

EDINBURG CISD

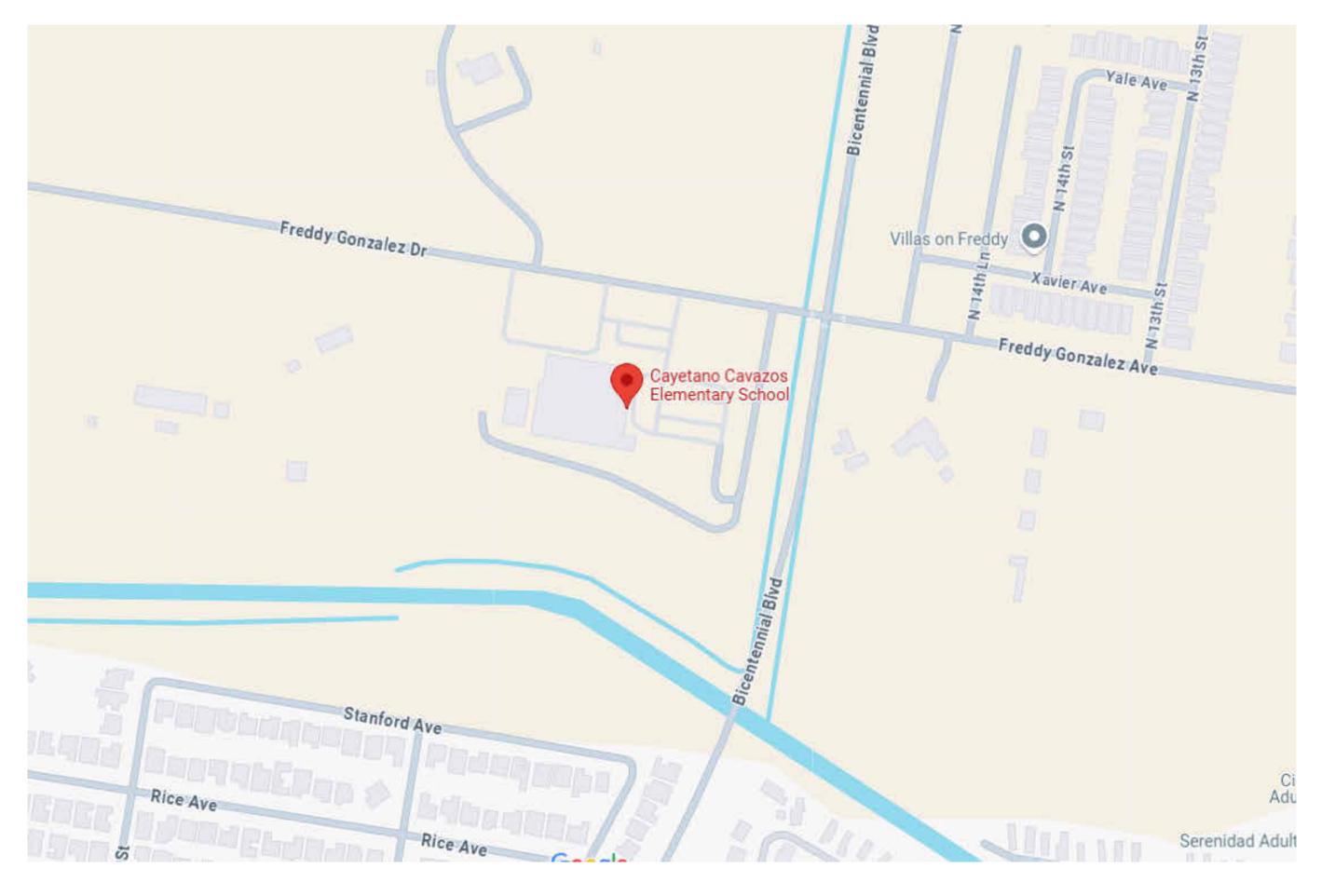
ECISD CSP 25-78

EDINBURG CISD BOARD MEMEBRS:

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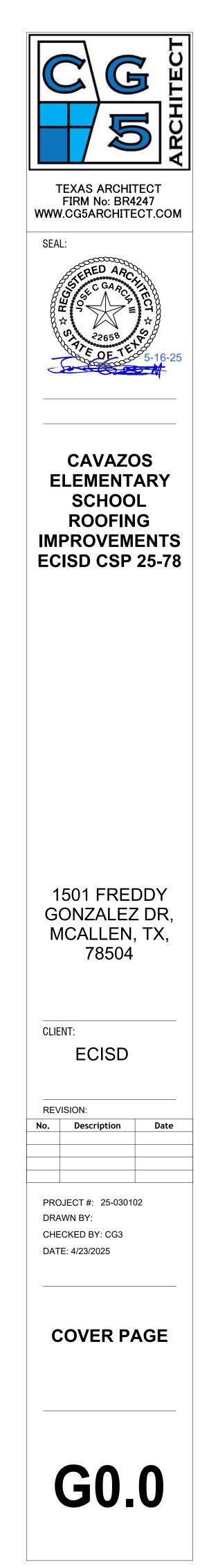
DAVID TORRES CARMEN GONZALEZ LETTY FLORES LUIS G. ALAMIA LETICIA "LETTY" GARCIA **XAVIER SALINAS** DOMINGA "MINGA" VELA

VICINITY MAP:



CAVAZOS ELEMENTARY ROOFING IMPROVEMENTS





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PROJECT INFORMATION

LOCATION:

Sheet Number

1501 FREDDY GONZALEZ DR, MCALLEN, TX, 78504

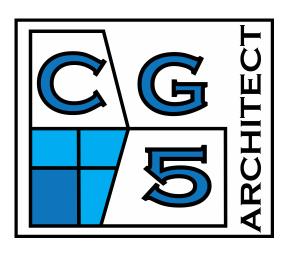
ARCHITECT OF RECORD:

OWNER:

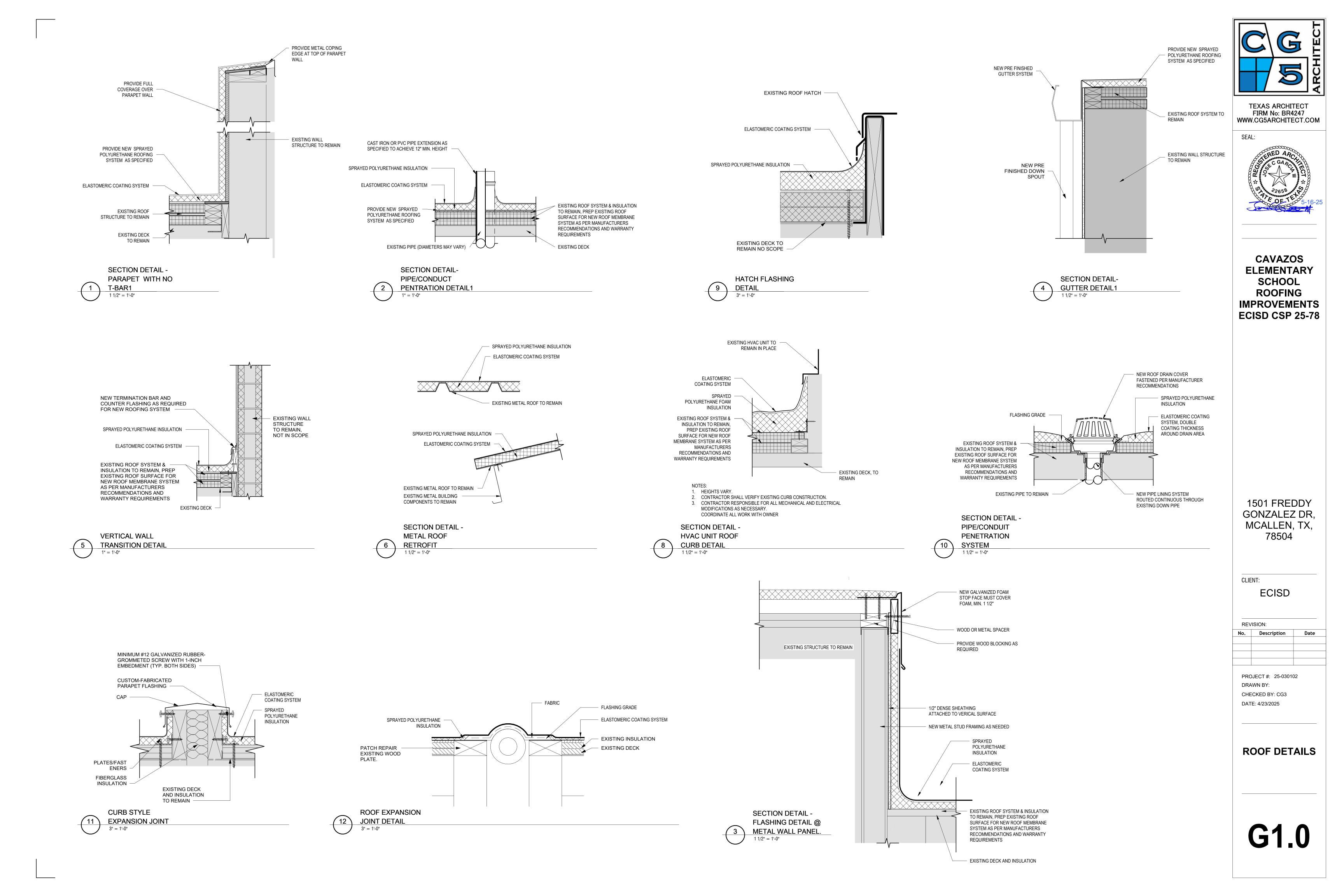
JOSE CARLOS GARCIA III, RA, AIA TBAE: # 22658 TBAE FIRM: BR 4247 CG5 ARCHITECT LLC 1314 E 22ND ST. MISSION, TX, 78572 EDINBURG CISD

PROJECT DESCRIPTION: EDINBURG CISD ROOF RENOVATIONS

ARCHITECT



801 BRYAN RD MISSION, TX 78572 956.239.2438 charlie@cg5architect.com www.cg5architect.com



SECTION 011000 - SUMMARY

PART 1 - GENERAL

RELATED DOCUMENTS 1.1

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

1.2 SUMMARY

- A. Section Includes
 - Project information.
 - Work covered by Contract Documents.
 - Phased construction. Work performed by Owner
 - Contractor's use of site and premises.
 - Coordination with occupants.
 - Work restrictions. Specification and Drawing conventions.
 - Miscellaneous provisions.
- B. Related Requirements:
 - Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
 - Section 017300 "Execution" for coordination of Ownerinstalled products.
- DEFINITIONS 1.3
- A. Work Package (if applicable): A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.
- 1.4 PROJECT INFORMATION
- A. Project Identification: EDINBURG CISD CAVAZOS ELEMENTARY **ROOFING IMPROVEMENTS**
- 1. Project Location: 1501 FREDDY GONZALEZ DR, MCALLEN, TX 78504

B. Owner: EDINBURG CISD

- Owner's Representative:
- C. Architect: Jose Carlos Garcia III, RA, AIA, (956) 239-2438.
- D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents
- 1. Refer to drawings.
- 1.5 WORK COVERED BY CONTRACT DOCUMENTS
- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
 - Work indicated in the Contract Documents which include the Project Manual, Construction Drawings, any Addenda issued for this project, and the Owner's Contract.

PHASED CONSTRUCTION 1.6

- A. The work is not intended to be constructed in phases. Unless otherwise proposed by Owner or Architect
- 1.7 WORK PERFORMED BY OWNER
- A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Concurrent Work: Owner may perform the following construction operations at Project site. Those operations will be conducted simultaneously with Work under this Contract.
 - 1. To Be Determined
- CONTRACTOR'S USE OF SITE AND PREMISES 1.8
- A. Limits on Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits on Use of Site: Confine construction operations to work areas.
 - Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction

operations throughout construction period. Repair damage caus	ed
by construction operations.	

1.9 COORDINATION WITH OCCUPANTS

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

1.10 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
- Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
- Notify Architect and Owner's not less than two days in advance of proposed utility interruptions. Obtain Owner's written permission before proceeding with
- utility interruptions.
- C. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
- Smoking and Controlled Substance Restrictions: Use of tobacco D products, alcoholic beverages, and other controlled substances on Owner's property is not permitted.
- Employee Identification: Provide identification tags for E Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- Employee Screening: Comply with Owner's requirements for background screening of Contractor personnel working on Project
- Maintain list of approved screened personnel with Owner's representative.
- SPECIFICATION AND DRAWING CONVENTIONS 1.11
- Specification Content: The Specifications use certain conventions A. for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Text Color: Text used in the Specifications, including units 4.7 of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.

END OF SECTION 011000 PART 4 - GENERAL 4.1 4.2 SUMMARY C. Related Requirements:

В

- 43 Α.
- ACTION SUBMITTALS 4.5 Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders. INFORMATIONAL SUBMITTALS
- Submit invoices or delivery slips to show actual quantities of Α. materials delivered to the site for use in fulfillment of each allowance. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance. C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.
- CONTINGENCY ALLOWANCES A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- В
 - Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract

- A.
- 4.6

- 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
- 2. Abbreviations: Materials and products are identified by abbreviations as part of the U.S. National CAD Standard. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.
- PART 2 PRODUCTS (Not Used)
- PART 3 EXECUTION (Not Used)
- SECTION 012100 ALLOWANCES

 - **RELATED DOCUMENTS**
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.

 - Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.
- DEFINITIONS
- Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.
- 4.4 SELECTION AND PURCHASE
- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.

- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.
- 4.8 TESTING AND INSPECTING ALLOWANCES
- Testing and inspecting allowances include the cost of engaging A. testing agencies, actual tests and inspections, and reporting results.
- The allowance does not include incidental labor required to assist B. the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
- C. Costs of testing and inspection services not specifically required by the Contract Documents are Contractor responsibilities and are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.
- ADJUSTMENT OF ALLOWANCES 4.9
- Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
 - Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances. Owner reserves the right to establish the quantity of workin-place by independent quantity survey, measure, or count.
- Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
- 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
- No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 5 - PRODUCTS (Not Used)

PART 6 - EXECUTION

- 6.1 EXAMINATION
- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.
- 6.2 PREPARATION
- Coordinate materials and their installation for each allowance Α. with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.
- 6.3 SCHEDULE OF ALLOWANCES
- A. Allowance No. 1 Contingency Allowance: Include a contingency allowance of \$45,000.00 for use according to the Architect and/or Owner's written instructions.
- END OF SECTION 012100

SECTION 012300 - ALTERNATES

PART 7 - GENERAL

- 7.1 RELATED DOCUMENTS
- Drawings and general provisions of the Contract, including A. General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 7.2 SUMMARY
- Section includes administrative and procedural requirements for A. alternates.
- 7.3 DEFINITIONS
- Alternate: An amount proposed by bidders and stated on the Bid Α. Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the

amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

- 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement. 2. The cost or credit for each alternate is the net addition to or
- deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

7.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- Execute accepted alternates under the same conditions as other Work of the Contract.
- Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 8 - PRODUCTS (Not Used)

PART 9 - GENERAL

- 9.1 RELATED DOCUMENTS
- Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- SUMMARY 9.2
- Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements
- 1. Document 002600 "Procurement Substitution Procedures" for requirements for substitution requests prior to award of Contract.
- 2. Section 012100 "Allowances" for products selected under an allowance.
- 3. Section 012300 "Alternates" for products selected under an alternate, if applicable.
- 4. Section 016000 "Product Requirements" for requirements
- by listed manufacturers.

9.3 DEFINITIONS

9.4

- Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
- 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
- 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

ACTION SUBMITTALS

- Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and
- 1. Substitution Request Form: Use form acceptable to Architect and Owner.
- 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be
 - provided, if applicable. b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and
 - requirements indicated. Indicate deviations, if any, from the Work specified.
 - Product Data, including drawings and descriptions of products and fabrication and installation procedures. Samples, where applicable or requested. f. Certificates and qualification data, where applicable

or requested.

g.

- for submitting comparable product submittals for products

- List of similar installations for completed projects,
- with project names and addresses as well as names and addresses of architects and owners.

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

A. Compatibility of Substitutions: Investigate and document

A. Coordination: Revise or adjust affected work as necessary to

A. Substitutions for Cause: Submit requests for substitution

noncompliance with these requirements:

properly submitted.

portions of the Work.

involved.

other portions of the Work.

immediately on discovery of need for change, but not later than

15 days prior to time required for preparation and review of

1. Conditions: Architect will consider Contractor's request for

substitution when the following conditions are satisfied. If

the following conditions are not satisfied, Architect will

return requests without action, except to record

a. Requested substitution is consistent with the

b. Substitution request is fully documented and

c. Requested substitution will not adversely affect

d. Requested substitution has received necessary

Requested substitution is compatible with other

Requested substitution has been coordinated with

Requested substitution provides specified warranty.

If requested substitution involves more than one

contractor, requested substitution has been

coordinated with other portions of the Work, is

uniform and consistent, is compatible with other

products, and is acceptable to all contractors

approvals of authorities having jurisdiction.

Contractor's construction schedule.

Contract Documents and will produce indicated

compatibility tests recommended by manufacturers.

integrate work of the approved substitutions.

compatibility of proposed substitution with related products and

materials. Engage a qualified testing agency to perform

9.5 QUALITY ASSURANCE

9.6 PROCEDURES

9.7 SUBSTITUTIONS

related submittals.

5 TEXAS ARCHITECT FIRM No: BR4247 WWW.CG5ARCHITECT.COM SEAL: CAVAZOS **ELEMENTARY** SCHOOL ROOFING **IMPROVEMENTS ECISD CSP 25-78** 1501 FREDDY GONZALEZ DR MCALLEN, TX, 78504

> CLIENT: ECISD

REVISION: No. Description

Date

Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.

- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated
 - d. Substitution request is fully documented and properly submitted.
 - Requested substitution will not adversely affect Contractor's construction schedule

PROJECT #: 25-030102 DRAWN BY: CHECKED BY: CG3 DATE: 4/23/2025

GENERAL SPECS

G2.0

- Requested substitution has received necessary approvals of authorities having jurisdiction.
- Requested substitution is compatible with other
- portions of the Work. Requested substitution has been coordinated with
- other portions of the Work.
- Requested substitution provides specified warranty. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 10 - EXECUTION

- SCHEDULE OF ALTERNATES 10.1
- A. REFER TO DRAWINGS

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 11 - PRODUCTS (Not Used)

PART 12 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 13 - GENERAL

13.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 13.2 SUMMARY
- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
 - Section 013100 "Project Management and Coordination" 2 for requirements for forms for contract modifications provided as part of web-based Project management software.
- MINOR CHANGES IN THE WORK 13.3
- Architect will issue supplemental instructions authorizing minor A. changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.
- 13.4 PROPOSAL REQUESTS
- Owner-Initiated Proposal Requests: Architect will issue a detailed A. description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change. d. Include an updated Contractor's construction
 - schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use [forms provided by Owner. Sample copies are included in Project Manual] [forms acceptable to Architect] [form provided as part of web-based Project management software].
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract
 - Include a list of quantities of products required or 2 eliminated and unit costs, with total amount of purchases

and credits to be made. If requested, furnish survey data to substantiate quantities.

- Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- Include costs of labor and supervision directly attributable to the change.
- Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified. 7. Proposal Request Form: Use form acceptable to Architect.
- ADMINISTRATIVE CHANGE ORDERS 13.5
- Allowance Adjustment: See Section 012100 "Allowances" for A administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

13.6 CHANGE ORDER PROCEDURES

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

13.7 CONSTRUCTION CHANGE DIRECTIVE

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

13.8 WORK CHANGE DIRECTIVE

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

PART 14 - PRODUCTS (Not Used)

PART 15 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 16 - GENERAL

- 16.1 RELATED DOCUMENTS
- Drawings and general provisions of the Contract, including Α. General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 16.2 SUMMARY
- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - General coordination procedures. 2. RFIs.
- 3. Project meetings.
- Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

Α.

16.5

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation. 1. Schedule construction operations in sequence required to

Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair. Make adequate provisions to accommodate items scheduled

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following: Preparation of Contractor's construction schedule

controls. Delivery and processing of submittals. Progress meetings. Preinstallation conferences. Project closeout activities.

General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified. 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor. 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract

16.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

16.4 INFORMATIONAL SUBMITTALS

Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products. 2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and in prominent location in built facility. Keep list current at all times.

GENERAL COORDINATION PROCEDURES

obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.

for later installation.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

> Preparation of the schedule of values. Installation and removal of temporary facilities and

Startup and adjustment of systems.

16.6 REQUEST FOR INFORMATION (RFI)

Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

Project name.

Owner name.

Owner's Project number. Name of Architect.

Architect's Project number.

Date. Name of Contractor

RFI number, numbered sequentially.

RFI subject.

10. Specification Section number and title and related paragraphs, as appropriate. 11. Drawing number and detail references, as appropriate.

12. Field dimensions and conditions, as appropriate.

13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum. Contractor shall state impact in the RFI. 14. Contractor's signature.

15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings,

coordination drawings, and other information necessary to fully describe items needing interpretation.

a. Include dimensions, thicknesses, structural grid references, and details of affected materials. assemblies, and attachments on attached sketches.

- C. RFI Forms: AIA Document G716.
- 1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 - The following Contractor-generated RFIs will be returned without action:
 - Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on
 - submittals g. Incomplete RFIs or inaccurately prepared RFIs.
 - 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information
 - Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum. notify Architect in writing within 5 days of receipt of the RFI response.
- RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log that is part of web-based Project management software.
- On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

16.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
- Minutes: Entity responsible for conducting meeting will 3 record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned. including Owner and Architect, within days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 - 1. Attendees: Authorized representatives of Owner and Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties. Lines of communications.
 - Use of web-based Project software.
 - Procedures for processing field decisions and Change Orders.
 - Procedures for RFIs.
 - Procedures for testing and inspecting. Procedures for processing Applications for Payment.
 - Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainable design requirements.
 - o. Preparation of Record Documents. Use of the premises and existing building.
 - Work restrictions.
 - Working hours.
 - Owner's occupancy requirements.
 - Responsibility for temporary facilities and controls. u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability v. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
 - Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

- Preinstallation Conferences: Conduct a preinstallation conference C. at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - Contract Documents.
 - Options. **Related RFIs**
 - Related Change Orders.
 - Purchases. e. Deliveries.
 - Submittals.
 - Sustainable design requirements. Review of mockups.
 - Possible conflicts. Compatibility requirements.

Weather limitations

Warranty requirements.

Installation procedures.

matters relating to the Work.

acceptance.

documentation.

maintenance data

stock, and spare parts.

Submittal procedures.

equipment

distribute meeting minutes.

controls

W.

х.

actions

Completion.

а.

с.

m.

0.

intervals.

Compatibility of materials.

Acceptability of substrates.

Time schedules.

Manufacturer's written instructions.

Temporary facilities and controls

Space and access limitations. Regulations of authorities having jurisdiction. Testing and inspecting requirements.

Coordination with other work.

Required performance results. Protection of adjacent work

Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and

4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial

1. Conduct the conference to review requirements and responsibilities related to Project closeout.

Attendees: Authorized representatives of Owner, Architect and their consultants; Contractor and its superintendent major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude

3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

> Preparation of Record Documents. Procedures required prior to inspection for Substantial Completion and for final inspection for

> Procedures for completing and archiving web-based Project software site data files. Submittal of written warranties.

Requirements for completing sustainable design

f. Requirements for preparing operations and

Requirements for delivery of material samples, attic

Requirements for demonstration and training Preparation of Contractor's punch list.

Procedures for processing Applications for Payment at Substantial Completion and for final payment.

Coordination of separate contracts. Owner's partial occupancy requirements.

Installation of Owner's furniture, fixtures, and

Responsibility for removing temporary facilities and

4. Minutes: Entity conducting meeting will record and

Progress Meetings: Conduct progress meetings at regular

1. Coordinate dates of meetings with preparation of payment

2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

- b. Review present and future needs of each entity present, including the following:
 - Interface requirements
 - Sequence of operations. Resolution of BIM component conflicts.
 - Status of submittals.
 - Status of sustainable design documentation.
 - Deliveries. Off-site fabrication.
 - Access. 8)
 - Site use. 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards. 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of Proposal Requests. 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes 20) Documentation of information for payment requests.
- Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

- Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
- Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
- a. Combined Contractor's Construction Schedule Review progress since the last coordination meeting Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting. c. Review present and future needs of each contractor
 - present, including the following:
 - 1) Interface requirements.
 - Sequence of operations. Resolution of BIM component conflicts.
 - Status of submittals.
 - Deliveries.
 - 6) Off-site fabrication. 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours. 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs. 15) Proposal Requests
 - 16) Change Orders.
 - 17) Pending changes.

Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 17 - PRODUCTS (Not Used)

PART 18 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 19 - GENERAL

19.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 5 TEXAS ARCHITECT FIRM No: BR4247 WWW.CG5ARCHITECT.COM SEAL: CAVAZOS **ELEMENTARY** SCHOOL ROOFING **IMPROVEMENTS ECISD CSP 25-78** 1501 FREDDY GONZALEZ DR, MCALLEN, TX, 78504 CLIENT: ECISD **REVISION:** No. Description Date PROJECT #: 25-030102 DRAWN BY: CHECKED BY: CG3 DATE: 4/23/2025 GENERAL SPECS **G2**.1

19.2 SUMMARY

A. Section Includes:

- Submittal schedule requirements.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.

Administrative and procedural requirements for submittals.

- 2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
- Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule
- Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs
- 5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
- 6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
- 7. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals. 8. Section 017839 "Project Record Documents" for
- submitting record Drawings, record Specifications, and record Product Data.
- Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

19.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

19.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

- 1. Coordinate submittal schedule with list of subcontracts. the
- schedule of values, and Contractor's construction schedule Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
- 3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
- 4. Format: Arrange the following information in a tabular format:
 - Scheduled date for first submittal.
 - Specification Section number and title. Submittal Category: Action; informational.
 - Name of subcontractor.
 - Description of the Work covered.
 - Scheduled date for Architect's final release or approval.
 - Scheduled dates for purchasing. Scheduled date of fabrication.
 - Scheduled dates for installation.
 - Activity or event number.

19.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal

Project name.

- Date. Name of Architect.
- Name of Construction Manager.
- Name of Contractor.
- Name of firm or entity that prepared submittal.
- Names of subcontractor, manufacturer, and supplier. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
- 9. Category and type of submittal. 10. Submittal purpose and description.
- 11. Number and title of Specification Section, with paragraph
- number and generic name for each of multiple items. 12. Drawing number and detail references, as appropriate.
- 13. Indication of full or partial submittal.
- 14. Location(s) where product is to be installed, as appropriate.
- 15. Other necessary identification. 16. Remarks.
- 17. Signature of transmitter.

- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals:

- Place a permanent label or title block on each submittal item for identification: include name of firm or entity that prepared submittal.
- Provide a space approximately 6 by 8 inches (150 by 200 2. mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
- 3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
- Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
- Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- 6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using AIA Document G810 transmittal form.
- E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
- F. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

19.6 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
 - Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
 - 2. Paper: Prepare submittals in paper form and deliver to Architect
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
- 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
- Coordinate transmittal of submittals for related parts of the 4 Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
- 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal. Resubmittal Review: Allow 15 days for review of each
- resubmittal. Sequential Review: Where sequential review of submittals
- by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
- Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- Submit one copy of submittal to concurrent reviewer a. in addition to specified number of copies to Architect.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - Note date and content of previous submittal.
 - Note date and content of revision in label or title block, and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

SUBMITTAL REQUIREMENTS

19.7

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are unsuitable for use,
 - submit as Shop Drawings, not as Product Data. 2. Mark each copy of each submittal to show which products and options are applicable.
 - Include the following information, as applicable:
 - Manufacturer's catalog cuts.
 - Manufacturer's product specifications. Standard color charts.
 - Statement of compliance with specified referenced standards.
 - Testing by recognized testing agency. Application of testing agency labels and seals.
 - Notation of coordination requirements.
 - Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

- Wiring diagrams that show factory-installed wiring.
- Printed performance curves.
- Operational range diagrams

5.

1.

2.

1.

7.

Clearances required to other construction, if not indicated on accompanying Shop Drawings.

Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.

- Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
- Identification of products.
- Schedules. Compliance with specified standards.
- Notation of coordination requirements.
- Notation of dimensions established by field measurement Relationship and attachment to adjoining
- construction clearly indicated. g. Seal and signature of professional engineer if
- specified. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on

sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

> Transmit Samples that contain multiple, related components, such as accessories together in one submittal

> Identification: Permanently attach label on unexposed side of Samples that includes the following:

- Project name and submittal number.
- Generic description of Sample.
- Product name and name of manufacturer. Sample source.
- Number and title of applicable Specification Section. Specification paragraph number and generic name of each item.

Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.

4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.

Paper Transmittal: Include paper transmittal, including complete submittal information indicated. Disposition: Maintain sets of approved Samples at Project

site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

- a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
- Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or

similar characteristics are required to be selected from manufacturer's product line. Architect, will return submittal with options selected.

- 8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by
 - Contractor if none is indicated. 2. Manufacturer and product name, and model number if applicable.
 - Number and name of room or space.
 - 4. Location within room or space.
- Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

- 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
- 2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
- 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
- 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

- 1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
- 2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing
- Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

- Name of evaluation organization. a. Date of evaluation. b
- Time period when report is in effect.
- Product and manufacturers' names. Description of product.
- Test procedures and results.
- Limitations of use. g.

19.8 DELEGATED-DESIGN SERVICES

- services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
- 1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
- 19.9 CONTRACTOR'S REVIEW
- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
- 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

19.10 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required.
- 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
- 2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- Architect will discard submittals received from sources other than Contractor.
- Submittals not required by the Contract Documents will be returned by Architect without action.

PART 20 - PRODUCTS (Not Used)

PART 21 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 22 - GENERAL

22.2 SUMMARY

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

quality assurance and quality control.

Contract Document requirements.

A. Performance and Design Criteria: Where professional design

G

A. Section includes administrative and procedural requirements for

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.

- 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
- 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
 - 1. Section 012100 "Allowances" for testing and inspection allowances.

22.3 DEFINITIONS

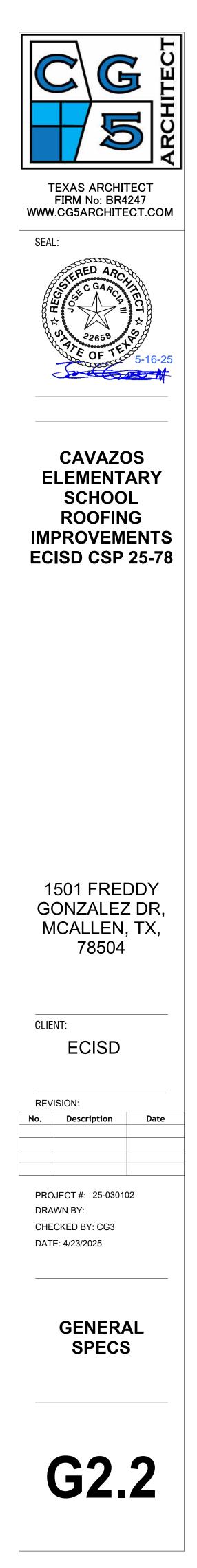
- Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or subsubcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
- 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
- Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."
- Ouality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's qualitycontrol services do not include contract administration activities performed by Architect.

22.4 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

22.5 CONFLICTING REQUIREMENTS

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



22.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
 - 2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - Specification Section number and title.
 - Entity responsible for performing tests and inspections. Description of test and inspection.
 - Identification of applicable standards.
 - Identification of test and inspection methods.
 - Number of tests and inspections required.
 - Time schedule or time span for tests and inspections. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.
- G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

22.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager may also serve as Project superintendent.
- Submittal Procedure: Describe procedures for ensuring C. compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 - 3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

22.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - Date of issue.
 - Project title and number Name, address, telephone number, and email address of
 - testing agency. Dates and locations of samples and tests or inspections.
 - Names of individuals making tests and inspections.
 - Description of the Work and test and inspection method.
 - Identification of product and Specification Section. 8. Complete test or inspection data.

- 9. Test and inspection results and an interpretation of test 10. Record of temperature and weather conditions at time of
- sample-taking and testing and inspection. 11. Comments or professional opinion on whether tested or
- inspected Work complies with the Contract Document requirements.
- 12. Name and signature of laboratory inspector. 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
- 1. Name, address, telephone number, and email address of
- technical representative making report. 2. Statement on condition of substrates and their acceptability for installation of product.
- 3. Statement that products at Project site comply with requirements.
- 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
- 5. Results of operational and other tests and a statement of whether observed performance complies with requirements
- Statement of whether conditions, products, and installation will affect warranty.
- Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factoryauthorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 - Statement that equipment complies with requirements.
 - Results of operational and other tests and a statement of whether observed performance complies with requirements. Statement of whether conditions, products, and installation
 - will affect warranty. 5. Other required items indicated in individual Specification

QUALITY ASSURANCE 22.9

Sections.

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.
- Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.
- 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:
- 1. Provide test specimens representative of proposed products and construction.

- Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
- 3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
- 4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project. 5. Build laboratory mockups at testing facility, using personnel, products, and methods of construction indicated
- for the completed Work. 6. When testing is complete, remove test specimens and test assemblies, and laboratory mockups; do not reuse products
- on Project. 7. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar qualityassurance service to Architect and Commissioning Authority,, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the

22.10 OUALITY CONTROL

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E

Contract Documents.

2.

Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

- 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
- 2. Payment for these services will be made from testing and inspection allowances specified in Section 012100 "Allowances," as authorized by Change Orders.
- 3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

- 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
- 2. Engage a qualified testing agency to perform qualitycontrol services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
- 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
- 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, duplicate, of each quality-control service.
- 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's
- responsibility. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide qualitycontrol services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

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

- 1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services. Determine the locations from which test samples will be
 - taken and in which in-situ tests are conducted. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies
- with or deviates from requirements. 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through
- Contractor. 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of
- the Work. 6. Do not perform duties of Contractor.

Manufacturer's Field Services: Where indicated, engage a factoryauthorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.

- 2. Incidental labor and facilities necessary to facilitate tests and inspections.
- Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
- Facilities for storage and field curing of test samples.
- Delivery of samples to testing agencies.
- Preliminary design mix proposed for use for material mixes that require control by testing agency.
- Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
 - Schedule times for tests, inspections, obtaining samples, and similar activities.
- Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's qualitycontrol plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
 - Schedule Contents: Include tests, inspections, and qualitycontrol services, including Contractor- and Owner-retained services, commissioning activities, and other Projectrequired services paid for by other entities.
 - Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 23 - PRODUCTS (Not Used)

PART 24 - EXECUTION

24.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - Date test or inspection was conducted.
 - Description of the Work tested or inspected. 3. Date test or inspection results were transmitted to
 - Architect. 4. Identification of testing agency or special inspector
- conducting test or inspection.
- Β. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and authorities' having jurisdiction reference during normal working hours.
 - 1. Submit log at Project closeout as part of Project Record Documents.

24.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- Repair and protection are Contractor's responsibility, regardless of C. the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 25 - GENERAL

- 25.1 RELATED DOCUMENTS
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 25.2 SUMMARY
- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
- 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions. 2. Section 012100 "Allowances" for allowance for metered
- use of temporary utilities.

25.3 USE CHARGES

Installation, removal, and use charges for temporary facilities A. shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

- Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services and metering as required for construction operations.
- 25.4 INFORMATIONAL SUBMITTALS
- Site Utilization Plan: Show temporary facilities, temporary utility Α. lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing waterdamaged Work.
- Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- Indicate methods to be used to avoid trapping water in finished work.
- Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
- Locations of dust-control partitions at each phase of work.
- HVAC system isolation schematic drawing. Location of proposed air-filtration system discharge.
- Waste-handling procedures. Other dust-control measures.
- G. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:
- 1. Methods used to meet the goals and requirements of the Owner.
- Concrete cutting method(s) to be used.
- Location of construction devices on the site.
- Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
- Indicate activities that may disturb building occupants and
- that are planned to be performed during non-standard
- working hours as coordinated with the Owner. Indicate locations of sensitive equipment areas or other
- areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

25.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines.
- 25.6 PROJECT CONDITIONS
- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 26 - PRODUCTS

26.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts;

- minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch-(73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide galvanized-steel bases for supporting posts.
- Fencing Windscreen Privacy Screen: Polyester fabric scrim with Β. grommets for attachment to chain-link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.
- Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-C mm) minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.
- D. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches (914 by 1524 mm).
- Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
- 26.2 TEMPORARY FACILITIES
- A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- Storage and Fabrication Sheds: Provide sheds sized, furnished, B and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.
- 26.3 EQUIPMENT
- Fire Extinguishers: Portable, UL rated; with class and Α. extinguishing agent as required by locations and classes of fire exposures.
- HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
- 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
- 2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application. 3. Permanent HVAC System: If Owner authorizes use of
- permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each returnair grille in system and remove at end of construction and clean HVAC system as required in Section 017700 "Closeout Procedures."
- Air-Filtration Units: Primary and secondary HEPA-filter-С. equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 27 - EXECUTION

- 27.1 TEMPORARY FACILITIES, GENERAL
- Conservation: Coordinate construction and use of temporary A. facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

27.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work
 - 1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
- 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed.
- a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
- b. Maintain negative air pressure within work area, using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
- 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices. 3. Perform daily construction cleanup and final cleanup using
- approved, HEPA-filter-equipped vacuum equipment.
- 27.3 TEMPORARY UTILITY INSTALLATION
- A. General: Install temporary service or connect to existing service.

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CLIENT: ECISD REVISION: No. Description Date PROJECT #: 25-030102 DRAWN BY: CHECKED BY: CG3 DATE: 4/23/2025
General Specs

- 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.
- E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- SUPPORT FACILITIES INSTALLATION 27.4
- A. Comply with the following:
 - 1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241. 2. Utilize designated area within existing building for
 - temporary field offices. Maintain support facilities until Architect schedules
 - Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
- Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- D. Storage and Staging: Use designated areas of Project site for storage and staging needs.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
 - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - Maintain and touch up signs, so they are legible at all 3.
- Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution.
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- AND PROTECTION FACILITIES 27.5 SECURITY **INSTALLATION**
- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

- Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
- 2. Inspect, repair, and maintain erosion- and sedimentationcontrol measures during construction until permanent
- vegetation has been established. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
- 4. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
- Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- Site Enclosure Fence: Before construction operations begin furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
- 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- Barricades, Warning Signs, and Lights: Comply with structurally adequate barricades, including warning signs and lighting.
- Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- K. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
- 1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage. 2. Paint and maintain appearance of walkway for duration of
- the Work.
- Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
- 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- M. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
- 1. Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
- 2. Construct dustproof partitions with two layers of 6-mil (0.14-mm) polyethylene sheet on each side. Cover floor with two layers of 6-mil (0.14-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fireretardant-treated plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain waterdampened foot mats in vestibule.
- 3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies. Insulate partitions to control noise transmission to occupied 4.
- Seal joints and perimeter. Equip partitions with gasketed 5. dustproof doors and security locks where openings are required.

3. 4.

Plan. 4 6.

- Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.
- А.
- removal.

Β.

Protect air-handling equipment.

7. Provide walk-off mats at each entrance through temporary partition.

- N. Temporary Fire Protection: Install and maintain temporary fireprotection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
 - Develop and supervise an overall fire-prevention and protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

27.6 MOISTURE AND MOLD CONTROL

- Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection
- Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
- Protect porous materials from water damage. 2. Protect stored and installed material from flowing or
- standing water. 3. Keep porous and organic materials from coming into prolonged contact with concrete.
- Remove standing water from decks. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter. Discard or replace water-damaged material.
 - Do not install material that is wet.
 - Discard and replace stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
 - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions. 2. Use temporary or permanent HVAC system to control
 - humidity within ranges specified for installed and stored materials. 3. Comply with manufacturer's written instructions for
 - temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
 - Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.

27.7 OPERATION, TERMINATION, AND REMOVAL

Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

Maintenance: Maintain facilities in good operating condition until

Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed

surfaces, and replace construction that cannot be satisfactorily repaired.

- 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
- 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
- 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 28 - GENERAL

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

28.2 SUMMARY

- Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 - 2. Section 012100 "Allowances" for products selected under an allowance.
 - 3. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 4. Section 014200 "References" for applicable industry standards for products specified.
 - 5. Section 01770 "Closeout Procedures" for submitting warranties.

28.3 DEFINITIONS

- Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
- 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
- Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated gualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
- 1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.
- Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 - 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.

- 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
- Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

QUALITY ASSURANCE 28.4

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - 1. Resolution of Compatibility Disputes between Multiple Contractors:
 - a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
- 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - Name of product and manufacturer. Model and serial number h
 - Capacity c.
- d. Speed.
- See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification

28.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.
- 28.6 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

- 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces. 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration,
- theft, and other losses. Deliver products to Project site in an undamaged condition 3. in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged
- and properly protected.

C. Storage:

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

28.7PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular

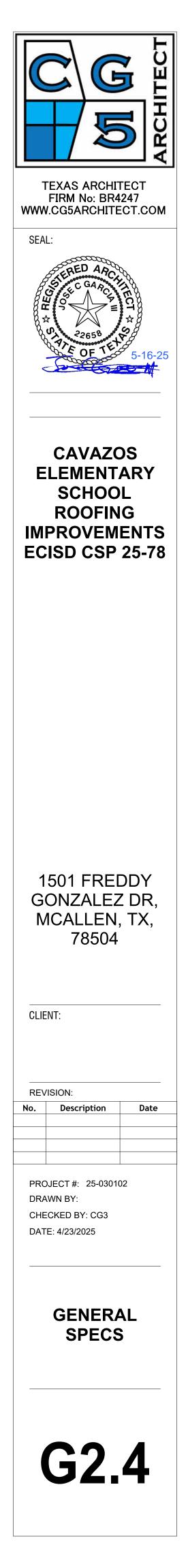
- Ratings. e.
- requirements.

product and issued in the name of the Owner or endorsed by manufacturer to Owner. Special Warranty: Written warranty required by the

Contract Documents to provide specific rights for Owner

and issued in the name of the Owner or endorsed by

- manufacturer to Owner. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
- Manufacturer's Standard Form: Modified to include Project-specific information and properly executed. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using
- indicated form properly executed. 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures.
- PART 29 PRODUCTS
- 29.1 PRODUCT SELECTION PROCEDURES
- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - Provide products complete with accessories, trim, finish, 1. fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 - 6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.
- B. Product Selection Procedures:
 - Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase Subject to compliance with requirements, provide the following."
 - 2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
 - 3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
 - 4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
 - 5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
 - 6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.



- Non-limited list of manufacturers is indicated by the а phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
- Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
- 7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
- Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.
- 1. Select products for which sustainable design documentation submittals are available from manufacturer.
- 29.2 COMPARABLE PRODUCTS
- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
 - 1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested. 5. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
 - 1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 - 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.
- D. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 30 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 31 - GENERAL

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

31.2 SUMMARY

31.3

31.4

31.5

			1
	ion includes general administrative and procedural irements governing execution of the Work, including, but not ted to, the following:	B.	Manuf site ma installa
1.	Construction layout.		mstant
2.	Field engineering and surveying.	DADT	
3. 4.	Installation of the Work. Cutting and patching.	PART.	32 - PRO
4. 5.	Coordination of Owner's portion of the Work.		
6.	Coordination of Owner-installed products.	32.1	MATE
7.	Progress cleaning.	۸	Compl
8. 9.	Starting and adjusting. Protection of installed construction.	А.	Compl
9.	Protection of instance construction.		1.
Rela	ted Requirements:		
1	Section 011000 "Summary" for coordination of and limits]
1.	on use of Project site.	B.	In-Plac
2.	Section 013300 "Submittal Procedures" for submitting		place r
	surveys.		match
3.	Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording		1.
	of Owner-accepted deviations from indicated lines and		1
	levels, replacing defective work, and final cleaning.		:
4.	Section 024119 "Selective Demolition" for demolition and]
	removal of selected portions of the building.		
		C.	Cleanin
DEF	TINITIONS		recom
Cutt	ing: Removal of in-place construction necessary to permit		cleaned to heal
	Illation or performance of subsequent work.		
			1.
	hing: Fitting and repair work required to restore construction		
to of	iginal conditions after installation of subsequent work.		
PRE	INSTALLATION MEETINGS		33 - EXE
Cutt	ing and Patching Conference: Conduct conference at Project	PART.	55 - EAE
site.	ing and Fatering Conference. Conduct conference at Project		
		33.1	EXAM
1.	Prior to commencing work requiring cutting and patching,	A.	Existin
	review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from		and ot
	cutting and patching work. Inform Architect of scheduled		guaran
	meeting. Require representatives of each entity directly		existen electric
	concerned with cutting and patching to attend, including the following:		ciccuit
	the following.		1. 1
	a. Contractor's superintendent.		i
	b. Trade supervisor responsible for cutting operations.		5
	c. Trade supervisor(s) responsible for patching of each type of substrate.		2.
	d. Mechanical, electrical, and utilities subcontractors'		1
	supervisors, to the extent each trade is affected by	B.	Exami
	cutting and patching operations.	D.	with ea
2.	Review areas of potential interference and conflict.		conditi
	Coordinate procedures and resolve potential conflicts		for con
	before proceeding.		other c
			1.
QUA	ALITY ASSURANCE		1
_			
	ing and Patching: Comply with requirements for and		2.
limi	tations on cutting and patching of construction elements.		3.
1.	Structural Elements: When cutting and patching structural		i
	elements, or when encountering the need for cutting and	a	
	patching of elements whose structural function is not	С.	Written
	known, notify Architect of locations and details of cutting and await directions from Architect before proceeding.		Section
	Shore, brace, and support structural elements during cutting		
	and patching. Do not cut and patch structural elements in a		1.]
	manner that could change their load-carrying capacity or		1
2.	increase deflection. Operational Elements: Do not cut and patch operating		2.
	elements and related components in a manner that results in		3.
	reducing their capacity to perform as intended or that		4.]
	results in increased maintenance or decreased operational	D.	Procee
	life or safety. Operational elements include the following:	D.	been co
	a. Primary operational systems and equipment.		surface
	b. Fire separation assemblies.		
	c. Air or smoke barriers.	33.2	PREPA
	d. Fire-suppression systems.e. Plumbing piping systems.	20.2	
	f. Mechanical systems piping and ducts.	А.	Existin
	g. Control systems.		necessa

Noise- and vibration-control elements and systems. 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace

not limited to the following:

Communication systems.

Electrical wiring systems.

Conveying systems.

Fire-detection and -alarm systems.

Water, moisture, or vapor barriers.

Exterior curtain-wall construction.

Piping, ductwork, vessels, and equipment.

Sprayed fire-resistive material.

Membranes and flashings.

Equipment supports.

Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other

construction elements or components in a manner that

could change their load-carrying capacity, that results in

reducing their capacity to perform as intended, or that

results in increased maintenance or decreased operational

life or safety. Other construction elements include but are

- construction that has been cut and patched in a visually unsatisfactory manner.
- afacturer's Installation Instructions: Obtain and maintain onnanufacturer's written recommendations and instructions for llation of specified products and equipment.

ODUCTS

- **TERIALS**
- ply with requirements specified in other Sections.
- For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- ace Materials: Use materials for patching identical to inmaterials. For exposed surfaces, use materials that visually in-place adjacent surfaces to the fullest extent possible.
- If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

ning Agents: Use cleaning materials and agents nmended by manufacturer or fabricator of the surface to be ed. Do not use cleaning agents that are potentially hazardous alth or property or that might damage finished surfaces.

Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

ECUTION

MINATION

- ing Conditions: The existence and location of underground other utilities and construction indicated as existing are not inteed. Before beginning sitework, investigate and verify the ence and location of underground utilities, mechanical and rical systems, and other construction affecting the Work.
- Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
- Furnish location data for work related to Project that must be performed by public utilities serving Project site.

nination and Acceptance of Conditions: Before proceeding each component of the Work, examine substrates, areas, and itions, with Installer or Applicator present where indicated, ompliance with requirements for installation tolerances and conditions affecting performance. Record observations.

- Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
- Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed
- Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

en Report: Where a written report listing conditions nental to performance of the Work is required by other ons, include the following:

- Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and
- detail, where applicable. List of detrimental conditions, including substrates.
- List of unacceptable installation tolerances.
- Recommended corrections.

eed with installation only after unsatisfactory conditions have corrected. Proceeding with the Work indicates acceptance of ces and conditions.

PARATION

B.

ing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

33.3 CONSTRUCTION LAYOUT

Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.

- Engage a project manager experienced in laying out the Work, B using the following accepted surveying practices:
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - Establish limits on use of Project site. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - Inform installers of lines and levels to which they must
 - Check the location, level and plumb, of every major
 - element as the Work progresses Notify Architect when deviations from required lines and levels exceed allowable tolerances.
- 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- Site Improvements: Locate and lay out site improvements. including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.
- 33.4 FIELD ENGINEERING
- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
- Record benchmark locations, with horizontal and vertical
- data, on Project Record Documents. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points
- sufficient to locate the Work. 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

33.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - Make vertical work plumb, and make horizontal work level 2. Where space is limited, install components to maximize
 - space available for maintenance and ease of removal for replacement.
 - Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated. 4. Maintain minimum headroom clearance of 96 inches (2440
 - mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces, unless otherwise indicated on Drawings.
- B Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- Attachment: Provide blocking and attachment plates and anchors H and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not

indicated, verify size and type required for load conditions with manufacturer.

- 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
- 2. Allow for building movement, including thermal expansion
 - and contraction. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be
 - embedded in concrete or masonry. Deliver such items to Project site in time for installation. Joints: Make joints of uniform width. Where joint locations in
 - exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
 - Repair or remove and replace damaged, defective, or nonconforming Work.
 - 1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

33.6 CUTTING AND PATCHING

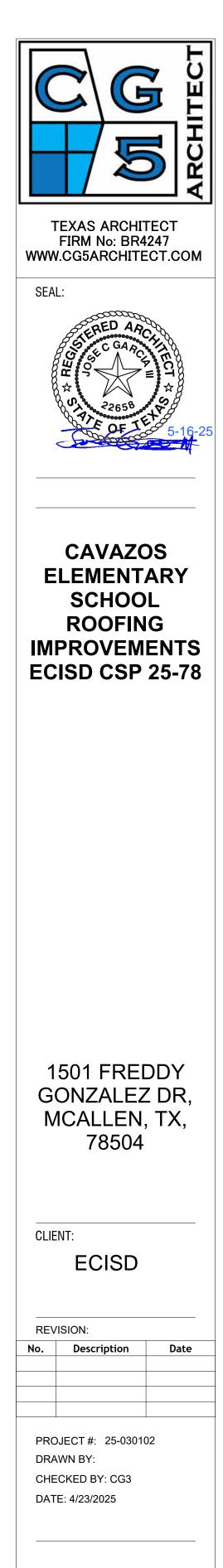
- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- Temporary Support: Provide temporary support of Work to be
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
- 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
- Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
- 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
- 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting. 6. Proceed with patching after construction operations
- requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
- 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials. b. Restore damaged pipe covering to its original condition.
- 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface

- containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
- 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
- Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- 33.7 PROGRESS CLEANING
- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C). 3. Containerize hazardous and unsanitary waste materials
 - separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
- Remove liquid spills promptly. 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- Installed Work: Keep installed work clean. Clean installed D surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- Waste Disposal: Do not bury or burn waste materials on-site. Do G not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls.'
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

33.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- Adjust equipment for proper operation. Adjust operating B components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."
- 33.9 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION
- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300



GENERAL SPECS

G2.5

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 34 - GENERAL

- 34.1 RELATED DOCUMENTS
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 34.2 SUMMARY
- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous [demolition] [and] [construction]
 - Disposing of nonhazardous [demolition] [and] [construction] waste.
- 34.3 DEFINITIONS
- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

34.4 MATERIALS OWNERSHIP

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

34.5 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
- B. Refrigerant Recovery Technician Qualifications: Universal certified by EPA-approved certification program.
- C. Refrigerant Recovery Technician Qualifications: Comply with requirements in Section 024119 "Selective Demolition."
- D. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.
- E. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition. Review and finalize procedures for materials separation 3.
 - and verify availability of containers and bins needed to avoid delays. Review procedures for periodic waste collection and
 - transportation to recycling and disposal facilities.
 - Review waste management requirements for each trade.

PART 35 - PRODUCTS

PART 36 - EXECUTION

- 36.1 PLAN IMPLEMENTATION
- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

- Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal. C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities. 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled 4 2. Comply with Section 015000 "Temporary Facilities and
 - Controls" for controlling dust and dirt, environmental protection, and noise control.
- D. Waste Management in Historic Zones or Areas: Transportation equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches (300 mm) or more.

SALVAGING DEMOLITION WASTE 36.2 Α. A. Comply with requirements in Section 024119 "Selective Demolition" for salvaging demolition waste. B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

- Clean salvaged items. 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed. Store items in a secure area until installation. Protect items from damage during transport and storage. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated. C. Salvaged Items for Sale and Donation: Not permitted on Project
- D
- Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
- Clean salvaged items. 37.6 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, A. quantity, and location where removed.
- Store items in a secure area until delivery to Owner Transport items to Owner's storage area designated by Owner.
- 5. Protect items from damage during transport and storage.
- Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- G Plumbing Fixtures: Separate by type and size.
- Lighting Fixtures: Separate lamps by type and protect from breakage.
- Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

36.3 DISPOSAL OF WASTE

- General: Except for items or materials to be salvaged or recycled A. remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials
- that are to be disposed of accumulate on-site. 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.
- Burning: Do not burn waste materials.
- Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 37 - GENERAL

37.1 RELATED DOCUMENTS

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

37.2 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - Substantial Completion procedures.
 - Final completion procedures. Warranties.
 - Final cleaning.

B. Related Requirements:

- 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and **Final Completion**
 - Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
- 3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

37.3 DEFINITIONS

List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

37.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

37.5 CLOSEOUT SUBMITTALS

A.

В

2.

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

MAINTENANCE MATERIAL SUBMITTALS

Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

37.7 SUBSTANTIAL COMPLETION PROCEDURES

Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

- 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
- Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
- 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
 - Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

Submit testing, adjusting, and balancing records. Submit sustainable design submittals not previously

submitted. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.

- Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
- Complete startup and testing of systems and equipment. Perform preventive maintenance on equipment used prior
- to Substantial Completion. Instruct Owner's personnel in operation, adjustment, and
- maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."

Advise Owner of changeover in utility services. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

- 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
- Complete final cleaning requirements. 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 - Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

37.8 FINAL COMPLETION PROCEDURES

- Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
 - Submit a final Application for Payment in accordance with 1 Section 012900 "Payment Procedures.'
 - 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements
 - Submit pest-control final inspection report. Submit Final Completion photographic documentation.
- Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- 1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

37.9 LIST OF INCOMPLETE ITEMS

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
 - 2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
 - Include the following information at the top of each page:
 - Project name.
 - Date Name of Architect
 - Name of Contractor.
 - Page number.
 - 4. Submit list of incomplete items in the following format: a. PDF Electronic File: Architect [, through Construction Manager,] will return annotated file.
- 37.10 SUBMITTAL OF PROJECT WARRANTIES
- Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 - 1. Submit on digital media acceptable to Architect.
- E. Warranties in Paper Form:
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinylcovered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11inch (215-by-280-mm) paper
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

- Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 38 - PRODUCTS

- 38.1 MATERIALS
- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
- 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 39 - EXECUTION

39.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and wasteremoval operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - and other foreign substances. b. Sweep paved areas broom clean. Remove
 - denosits c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - building f. Clean exposed exterior and interior hard-surfaced
 - reflective surfaces to their original condition.

 - Vacuum and mop concrete.
 - stains remain.
 - scratch surfaces.
 - Remove labels that are not permanent. Wipe surfaces of mechanical and electrical m. equipment and similar equipment. Remove excess
 - foreign substances. Clean plumbing fixtures to a sanitary condition, free
 - registers, and grills.
 - inspection].
 - completion of cleaning.
 - function with full efficiency. Clean strainers.
 - s. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- 39.2 REPAIR OF THE WORK
- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

Clean Project site of rubbish, waste material, litter,

petrochemical spills, stains, and other foreign

Remove snow and ice to provide safe access to

finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore

Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar

Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.

Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or

Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to

lubrication, paint and mortar droppings, and other

of stains, including stains resulting from water

Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers,

Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on

1) Clean HVAC system in compliance with NADCA ACR. Provide written report on

Clean luminaires, lamps, globes, and reflectors to

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 40 - GENERAL

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

40.2 SUMMARY

Α.

- Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
- 1. Operation and maintenance documentation directory manuals
- Emergency manuals. Systems and equipment operation manuals.
- Systems and equipment maintenance manuals. Product maintenance manuals.
- B Related Requirements:
- 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

40.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

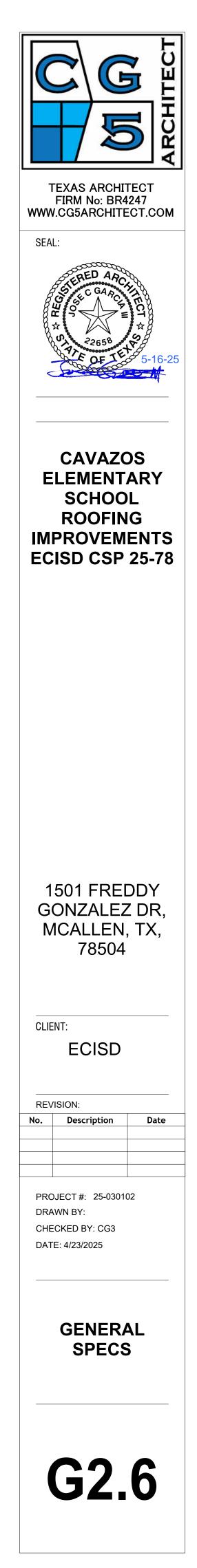
40.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

- 1. Architect and Commissioning Authority will comment on whether content of operation and maintenance submittals is acceptable
- 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
- 1. Submit by email to Architect. Enable reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.
- 1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's [and Commissioning Authority's] comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.
- 40.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS
 - Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

- 1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if



necessary to provide essential information for proper operation or maintenance of equipment or system.

- Identify each binder on front and spine, with printed b title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
- 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
- 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
- Supplementary Text: Prepared on 8-1/2-by-11-inch (215-4 by-280-mm) white bond paper.
- Drawings: Attach reinforced, punched binder tabs on 5. drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
- b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
- 40.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS
- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - Title page.
 - Table of contents. Manual contents.
- B. Title Page: Include the following information:
 - Subject matter included in manual.
 - Name and address of Project.
 - Name and address of Owner. Date of submittal.
 - Name and contact information for Contractor.
 - Name and contact information for Construction Manager.
 - Name and contact information for Architect. Name and contact information for Commissioning 8
 - Authority. 9. Names and contact information for major consultants to the
 - Architect that designed the systems contained in the manuals 10. Cross-reference to related systems in other operation and
- maintenance manuals C. Table of Contents: List each product included in manual,
- identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."
- 40.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL
- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
 - 1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each
 - 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate
 - 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

40.8 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:

- Type of emergency. Emergency instructions.
- 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - Fire. Flood.
 - Gas leak.
 - Water leak. Power failure.
 - Water outage.
- System, subsystem, or equipment failure. 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of

Installer, supplier, and manufacturer to maintain warranties.

- E. Emergency Procedures: Include the following, as applicable:
 - Instructions on stopping.
 - Shutdown instructions for each type of emergency
 - Operating instructions for conditions outside normal operating limits.
 - Required sequences for electric or electronic systems. Special operating instructions and procedures.

40.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system. Prepare a separate manual for each system and subsystem,
 - in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - Performance and design criteria if Contractor has delegated design responsibility.
 - Operating standards. Operating procedures.
- Operating logs.
- Wiring diagrams.
- Control diagrams.
- Piped system diagrams.
- Precautions against improper use. 10. License requirements including inspection and renewal dates

C. Descriptions: Include the following:

- Product name and model number. Use designations for
- products indicated on Contract Documents. Manufacturer's name.
- Equipment identification with serial number of each 3.
- component.
- Equipment function. Operating characteristics
- Limiting conditions.
- Performance curves.
- Engineering data and tests. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 - Startup procedures.
 - Equipment or system break-in procedures.
 - Routine and normal operating instructions. Regulation and control procedures.
 - Instructions on stopping.
 - Normal shutdown instructions.
 - Seasonal and weekend operating instructions.
 - Required sequences for electric or electronic systems. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

40.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
 - Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures,

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C.

maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

- Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly Identification and nomenclature of parts and components.
- 4. List of items recommended to be stocked as spare parts.

Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

- Test and inspection instructions.
- Troubleshooting guide. Precautions against improper maintenance.
- Disassembly; component removal, repair, and replacement;
- and reassembly instructions.

Aligning, adjusting, and checking instructions. 6. Demonstration and training video recording, if available.

Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

- Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
- 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and crossreferenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals

40.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

- Product name and model number.
- Manufacturer's name.

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- Color, pattern, and texture. Material and chemical composition.
- Reordering information for specially manufactured products.
- Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - Inspection procedures.
- 2. Types of cleaning agents to be used and methods of cleaning.

- 3. List of cleaning agents and methods of cleaning detrimental to product.
- Schedule for routine cleaning and maintenance. 5. Repair instructions.
- Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 41 - PRODUCTS (Not Used)

PART 42 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 43 - GENERAL

43.1 RELATED DOCUMENTS

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

43.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - Record Drawings.
 - Record specifications.
 - Record Product Data. 4. Miscellaneous record submittals
- B. Related Requirements:
- Section 017700 "Closeout Procedures" for general closeout procedures. Section 017823 "Operation and Maintenance Data" for

operation and maintenance manual requirements.

- 43.3 CLOSEOUT SUBMITTALS
- A. Record Drawings: Comply with the following:
 - Number of Copies: Submit one set(s) of marked-up record
- Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
- Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.
- Reports: Submit written report weekly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.
- 43.4 RECORD DRAWINGS
- Record Prints: Maintain one set of marked-up paper copies of the A. Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - Dimensional changes to Drawings.
 - Revisions to details shown on Drawings. Depths of foundations.
 - Locations and depths of underground utilities.
 - Revisions to routing of piping and conduits. Revisions to electrical circuitry.
 - Actual equipment locations.
 - Duct size and routing.

- Locations of concealed internal utilities. Changes made by Change Order or Construction
- Change Directive.
- Changes made following Architect's written orders. Details not on the original Contract Drawings.
- m. Field records for variable and concealed conditions.
- schematically.
- 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
- Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location. Mark important additional information that was either
- shown schematically or omitted from original Drawings. 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
- 1. Format: Same digital data software program, version, and operating system as for the original Contract Drawings. 2. Format: Annotated PDF electronic file with comment
- function enabled. 3. Incorporate changes and additional information previously
- and notations where applicable. Refer instances of uncertainty to Architect for resolution. Architect will furnish Contractor with one set of digital
- information.
- a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files. b. Architect will provide data file layer information. Record markups in separate layers.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- 1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets. 2. Format: Annotated PDF electronic file with comment
- function enabled. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to
- each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file. 4. Identification: As follows:
 - a. Project name.
- Date. b.
- Name of Architect and Construction Manager. d. e. Name of Contractor.
- 43.5 RECORD SPECIFICATIONS

Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

and recorded later.

selections made.

Product Data.

43.6 RECORD PRODUCT DATA

occur; do not wait until end of Project.

indicated in Product Data submittal.

instructions for installation.

and recorded later.

file

file

n. Record information on the Work that is shown only

- marked on record prints. Delete, redraw, and add details
- data files of the Contract Drawings for use in recording
- Designation "PROJECT RECORD DRAWINGS."
- 1. Give particular attention to information on concealed products and installations that cannot be readily identified
- 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected. Record the name of manufacturer, supplier, Installer, and
- other information necessary to provide a record of 4. For each principal product, indicate whether Record Product Data has been submitted in operation and
- maintenance manuals instead of submitted as Record 5. Note related Change Orders, Record Product Data, and
- Record Drawings where applicable. Format: Submit record specifications as annotated PDF electronic
- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified
- 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written
- 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
- C. Format: Submit Record Product Data as annotated PDF electronic

- 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.
- 43.7 MISCELLANEOUS RECORD SUBMITTALS
 - Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
 - Format: Submit miscellaneous record submittals as PDF electronic file
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.
- 43.8 MAINTENANCE OF RECORD DOCUMENTS
- Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.
- PART 44 PRODUCTS (Not Used)
- PART 45 EXECUTION (Not Used)
- END OF SECTION 017839
- SECTION 017900 DEMONSTRATION AND TRAINING
- PART 46 GENERAL
- 46.1 RELATED DOCUMENTS
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 46.2 SUMMARY
- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.
- Allowances: Furnish demonstration and training instruction time under the demonstration and training allowance as specified in Section 012100 "Allowances."
- C. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up. See requirements in Section 012200 "Unit Prices."
- 46.3 INFORMATIONAL SUBMITTALS
 - Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturerproduced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
- 46.4 CLOSEOUT SUBMITTALS
- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - Name and address of videographer.
 - Name of Architect. Name of Construction Manager.
 - Name of Contractor.
 - Date of video recording.
 - 2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
 - 3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
- 5 TEXAS ARCHITECT FIRM No: BR4247 WWW.CG5ARCHITECT.COM SEAL: CAVAZOS **ELEMENTARY** SCHOOL ROOFING **IMPROVEMENTS ECISD CSP 25-78** 1501 FREDDY GONZALEZ DR MCALLEN, TX, 78504 CLIENT: ECISD **REVISION:** No. Description Date PROJECT #: 25-030102 DRAWN BY: CHECKED BY: CG3 DATE: 4/23/2025 GENERAL SPECS **G2**_7

4. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

46.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Reinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

46.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

46.7 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.b. Performance and design criteria if Contractor is
 - delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.h. Performance curves.
 - n. i eriornance curves.

2. Documentation: Review the following items in detail:

- a. Emergency manuals.
- b. Systems and equipment operation manuals.c. Systems and equipment maintenance manuals.
- d. Product maintenance manuals.
- e. Project Record Documents.
- f. Identification systems.g. Warranties and bonds.
- h. Maintenance service agreements and similar continuing commitments.
- 3. Emergencies: Include the following, as applicable:
- a. Instructions on meaning of warnings, trouble indications, and error messages.
- b. Instructions on stopping.
- c. Shutdown instructions for each type of emergency.d. Operating instructions for conditions outside of
- normal operating limits.e. Sequences for electric or electronic systems.
- f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
- a. Startup procedures.
- b. Equipment or system break-in procedures.c. Routine and normal operating instructions.
- d. Regulation and control procedures.
- e. Control sequences.
- f. Safety procedures.g. Instructions on stopping.
- h. Normal shutdown instructions.
- i. Operating procedures for emergencies.
- j. Operating procedures for system, subsystem, or equipment failure.

- k. Seasonal and weekend operating instructions.
- l. Required sequences for electric or electronic
- m. Special operating instructions and procedures.

5. Adjustments: Include the following:

- a. Alignments.
- b. Checking adjustments.c. Noise and vibration adjustments.
- d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:

a. Diagnostic instructions.

b. Test and inspection procedures.Maintenance: Include the following:

a. Inspection procedures.

- b. Types of cleaning agents to be used and methods of
- cleaning. c. List of cleaning agents and methods of cleaning
- detrimental to product.
- d. Procedures for routine cleaning.
- e. Procedures for preventive maintenance.f. Procedures for routine maintenance.
- g. Instruction on use of special tools.
- 8. Repairs: Include the following:

 - a. Diagnosis instructions.b. Repair instructions.
 - c. Disassembly; component removal, repair, and
 - replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.e. Review of spare parts needed for operation and
 - maintenance.

46.8 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

46.9 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- . Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
- Owner will furnish an instructor to describe Owner's operational philosophy.
- Owner will furnish Contractor with names and positions of participants.
- 2. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
- 1. Schedule training with Owner with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training onsite in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and
- 46.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

equipment to condition existing before initial training use.

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.
- 1. Submit video recordings thumb drive.
- 2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
- 3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
- 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:

- a. Name of Contractor/Installer.
- b. Business address.c. Business phone number.
- d. Point of contact.
- e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

- 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
 - 1. Furnish additional portable lighting as required.
- Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.
- Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 47 - PRODUCTS

PART 48 - EXECUTION

END OF SECTION 017900

SECTIO	ON 012100 - ALLOWANCES	C.	Costs require respons
PART 1	- GENERAL	D.	At Pro testing
1.1	RELATED DOCUMENTS	1.0	
A.	Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.	1.9 A.	ADJU: Allowa prepare betwee
1.2	SUMMARY		final r applica
A.	Section includes administrative and procedural requirements governing allowances.		toleran require
B.	Types of allowances include the following:		1.
	1. Contingency allowances.		2.
C.	Related Requirements:		3.
	1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.		4.
	2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.	B.	Submit scope Docum
1.3	DEFINITIONS		Contra profit.
A.	Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.		1. 1. 2.
			1
1.4	SELECTION AND PURCHASE)
A.	At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid	PART 2	- PROD
D	delaying the Work.	PART 3	- EXEC
B.	At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.	3.1	EXAM
C.	Purchase products and systems selected by Architect from the designated supplier.	A.	Examin deliver produc
1.5	ACTION SUBMITTALS	3.2	PREPA
A.	Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.	A.	Coordi allowa that en interfa
1.6	INFORMATIONAL SUBMITTALS		
A.	Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each	3.3 A.	SCHE! Allowa
	allowance.		conting the Are
B.	Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.	END OF	
C.	Coordinate and process submittals for allowance items in same manner as for other portions of the Work.		

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.
- 1.8 TESTING AND INSPECTING ALLOWANCES
- A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

s of testing and inspection services not specifically red by the Contract Documents are Contractor insibilities and are not included in the allowance.

oject closeout, credit unused amounts remaining in the g and inspecting allowance to Owner by Change Order.

USTMENT OF ALLOWANCES

wance Adjustment: To adjust allowance amounts, are a Change Order proposal based on the difference even purchase amount and the allowance, multiplied by measurement of work-in-place where applicable. If icable, include reasonable allowances for cutting losses, ances, mixing wastes, normal product imperfections, ired maintenance materials, and similar margins.

Include installation costs in purchase amount only where indicated as part of the allowance. If requested, prepare explanation and documentation

- to substantiate distribution of overhead costs and other markups.
- Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
- Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

hit claims for increased costs due to a change in the e or nature of the allowance described in the Contract ments, whether for the purchase order amount or ractor's handling, labor, installation, overhead, and

Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.

No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

DUCTS (Not Used)

CUTION

MINATION

nine products covered by an allowance promptly on very for damage or defects. Return damaged or defective ucts to manufacturer for replacement.

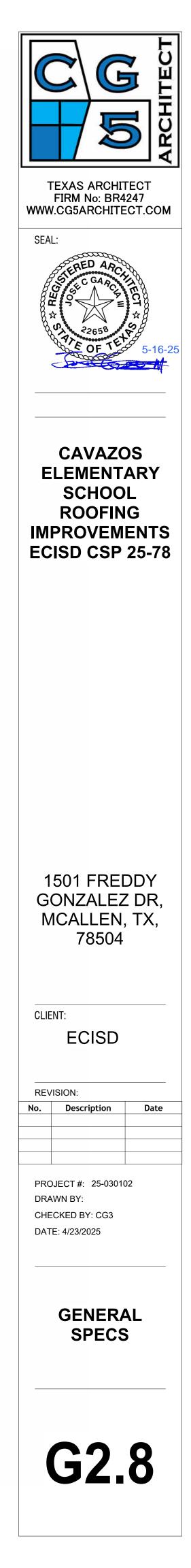
PARATION

dinate materials and their installation for each vance with related materials and installations to ensure each allowance item is completely integrated and faced with related work.

EDULE OF ALLOWANCES

wance No. 1 - Contingency Allowance: Include a ngency allowance of **\$15,000.00** for use according to rchitect and/or Owner's written instructions.

TON 012100



SECTION 075700 - COATED FOAMED ROOFING

PART 1 - GENERAL

RELATED DOCUMENTS 1.1

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

1.2 SUMMARY

- A. Section Includes:
 - Spray-applied, coated, polyurethane foam roofing. Walkways.
- B. Scope of Work:
 - 1. This guide specification covers the installation of the, Sprayed Polyurethane Roofing System (SPRS) which consists of a seamless sprayed-in-place polyurethane foam insulation covered with an elastomeric coating for use as an insulated roofing system for retrofit (re-roofing) construction. The coating materials shall be listed in the Energy Star® Roof Products Program.
 - 2. This existing roof shall be prepared for an overlay of an SPRS system. The final (finish) exposed layer of the existing roof shall be prepared by removing any loose material and the existing roof substrate layers shall be secured for the new roof system. All materials are to be disposed of properly by the contractor. Refer to drawings for additional scope of work.
- 1.3 DEFINITIONS
- A. Applicator: A qualified person employed to apply spray-applied, coated, polyurethane foam roofing.
- B Installer: A qualified firm contracted to install spray-applied, coated, polyurethane foam roofing.

PREINSTALLATION MEETINGS 1.4

- A. Preinstallation Conference: Conduct conference at **Project site**
 - Review methods and procedures related to coated foamed roofing, including, but not limited to, the following:
 - Load limitations on in-place roofing.
 - b. Construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays. Surface preparation specified in other Sections.
 - Minimum curing period. Forecasted weather conditions.
 - Special details and sheet flashings

ACTION SUBMITTALS 1.5

A. Product Data: For each type of product.

Repairs

- Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties.
- Samples for Initial Selection: For each type of exposed product, finish, and color.
- Include Samples of auxiliary materials and accessories 1 involving color and finish selection.
- C. Samples for Verification: For coated foamed roofing, prepared on Samples of size indicated below:
 - Samples, 24 by 24 inches (600 by 600 mm), on rigid 1. backing, showing polyurethane foam of thickness required and stepped coatings in colors required to illustrate buildup of coated foamed roofing.
 - Include Samples of auxiliary materials and accessories to verify color and finish selected.

INFORMATIONAL SUBMITTALS 1.6

- Qualification Data: For SPFA-qualified Installer and Α. applicators.
- B. Product Certificates: For each type of coated foam roofing.
- C. Evaluation Reports: For coated foamed roofing, from ICC-ES.
- D. Field quality-control reports.
- E. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- Maintenance Data: For coated foamed roofing to include in Α. maintenance manuals.
- QUALITY ASSURANCE 1.8
- A. Installer Qualifications: A qualified coated-foamed-roofing installer who is approved, authorized, or licensed by coating manufacturer for installation of coating manufacturer's product over polyurethane foam.

- Engage an installer who participates in and who has fulfilled requirements of the SPFA program for company accreditation as "SPFA PCP Accredited Company Roofing," with individual applicator certification for personnel assigned to work on Project.
- B. Comply with recommendations in SPFA AY-104.

DELIVERY, STORAGE, AND HANDLING 1.9

- A. Deliver materials to Project site with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.
- B. Store materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by manufacturer.
- C. Remove and replace material that cannot be applied within its stated shelf life.

1.10FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing work to be performed according to manufacturer's written instructions and warranty requirements.
 - Apply materials within the range of ambient and substrate temperatures recommended in writing by material manufacturers, but not below 50 deg F (10 deg C).
 - 2. Apply materials within range of relative humidity recommended in writing by manufacturer of each component, but not when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F (3) deg C) above dew point.
 - Do not apply materials to damp or wet surfaces.
 - Do not apply primers, polyurethane foam, or coatings in snow, rain, fog, or mist, or when such weather conditions are imminent during the application and curing period.
 - 5. Do not apply polyurethane foam when wind conditions result in surface finish textures not complying with requirements
 - 6. Do not apply coatings when wind conditions prevent uniform coating application.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace coated foamed roofing that does not comply with requirements or that does not remain watertight within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Source Limitations for Coated Foamed Roofing System: Obtain coating from single source from single manufacturer and polyurethane foam from single manufacturer acceptable in writing to coating manufacturer.

2.2 PERFORMANCE REOUIREMENTS

- A. General Performance: Coated foamed roofing shall withstand exposure to weather without failure due to defective manufacture, installation, or other defects in construction. Membrane roofing shall remain watertight.
 - 1. Material Compatibility: Provide polyurethane foam, coatings, substrate board, and auxiliary materials that are compatible with one another and with substrate under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Fire-Test-Response Characteristics: Provide coated foamed roofing with the fire-test-response characteristics indicated, as determined by testing identical systems according to test methods below for deck type and slopes indicated by a qualified testing and inspecting agency that is acceptable to authorities having jurisdiction.
 - **Class A** roof covering according to ASTM E108. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 75 or less.

- 3. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- C. Wind-Uplift Resistance: Design roofing system to resist the following wind-uplift pressures when tested according to FM 4474, UL 580, or UL 1897 for the county project is located.
- D. FM Approvals Listing: Provide roofing system and component materials that comply with requirements in [FM Approvals Standard 4450 for steel roof decks and JFM Approvals Standard 4470 for roof covers as part of a foamed roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
 - Fire/Windstorm Classification: Class 1A-60 or better. Hail-Resistance Classification: MH.
- E. Energy Performance: Provide coated foam roofing that is listed on the EPA/DOE's "ENERGY STAR Roof Product List" for lowslope roof products.

2.8

2.6

Energy Performance: Provide coated foamed roofing certified and labeled according to one of the following when tested according to CRRC-1:

1. Three-year, aged solar reflectance of not less than **0.55** and emissivity of not less than 0.75.

PRIMER AND INTENDED APPLICATION SUBSTRATE

- Asphalt/BUR, Masonry & Plywood: Primer shall be singlecomponent, primer, black in color. The product BASIS OF DESIGN (or equal): Enviro-Prime as manufactured by Global Polymer Systems.
- Galvanized Metal and Other Non-Ferrous Metals BASIS OF DESIGN OR EOUAL: Pretreatment Primer No. 4860-420 (Reducer 1000-44) as manufactured by Cardinal Industrial Finishes, El Monte, CA,213-283-9335.

2.4 BASE SHEET AND FASTENERS

2.3

2.5

- A. A base sheet if required shall be 72 Lb. fiberglass, mineral surfaced cap sheet as manufactured by Manville, GAF, or equal.
- B. Nailable decks; The fasteners shall be 1-inch, square head, ringshank nails as manufactured by Simplex or equal with sufficient length to penetrate sheathing or embed a minimum 1-inch into sheathing.
- Mechanical Fasteners and Plates; Screws shall be No. 12, coated, self-taping screws of sufficient length to penetrate the existing BUR and insulation with 1 inch penetration (minimum) into the substrate. The plates shall be 2 inch square, coated plates. The screws and plates shall be as manufactured by Olympic, DeckFast or equal.

POLYURETHANE INSULATION

- A. Polyurethane insulation shall be a two-component polyurethane insulation system formulated for use through airless equipment.
- B. BASIS OF DESIGN OR EQUAL: Enviroseal manufactured by Global Polymer Systems, Edinburg Texas.
 - Density (sprayed in place) 2.7 3.0 pcf
 - Compressive strength >40 psi (nominal)
 - Tensile strength 90 psi Shear strength 45 psi
 - Closed cell content 90 % min.
 - K factor (aged) 0.156
 - Flame spread UL-723 (ASTM E-84) <75
 - Roof Deck Classification UL 790 (ASTM E-108) Maintenance and Repair Class A
 - 10. FMRC 4470
- C. FLUID APPLIED ELASTOMERIC COATINGS
 - The elastomeric coating material shall be an acrylic elastomer coating and shall be an Energy Star® Listed Product and meet the Standards for Liquid Applied Coating Used in Roofing ASTM D-6083-97a.
 - BASIS OF DESIGN OR EQUAL: ENVIROSHEILD II manufactured by Global Polymer Systems, Edinburg, TX
 - Phyisical Properties: a. Solids Content, by vol: $55 \pm 2.0\%$
 - Viscosity: 110 ± 10 KU
 - Weight Per Gallon: 11.1 lbs. per gallon
 - Flash Point: None
 - Coverage (mils/100 SF/gal): 8.8 Dry Mils Drying Time at 24 wet mils:
 - Dry to Touch 4 hours
 - Dry Through 12 hours
 - Dry-to-Recoat >6 hours
 - Total Cure Time (aprx.): 30 days
 - Permeability: 14 ± 3 (ASTM D-624)
 - Tensile Strength: 273 ± 20 psi (EC) or 500 ± 50 psi
 - m. Tear Resistance: $95 \pm 3 \text{ psi}$ (EC) or $133 \pm 3 \text{ psi}$ (HT) n. Elongation: $233 \pm 20\%$ (EC) or $600 \pm 50\%$ (HT)
 - Aged, 1000 hrs: $155\% \pm 100$
 - Adhesion/peel test on foam: 2.4 lbs/in.
 - Hardness Shore A (ASTM D-2240): 50-55
 - Low Temperature Flex: Pass
 - Service Temperature Range: 50° to 200°F Roof Deck Classification: UL 790 (ASTM E-108)
 - u. Maintenance and Repair: Class A
 - Meets ASTM D6083 Standard Specification for Liquid 4 Applied Acrylic Coating Used in Roofing ENERGY STAR® Certified
 - Meets the requirements of California Energy Commission
 - (CEC) Title 24 Section 118(i)3 Cool Roof Rating Council (CRRC) Rated
 - FM Certified
 - 7
 - UL Certified as a component withing Class "A" and "B" fire rated roof coverings
 - 8. The minimum thickness of the acrylic coating shall be 52 dry mils.
- CAULKING OR SEALANTS

Caulking material shall be BASIS OF DESIGN OR EQUAL: ENVIRO-SIL sealant, a single-component 100% Solids Siliconized Urethane. Caulking of fabricated metal components or lapping metal joints (except equipment pan seams).

2.7 GRANULES:

A. Granules shall be Dust Free White granules and shall be broadcast into the final coating application while it is still wet. (Only if specified for project)

EQUIPMENT:

- A. Equipment for spraying foam shall be manufactured specifically for the application of polyurethane foam. The equipment shall be airless, capable of maintaining a 1:1 volume ratio and have primary and hose heaters (300 feet of material hose maximum allowable to meet mix pressure requirements, Gusmer GX-7 gun with 90 PCD suggested for winter-grade foam systems).
- B. Coating equipment shall be an airless type as recommended by manufacturer.

PART 3 - EXECUTION

- 3.1 EXAMINATION
- A. Verify that related work is complete. Do not install coated foamed roofing until roof openings, curbs, and parapets, if any, are complete and roof drains, vents, and other roof penetrations are in place.
- B. Examine substrates, areas, and conditions under which coated foamed roofing will be applied, with Installer present, for compliance with requirements.
- C. Proceed with installation only after unsatisfactory conditions have been corrected and substrates are dry.
- D. Proceed with installation only after minimum concrete curing and drying period recommended in writing by coated foamed roofing manufacturer.
- Verify that concrete substrate is visibly dry and free of moisture. Test concrete substrate for capillary moisture by plastic sheet method according to ASTM D4263at start of each roof area or plane. Do not proceed with roofing work if moisture condenses under the plastic sheet.
- F. Raising, repairing and modifying existing air conditioning systems for the installation of curbs, metal pans and duct work.

3.2 SUBSTRATE BOARD

- A. General: Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
- B. Thermal Barrier: Fasten to top flanges of steel deck according to recommendations in FM Global's "Approval Guide" and its FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.
- C. Thermal Barrier: Fasten to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to coated foamed roofing manufacturer's written instructions.

3.3 SURFACE PREPARATION

- General: Clean and prepare substrate according to coated foamed roofing manufacturer's written instructions. Provide clean, dustfree, dew-free, and dry substrate for coated foamed roofing application.
- B. Remove grease, oil, form-release agents, curing compounds, and other contaminants from substrate.
- C. Prepare substrate for re-covering according to Section 070150.19 "Preparation for Re-Roofing" and to coated foamed roofing manufacturer's written instructions.
- D. Cover and mask adjoining surfaces not receiving coated foamed roofing to prevent overspray or spillage affecting other construction. Temporarily close off roof drains, removing roofdrain plugs when not doing coated foamed roofing work or when rain is forecast.
 - 1. Remove masking after polyurethane foam application; cover and re-mask adjoining surfaces before coating polyurethane foam.
- Prime substrate as recommended in writing by coated foamed roofing manufacturer.
- F. Fill, cover, or tape joints and cracks in substrate that exceed a width of 1/4 inch (6 mm). Remove dust and dirt from narrower joints and cracks before applying polyurethane foam.
- G. Install vapor retarder according to coated foamed roofing manufacturer's written instructions.

POLYURETHANE FOAM APPLICATION 3.4

- A. General: Mix and apply polyurethane foam according to ASTM D5469/D5469M and coated foamed roofing manufacturer's written instructions.
 - Fill irregularities and depressions to prevent ponding water. Apply the required full thickness of polyurethane foam in
 - any specific area on same day. 3. Apply only the area of polyurethane foam that can be
 - covered with required base coating on same day or within 24 hours. 4. Apply polyurethane foam to avoid overspray beyond
 - immediate area of work.
- B. Uniformly apply total thickness of polyurethane foam indicated, but not less than $1 \frac{1}{2}$ inch (25 mm), to a surface tolerance of plus 1/2" inch (6 mm) and no minus.
 - 1. Slope to Drain: Vary thickness uniformly and fill low spots to achieve minimum 1/4-inch-per-foot (1:48) slope to drain unless otherwise indicated.
- C. Apply polyurethane foam to roof penetrations, terminations, and vertical surfaces as indicated. Unless otherwise indicated, extend polyurethane foam at least 4 inches (100 mm) above elevation of adjacent roof field.

- ASTM D5469/D5469M:
- 1. Texture: Smooth to **coarse orange peel**
- Remove and replace polyurethane foam not complying with results.
- 3.5 COATING APPLICATION
- A. Allow polyurethane foam substrate to cure for a minimum of two contaminants before applying coating system.
- B. Apply coating system to polyure than foam by spray, roller, or manufacturer's written instructions.
- Apply base coat and one or more topcoats to obtain a uniform, successive coats.
- contaminants from base coat. 2. Urethane Coating: Apply coating system to a minimum dry
- foamed roofing manufacturer.
- D
- Mineral Granules: Apply mineral granules over wet topcoat, using Remove excess granules after topcoat has cured.
- manufacturer.
- G. Walkways: Install roof walkways in pattern and locations indicated and as follows:
 - excess granules after topcoat has cured.
- H. Aggregate: Apply aggregate uniformly over coated polyurethane puncturing coating and to minimize damage to substrate foam.

3.6 REPAIR AND RE-COATING

materials.

coatings.

END OF SECTION 075700

A.

C.

D. Surface Finish: Provide finished surface of polyurethane foam within the following range of surface textures as defined by

surface-texture limitations. Remove defective thickness and prepare and reapply polyurethane foam with acceptable, uniform

hours before coating (or by manufacturer recommendation), and apply coating system to polyure than foam no later than 24 hours after applying the foam. Remove dust, dirt, water, and other

other suitable application method according to coating

seamless membrane free of blisters and pinholes. Apply each coat at right angles to preceding coat, using contrasting color tints for

1. Apply topcoat(s) after removing dust, dirt, water, and other

film thickness recommended in writing by coated

Height at Terminations: Apply coating system at wall terminations and other vertical surfaces to extend vertically beyond polyurethane foam by a minimum of 4 inches (100 mm).

pressure equipment at the rate of 0.5 lb/sq. ft. (2.45 kg/sq. m).

Sealant: Apply sealant to perimeter and other terminations where indicated on Drawings or required by coated foamed roofing

1. Fabric-Reinforced, Granule-Coated Walkways: Mask off completed coating adjacent to walkways, and apply one additional topcoat to achieve a minimum dry film thickness recommended in writing by coated foamed roofing manufacturer. Lay reinforcing fabric into wet coating and apply another topcoat, completely filling fabric. Spread mineral granules uniformly at a rate of 0.5 lb/sq. ft. (2.45 kg/sq. m) into final wet coating. Remove masking and

foam at coated foamed roofing manufacturer's recommended rate, but not less than 6 lb/sq. ft. (29 kg/sq. m) and a minimum thickness of 3/4 inch (19 mm). Spread with care to prevent

Correct deficiencies in, or remove, foam or coatings that do not comply with requirements; fill and repair substrates and reapply

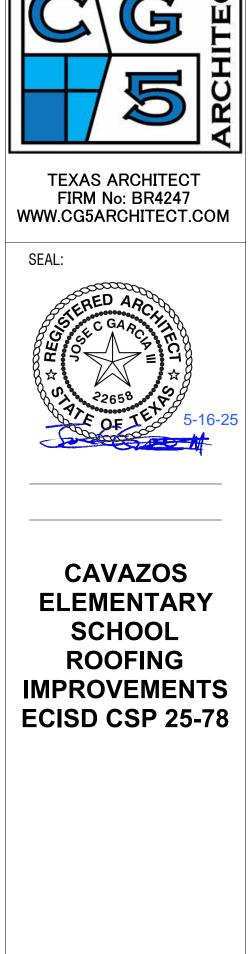
B. Repair and re-coat coated foamed roofing according to ASTM D6705/D6705M and manufacturer's written instructions.

3.7 CURING, PROTECTING, AND CLEANING

Cure coatings according to manufacturer's written instructions, taking care to prevent contamination and damage during application stages and curing. Do not permit traffic on uncured

B. Protect coated foamed roofing from damage and wear during remainder of construction period.

Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.



1501 FREDDY GONZALEZ DR MCALLEN, TX, 78504

CLIENT: ECISD

REVISION:

No. Description

Date

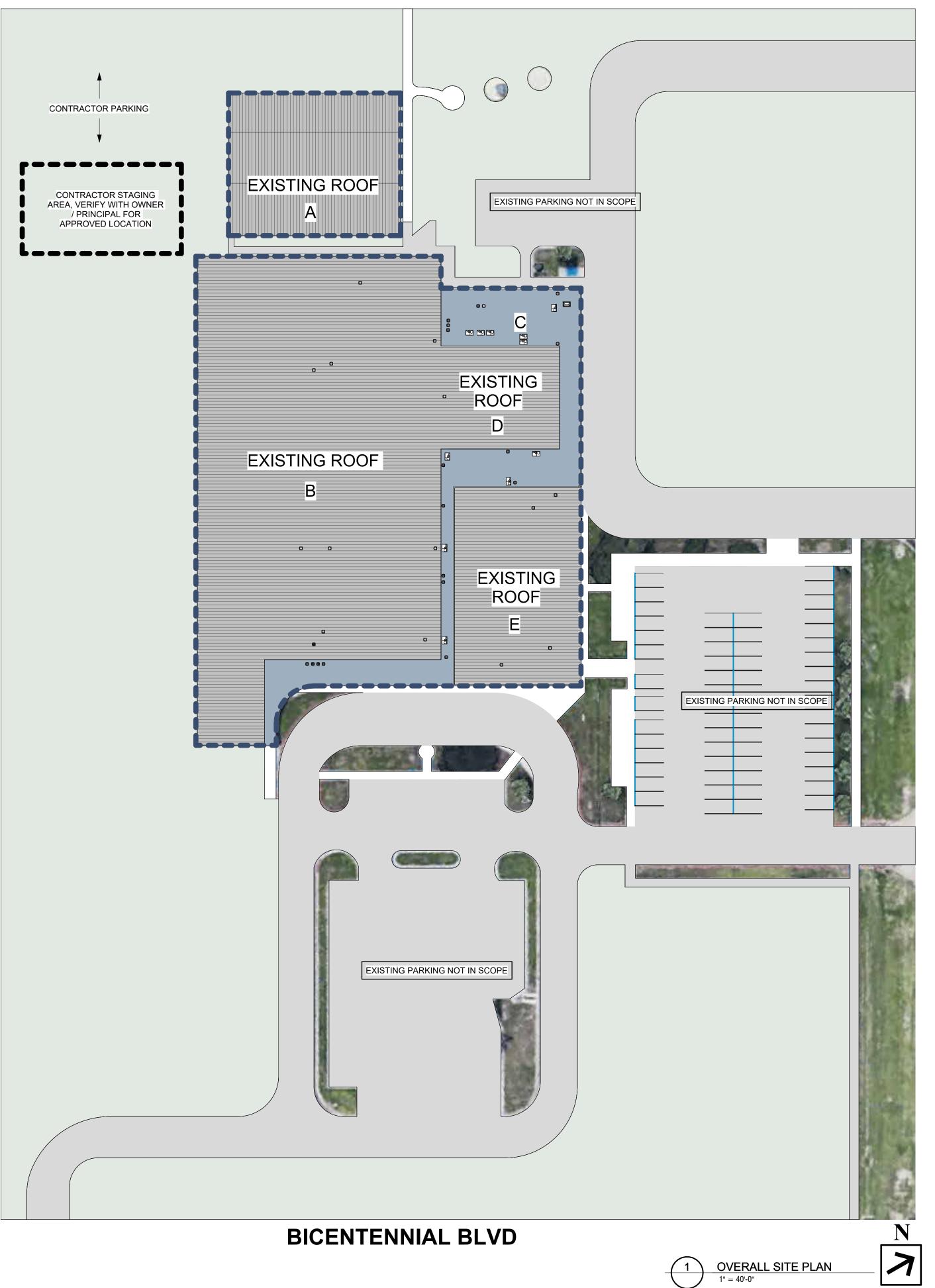
PROJECT #: 25-030102 DRAWN BY: CHECKED BY: CG3

DATE: 4/23/2025

GENERAL SPECS



CAVAZOS ELEMENTARY SCHOOL

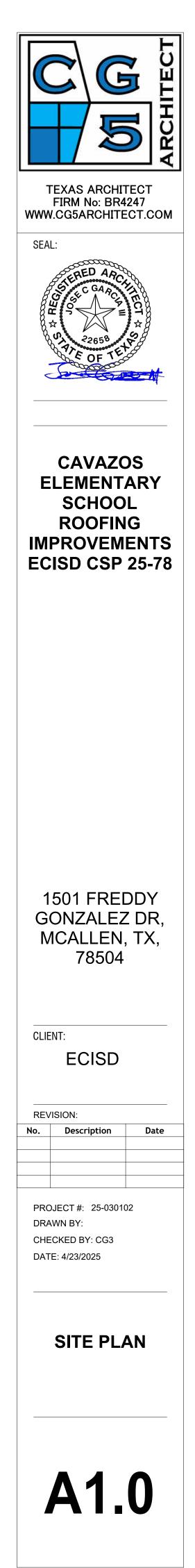


GENERAL NOTES

- 1. CONTRACTOR TO FIELD VERIFY ACTUAL ROOF DIMENSIONS
- THE GENERAL CONTRACTOR SHALL EXERCISE 2. CARE TO PREVENT DAMAGE TO ALL OTHER STRUCTURES IN THE AREA INCLUDING BUILDINGS, FENCES, ROADS PIPELINES, UTILITIES ETC. WHETHER PUBLICLY OR PRIVATELY OWNED.
- THE GENERAL CONTRACTOR SHALL REPAIR ALL 3. ASPHALT PAVING AND CONCRETE CURB, GUTTER, SIDEWALK, DRAINAGE, LANDSCAPING, OR ANY STRUCTURES DAMAGED DURING CONSTRUCTION
- THE GENERAL CONTRACTOR SHALL PROVIDE AND 4. MAINTAIN BARRICADES, TEMPORARY ENCLOSURES, DUST, BARRIERS, SIGNAGE, ETC. AS REQUIRED INSURE PROTECTION FOR WORKMEN AND OCCUPANTS OF THE BUILDING
- THE GENERAL CONTRACTOR TO COORDINATE NO 5. ACCUMULATION OF TRASH AND DEBRIS MATERIALS; DISPOSE OF TRASH IN A SAFE AND LEGAL MANNER.

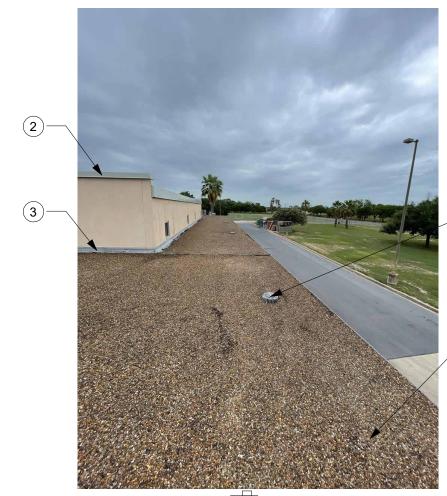
NOTE: CONTRACTOR TO FIELD VERIFY SQUARE FOOT QUANTITIES INCLUDING VERTICAL SURFACES

DR Ш **ONZ** C FREDDY





EXISTING PHOTO



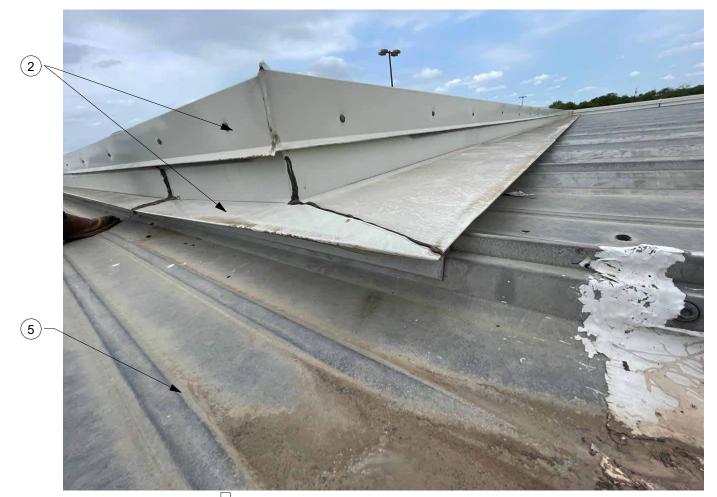
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EXISTING PHOTO



EXISTING PHOTO

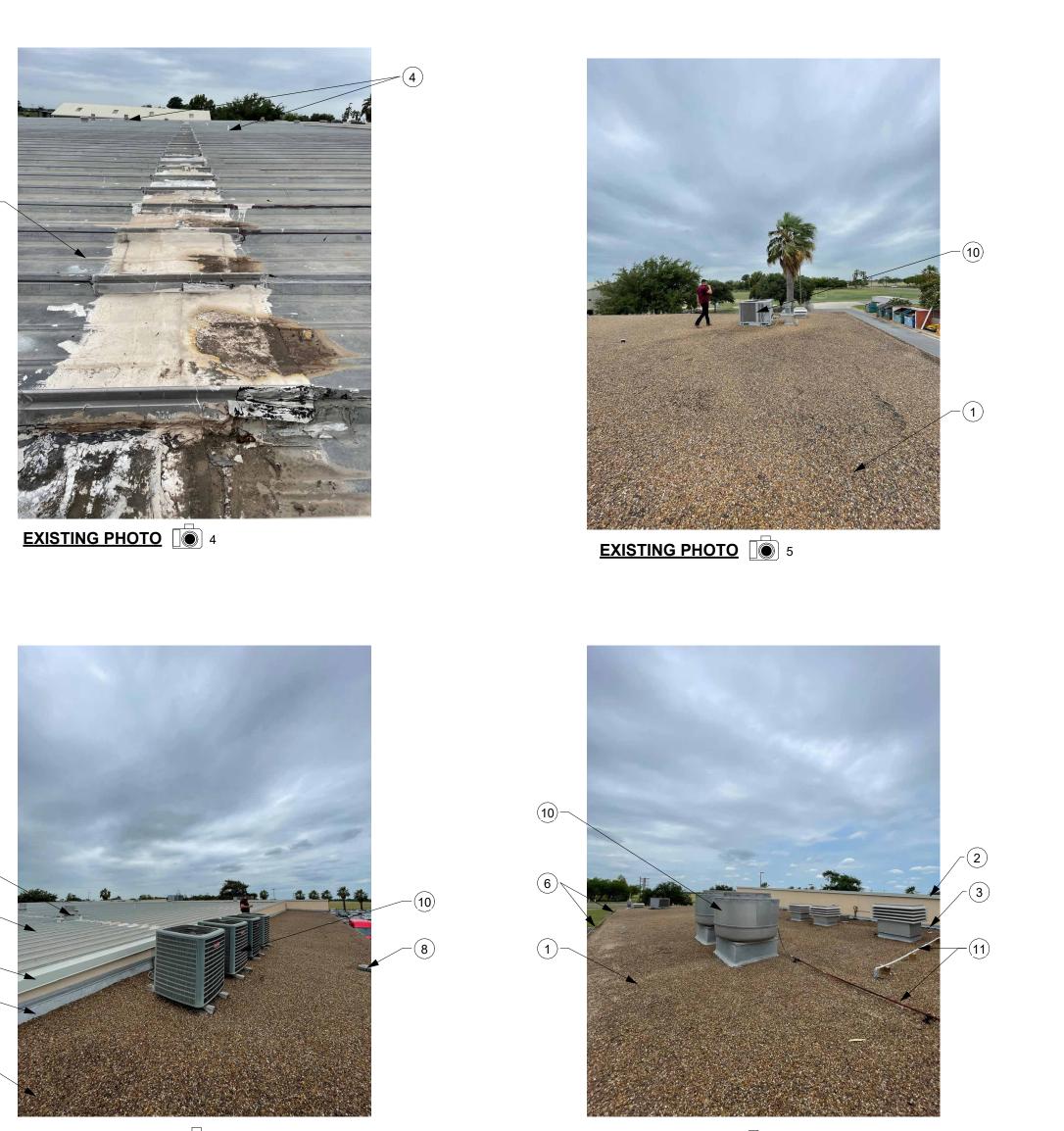


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EXISTING PHOTO 12

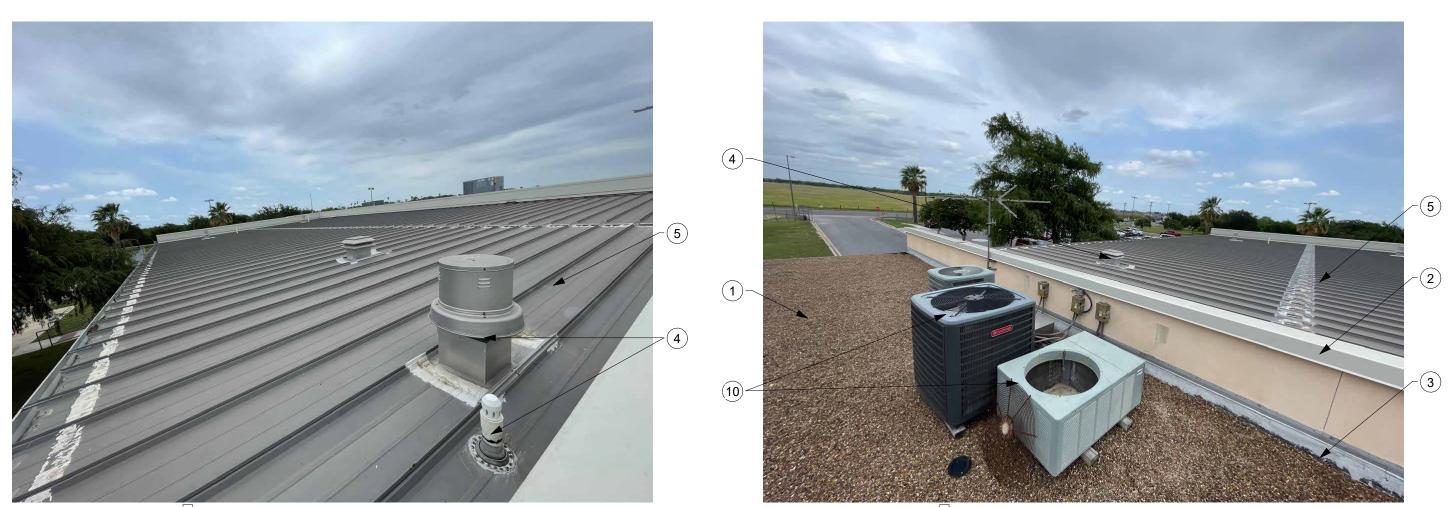






EXISTING PHOTO 8

EXISTING PHOTO



EXISTING PHOTO 13

DEMO ROOF PLAN KEYNOTES

- DEMOLISH AND REMOVE EXISTING GRAVEL AND PREP EXISTING ROOF SYSTEM FOR NEW ROOF OVERLAY, TYP.
- DEMOLISH AND REMOVE EXISTING METAL COPING / METAL EDGE AS REQUIRED, PROVIDE BLOCKING AS NECESSARY FOR NEW ROOF OVERLAY SYSTEM AS DETAILED, PATCH REPAIR EXPOSED MASONRY/ FRAMING AS REQUIRED. (2)
- 3 DEMOLISH AND REMOVE EXISTING TERMINATION BAR AND FLASHING AT BASE OF PARAPET WALL AND OR VERTICAL WALL TRANSITION, PREP WALL FOR NEW ROOFING SYSTEM OVERLAY AS DETAILED
- (4) DEMOLISH AND REMOVE EXISTING ROOF PENETRATION BOOT FLASHING AND OR BLOCKING AS REQUIRED FOR NEW APPROVED WATERPROOFING AND FLASHING, TYPICAL AT ALL ROOF PENETRATIONS
- PREPARE EXISTING METAL ROOF FOR NEW SPRAY FOAM ROOF SYSTEM, CONTRACTOR TO REPAIR EXISTING METAL ROOF SUBSTRATE AS REQUIRED TO ACCEPT NEW FOAM ROOF SYSTEM, INCLUDING REMOVING PREVIOUS FOAM REPAIR AS REQUIRED. (5)
- 6 DEMOLISH AND REMOVE EXISTING GUTTER SYSTEM, SCUPPER AND DOWNSPOUT, EXISTING CONCRETE SPLASH BLOCK TO REMAIN UNLESS DAMAGED, THEN REMOVE AND REPLACED
- (7) DEMOLISH AND REMOVE EXISTING METAL RAKE TRIM... ETC.

EXISTING PHOTO 10

EXISTING PHOTO 14

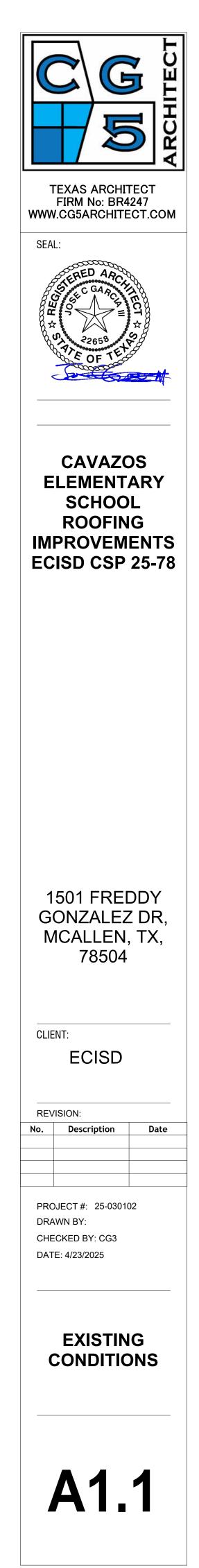
8 REMOVE EXISTING ROOF DRAIN COVER AND PIPE NOZZLE IF DAMAGED, EXISTING DRAIN TO BE FLUSHED

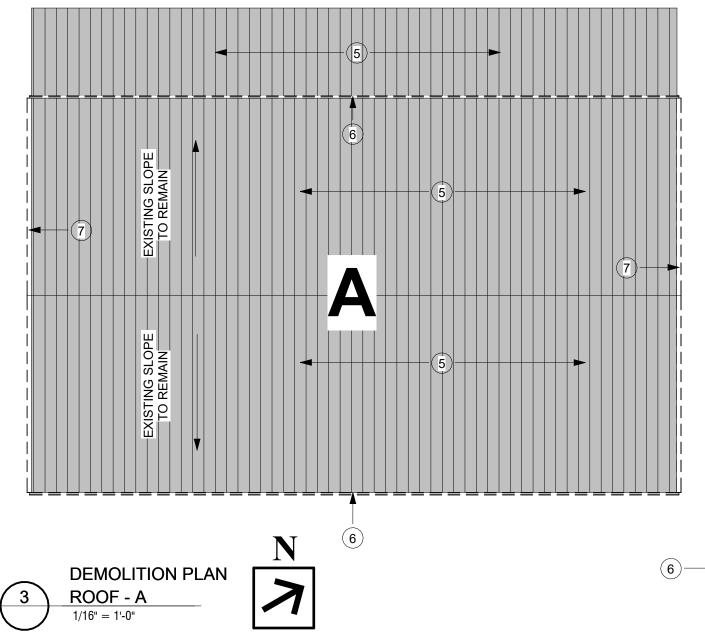
9 EXISTING ROOF HATCH TO REMAIN, EXISTING CURB AND FLASHING TO REMAIN OR PATCH AND REPAIRED AS REQUIRED, PREPARE ROOF HATCH CURB AND FLASHING FOR NEW SPRAY FOAM OVERLAY SYSTEM

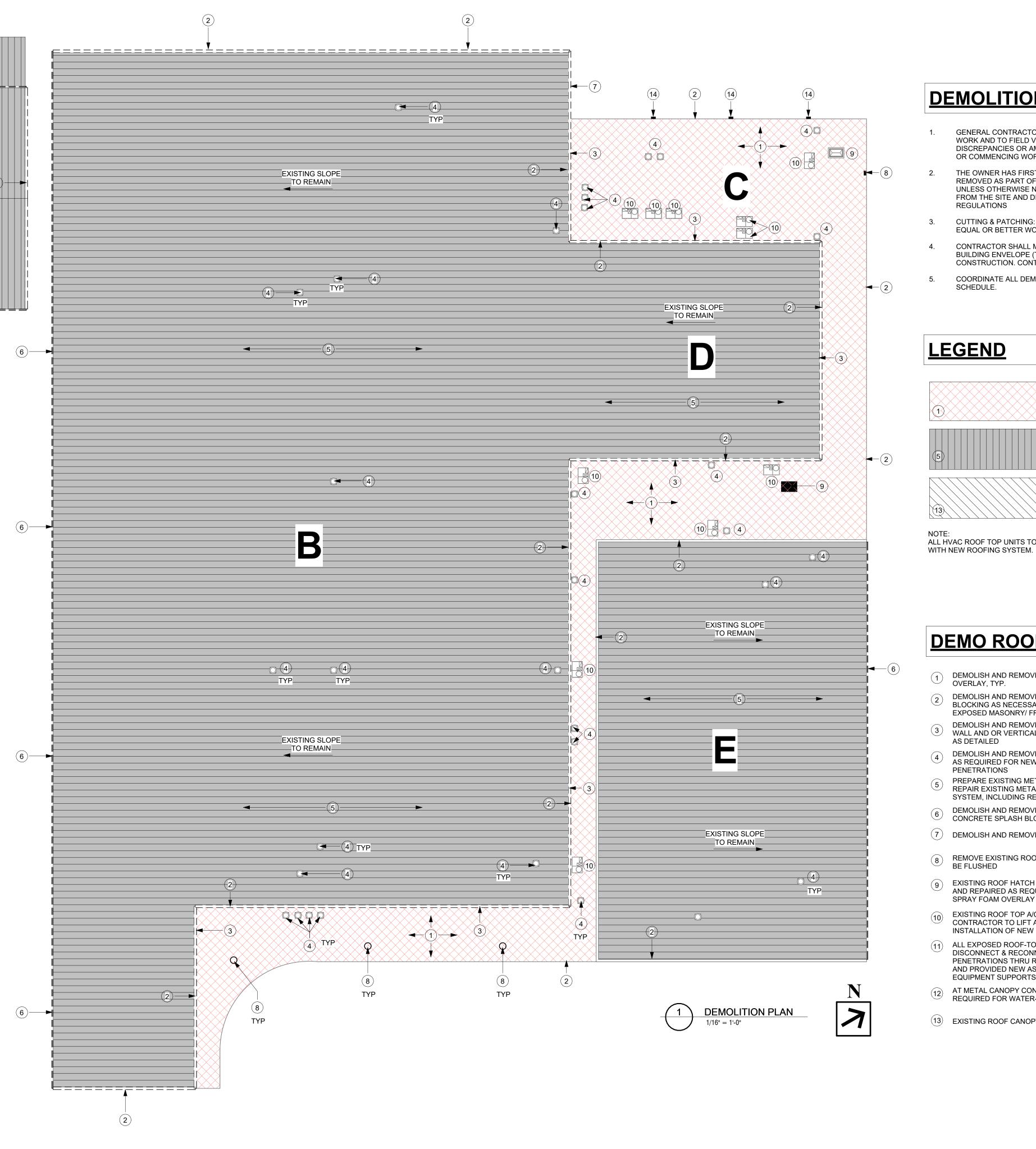
10 EXISTING ROOF TOP A/C UNITS AND / OR WALL MOUNTED EQUIPMENT TO REMAIN, CONTRACTOR TO LIFT AND RESET OR REMOVE AND REINSTALL AS REQUIRED TO PROVIDE INSTALLATION OF NEW ROOF SYSTEM, TYPICAL

(1) ALL EXPOSED ROOF-TOP CONDUIT AND PIPING TO REMAIN, CONTRACTOR TO LIFT & RESET, OR DISCONNECT & RECONNECT AS REQUIRED TO INSTALL NEW ROOF SYSTEM, TYPICAL. ALL PIPE PENETRATIONS THRU ROOF SHALL BE CLEANED OF EXISTING ROOF AND FLASHING MATERIAL AND PROVIDED NEW AS PER NEW ROOF SYSTEM REQUIREMENTS. INCLUDE NEW PIPE OR EQUIPMENT SUPPORTS AS REQUIRED FOR EXISTING COMPONENTS, TYPICAL

(12) AT METAL CANOPY CONNECTION TO VERTICAL WALL TRANSITION, PATCH/REPAIR FLASHING AS REQUIRED FOR WATER-TIGHT CONNECTION.







DEMOLITION GENERAL NOTES:

GENERAL CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE THEMSELVES WITH THE SCOPE OF WORK AND TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING THIS PROJECT, ANY DISCREPANCIES OR AMBIGUOUS ITEMS MUST BE REPORTED TO THE ARCHITECT PRIOR TO BIDDING OR COMMENCING WORK FOR CLARIFICATION

THE OWNER HAS FIRST RIGHT OF SALVAGE OF ALL FIXTURES, EQUIPMENT, & BUILDING MATERIALS REMOVED AS PART OF THIS CONTRACT, AND SHALL NOT BE REUSED IN THE NEW CONSTRUCTION UNLESS OTHERWISE NOTED OR DIRECTED IN WRITING, REMOVE ALL OTHER DEBRIS AND WASTE FROM THE SITE AND DISPOSE OF PROPERLY, IN ACCORDANCE WITH FEDERAL, STATE, & LOCAL

CUTTING & PATCHING: PROVIDE MATERIALS FOR CUTTING & PATCHING WHICH WILL RESULT IN EQUAL OR BETTER WORK THAN THAT BEING CUT OR PATCHED

CONTRACTOR SHALL MAINTAIN BUILDING INTEGRITY, BUILDING SECURITY, AND WEATHER-TIGHT BUILDING ENVELOPE (TO INCLUDE EXTERIOR WALL(S), ROOF, EXTERIOR OPENINGS, ETC.) DURING CONSTRUCTION. CONTRACTOR TO COORDINATE BUILDING ACCESS WITH OWNER

COORDINATE ALL DEMOLITION WORK IN PHASES CONVENIENT TO OWNER OCCUPANCY AND

DEMOLISH AND REMOVE EXISTING GRAVEL AND PREP EXISTING ROOF SYSTEM FOR NEW ROOF OVERLAY

EXISTING METAL ROOF PREPARE EXISTING METAL ROOF FOR NEW SPRAY FOAM ROOF SYSTEM

ROOF NOT IN SCOPE

ALL HVAC ROOF TOP UNITS TO REMAIN. CONTRACTOR TO COORDINATE ROOF CURB DETAILING

DEMO ROOF PLAN KEYNOTES

- DEMOLISH AND REMOVE EXISTING GRAVEL AND PREP EXISTING ROOF SYSTEM FOR NEW ROOF
- DEMOLISH AND REMOVE EXISTING METAL COPING / METAL EDGE AS REQUIRED, PROVIDE BLOCKING AS NECESSARY FOR NEW ROOF OVERLAY SYSTEM AS DETAILED, PATCH REPAIR EXPOSED MASONRY/ FRAMING AS REQUIRED.
- DEMOLISH AND REMOVE EXISTING TERMINATION BAR AND FLASHING AT BASE OF PARAPET WALL AND OR VERTICAL WALL TRANSITION, PREP WALL FOR NEW ROOFING SYSTEM OVERLAY
- DEMOLISH AND REMOVE EXISTING ROOF PENETRATION BOOT FLASHING AND OR BLOCKING AS REQUIRED FOR NEW APPROVED WATERPROOFING AND FLASHING, TYPICAL AT ALL ROOF
- PREPARE EXISTING METAL ROOF FOR NEW SPRAY FOAM ROOF SYSTEM, CONTRACTOR TO REPAIR EXISTING METAL ROOF SUBSTRATE AS REQUIRED TO ACCEPT NEW FOAM ROOF SYSTEM, INCLUDING REMOVING PREVIOUS FOAM REPAIR AS REQUIRED.
- DEMOLISH AND REMOVE EXISTING GUTTER SYSTEM, SCUPPER AND DOWNSPOUT, EXISTING CONCRETE SPLASH BLOCK TO REMAIN UNLESS DAMAGED, THEN REMOVE AND REPLACED
- (7) DEMOLISH AND REMOVE EXISTING METAL RAKE TRIM... ETC.
- 8 REMOVE EXISTING ROOF DRAIN COVER AND PIPE NOZZLE IF DAMAGED, EXISTING DRAIN TO
- (9) EXISTING ROOF HATCH TO REMAIN, EXISTING CURB AND FLASHING TO REMAIN OR PATCH AND REPAIRED AS REQUIRED, PREPARE ROOF HATCH CURB AND FLASHING FOR NEW SPRAY FOAM OVERLAY SYSTEM
- (10) EXISTING ROOF TOP A/C UNITS AND / OR WALL MOUNTED EQUIPMENT TO REMAIN, CONTRACTOR TO LIFT AND RESET OR REMOVE AND REINSTALL AS REQUIRED TO PROVIDE INSTALLATION OF NEW ROOF SYSTEM, TYPICAL
- (1) ALL EXPOSED ROOF-TOP CONDUIT AND PIPING TO REMAIN, CONTRACTOR TO LIFT & RESET, OR DISCONNECT & RECONNECT AS REQUIRED TO INSTALL NEW ROOF SYSTEM, TYPICAL. ALL PIPE PENETRATIONS THRU ROOF SHALL BE CLEANED OF EXISTING ROOF AND FLASHING MATERIAL AND PROVIDED NEW AS PER NEW ROOF SYSTEM REQUIREMENTS. INCLUDE NEW PIPE OR EQUIPMENT SUPPORTS AS REQUIRED FOR EXISTING COMPONENTS, TYPICAL
- (12) AT METAL CANOPY CONNECTION TO VERTICAL WALL TRANSITION, PATCH/REPAIR FLASHING AS REQUIRED FOR WATER-TIGHT CONNECTION.
- (13) EXISTING ROOF CANOPY TO REMAIN, AREA NOT IN SCOPE OF WORK



TEXAS ARCHITECT FIRM No: BR4247 WWW.CG5ARCHITECT.COM





CAVAZOS ELEMENTARY SCHOOL ROOFING **IMPROVEMENTS** ECISD CSP 25-78

1501 FREDDY GONZALEZ DR, MCALLEN, TX, 78504

CLIENT: ECISD

REVISION:

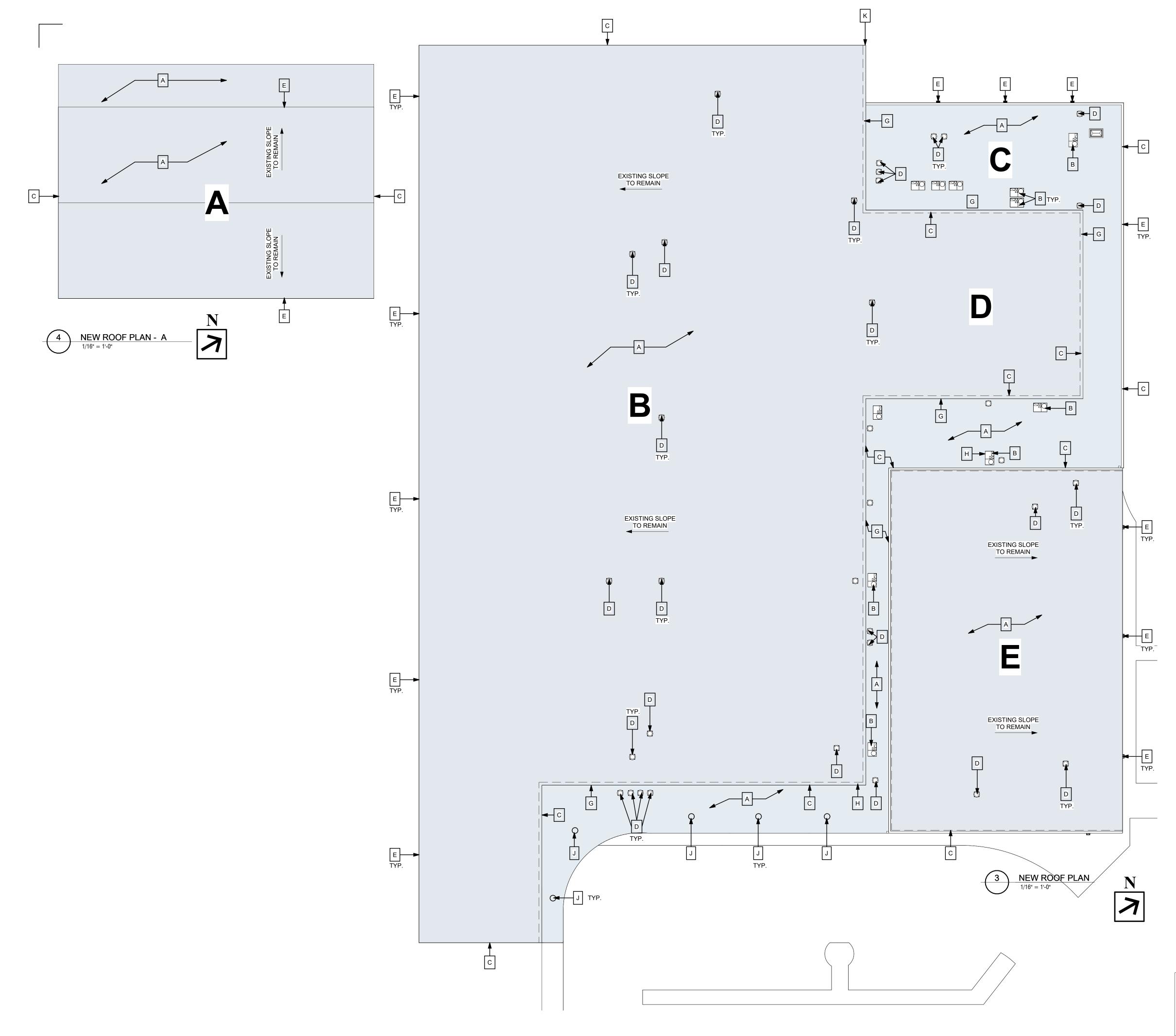
No. Description

Date

PROJECT #: 25-030102 DRAWN BY: CHECKED BY: CG3 DATE: 4/23/2025

DEMOLITION PLAN





GENERAL ROOF NOTES

1. CONTRACTOR SHALL REVIEW AND COORDINATE WITH ARCHITECTURAL PLANS TO ASCERTAIN EXACT CONDITIONS AND COMPONENTS RELATED TO THE WORK DESCRIBED BY THESE DOCUMENTS. ALL WORK SHALL BE IN ACCORDANCE WITH ACCEPTED MANUFACTURER'S PRINTED INSTRUCTIONS AND NRCA STANDARDS

2. DIMENSIONS, DETAILS, EQUIPMENT SIZE AND LOCATION SHOWN ON THESE ROOF PLAN AND ROOF DETAILS ARE FOR INFORMATION AND REFERENCE ONLY. EXACT SIZE, LOCATION, TYPE OF MATERIAL AND TYPE OF CONSTRUCTION TO CONFIRM AND GENERAL CONTRACTOR TO COORDINATE.

3.UPON SUBSTANTIAL COMPLETION THE GENERAL CONTRACTOR SHALL EXAMINE AND ENSURE DRAIN LINES, GUTTERS AND DOWNSPOUTS ARE FREE OF DEBRIS AND BLOCKAGE, FLUSH WITH WATER TO ENSURE THAT DRAINS FLOW FREELY, WHERE APPLICABLE

4. THE USE OF THE TERM "PROVIDE" SHALL CONSTITUTE THE MEANING OF FURNISH AND INSTALL A COMPLETE AND READY TO USE SYSTEM OR PRODUCT

5. GENERAL CONTRACTOR SHALL PROVIDE ALL REQUIRED UTILITY, MEP, AND/OR STRUCTURAL COMPONENTS FOR ALL CONTRACTOR SUPPLIED EQUIPMENT OR SERVICES, REGARDLESS OF ANY OMISSIONS OR INCONSISTENCIES IN THE CONTRACT DOCUMENTS.

6. ALL WOOD BLOCKING AT ROOF SHALL BE FIRE-RETARDANT TREATED

7. ALL FLASHING, METAL AND MEMBRANE, SHALL BE MINIMUM OF 12" FROM ADJACENT SURFACE AND SHALL BE INSTALLED AND MAINTAINED TO PREVENT WEATHER TIGHTNESS.

8. PROVIDE PRE0FINISHED GALVANIZED METAL GUTTER SYSTEM UNLESS OTHERWISE NOTED, MATCH EXISTING SIZE AND LOCATIONS

9. PROVIDE CONCRETE SPLASHBLOCK (5000 PSI MIN) TYPICAL AT ALL DOWNSPOUT LOCATIONS

10. PROVIDE PRE-FINISHED GALVANIZED METAL DOWNSPOUTS UNLESS OTHERWISE NOTED, MATCH EXISTING SIZE AND LOCATIONS

11. REFER TO MEP FOR EXPOSED PIPE AND ROOF EQUIPMENT SUPPORT, COORDINATED WITH ROOFING MANUFACTURER DETAILING FOR ROOF WARRANTY ADHERENCE.

12. GENERAL CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES AND BUILDING SERVICE SYSTEMS PRIOR TO CONSTRUCTION TO PREVENT DAMAGE. IF ANY SYSTEM IS DAMAGED DURING CONSTRUCTION OR FOR PREPARATION OF NEW CONSTRUCTION, CONTRACTOR SHALL PATCH/REPAIR DAMAGED SYSTEM TO EXISTING CONDITION.

13. GENERAL CONTRACTOR SHALL PROVIDE EXTRA CARE TO PREVENT DAMAGE TO EXISTING CONCRETE WALKS, ASPHALT/CONCRETE DRIVE/PARKING AREAS, OR LANDSCAPE AREAS OUTSIDE OF CONSTRUCTION LIMITS, AND ALL DAMAGE SHALL BE PATCHED/REPAIRED TO EXISTING CONDITION

14. GENERAL CONTRACTOR TO COORDINATE ALL WORK WITH OWNER AND ARCHITECT

15. GENERAL CONTRACTOR TO CAREFULLY REMOVE , SALVAGE, STORE, ANY ROOF MOUNTED EQUIPMENT THAT MUST BE REMOVED TO PROVIDE NEW ROOFING SYSTEM, ANY DISTURBED ROOF MOUNTED EQUIPMENT MUST BE RE-INSTALLED OR RELOCATED TO EXISTING WORKING CONDITION

16. GENERAL CONTRACTOR SHALL COORDINATE ANY ROOF MOUNTED EQUIPMENT WITH OWNER PRIOR TO RELOCATION OR REMOVAL

NEW ROOF PLAN KEYNOTES

 PROVIDE NEW SPRAYED POLYURETHANE ROOFING SYSTEM AS SPECIFIED
EXISTING MEP EQUIPMENT TO REMAIN, PROVIDE NEW CURB FLASHING AS PER MANUFACTURERS DETAILS
PROVIDE NEW PRE-FINISHED METAL COPING EDGE AT PARAPET OR ROOF EDGE AS DETAILED, PATCH/REPAIR WOOD BLOCKING, MASONRY, AND STUCCO AS REQUIRED, PRIOR TO INSTALLATION OF NEW ROOF SYSTEM AND METAL EDGE, TYPICAL
ROOF PENETRATION VENT STACK W BOOT REFER TO DETAILS
NEW PRE-FINISHED GUTTER SYSTEM, SCUPPER AND DOWNSPOUTS, PROVIDE NEW CONCRETE SPLASH BLOCK IF DAMAGED OR MISSING
PROVIDE NEW SPRAYED POLYURETHANE ROOFING SYSTEM AS SPECIFIED CONTINUOUS OVER PARAPET WALL, PROVIDE FULL COVERAGE
PROVIDE TERMINATION BAR AND COUNTER FLASHING AT VERTICAL SURFACE 12" MIN AS DETAILED
CONTRACTOR TO LIFT AND REPLACE EXISTING CONDUIT OR DRAIN PIPES, PROVIDE NEW LIFT BRACKETS AS NEEDED.
PROVIDE NEW ROOF DRAIN COVER, EXISTING ROOF DRAIN TO BE FLUSHED AND INSPECTED TO BRING TO ORIGINAL WORKING CONDITIONS,

J FLUSHED AND INSPECTED TO BRING TO ORIGINAL WORKING CONDITIONS, PROVIDE NEW PIPE NOZZLE AT END IF DAMAGED OR MISSING, PROVIDE NEW CONCRETE SPLASH BLOCK IF DAMAGED OR MISSING

NOTE: REFER TO SHEET G2.9 FOR ROOF SPECIFICATIONS

CAVAZOSBLEMENTARYSCHOOLROOFINGMPROVEMENTSCISD CSP 25-78

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TEXAS ARCHITECT

FIRM No: BR4247

WWW.CG5ARCHITECT.COM

SEAL:

1501 FREDDY GONZALEZ DR, MCALLEN, TX, 78504

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