco.

2.2 METAL LATH

- A. Expanded-Metal Lath: Self-furring diamond mesh, 3.4 lb./sq. yd. ASTM C 847 with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.

2.3 LATH BOARD

- A. Lath Board: Fiberglass-mat faced gypsum sheathing complying with ASTM C1177:
 - 1. Basis of Design: Densglass Sheathing, Type X as manufactured by Georgia Pacific.
 - 2. Size: 5/8 inch thick by 48 inches wide.
 - 3. Weight: 1.9 lb./sq. ft.

4. Edges: Square.
5. Surfacing: Fiberglass mat on face, back, and long edges.

2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
- B. Lime: ASTM C 207, Type S.
- C. Perlite Aggregate: ASTM C 35.
- D. Ready-Mixed Finish-Coat Plaster: Mill-mixed portland cement, aggregates, and proprietary ingredients.

2.5 TRIM ACCESSORIES

- A. General: Comply with ASTM C 1063, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required and to match existing type and configuration.

2.6 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch long, free of contaminants, manufactured for use in Portland cement plaster.
- C. Bonding Agent: Conform to ASTM C1059.
 1. Exterior applications and areas exposed to water immersion or to high humidity: A non re-emulsifiable acrylic emulsion. To be used as integrally mixed product when recommended by the Portland Stucco System Manufacturer.
 2. Manufacturers and products are as indicated, however, equal or better performing products of other manufacturers will be considered for acceptance by the Architect.
 - a. ThoroseallAcryl 60, as manufactured by Harris Specialty Chemicals, Inc.
 - b. Bonsal Acrylic Additive by W.R. Bonsal Company.
 - c. Silkalatex, manufactured by Sika Chemical Corporation.
- D. Waterproofing: Formulated stearate compound for increasing the water repellency.
 1. Manufacturers and products are as indicated, however, equal or better performing products of other manufacturers will be considered for acceptance by the Architect.
 - a. "Hydrocel" as manufactured by Lambert Corporation.
 - b. "Omicron Mortar proofing" as manufactured by Master Builders.
 - c. "Hydratite" as manufactured by A. C. Horn.
- E. Admixture: Acrylic-polymer emulsion "Acrylic 60" as manufactured by Thoroseral.
- F. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.
- G. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.
- H. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch diameter, unless otherwise indicated.

2.7 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
- B. Manufacturers: The basis of design products are manufactured by "Master Builders (BASF)".
- C. The following manufacturers' subject to compliance with requirements are accepted and equal or better performing products of other manufacturers will be considered for acceptance by the architect.
 - 1. Quickrete Company
 - 2. Titan Florida LCC
- D. Cement Plaster for Use over Metal Lath:
 - 1. Scratch Coat: Pre-blended mixture of portland cement, reinforcing fibers and manufacturers additional ingredients "Stucco Base".
 - 2. Brown Coat: Pre-blended mixture of portland cement, reinforcing fibers and manufacturers additional ingredients "Stucco Base".
 - 3. Finish Coat: Waterproofing cement-based coating "MasterSeal - Waterproof Cement Based Coating #584".
 - 4. Admixture: Water based acrylic bonding and modifying admixture which shall be added to all coats "Acryl 60".
 - 5. Total vertical system thickness: 7/8" Match existing.
 - 6. Total horizontal system thickness: 3/4" Match existing.
- E. Cement Plaster for Use over Masonry and Concrete:
 - 1. First Coat: Waterproofing cement-based coating "MasterSeal - Waterproof Cement Based Coating #584".
 - 2. Finish Coat: Pre-blended mixture of portland cement, reinforcing fibers and manufacturers additional ingredients "Stucco Base".
 - 3. Admixture: Water based acrylic bonding and modifying admixture which shall be added to all coats "Acryl 60".
 - 4. Total system thickness: 5/8" Match existing.
- F. Fenestration Openings Flashing
 - 1. Flashing: Waterproofing cement-based coating "MasterSeal - Waterproof Cement Based Coating #581".

2.8 TEXTURES

- A. Finish texture shall match existing when new stucco is placed adjacent to existing stucco.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Remove damaged and unbonded areas of stucco and damaged metal lath or lath board and suspension system. Provide replacement materials to match existing.

3.3 INSTALLING LATH BOARD

- A. Lath board installation per manufacturer's installation instructions.

3.4 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 1063.

3.5 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 at locations commissary with the existing accessory layout.

3.6 PLASTER APPLICATION

- A. General: Comply with ASTM C 926
- B. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
- C. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
- D. Provide plaster surfaces that are ready to receive field-applied finishes indicated.
- E. Bonding Compound: Apply on masonry and concrete for plaster bases.

- F. Walls; Base-Coat Mixes for Use over Masonry and Concrete: Scratch and brown coat for three-coat plasterwork.
- G. Ceilings and Soffits; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coat for three-coat plasterwork.
- H. Plaster Finish Coats: Apply to provide finish to match existing.

3.7 PLASTER REPAIRS

- A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.8 PROTECTION

- A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 09 24 10

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 65 and 80 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- C. This Project contains existing surfaces requiring additional preparation from new/unpainted surfaces. Prepare existing surfaces in accordance with "Preparation of Existing Surfaces" specified elsewhere in this Specification.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.
- B. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Benjamin E. Moore (More)
 - 2. Pittsburgh Paints (PITT) – formerly PPG Paints
 - 3. Sherwin Williams (S/W)

2.2 PAINT, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors: As selected by Architect or Owner from manufacturer's full range.
- D. Accent Painting: Accent painting is defined as painting of indicated surfaces with a different color than adjacent surfaces. Contractor shall assume the following surfaces will receive accent painting:
 - 1. All metal doors and view window frames.

2.3 EXTERIOR SEALANTS (CLEAR)

- A. Basis of Design Product: Xypex.

2.4 EXTERIOR FINISH COATS

- A. Exterior Coating (Flat):
 - 1. Basis of Design Product: PPG specifications by Owner
 - 2. Color: Specified by owner
- B. Aluminum (Not Anodized or Otherwise Coated) Substrates:
 - 1. Latex System:
 - Prime Coat: Primer, quick dry, for aluminum, MPI #95.
 - Intermediate Coat: Latex, exterior, matching topcoat.
 - Topcoat: Latex, exterior, semi-gloss, (Gloss Level 5), MPI #11.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

END OF SECTION

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SECTION 31 66 13 HELICAL PILE FOUNDATIONS

1. GENERAL

1.1 Purpose of Specification

The purpose of this specification is to detail the furnishing of all materials, tools, equipment, labor supervision, and installation techniques necessary to install helical piles as detailed on the drawings, including connection details. This shall include provisions for load testing that may be part of the scope of work.

1.2 Scope of Work

This work consists of furnishing all necessary, supervision, labor, tools, materials, and equipment to perform all work necessary to install the helical piles, for underpinning the northeast exterior stair at the Montgomery Training Building of the Carpenter complex per the specifications described herein, and as shown on the drawings. The Contractor shall install a helical pile that will develop the load capacities as detailed on the drawings.

1.3 Qualifications of the Helical Pile Contractor

The helical pile Contractor shall be experienced in the installation of helical pile foundations and shall furnish all materials, labor, and supervision to perform the work. The Contractor shall provide names of on-site personnel materially involved with the work, including those who carry documented certification of helical pile training. At a minimum, these personnel shall include foreman, machine operator, and project engineer/manager.

The helical pile Contractor shall not sublet the whole or any part of the contract without the express written permission of the Owner.

1.4 Definitions

A partial list follows. *The Owner may wish to add other specific, project-related items.*

Design Load (DL):	Maximum anticipated service load applied to the helical anchor. Also known as the working load (WL).
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Helical Extension:	Helical pile component installed immediately following the lead section, if required. This component consists of one or more helix plates welded to a central steel shaft of finite length.
Helix Plate:	Generally round steel plate formed into a ramped spiral. The helical shape provides the means to install the helical tieback anchor, plus the plate transfers load to soil in end-bearing. Helix plates are available in various diameters and thicknesses.
Lead Section:	The first helical pile component installed into the soil, consisting of single or multiple helix plates welded to a central steel shaft. Helix plates provide end-bearing capacity.
Plain Extension:	Central steel shaft of finite length without helix plates. It is installed following the installation of the lead section or helical extension (if used). The units are connected with integral couplings and bolts. Plain extensions are used to extend the helix plates beyond the specified minimum depth and into competent load bearing stratum.
Safety Factor:	The ratio of the ultimate capacity to the working or design load of the helical pile.
Working Load (WL):	Equivalent term for Design Load.
Ultimate Capacity (UC):	Limit state based on the structural and/or geotechnical capacity of the ground anchor defined as the point at which no additional capacity can be justified.

1.5 Allowable Tolerances

- 1.5.1 Centerline of helical pile shall not be more than 3 inches from indicated plan location.
- 1.5.2 Helical pile plumbness shall be within 2° of design alignment.
- 1.5.3 Top elevation of helical pile shall be within +1 inch to -2 inches of the design vertical elevation.

1.6 Quality Assurance

- 1.6.1 The Contractor shall employ an adequate number of skilled workers who are experienced in the necessary crafts and who are familiar with the specified requirements and methods needed for proper performance of the work of this specification.
- 1.6.2 All helical piles shall be installed in the presence of a designated representative of the Owner unless said representative informs the Contractor otherwise. The designated representative shall have the right to access any and all field installation records and test reports.

- 1.6.3 Helical pile components as specified therein shall be manufactured by a facility whose quality systems comply with ISO (International Organization of Standards) 9001 requirements. Certificates of Registration denoting ISO Standards Number shall be presented upon request to the Owner or their representative.

1.7 Ground Conditions

The Geotechnical Report, including logs of soil borings as shown on the boring location plan, shall be considered to be representative of the in-situ subsurface conditions likely to be encountered on the project site. Said Geotechnical Report shall be used as the basis for helical pile foundation design using generally accepted engineering judgment and methods.

2 REFERENCED CODES AND STANDARDS

Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title, or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation. In case of conflict, the particular requirements of this specification shall prevail. The latest publication as of the issue of this specification shall govern, unless indicated otherwise.

2.1 American Society for Testing and Materials (ASTM):

- 2.1.1 ASTM A29/A29M Steel Bars, Carbon and Alloy, Hot-Wrought and Cold Finished.
- 2.1.2 ASTM A36/A36M Structural Steel.
- 2.1.3 ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- 2.1.4 ASTM A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- 2.1.5 ASTM A252 Welded and Seamless Steel Pipe Piles.
- 2.1.6 ASTM A775 Electrostatic Epoxy Coating
- 2.1.7 ASTM A193/A193M Alloy-Steel and Stainless-Steel Bolting Materials for High Temperature Service.
- 2.1.8 ASTM A320/A320M Alloy-Steel Bolting Materials for Low Temperature Service.
- 2.1.9 ASTM A500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- 2.1.10 ASTM A572 HSLA Columbium-Vanadium Steels of Structural Quality.
- 2.1.11 ASTM A618 Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing.
- 2.1.12 ASTM A656 Hot-Rolled Structural Steel, High-Strength Low-Alloy Plate with Improved Formability.
- 2.1.13 ASTM A1018 Steel, Sheet and Strip, Heavy Thickness Coils, Hot Rolled, Carbon, Structural, High-Strength Low-Alloy, Columbium or Vanadium, and High-Strength Low-Alloy with Improved Formability.
- 2.1.14 ASTM D1143 Method of Testing Piles Under Static Axial Compressive Load.
- 2.1.15 ASTM D3689 Method of Testing Individual Piles Under Static Axial Tensile Load.

2.2 American Welding Society (AWS):

- 2.2.1 AWS D1.1 Structural Welding Code – Steel.
- 2.2.2 AWS D1.2 Structural Welding Code – Reinforcing Steel.

2.3 American Society of Civil Engineers (ASCE):

- 2.3.1 ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations.

2.4 Deep Foundations Institute (DFI):

- 2.4.1 *Guide to Drafting a Specification for High Capacity Drilled and Grouted Micropiles for Structural Support*, 1st Edition, Copyright 2001 by the Deep Foundation Institute (DFI).

2.5 Post Tensioning Institute (PTI):

- 2.5.1 *Recommendations for Prestressed Rock and Soil Anchors*, Third Edition, Copyright 1996 By the Post-Tensioning Institute.

2.6 Society of Automotive Engineers (SAE):

- 2.6.1 SAE J429 Mechanical and Material Requirements for Externally Threaded Fasteners.

3 SUBMITTALS

3.1 Construction Submittals

- 3.1.1 The Contractor shall submit a detailed description of the construction procedures proposed for use to the Owner for review. This shall include a list of major equipment to be used.
- 3.1.2 The technical submittal shall include the following:
- 3.1.2.a Helical pile number, location and pattern by assigned identification number if not indicated on plans
 - 3.1.2.b Load required of each helical pile
 - 3.1.2.c Type and size of central steel shaft
 - 3.1.2.d Helix configuration (number and diameter of helix plates proposed)
 - 3.1.2.e Minimum effective installation torque
 - 3.1.2.f Minimum depth
 - 3.1.2.g Helical pile attachment to structure relative to grade beam, column pad, pile cap, etc.
- 3.1.3 The Contractor shall submit shop drawings for all helical pile components, including corrosion protection and pile top attachment to the Owner for review and approval. This includes helical pile lead and extension section identification (manufacturer's catalog numbers).
- 3.1.4 Work shall not begin until all the submittals have been received and approved by the Owner.

3.2 Installation Records

The Contractor shall provide the Owner copies of helical pile installation records within 24 hours after each installation is completed. Formal copies shall be submitted on a weekly basis. These installation records shall include, but are not limited to, the following information.

- 3.2.1 Name of project and Contractor
- 3.2.2 Name of Contractor's supervisor during installation
- 3.2.3 Date and time of installation
- 3.2.4 Name and model of installation equipment
- 3.2.5 Type of torque indicator used
- 3.2.6 Location of helical pile by assigned identification number
- 3.2.7 Actual central steel shaft type and configuration – including lead section (number and size of helix plates), number and type of extension sections
- 3.2.8 Helical pile installation duration and observations

- 3.2.9 Total length of installed helical pile
- 3.2.10 Cut-off elevation
- 3.2.11 Inclination
- 3.2.12 Installation torque at one-foot intervals for the entire length
- 3.2.13 Comments pertaining to interruptions, obstructions, rate of advancement or other relevant information

4 PRODUCTS AND MATERIALS

4.1 Central Steel Shaft:

The central steel shaft, consisting of lead sections, helical extensions, plain extensions, and foundation repair brackets shall be manufactured by A.B.Chance or approved equal.

- 4.1.1 *Solid Square Shaft Material (1.5"x1.5")*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting dimensional and workmanship requirements of ASTM A29. The bar shall be modified medium carbon steel grade (similar to AISI 1044) with improved strength due to fine grain size.

- 4.1.1.a Torsional strength rating = 5,500 ft-lb
- 4.1.1.b Minimum yield strength = 70 ksi

- 4.1.2 *Solid Square Shaft Material (1.5"x1.5")*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A29. The bar shall be High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

- 4.1.2.a Torsional strength rating = 7,000 ft-lb
- 4.1.2.b Minimum yield strength = 90 ksi

- 4.1.3 *Solid Square Shaft Material (1.75"x1.75")*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A29. The bar shall be High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

- 4.1.3.a Torsional strength rating: = 11,000 ft-lb
- 4.1.3.b Minimum yield strength = 90 ksi

- 4.1.4 *Solid Square Shaft Material (2.0"x2.0")*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A29. The bar shall be High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

- 4.1.4.a Torsional strength rating: = 16,000 ft-lb
- 4.1.4.b Minimum yield strength = 90 ksi

- 4.1.5 *Solid Square Shaft Material (2.25"x2.25")*: Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A29. The bar shall be High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

- 4.1.5.a Torsional strength rating: = 23,000 ft-lb

4.1.5.b Minimum yield strength = 90 ksi

4.1.6 *Pipe Shaft Material (2.875" O.D.):* Shall be structural steel tube or pipe, seamless or straight-seam welded, per ASTM A500 Grade B. Wall thickness is 0.203" (schedule 40).

4.1.6.a Torsional strength rating = 5,500 ft-lb

4.1.6.b Minimum yield strength = 50 ksi

4.1.7 *Pipe Shaft Material (2.875" O.D.):* Shall be structural steel tube or pipe, seamless or straight-seam welded, per ASTM A500 Grade B. Wall thickness is 0.276" (schedule 80).

4.1.7.a Torsional strength rating = 8,000 ft-lb

4.1.7.b Minimum yield strength = 50 ksi

4.1.8 *Pipe Shaft Material (3.5" O.D.):* Shall be structural steel tube or pipe, seamless or straight-seam welded, ASTM A53, A252, A500, or A618. Wall thickness is 0.300" (schedule 80).

4.1.8.a Torsional strength rating = 13,000 ft-lb

4.1.8.b Minimum yield strength = 50 ksi

4.2 Helix Bearing Plate:

Helix plates material shall be hot rolled carbon steel sheet, strip, or plate formed on matching metal dies to true helical shape and uniform pitch. Bearing plate material shall conform to the following ASTM specifications.

4.2.1 *Solid Square Shaft Material (Torque $\leq 5,500$ ft-lb):* Per ASTM A572, or A1018, or A656 with minimum yield strength of 50 ksi. Plate thickness is 3/8".

4.2.2 *Solid Square Shaft Material (Torque $\geq 5,500$ ft-lb):* Hot rolled steel sheet, strip or plate per ASTM A656 or A936 with minimum yield strength of 80 ksi. Plate thickness is 3/8" or 1/2".

4.2.3 *Pipe Shaft Material (Torque $\leq 5,500$ ft-lb.):* Hot Rolled carbon steel, strip, or plate per ASTM A568 with minimum yield strength of 50 ksi. Alternate materials are A-36 or ASTM A572 Grade 50. Plate thickness is 3/8".

4.2.4 *Pipe Shaft Material (Torque $\geq 5,500$ ft-lb.):* Per ASTM A36, or A572, or A1018, or A656 depending on helix diameter, with minimum yield strength of 80 ksi. Plate thickness is 3/8" or 1/2".

4.3 Bolts:

The size and type of bolts used to connect the central steel shaft sections together shall conform to the following ASTM specifications.

4.3.1 *Solid Square Shaft Material (Torque $\leq 7,000$ ft-lb):* 3/4" diameter bolt per ASTM A320 Grade L7.

4.3.2 *Solid Square Shaft Material (Torque $\geq 7,000$ ft-lb):* 7/8" – 1-1/4" per ASTM A193 Grade B7

4.3.3 *Pipe Shaft Material (Torque $\leq 13,000$ ft-lb):* 3/4" diameter bolts (# of bolts per coupling depends on torque) per SAEJ429 Grade 5.

- SAE J429 Grade 5: Sy (min) = 92 ksi, Su (min) = 120 ksi

4.4 Couplings:

Couplings shall be capable of transmitting both the maximum installation torque from the tool string to

the helix plates, and the maximum axial load from the top of the pile to the helical bearing plates.

4.5 Foundation Repair Bracket:

Brackets are formed from steel that meets or exceeds the requirements of ASTM A36, and have a hot-dipped galvanized coating per ASTM A153.

4.6 Plates, Shapes, or Pier Caps:

Structural steel plates and shapes for helical pile top attachments shall conform to ASTM A36 or ASTM A572 Grade 50.

4.7 Corrosion Protection

4.7.1 Galvanization: All helical pile material that is not encased in concrete shall be hot-dipped galvanized in accordance with ASTM A153 after fabrication.

5 EXECUTION

5.1 Site Conditions

- 5.1.1 Prior to commencing helical pile installation, the Contractor shall inspect the work of all other trades and verify that all said work is completed to the point where helical pile installation may commence without restriction.
- 5.1.2 The Contractor shall verify that all helical piles may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc.
- 5.1.3 In the event of a discrepancy, the Contractor shall notify the Owner. The Contractor shall not proceed with helical pile installation in areas of discrepancies until said discrepancies have been resolved.

5.2 Installation Equipment

- 5.2.1 Shall be rotary type, hydraulic power driven torque motor with clockwise and counter-clockwise rotation capabilities. The torque motor shall be capable of continuous adjustment to revolutions per minute (RPM's) during installation. Percussion drilling equipment shall not be permitted. The torque motor shall have torque capacity 15% greater than the torsional strength rating of the central steel shaft to be installed.
- 5.2.2 Equipment shall be capable of applying adequate down pressure (crowd) and torque simultaneously to suit project soil conditions and load requirements. The equipment shall be capable of continuous position adjustment and swing capacity at maximum installation torque to maintain proper helical pile alignment during installation. The application of bending stress to the pile during installation will not be permitted.

5.3 Installation Tooling

- 5.3.1 Shall consist of a Kelly Bar Adapter (KBA) and drive tool as appropriate for the central shaft of the helical pile under maximum installation torque and used in accordance with the manufacturers' written installation instructions.
- 5.3.2 Installation tooling should be maintained in good working order and safe to operate at all times. Flange bolts and nuts should be regularly inspected for proper tightening torque. Bolts, connecting pins, and retainers should be periodically inspected for wear and/or damage and replaced with identical items provided by the manufacturer. Heed all warning labels. Worn or damaged tooling should be replaced.
- 5.3.3 A torque indicator shall be used during helical pile installation. The torque indicator shall be a device that directly measures torque and that is mounted in-line with the installation tooling. Devices that infer torque from hydraulic pressure will not be permitted.
 - 5.3.3.a Shall be capable of providing continuous measurement of applied torque throughout the installation.
 - 5.3.3.b Shall be capable of torque measurements in increments of 200 ft-lb or less.
 - 5.3.3.c Shall be re-calibrated, if in the opinion of the Owner and/or Contractor reasonable doubt exists as to the accuracy of the torque measurements.

5.4 Installation Procedures

- 5.4.1 The helical pile installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project.
- 5.4.2 The lead section shall be positioned at the location as shown on the working drawings. Battered helical piles can be positioned perpendicular to the ground to assist in initial advancement into the soil before the required batter angle shall be established. The helical pile sections shall be engaged and advanced into the soil in a smooth, continuous manner at a rate of rotation of not to exceed 16 RPM's. The extension sections shall be provided to obtain the required minimum overall length and installation torque as shown on the working drawings. Connect sections together using coupling bolt(s) and nut torqued to 40 ft-lb.
 - 5.4.2.a Sufficient down pressure shall be applied to uniformly advance the helical pile sections approximately 3 inches per revolution. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths.

5.5 Termination Criteria

- 5.5.1 The torque as measured during the installation shall not exceed the torsional strength rating of the central steel shaft.
- 5.5.2 The minimum installation torque and minimum overall length criteria as shown on the technical submittal shall be satisfied prior to terminating the helical pile foundation installation.
- 5.5.3 If the torsional strength rating of the central steel shaft and has been reached prior to achieving the minimum overall length required, the Contractor shall have the following options:
 - 5.5.3.a Terminate the installation at the depth obtained subject to the review and acceptance of the Owner, or:
 - 5.5.3.b Remove the existing helical pile and install a new one with fewer and/or smaller diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Owner.

- 5.5.4 If the minimum installation torque as shown on the working drawings is not achieved at the minimum overall length, and there is no maximum length constraint, the Contractor shall have the following options:
- 5.5.4.a Install the helical pile deeper using additional extension sections, or:
 - 5.5.4.b Remove the existing helical pile and install a new one with additional and/or larger diameter helix plates.
 - 5.5.4.c De-rate the load capacity of the helical pile and install additional helical screw foundation(s). The de-rated capacity and additional helical screw foundation location shall be subject to the review and acceptance of the Owner.
- 5.5.5 If the helical pile is refused or deflected by a subsurface obstruction, the installation shall be terminated and the pile removed. The obstruction shall be removed, if feasible, and the helical pile re-installed. If the obstruction can't be removed, the helical pile shall be installed at an adjacent location, subject to review and acceptance of the Owner.
- 5.5.6 If the torsional strength rating of the central steel shaft has been reached prior to proper positioning of the last plain extension section relative to the final elevation, the Contractor may remove the last plain extension and replace it with a shorter length extension. If it is not feasible to remove the last plain extension, the Contractor may cut said extension shaft to the correct elevation. The Contractor shall not reverse (back-out) the helical pile to facilitate extension removal.
- 5.5.7 The average torque for the last three feet of penetration shall be used as the basis of comparison with the minimum installation torque as shown on the working drawings. The average torque shall be defined as the average of the last three readings recorded at one-foot intervals.

END OF SPECIFICATION

Carpenter Field Training Complex - 2026 Repairs
City of Clearwater, Florida
Issuance Date: 2026/03/24