



Post Office Box 3005
2831 Talleyrand Avenue
Jacksonville, Florida 32206-0005
www.jaxport.com

February 6, 2023

ADDENDUM NO. 01
TO
SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR
INVITATION TO BID
PCOB NEW AWNINGS
JPA CONTRACT NO. MC-1839AD

The item(s) of this Addendum shall modify and become a part of the contractual documents for this project as of this date.
(Failure to acknowledge this addendum will be grounds for rejection of proposal.)

PHYSICAL CHANGES TO CONTRACT SPECIFICATIONS

Item No. 01

Reference to Drawing Cover Sheet, Sheet C102, & Sheet C103 **DELETE** and **REPLACE** with the attached Revised 100% Plan Set, Cover Sheet, Sheet C102, & Sheet C103 drawings. **(See attachment No. 02)**

ATTACHMENTS TO CONTRACT SPECIFICATIONS

Attachment No. 01

Pre-Bid Meeting Minutes held on Friday, January 27, 2023 at 10:30 AM.

Attachment No. 02

100% Revision 1 Plan Set (Cover Sheet, Sheet C102, & Sheet C103)

Attachment No. 03

Response to Questions

Attachment No. 04

Technical Specifications 100% Submittal_PCOB Awning

Acknowledgment of the following addenda is hereby made:

Addendum #1, Dated: _____ Initials _____

Company _____

NOTE: THIS ADDENDUM SHALL BE ACKNOWLEDGED AND UPLOADED WITH YOUR BID SUBMISSION, FAILURE TO ACKNOWLEDGE ALL ADDENDA IN E-BUILDER WILL BE GROUNDS FOR REJECTION OF BID.

PLEASE VISIT <http://www.jaxport.com/procurement/active-solicitations> OR CALL THE PROCUREMENT DEPARTMENT AT (904) 357-3017, PRIOR TO THE BID OPENING TO DETERMINE IF ANY ADDENDA HAVE BEEN RELEASED ON THIS CONTRACT.

PRE-BID MEETING MEETINGS
JPA Contract: ITB MC-1839AD

PCOB NEW AWNINGS

Date: FRIDAY, JANUARY 27, 2023

Time: 10:30 AM

Good morning! It is now **10:30 AM** on **FRIDAY, JANUARY 27, 2023** and the Pre-Bid Meeting for JPA Contract No. **ITB MC-1839AD PCOB NEW AWNINGS** will now begin. This meeting is being held via **ZOOM Meeting** teleconference which allows interested persons to view and participate remotely.

Please type your name and the company you represent in the "Chat Box".

This meeting is subject to Florida Sunshine Laws and therefore, is being recorded.

We will begin the meeting by introducing JAXPORT Staff Members:

JAXPORT STAFF IN ATTENDANCE:

- Name: Retta Rogers Title: Manager, Procurement Services
- Name: Jerrie Gunder Title: Contract Specialist
- Name: Kelsey Cox Title: Sr. Director, Engineering & Construction
- Name: Jose Vazquez Title: Director, Engineering & Construction Support
- Name: Marvin Grieve Title: Director, Project Management
- Name: Ellen Carmosino Title: Construction Program Administrator
- Name: Bobbi Mullins Title: Construction Contracts Coordinator
- Name: Corey Bell Title: Manager, Public Safety Administration

IDENTIFY MEMBERS OF PUBLIC ATTENDEES

Please clearly state your name and the company you are representing. *(Allow time for each person to speak, add their name to the Attendance list, and ask again at the conclusion of the meeting for verification).*

COMPANIES' ATTENDANCE RECORD OF PRE-BID MEETING	
REPRESENTING AGENT	COMPANY'S NAME
1. April Campbell	Pars Construction Services

Instructions for all participants/members of the public –

- i. To avoid any microphones transmitting sounds that causes feedback, echoes or sounds that will otherwise cause a disruption to this meeting, participants (regardless of how they are accessing this meeting) are asked to keep their microphones on "mute" at all times when not speaking. PLEASE TAKE A MOMENT AND "MUTE" YOUR MICs FOR THIS MEETING.
- ii. Any individual who wishes to speak, should "*unmute*" their microphones and wait to be recognized by the host before speaking.
- iii. When called upon, please announce your name and the company you are representing.

- iv. Each person speaking should do so clearly and slowly to ensure they are heard and understood for recording purposes and by other participants and attendees.

Key Dates:

- **Questions:** Any questions after the meeting must be e-mailed with the **SUBJECT: ITB_MC-1839AD** to sandra.platt@jaxport.com. Please do not send questions to anyone else. The deadline to submit questions by e-mail is: **Thursday, February 2, 2023 at 3:00 PM (EST)** After that time no questions will be answered concerning this ITB.
- **Bids Due: Wednesday, February 22, 2023, at 2:00 PM (EST).** Invitation to Bids and all required supplemental material listed in the bid documents, must be submitted in **PDF Format Only** through E-Builder. Bids and supplemental documents submitted through Email or Fax will not be accepted or considered. **Until further notice, JAXPORT is not accepting any ITB packages submitted by Mail or Hand-Deliveries. Please visit JAXPORT's website at www.jaxport.com for more information and updates.**
- **Site Visit:** An Optional Site Visit is scheduled for 2:00 PM

The PDF file name should read "MC-1839AD"

INVITATION TO BID DOCUMENTS

The Invitation to Bid document can be reviewed from our website: <https://www.jaxport.com/procurement/active-solicitations/> If you should have any questions regarding the solicitation package, please submit them **by e-mail to Sandra Platt, Sr. Contract Specialist at: sandra.platt@jaxport.com or through E-Builder.**

- **Acknowledgment of Addenda** *(It is mandatory that the bidder acknowledge all addenda, the system will not allow you to submit your proposal until the addenda is acknowledged).*
- **Bidder Requirements:** Page BCF-1 (list of documents required to be submitted with bid. It is mandatory that all required documents be uploaded in e-Builder when submitting your bids.)
- **Bid Form – Total Bid Amount (Items 1 – 17) to include Owner's Options 1 & 2**
- **Time for Completion – Refer to Special Conditions, page SC-2 Item 1 120 calendar days after issuance of Construction NTP to successful bidder.**
- **Liquidated Damages - \$ 1,694.00 per day**
- **SEB Participation is 0%, however, SEB participation strongly Encouraged in any of the following categories: (JSEB/DBE/MBE/WBE/SBA). (Brian Williams)**
- **Scope of Services Overview – Jose Vazquez, Director, Engineering & Construction Support.**

Project Manager: Jose Vazquez, Director, Engineering & Construction Support gave an overview of the Scope of Work as outlined in the specification documents.

Director, Project Manager: Marv Grieve, Director, Project Manager advised that one of the two main entrances at PCOB must always be available for use.

Security: Corey Bell, Manager, Public Safety Administration gave an overview of the security requirements for entering PCOB and notifying the guard when visiting the site.

Question & Answers: Questions asked during the meeting were addressed, however, it was stated that **questions should be sent via email** to Sandra.Platt@jaxport.com to be properly addressed via Addendum.

Note: These minutes shall become a part of the solicitation documents and contract agreement. Any corrections, additions or errors will be brought to the attention of the Project Manager within 5 days after receipt of the minutes. It shall be the responsibility of the contractor submitting a proposal for this contract to ensure that all Subcontractors, Suppliers, and services that are incorporated into his proposal have received benefit of the minutes and any addenda that may be issued.

QUESTIONS:

Thank you for your participation and we look forward to your bid submission.

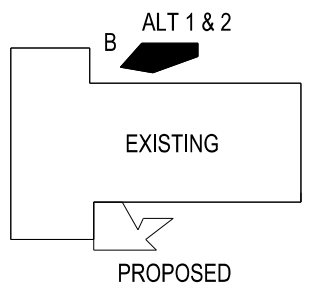
Meeting adjourned at **10:46 AM**.

Prepared By: *Retta Rogers, Manager, Procurement Services*

PROJECT TITLE:
PCOB NEW AWNING

PROJECT ADDRESS:
2831 TALLEYRAND AVE
JACKSONVILLE, FL 32206

KEY PLAN:



REVISIONS

NO.	DESCRIPTION	DATE
1	ADDED NOTE	1/26/2023

DATE ISSUED: SEPTEMBER 30, 2022
REVIEWED BY: SDP
DRAWN BY: AC
DESIGNED BY: AC

PROJECT NUMBER:
10014153010
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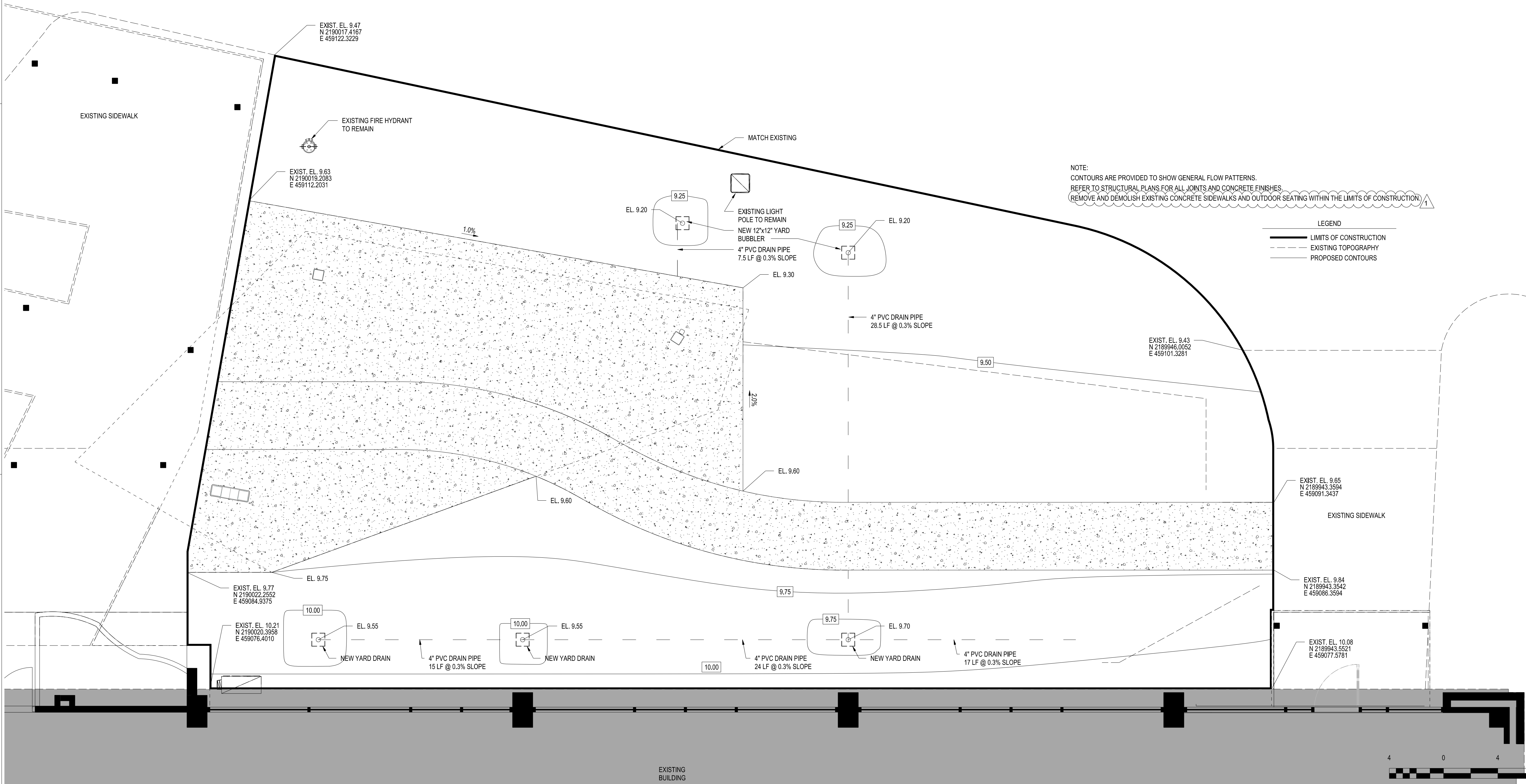
SEAL:

SHEET TITLE:
SITE GRADING PLAN
ALT 1

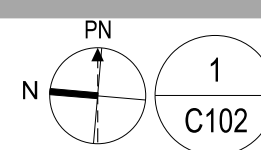
SHEET ID:

C102

PROJECT STATUS:
100% SET



11/10/2022 10:57:10 AM BIM-3602/1014153000_JAXPORT_GEC AE 177B AWNING/1014153010_PCOB NEW AWNING_A_R20.rvt



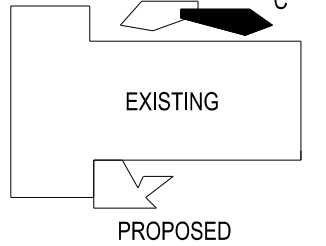
SITE GRADING PLAN - ALT 1

SCALE: 1/4" = 1'-0"

PROJECT TITLE:
 PCOB NEW AWNING

PROJECT ADDRESS:
 2831 TALLEYRAND AVE
 JACKSONVILLE, FL 32206

KEY PLAN:
 ALT 1 & 2



REVISIONS

NO.	DESCRIPTION	DATE
1	ADDED NOTE	1/26/2023

DATE ISSUED: SEPTEMBER 30, 2022
REVIEWED BY: SDP
DRAWN BY: AC
DESIGNED BY: AC

PROJECT NUMBER:
 10014153010
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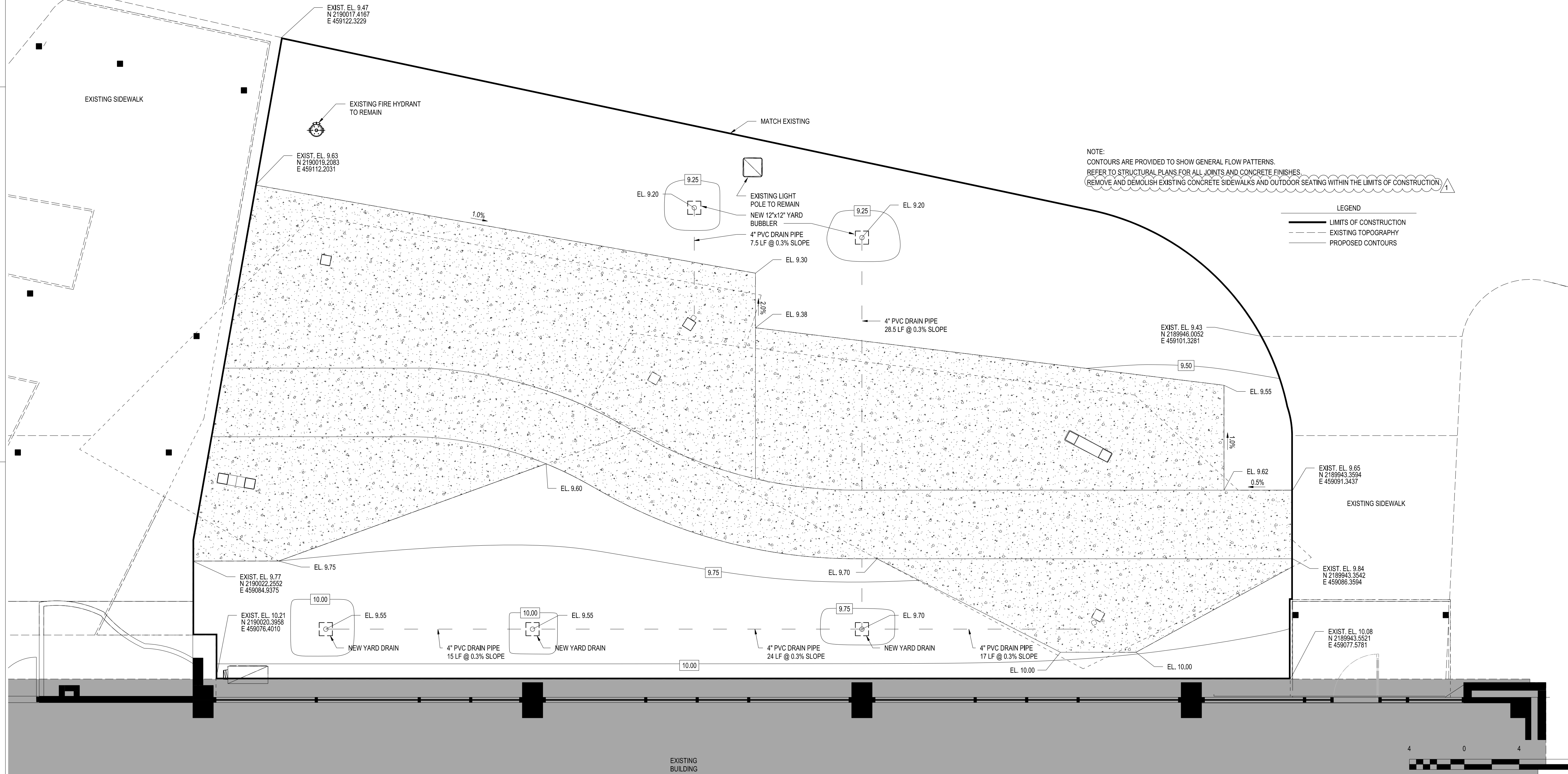
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SHEET TITLE:
 SITE GRADING PLAN
 ALT 2

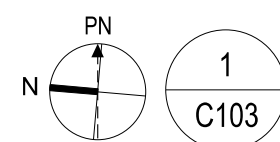
SHEET ID:

C103

PROJECT STATUS:
 100% SET



LEGEND
 ——— LIMITS OF CONSTRUCTION
 - - - - - EXISTING TOPOGRAPHY
 ——— PROPOSED CONTOURS



SITE GRADING PLAN - ALT 2

SCALE: 1/4" = 1'-0"

11/10/2022 10:55:49 AM BIM-360/1014153000_JAXPORT_GEC_AE_177B_AWNING/1014153010_PCOB_NEW_AWNING_A_R20.rvt



Post Office Box 3005
2831 Talleyrand Avenue
Jacksonville, Florida 32206-0005

**INVITATION TO BID
ADDENDUM NO. 01
JPA CONTRACT NO.: MC-1839AD
PCOB NEW AWNINGS**

RESPONSE TO QUESTIONS

1. I noticed that the specification for the canopy section has not been uploaded.
I am looking to obtain the canopy specifications.

ANSWER: See Attachment No. 04

**TECHNICAL SPECIFICATIONS
100% SUBMITTAL**

For:
PCOB AWNING
G2022-05
MC-1839AD

Prepared For:



JACKSONVILLE PORT AUTHORITY

Prepared By



RS&H, INC.
10748 Deerwood Park Blvd. South
Jacksonville, Florida 32256-0597
DECEMBER 2022

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TECHNICAL SPECIAL PROVISIONS

DIVISION	TITLE	DISCIPLINE	PAGES
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DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 02 – EXISTING CONDITIONS

Section 02 41 19	SELECTIVE DEMOLITION	Architectural	4
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DIVISION 03 – CONCRETE

Section 03 30 00	CAST-IN-PLACE CONCRETE	Structural	9
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DIVISION 07 – THERMAL AND MOISTURE PROTECTION

Section 07 42 93	SOFFIT PANELS	Architectural	19
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Section 07 92 00	JOINT SEALANTS	Architectural	33

DIVISION 09 – FINISHES

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DIVISION 10 – SPECIALTIES

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DIVISIONS 11 – 30

Not used.

DIVISION 31 – EARTHWORK

Section 31 31 16	TERMITE CONTROL	Architectural	50
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DIVISIONS 33 - 49

Not used.

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and **[deliver to Owner ready for reuse] [store]**.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at **Project site**.
 1. Inspect and discuss condition of construction to be selectively demolished.
 2. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 3. Review areas where existing construction is to remain and requires protection.

1.5 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property **for dust control and noise control**. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's [**building manager's**] [**and**] [**other tenants'**] on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.8 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. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. 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.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.9 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey of Existing Conditions: Record existing conditions by use of **measured drawings** and **preconstruction photographs**.
 - 1. Inventory and record the condition of items to be removed and salvaged.

3.2 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.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- B. Remove temporary barricades and protections where hazards no longer exist.

3.3 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 6. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. 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 reinstalled in their original locations after selective demolition operations are complete.

3.4 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

3.5 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.
- B. Burning: Do not burn demolished materials.

3.6 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 024119

SECTION 033300 – ARCHITECTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place architectural concrete, including form facings, reinforcement accessories, concrete materials, concrete mixtures, concrete placement, and concrete finishes.

B. Related Requirements:

1. Section 079200 "Joint Sealants"
2. Section 313116 "Termite Control"
3. Section 312323.43 "Geofoam"

1.2 DEFINITIONS

- A. Aggregate Exposure: Projection of coarse aggregate from matrix or mortar after completion of exposure operations.
- B. Cast-in-Place Architectural Concrete: Concrete that is exposed to view, is designated as architectural concrete, and that requires special concrete materials, formwork, placement, or finishes to obtain specified architectural appearance.
- C. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- D. Design Reference Sample: Sample designated by Architect in the Contract Documents that reflects acceptable surface quality and appearance of cast-in-place architectural concrete.
- E. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials.
- D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
1. Cementitious materials and aggregates.

2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.

E. Shop Drawings:

1. Existing Measurements:
 - a. Provide dimension plan and sections of existing elements of which new construction is to match.
 - b. Provide location and dimensions of new work coordinated with dimensions of existing.
2. Reinforcing Bar:
 - a. Include placing drawings that detail fabrication, bending, and placement.
 - b. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301.

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations and dimensions of existing elements in place to match prior to commencement of work. Measurements should verify existing element locations and dimensions. Existing element dimensions shall be noted on shop drawings for coordination with drawings.
- B. Finishes: Verify finishes of existing elements to match prior to commencement of work. Finishes of new work shall match existing elements including color and texture.

PART 2 - PRODUCTS

2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth surfaces.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

- A. Reinforcement Bars: ASTM A 615, Grade 60, deformed.
- B. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60. Cut bars true to length with ends square and free of burrs.

2.3 CONCRETE MATERIALS

- A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project.
- B. Portland Cement: ASTM C 150, Type I or II.
 - 1. Fly Ash: ASTM C 618, Class F or C.
 - 2. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- C. Aggregate: ASTM C 33, uniformly graded, from a single source, with coarse aggregate.
- D. Water: ASTM C 94.

2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1% water-soluble chloride ions by mass of cement and to be compatible with other admixtures.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

2.6 RELATED MATERIALS

- A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.7 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
- C. Proportion mixes to provide concrete with the following properties:
 - 1. Compressive Strength (28 Days): 3,500 psi.
 - 2. Slump Limit: 4 in. or up to 8 in. if using a high range water reducing admixture.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94.
 - 1. When air temperature is between 85° F and 90° F, reduce mixing and delivery time from 1.5 hrs to 75 minutes; when air temperature is above 90° F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

- A. Limit deflection of form-facing panels to not exceed ACI 301 requirements.
- B. Construct forms to result in cast-in-place architectural concrete that complies with ACI 117.
- C. Seal form joints, chamfers, and penetrations at form ties with form joint tape or form joint sealant to prevent cement paste leakage.
- D. Chamfer exterior corners and edges of cast-in-place architectural concrete.
- E. Coat contact surfaces of forms with form-release agent, in accordance with manufacturer's written instructions, before placing reinforcement, anchoring devices, and embedded items.

3.2 INSTALLATION OF REINFORCEMENT AND ACCESSORIES

- A. General: Comply with Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.3 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work.
 - 1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
 - 2. Apply new form-release agent.
- B. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.
 - 1. Align and secure joints to avoid offsets.
 - 2. Do not use patched forms for cast-in-place architectural concrete surfaces.

3.4 JOINTS

- A. Construction Joints: Install construction joints true to line, with faces perpendicular to surface plane of cast-in-place architectural concrete, so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.
 - 2. Use **bonding agent** at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.

- D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery, at Project site, or during placement.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- H. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40° F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50° F and not more than 80° F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.
- I. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90° F. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.6 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish:
 - 1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
 - 2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with **ACI 117 (ACI A117M)** tolerances for conventional concrete.

3. Apply float finish to surfaces **to receive trowel finish.**

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighthen until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces **exposed to view.**
7. Finish surfaces to the following tolerances, in accordance with **ASTM E1155** for a randomly trafficked floor surface:

a. Slabs on Ground:

- 1) Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, **10-ft.-** long straightedge resting on two high spots and placed anywhere on the surface does not exceed **1/4 inch and also no more than 1/16 inch in 2 feet.**

D. Fine-Broom Finish: Apply a fine-broom finish to exterior concrete locations indicated on Drawings.

1. Apply a first trowel finish to surfaces.
2. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.
3. Coordinate required final finish with Architect before application.
4. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete locations **indicated on Drawings.**

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

3.7 CONCRETE CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-in. lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 in., and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within 3 hrs after initial application. Maintain continuity of coating and repair damage during curing period.

3.8 REPAIRS, CLEANING, & PROTECTION

- A. Remove and replace concrete that is broken, damaged, or defective, or does not meet requirements in this Section.
- B. Drill test cores where directed by Design Professional when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Maintain concrete as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Protect corners, edges, and surfaces of cast-in-place architectural concrete from damage; use guards and barricades.
- E. Protect cast-in-place architectural concrete from staining, laitance, and contamination during remainder of construction period.
- F. Clean concrete not more than two days before date scheduled for Substantial Completion inspections.
- G. Wash and rinse surfaces in accordance with concrete finish applicator's written instructions.
 - 1. Protect other Work from staining or damage due to cleaning operations.
 - 2. Do not use cleaning materials or processes that could change the appearance of cast-in-place architectural concrete finishes.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Agency: Owner will engage a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.
- C. Testing Services: Testing shall be performed according to the following requirements:
 - 1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.
 - 2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
 - 3. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test, but not less than one test for each day's pour of each type of air-entrained concrete.
 - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40° F and below and when 80° F and above, and one test for each set of compressive-strength specimens.
 - 5. Compression Test Specimens: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
 - 6. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.
 - 7. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
- D. Test results shall be reported in writing to Design Professional, concrete manufacturer, and Contractor within 24 hrs of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Design Professional but will not be used as the sole basis for approval or rejection.
- F. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Design Professional. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

3.10 FINAL ACCEPTANCE

- A. Final acceptance of completed architectural concrete Work will be determined by Architect by comparing approved sample and existing finishes with installed Work, when viewed at a distance of 4 feet.

END OF SECTION 033300

SECTION 074293 - SOFFIT PANELS

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. Metal soffit panels.
- B. Related Sections:
 - 1. Section 077100 "Roof Specialties" for metal flashing and trim.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
 - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each product, tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

1.7 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.8 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: **Two** years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: **20** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 1. Wind Loads: As indicated on Drawings.
 2. Other Design Loads: **As indicated on Drawings.**
 3. Deflection Limits: For wind loads, no greater than **1/240** of the span.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): **120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.**

2.2 METAL SOFFIT PANELS

- A. Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels:
 1. Finish: **Match finish and color of canopy framing**
 2. Sealant: Factory applied within interlocking joint.
- C. Flush-Profile Metal Soffit Panels **Solid** panels formed with vertical panel edges and **a flat pan** between panel edges; with flush joint between panels.
 1. Material: Same material, finish, and color as metal **roof** panels.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal panel manufacturer.
 2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Shim or otherwise plumb substrates receiving metal panels.
 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 3. Install screw fasteners in predrilled holes.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 5. Install flashing and trim as metal panel work proceeds.
 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
 2. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
 3. Copper Panels: Use copper, stainless steel, or hardware-bronze fasteners.
 4. Stainless Steel Panels: Use stainless steel fasteners.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
1. Apply panels and associated items true to line for neat and weathertight enclosure.
 2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
 4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
- E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

- F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
 - 1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
 - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074293

SECTION 077100 - ROOF SPECIALTIES

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. Roof-edge drainage systems.
 - 2. Reglets and counterflashings.
- B. Related Requirements:
 - 1. Section 079200 "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.
 - 2. Section 107326 "Canopies" for polycarbonate panel system over steel structural canopy.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Product Test Reports: For roof-edge flashings, for tests performed by a qualified testing agency.
- C. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.

- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.8 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. SPRI Wind Design Standard: Manufacture and install roof-edge specialties tested according to SPRI ES-1 and capable of resisting the following design pressures:
 - 1. Design Pressure: As indicated on Drawings.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 ROOF-EDGE DRAINAGE SYSTEMS

- A. Gutters: Manufactured in uniform section lengths not exceeding 12 feet (3.6 m), with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch (25 mm) above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.
 - 1. Aluminum Sheet: 0.032 inch (0.81 mm) thick.
 - 2. Gutter Profile: As indicated in drawings.
 - 3. Corners: Factory mitered and mechanically clinched and sealed watertight.
 - 4. Gutter Supports: Gutter brackets with finish matching the gutters.
- B. Downspouts: Plain rectangular complete with mitered elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.
 - 1. Formed Aluminum: 0.032 inch (0.81 mm) thick.
- C. Aluminum Finish: Two-coat fluoropolymer.
 - 1. Color: Match Architect's sample.

2.3 REGLETS AND COUNTERFLASHINGS

- A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
 - 1. Formed Aluminum: 0.024 inch (0.61 mm) thick.
 - 2. Corners: Factory mitered and mechanically clinched and sealed watertight.
 - 3. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 - 4. Concrete Type, Embedded: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
 - 5. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.
 - 6. Multiuse Type, Embedded: For multiuse embedment in [cast-in-place concrete] [masonry mortar joints].
- B. Counter flashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets and compress against base flashings with joints lapped, from the following exposed metal:
 - 1. Formed Aluminum: 0.024 inch (0.61 mm) thick.
- C. Aluminum Finish: Two-coat fluoropolymer.
 - 1. Color: Match Architect's sample.

2.4 MATERIALS

- A. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

- B. Aluminum Extrusions: ASTM B221 (ASTM B221M), alloy and temper recommended by manufacturer for type of use and finish indicated, finished as follows:

2.5 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 - 1. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
- B. Elastomeric Sealant: ASTM C920, elastomeric polyurethane polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 - 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.

2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 4. Torch cutting of roof specialties is not permitted.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
1. Coat concealed side of uncoated aluminum and stainless steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise indicated on Drawings.
 2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
- D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.3 INSTALLATION OF ROOF-EDGE DRAINAGE-SYSTEM

- A. Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.
1. Install gutter with expansion joints at locations indicated but not exceeding 50 feet (15.2 m) apart. Install expansion-joint caps.
- B. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch (25 mm) away from column; locate fasteners at top and bottom and at approximately 60 inches (1500 mm) o.c.
1. Connect downspouts to underground drainage system indicated.

3.4 INSTALLATION OF REGLETS AND COUNTERFLASHINGS

- A. Coordinate installation of reglets and counterflashings with installation of base flashings.

- B. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches (100 mm) over top edge of base flashings.
- C. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant. Fit counterflashings tightly to base flashings.

3.5 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077100

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Silicone joint sealants.
 2. Urethane joint sealants.

1.2 ACTION SUBMITTALS

- A. Product Data:
1. Joint-sealants.
 2. Joint sealant backing materials.
- B. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports:
1. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
 - a. Joint-sealant location and designation.
 - b. Manufacturer and product name.
 - c. Type of substrate material.
 - d. Proposed test.
 - e. Number of samples required.
 2. Preconstruction Laboratory Test Reports: For each joint sealant and substrate material to be tested from sealant manufacturer, indicating the following:
 - a. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - b. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.
- B. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

- A. Warranty Documentation:
 - 1. Manufacturers' special warranties.
 - 2. Installer's special warranties.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installers: Authorized representative who is trained and approved by manufacturer.
 - 2. Testing Agency: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

1.6 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.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain joint sealants from single manufacturer for each sealant type.

2.2 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 - 1. Pecora Corporation,
 - 2. Sika Corporation
 - 3. The Dow Chemical Company
 - 4. Tremco Incorporated

2.4 URETHANE JOINT SEALANTS

- A. Urethane, M, P, 50, T, NT: Multicomponent, pourable, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 50, Uses T and NT.
 - 1. Pecora Corporation,
 - 2. Sika Corporation
 - 3. The Dow Chemical Company
 - 4. Tremco Incorporated

2.5 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

- A. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- B. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Cement Plaster
 - 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. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide flush joint profile at locations indicated on Drawings in accordance with Figure 8B in ASTM C1193.

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 JOINT-SEALANT SCHEDULE

- A. Exterior joints in horizontal traffic surfaces, JS-#1:
 - 1. Joint Locations:
 - a. Isolation and contraction joints in cast-in-place concrete slabs.
 - 2. Joint Sealant: Urethane, M, P, 50, T, NT
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- B. Exterior joints in vertical surfaces and horizontal nontraffic surfaces, JS-#2:
 - 1. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Joints between plant-precast architectural concrete units.
 - c. Control and expansion joints in unit masonry.
 - d. Joints between metal panels.
 - e. Joints between different materials listed above.
 - f. Perimeter joints between materials listed above and frames of doors and windows.
 - g. Control and expansion joints in ceilings.
 - 2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors

END OF SECTION 079200

SECTION 092400 - CEMENT PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Exterior vertical plasterwork (stucco).
 - 2. Exterior horizontal and nonvertical plasterwork (stucco).

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- 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 factory-prepared finish coat and for each color and texture specified.

1.3 DELIVERY, STORAGE, AND HANDLING

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

1.4 FIELD CONDITIONS

- A. Comply with ASTM C926 requirements.
- B. 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 (4.4 deg C).
 - 3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

PART 2 - PRODUCTS

2.1 METAL LATH

- A. Expanded-Metal Lath: ASTM C847, cold-rolled carbon-steel sheet with ASTM A653/A653M, G60 (Z180), hot-dip galvanized-zinc coating.
 - 1. Manufacturers:
 - a. Alabama Metal Industries
 - b. ClarkDietrich
 - c. Phillips Manufacturing Co
 - d. Approved Equal
 - 2. Diamond-Mesh Lath: Self-furring, 2.5 lb/sq. yd.

2.2 ACCESSORIES

- A. General: Comply with ASTM C1063, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Metal Accessories:
 - 1. Manufacturers:
 - a. Alabama Metal Industries
 - b. ClarkDietrich
 - c. Phillips Manufacturing Co
 - d. Approved Equal
 - 2. Foundation Weep Screed: Fabricated from hot-dip galvanized-steel sheet, ASTM A653/A653M, G60 (Z180) zinc coating.
 - 3. External- (Outside) Corner Reinforcement: Fabricated from metal lath with ASTM A653/A653M, G60 (Z180), hot-dip galvanized-zinc coating.
 - 4. Cornerbeads: Fabricated from zinc-coated (galvanized) steel
 - a. Smallnose cornerbead with expanded flanges; use unless otherwise indicated.
 - b. Smallnose cornerbead with perforated flanges; use on curved corners.
 - c. Smallnose cornerbead with expanded flanges reinforced by perforated stiffening rib; use on columns and for finishing unit masonry corners.
 - 5. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
 - 6. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
 - 7. Expansion Joints: Fabricated from zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.
 - 8. Two-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4 to 5/8 inch (6 to 16 mm) wide; with perforated flanges.

2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Bonding Compound: ASTM C932.
- C. Fasteners for Attaching Metal Lath to Substrates: ASTM C1063.

2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I
 - 1. Color for Finish Coats: White
- B. Masonry Cement: ASTM C91, Type N.
 - 1. Color for Finish Coats: White

2.5 PLASTER MIXES

- A. General: Comply with ASTM C926 for applications indicated.
- B. Base-Coat Mixes for Use over High-Absorption Unit Masonry and Concrete: Single base (scratch) coat for two-coat plasterwork on high-absorption plaster bases as follows:
 - 1. Portland Cement Mix: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
 - 2. Masonry Cement Mix: Use 1 part masonry cement and 2-1/2 to 4 parts aggregate.
 - 3. Portland and Masonry Cement Mix: For cementitious material, mix 1 part portland cement and 1 part masonry cement. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
 - 4. Plastic Cement Mix: Use 1 part plastic cement and 2-1/2 to 4 parts aggregate.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances 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. Prepare smooth, solid substrates for plaster according to ASTM C926.

3.3 INSTALLING METAL LATH

- A. Metal Lath: Install according to ASTM C1063.
 - 1. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.

3.4 INSTALLING ACCESSORIES

- A. Install according to ASTM C1063 and at locations indicated on Drawings.
- B. Reinforcement for External (Outside) Corners:
 - 1. Install lath-type, external-corner reinforcement cornerbead at exterior locations.
 - 2. Install cornerbead at interior locations.
- C. Control Joints: Locate as approved by Architect for visual effect and as follows:
 - 1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
 - a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
 - b. Horizontal and Other Nonvertical Surfaces: 100 sq. ft. (9.3 sq. m).
 - 2. At distances between control joints of not greater than 18 feet (5.5 m) o.c.
 - 3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
 - 4. Where control joints occur in surface of construction directly behind plaster.
 - 5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.5 PLASTER APPLICATION

- A. General: Comply with ASTM C926.
 - 1. Do not deviate more than plus or minus 1/4 inch in 10 feet (6 mm in 3 m) from a true plane in finished plaster surfaces when measured by a 10-foot (3-m) straightedge placed on surface.
 - 2. Provide plaster surfaces that are ready to receive field-applied finishes indicated.
- B. Bonding Compound: Apply on unit masonry and concrete substrates for direct application of plaster.
- C. Walls: Base-Coat Mixes for Use over Metal Lath: For scratch and brown coats, for three-coat plasterwork with 3/4-inch (19-mm) total thickness, as follows:
 - 1. Portland cement mixes.

- D. Walls; Base-Coat Mix: For base (scratch) coat, for two-coat plasterwork and having 1/4-inch (6-mm) thickness on concrete, as follows:
 - 1. Portland cement mix.
- E. Plaster Finish Coats: Apply to provide fine, float(sand) finish.

3.6 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.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protection and enclosure of other work after plastering is complete. 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 092400

SECTION 10 73 26 – CANOPIES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel and sloped monolithic polycarbonate glazing panel system and accessories as shown in drawings and as specified.
2. Provide a complete canopy glazing assembly of extruded solid polycarbonate panels as part of a complete aluminum framed glazing system that has been tested and warranted by the manufacturer. Cellular or multi-cell polycarbonate panels are not acceptable.
3. Factory provided structural steel, anchors, brackets and hardware necessary to complete the assembly and weather tightness performance requirements. All flashing up to but not penetrating adjoining work are also required as part of the system and shall be included according to the approved manufacturer submittals.

B. Related Sections:

1. Section 077100 "Roof Specialties" for metal flashing and trim.
2. Section 079200 "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide a complete canopy system consisting of structural steel, aluminum frame and monolithic polycarbonate glazing capable of withstanding loads as defined by the local governing codes having jurisdiction where the system is to be installed without failure. Failure to include the following:

1. Deflection exceeding specified limits.
2. Thermal stresses transferred to supporting structure.
3. Framing members transferring stresses, including those caused by thermal and structural movement to glazing.
4. Weakening of fasteners, attachments and other components.

B. Deflection Limits: Maximum calculated deflection of any framing member in a direction normal to the glazing plane when subjected to specified design pressures shall be limited to $[L/xxx \text{ (DGI to provide)}]$ of its clear span.

C. Structural Loads: Provide structural monolithic polycarbonate panel assemblies, including anchorage, capable of withstanding the effects of the following design loads:

1. Roof Loads:

- a. Concentrated Live Load: 300 pound point load applied to framing members at location that produces the most severe stress or deflection.
- b. Uniform Live Load: As indicated on drawings.
- c. Wind Load: As indicated on drawings.

D. Structural Performance: Uniform Static Air pressure Difference in accordance to ASTM E 330.

1. 1/4" (.25 inch nominal) Panel: No damage or disengagement at (+/-) 180 psf.

I. Flammability:

1. Approved light transmitting plastic with CC1 classification per ASTM D-635 and IBC 2606.4.
2. Smoke density no greater than 75 per ASTM D2843.
3. Self-ignition temperature, per ASTM-1929 no less than 550 degrees Celsius.

- J. Weatherability:
 - 4. Panels shall consist of a polycarbonate resin with a permanent, co-extruded, ultra-violet protective layer. Post applied coatings or films of dissimilar materials are not acceptable.
 - 5. Color change: Per ASTM D 2244.
- K. Appearance:
 - 1. Panel thickness: [1/4"] (.25" inch nominal)
 - 2. Panel profile: Flat uniform extruded monolithic sheet.
 - a. Other glazing panels including standing seam and corrugated profiles are not acceptable.
 - b. Systems utilizing raised metal or plastic batten/mullion covers over 1/4" tall are unacceptable.
 - 3. Panel width: 24" (nominal)
 - 4. Panel color: Clear
 - a. Panels shall be uniform in color according to manufacturer standard allowable variation.
- L. Solar Performance:
 - 1. Visible light transmission
 - a. Clear 1/4" = 84%

1.3 SUBMITTALS

- A. Product Data Sheets: Submit manufacturer's product data, including details of construction and installation, materials and finish and installation instructions applicable to the configuration.
- B. Shop Drawings:
 - 1. Shall include Plans and / or elevations and details of the system and its installation. Flashing sealants and anchorage shall be clearly indicated.
 - 2. Shall note gauges of brake metal, the finish on the framing and any other information required to properly describe and install the system.
- C. Samples for Selection: Submit manufacturer's samples for each glazing type (12" x 12"), framing system (6"), finish, and color specified.
- D. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- E. Manufacturer's Project References: Submit list of completed projects including project name and location, name of architect, and type of daylighting manufactured.
- F. Warranty: Submit manufacturer's standard warranty.
- G. Test Reports:
 - 1. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
 - 2. ASTM D 1929 – Standard Test Method for Determining Ignition Temperatures of Plastics.
 - 3. ASTM D 2843 – Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
 - 4. ASTM D 1003 – Standard Test Method for Haze and Luminous Transmittance pf Transparent Plastics.
 - 5. ASTM D 1925 - Standard Test Method for Yellowness Index of Plastics.
 - 6. ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Wall by Uniform Static Air Pressure Difference.

1.4 WARRANTY

- A. Warranty: Written warranty, executed by the manufacturer agreeing to repair components of Series 3900-25 [1/4"] Sleekline monolithic translucent glazing that fail in materials or workmanship within the specified warranty period. Failure includes, but are not limited to the following:
 - 1. Structural failures.

2. Failure of systems to meet performance requirements.
 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- B. System Warranty: Provide written warranty from manufacturer agreeing to replace materials that exhibit defects from manufacturing or fabrication that contribute to water leakage (as defined above) or Structural failure. The manufacturer will, in a timely fashion, furnish (only) new components to replace those found to be defective.
1. Warranty Period: [1] year from date of shipment from manufacturer.
- C. Polycarbonate Warranty: Provide written warranty from manufacturer agreeing to repair or replace work that has or develops defects in the polycarbonate panels. "Defects" is defined as abnormal aging or deterioration.
1. Warranty period for polycarbonate: [10] years from date of shipment from manufacturer against:
 - a. Yellowing – The changes of yellowing index established in accordance to ASTM D 1925 standard should be less than 10 delta after 10 years, in relation to the original value.
 - b. Change in light transmission of no more than 6% per ASTM D-1003 in relation to the original value.
 - c. No delamination of panel affecting appearance, performance or structural integrity of the cellular polycarbonate glazing panel.
 - d. No breakage due to direct effect from weather conditions and hail impact as defined by manufacturers written warranty submitted as part of section [1.3/F] in this specification.
- D. Finish Warranty: Provide written warranty from manufacturer agreeing to repair or replace work with finish defects. "Defects" is defined as peeling, chipping, chalking, fading, abnormal aging or deterioration and failure to perform as required.
1. Warranty Period for "Anodized" finish:
 - a. [5] Years from date of shipment from manufacturer.
 - b. Longer warranty periods available upon request if specified.
 2. Warranty Period for Fluoropolymer PVDF ("Kynar") finish:
 - a. AAMA 2605 (70% Fluoropolymer PVDF) – [10] years from date of shipment from manufacturer.
 3. Warranty for Baked Enamel finish:
 - a. AAMA 2603 – [1] year from date of shipment.
 4. Warranty Period for "Tnemec" finish:
 - a. [10] Years from date of shipment from manufacturer.
 - b. Longer warranty periods available upon request if specified.

1.5 QUALITY ASSURANCE

- A. Designer Qualifications:
1. Continuously engaged in Steel and Aluminum Canopy manufacturing with a minimum of 10 years successful experience. Manufacturer must be AISC certified. Category Building – BU.
 2. Able to demonstrate successful performance on comparable projects.
 3. Responsible for all components, including structural design.
 4. All welding performed by AWS certified welders and inspected by AWS certified inspector. Qualify procedures and personal according to AWS D1.1/D1.1M, 2020 Structural Welding Code – Steel.
 5. AISC member in good standing. A qualified steel fabricator that participates in the AISC Quality Certification Program and is designated an AISC Certified Manufacturer, Category BU, Building Fabricator. Manufacturer shall affix their AISC certification number on the cover page of shop drawing set.
 6. Comply with applicable provisions of the following specifications and documents: AISC 303-16, AISC 341-16, AISC 341s1, AISC 360-16, AISC 358-16, and AISC 358s1-18. Specifications for Structural Joints Using High Strength Bolts.

2.1 MANUFACTURER

- A. Basis-of-Design Product: Series 3900-25 [¼”] Sleekline Monolithic Translucent Canopy system by Duo-Gard Industries Inc., 40442 Koppernick Road, Canton, Michigan 48187. Phone (734) 207-9700. Fax (734) 207-7995. Web Site: www.duo-gard.com.
- B. Substitutions: Manufacturers shall not be considered without prior approval in writing no later than ten (10) calendar days prior to bid. Substitute manufacturers must have been in the vertical glazing manufacturing for not less than a period of 15 years and must submit to the Architect the following:
 - 1. List of similar projects successfully completed within the last 5 years.
 - 2. Proof of financial capability.
 - 3. Complete details of proposed glazing system.
 - 4. Complete specifications for Architect’s review.
 - 5. Include proof of conformance and test reports per section 1.3/G.
 - a. Any exceptions taken from this specification must be noted on the approval request. A list of all approved manufacturers and products will be issued by addendum. No other manufacturers will be acceptable. No verbal approvals will be given. Listing manufacturer’s names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements.

2.2 MATERIALS

- A. Framing System:
 - 1. Shall be extruded aluminum alloy of 6063-T5, 6005-T5 or 6061-T6 ASTM B 221. All sections shall be formed true to detail and free from defects impairing appearance, strength and durability. Provide integral weep holes in factory supplied extrusions and welded corner assemblies to provide end dams where applicable.
- B. Glazing Gaskets:
 - 1. Shall be elastomeric, having low friction where in contact with the glazing panel.
 - 2. Shall be compatible with the polycarbonate glazing panel.
- C. Fasteners:
 - 1. In general, concealed fasteners are to be used for all aluminum framing unless noted in submittal drawings.
 - 2. In system construction, the use of adhesives and sealants are not allowed.
 - 3. Where exposed, fasteners shall be stainless steel with stainless steel backed neoprene washers
 - 4. Concealed fasteners may be stainless steel or zinc-plated steel in accordance with ASTM specifications A165-55 or A164-55.
 - 5. Bolts, anchors and other fastening devices shall be as required for the strength of the connections and shall be suitable for conditions encountered. Washers shall be of the same material as the fasteners.
- D. Sealants: Single component, non-sag, high performance, non-priming, gun grade sealant furnished by glazing manufacturer.
 - 1. Factory-Applied Sealant: Gunnable, non-hardening, elastomeric sealant. ASTM C 920, Type S, Class 12, Grade NS. Fed Spec TT-S-1657, Type 1.n.
 - 2. Field-Applied Sealant: Approved by translucent insulated daylighting manufacturer.
 - 3. Sealant conforms to USDA Approval standards.
- E. Flashing:
 - 1. Minimum of .040” thick Aluminum.
 - 2. Factory formed to project profile(s) in 10-ft. lengths, whenever practical, to allow for field trimming and fitment to suit as-built conditions.

3. The finish on this flashing metal shall match as closely as possible the finish on the aluminum framing members.
4. Concealed flashing: Manufacturer's standard corrosion resistant, non-staining, non-bleeding flashing compatible with adjacent materials
5. Exposed flashing: Aluminum sheet alloy of 5005-H34, thickness as required for proper performance per application.

F. Polycarbonate Glazing Panels:

1. Panels shall consist of a polycarbonate resin with a permanent, co-extruded, ultraviolet protective layer on both faces of the panel. This protective layer shall be co-extruded by the manufacturer during the original manufacturing process of the panel and shall be a permanent, non-removable, part of the panel. Post applied coating or films of dissimilar materials are unacceptable and not allowed.
2. Provide monolithic (solid) polycarbonate panel as follows:
 - a. Thickness [1/4"] (.25 inch) nominal.
 - b. Manufactured in The United States.
 - c. Color selected from manufacturer's standard available colors by Architect.
 - d. Extruded to length:
 1. [1/4"] (.25 inch nominal) – up to [48] feet in length.
4. Multi-cellular, corrugated, standing seam or batten type panels will not be accepted.

2.3 STRUCTURAL FRAMING

A. Steel members, unless otherwise noted:

1. Plates, shapes, and bars: ASTM A36.
2. Cold-Formed Tubing: ASTM A 500 Grade B/C. ASTM A 513 where req'd.
3. Pipe: ASTM A 53, Type E or S, Grade B.
4. Black and hot-dipped zinc coated, for welded and seamless steel pipe for ordinary use: ASTM A 120.
5. Zinc (hot-galvanized) coatings, for products fabricated from rolled, pressed, and forged steel shapes, plates, bars, and strips: ASTM A 123.
6. Mild steel arc-welding electrodes: AWS E701X, ER70S-X, E7XT-X.

B. The shelter glazing trim and other components shall be fabricated using 6063-T5 extruded aluminum members Fed. Spec. QQ-A-200/9C(1). 6061-T6 and 6005-T6 alloy/temper shall be used where required.

C. Fasteners:

1. Roof framing, accessories, amenities, wall / roof trim: stainless steel or aluminum.
2. High strength bolts and nuts: ASTM A 325 or A 490 where req'd.
3. Unfinished bolts and nuts: ASTM A 307 Grade A (to be unexposed in completed product, or finished in field).

D. Shelter and the method of fastening to the supporting foundation shall be engineered to provide a framework of adequate structural integrity to satisfy the uniform building code (UBC), ANSI A58.1, the International Building Code, or applicable local building codes, whichever is more stringent, and to meet the requirements for snow, wind and seismic loading for the location(s) being considered.

2.4 FABRICATION

A. Fabricate framing components as follows:

1. Factory prepare, fit and assemble components where practical prior to delivery.
2. Fabricate components that, when assembled, will fit precisely and accurately with mitered or coped ends producing hairline joints free of burrs and distortion.
3. Fabricate components to accommodate thermal expansion and contraction, field adjustment and

- provide minimum clearance and shimming for proper glazing system installation and performance.
 - 4. Fabricate components to properly drain water passing joints; drain condensation and moisture occurring and mitigating within glazing system to the exterior through internal guttering and a weep system.
 - 5. Fabricate components to ensure that glazing is properly isolated for low friction thermal and physical movement within the glazing system.
 - 6. Fabricate components with straight, sharp profiles and edges free from defects or deformations before finishing.
 - 7. Fabricate, fit and assemble components to the greatest extent practical before finishing.
 - 8. Reinforce components and member as required to retain fastener thread and engagement.
 - 9. Fabricate glazing retainer bars for fastener placement at 12" on center
 - 10. Weld components before finishing and in concealed location to greatest extent practical to minimize distortion and/or discoloration.
- B. Provide aluminum framing to the longest lengths possible to minimize splice joints. Splice joints will be sealed and locked with at least a six inch offset between frame components.
 - C. Provide welded corner assemblies where practical.
 - D. Prepare aluminum framing components for anchors and connection devices, fasteners and hardware.
 - E. Fabricate glazing panels as follows:
 - 1. Polycarbonate panels will be extruded and fabricated to the longest length possible.
 - 2. Monolithic polycarbonate panels will be shop fabricated to a nominal width of 24"

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive translucent glazing. Notify Contractor / Architect of conditions that would adversely affect installation or subsequent utilization of daylighting. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Ensure supports to receive translucent insulated daylighting are clean, flat, level, plumb, square, accurately aligned, and correctly located.
- C. All submitted opening sizes, dimensions and tolerances are to be field verified by the installer unless otherwise stipulated.
- D. Installer to examine site conditions to verify readiness. Notify general contractor or owner about any defects requiring corrections, including but not limited to improperly sloping sill substrates and uneven planar substrates. Do not work until conditions are satisfactory

3.2 INSTALLATION

- A. Install components in strict accordance with manufacturer's instructions and approved shop drawings. Use proper fasteners and hardware for material attachments as specified.
- B. Use methods of attachment to structure which include provisions for thermal movement.
- C. Glazing shall be installed in accordance with panel and system manufacturer's guidelines.
- D. Install daylighting including flashing, fasteners, hardware, gaskets, joint sealants, and glazing materials required for a complete, weathertight installation.
- E. Remove all protective coverings on polycarbonate panels during or immediately after installation.
- F. Apply joint sealants in accordance to sealant and system manufacturer's guidelines. Use sealant approved by system manufacturer as specified previously in specification.
- G. Repair any minor installation marks or damage to metal finish in accordance with manufacturer's instructions and as approved by Architect. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 CLEANING

- A. During installation, protect exposed surfaces against accumulation of paint, caulking, disfiguration and damage.
- B. Interior glazing surfaces shall be cleaned as the panels are being installed. The exterior shall be cleaned as each phase of the work is completed.
- C. Remove excess joint sealant in accordance with sealant manufacturer's instructions.
- D. Clean inside and outside of glazing panels immediately after installation and after joint sealants have cured.
- E. Follow panel manufacturer's instructions when cleaning exposed panel surfaces. Clean polycarbonate and frame at time of installation.
- F. Clean glazing panels in accordance with panel and system manufacturer's instructions and guidelines.
- G. Do not use harsh cleaning materials or methods that would damage metal finish or glazing.

3.5 PROTECTION

- A. Protect installed translucent insulated daylighting from damage during construction.
- B. Remove and replace damaged daylighting components as determined by Architect.

END OF SECTION

SECTION 313116 - TERMITE CONTROL

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. Soil treatment.
- B. Related Requirements:
 - 1. ARCHITECTURAL CONCRETE: Section 03 33 00.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components, and profiles for termite control products.
 - 2. Include the EPA-Registered Label for termiticide products.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
 - 1. Document evidence of applicator's qualifications.
 - 2. A copy of the applicator's current state license.
- B. Product Certificates: For each type of termite control product.
- C. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's records and include the following:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Termiticide brand name and manufacturer.
 - 4. Quantity of undiluted termiticide used.
 - 5. Dilutions, methods, volumes used, and rates of application.
 - 6. Areas of application.
 - 7. Water source for application.
- D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage a professional pest control operator, licensed in the State of Florida accordance with regulations of governing authorities for application of soil treatment solution.
- B. Requirements of Regulatory Agencies: All work shall comply with the Florida Building Code.

1.6 FIELD CONDITIONS

- A. Soil Treatment:
 - 1. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.
 - 2. Related Work: Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

- A. General: Provide an EPA-Registered emulsifiable, concentrated termiticide that dilutes with water, specially formulated to prevent termite infestation. Termiticide shall be clearly labeled for use as a preventative treatment to new construction. Fuel oil will not be permitted as a diluent.
 - 1. Dilute with water to concentration level compliant with manufacturer's written instructions.
 - 2. Use only soil treatment solutions that are not injurious to plants.
- B. Products: Provide one of the following products (Or approved equal):
 - 1. "Draagnet SFR" permethrin; FMC Corp.
 - 2. "Prevail FT"; cypermethrin; FMC Corp.
 - 3. "Demon TC" cypermethrin; Syngenta.
 - 4. "Prelude" permethrin; Syngenta.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Prepare work areas according to the requirements of authorities having jurisdiction and according to manufacturer's written instructions before beginning application and installation of termite control treatment(s). Remove extraneous sources of wood cellulose and other edible materials, such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.
 - 1. Fit filling hose connected to water source at the site with a backflow preventer, according to requirements of authorities having jurisdiction.

3.2 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Distribute treatment uniformly. Apply treatment at the product's EPA-Registered Label volume and rate for maximum specified concentration of termiticide to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.
 - 1. Slabs-on-Grade: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
 - 2. Foundations: Soil adjacent to and along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around plumbing pipes and electric conduit penetrating the slab; around interior column footers, piers, and chimney bases; and along the entire outside perimeter, from grade to bottom of footing.
 - 3. Penetrations: At expansion joints, control joints, and areas where slabs and below-grade walls will be penetrated.
- B. Post warning signs in areas of application.
- C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.3 PROTECTION

- A. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- B. Protect termiticide solution dispersed in treated soils and fills from being diluted by exposure to water spillage or weather until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

END OF SECTION 313116

SECTION 31 23 23.43 – GEOFOAM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Expanded Polystyrene (EPS) Geofoam Fill and Soil Stabilization Material and accessories.
- B. Related Requirements:
 - 1. Section 02 41 19 – Selective Demolition.
 - 2. Section 03 33 00 – Architectural Concrete
 - 3. Section 31 31 16 – Termite Control

1.1 REFERENCE STANDARDS

- A. American Society for Testing and Materials – ASTM International (ASTM):
 - 1. ASTM D6817/D6817M - Standard Specification for Rigid Cellular Polystyrene Geofoam.
 - 2. ASTM D7180 - Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam in Geotechnical Projects
 - 3. ASTM C203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
 - 4. ASTM C303 - Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation.
 - 5. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
 - 6. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 7. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
 - 8. ASTM D2863 - Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index).
 - 9. ASTM D7557 - Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens.

1.2 SUBMITTALS

- A. Product Data: Submit data on product characteristics, performance criteria, and product limitations.
- B. Submit Manufacturer’s Safety Data Sheet (SDS)
- C. Test and Evaluation Reports: Submit independent third-party inspection agency’s Evaluation Report(s) indicating compliance with ASTM D6817/D6817M and building codes for Geofoam.
- D. Qualification Data: Manufacturer’s and Installer’s Qualification Statements.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Company specializing in manufacturing products specified in this section, with not less than ten years documented experience.
 - 2. Company maintains a current, third-party certified quality management system and environmental management system.
- B. Installer Qualifications: Company specializing in performing work of the type and scope specified and with at least three years of documented experience.
- C. Geofoam Block Qualifications:
 - 1. Provide samples of Geofoam blocks upon initial project delivery in accordance with ASTM D7557 and test for compliance with Compressive Resistance minimum value at 1 percent deformation in accordance with ASTM D6817/D6817M requirements.
 - 2. Mark Geofoam blocks to include individual block identifier, manufacturing date, and Type in compliance with ASTM D6817/D6817M.
 - 3. Manufacturer shall maintain records of its quality assurance test results.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials with identification labels intact. The installer shall coordinate with the manufacturer's lead time requirements to prevent construction delays.
- B. Comply with manufacturer's Safety Data Sheet (SDS), especially regarding:
 - 1. Combustibility: Do not expose Geofoam to sparks, open flames, or any other sources of ignition nor to excessive heat of more than 75 degrees C (167 degrees F). Only store and use Geofoam in well-ventilated areas to prevent the build-up of flammable vapours. Prevent inhalation of any smoke, fumes, or dust from any burning or fabrication activities.
- C. Incompatibility: Keep Geofoam protected from hydrocarbons (e.g. fuels, oils, tar, asphaltic mastic compounds), organic solvents (e.g. acetone/ketones, benzene, paint thinner, concrete curing compounds), ethers, esters, aldehydes and amines. Installer shall test Geofoam compatibility with mastics and other materials prior to use.
- D. Restrict equipment traffic that can impose contact pressures exceeding the allowable design stress of Geofoam. Protective materials such as sheathing or planks may be placed on the material to allow light rubber-tired equipment use.
- E. Handling: Geofoam may be cut, drilled, sawn, rasped and otherwise handled similar to other construction materials, such as wood.

1.5 WARRANTY

- A. Manufacturer shall provide a warranty that the products comply with their published specifications and are free from manufacturing defects.

PART 2 - PRODUCTS

1.6 MANUFACTURERS

- A. Atlas Molded Products – Gainesville, GA. www.atlasmoldedproducts.com, 770-536-7900.
- B. Geofoam America – Lakeland, FL. www.geofoamamerica.com, 800-379-5060.
- C. Insulfoam – Lakeland, FL. www.insulfoam.com, 800-242-8879.

1.7 MATERIALS – EPS GEOFOAM

Provide Geofoam in locations and configurations as shown on the drawings, and to meet the following properties:

- A. Type G12:
 - 1. Compressive resistance at 1% strain: 2.2 psi minimum; ASTM D1621.
 - 2. Flexural strength: 10 psi minimum; ASTM C203.
 - 3. Density: 0.7 lb/ft³ minimum; ASTM D1622.
 - 4. Buoyancy Force: 61.8 lbf/ft³ maximum (dry EPS, $\rho=1,000$ kg/m³).

1.8 MATERIALS - ADDITIONAL PROPERTIES FOR ALL EPS GEOFOAM TYPES

- A. Limiting Oxygen Index: minimum 24% per ASTM D2863. Geofoam shall contain a polymeric (non-HBCD) fire retardant modifier
- B. Surface Burning Characteristics per ASTM E84 (UL 723):
 - 1. Flame Spread Index ≤ 25 .
 - 2. Smoke-Developed Index ≤ 450 up to 6" thick.
- C. Combustibility: Geofoam is combustible. GHS Classification: Non-Hazardous
- D. Maximum service temperature:
 - 1. Long-term exposure: 75°C [167°F].
 - 2. Intermittent exposure: 80°C [176°F].
- E. EPS Geofoam does not contain Formaldehyde, CFCs, HCFCs, nor HFCs
- F. Poisson's ratio $\nu \approx 0.12$ within the elastic range (approximate).
- G. Coefficient of friction: $\mu \approx 0.5-0.7$ along clean faces.
- H. Coefficient of thermal expansion: $5 \cdot 10^{-5}/K$ to $7 \cdot 10^{-5}/K$
- I. Capillarity: none
- J. Mold and Fungi: Geofoam does not promote mold and fungi growth per ASTM C1338.
- K. Geofoam has no nutritional value for insects. To protect against insects/termites and water-vapor, place adequate physical barriers such as membranes around below-grade EPS. Where needed use adequate drainage to limit water absorption and buoyancy.

1.9 PERFORMANCE REQUIREMENTS

- A. Exact dimensions of EPS Geofoam products to suit site conditions are determined by the installer in collaboration with the manufacturer and shall be approved by the engineer or architect of record.
- B. EPS Geofoam standard blocks are 48" x 48" x 96"; full-size maxima are 48½" x 48½" x 194" within tolerances per ASTM D6817. Use of half blocks, smaller end pieces and thinner sheets may be used as needed to offset joints and complete the project per plans.
- C. Geofoam blocks are factory-trimmed as necessary so surfaces are within tolerances of ASTM D6817; additional field cutting or trimming may be required and shall be completed on site by the installer with a saw or hot wire cutter.
- D. Installer to correct damage to Geofoam as follows:
 - 3. Slight Damage: Less than 0.12 ft³ [0.0034 m³] with no linear dimension greater than 1 ft may be left in place.
 - 4. Moderate Damage: Less than 0.35 ft³ with no linear dimension greater than 3.3 ft³ shall be filled with sand.
 - 5. Geofoam blocks with excessive damage, such as exceeding the "Moderate Damage" category, shall be replaced with blocks that comply with dimensional requirements.
 - 6. Geofoam blocks not in compliance with damage criteria may be cut to remove the excessive damage and the remaining undamaged portion of the block may be used within the fill, provided the undamaged portion of the block meets other requirements.

1.10 ACCESSORIES

- A. Supply any materials, equipment, or other accessories required for the installation of Geofoam products.
- B. Follow respective manufacturer's instructions for accessories and other items to be used in conjunction with Geofoam products.

PART 3 - EXECUTION

1.11 EXAMINATION

- A. Examine and measure installation areas and subgrade conditions to receive Geofoam.
- B. If subgrade or substrate preparation are not within specifications and the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Submit all site measurements and project documentation pertaining to the Geofoam installation to the manufacturer for preparation of shop drawings. Notify the manufacturer of any changes in site conditions which may affect the layout or amount of Geofoam required.
- D. Verify manufacturer's shop drawings and dimensions of all Geofoam and related products. Submit final shop drawings to the engineer of record for approval.

1.12 PREPARATION

- A. Excavate and prepare installation site in accordance with design and project documentation as well as the shop drawings. Clear debris and dewater site as needed.
- B. Grade according to elevations shown on plans; the finish grade shall be smooth and free from holes or protrusions to be adequately level for the Geofoam installation.
- C. Cover graded area to receive Geofoam blocks with sand or other drainage layer as specified on drawings and level within tolerances per the engineer of record.
- D. Ensure that the site has adequate access and space to receive and unload shipments of Geofoam products, safely store Geofoam products, maneuver EPS Geofoam products to the installation area, and perform any site fabrication activities if required.

1.13 INSTALLATION

- A. Install Geofoam blocks according to drawings and tolerances approved by the engineer of record.
- B. Provide necessary space to accommodate utilities, drainage and structural systems and their installation.
- C. Cut and fit geofoam tightly around projections and penetrations. Complete additional fabrication for the installation of Geofoam products as required.
- D. If specified, install accessories (membranes, connector plates, etc.), ballast and related components as required.

1.14 PROTECTION

- A. Protect Geofoam blocks from: (1) Organic solvents such as acetone, benzene, and paint thinner; (2) Petroleum based solvents such as gasoline and diesel fuel; (3) Open flames.
- B. Protect installed products and surface finishes from damage during construction.
- C. Properly secure Geofoam blocks as needed to prevent dislocation from water, wind, backfilling or other site activities.
- D. Remove and legally dispose of construction debris from project site. Return unused Geofoam material to the manufacturer for recycling, if it is clean, dry, and not mixed with any other materials.

END OF SECTION 313223.43