

PROJECT MANUAL

**GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM
OF THE VIRGIN ISLANDS
ST. THOMAS HEADQUARTERS BUILDING
HIP ROOFS RESTORATION**



GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM
OF THE VIRGIN ISLANDS
3438 KRONPRINDSES GADE,
ST. THOMAS U.S. VIRGIN ISLANDS, 00802

JUNE 2021 BY:



Jaredian Design Group

Architects, Engineers and Construction Managers

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Government Employees' Retirement System of the Virgin Islands
Headquarters Building Hip Roofs Restoration
3438 Kronprindsens Gade, St. Thomas U.S. Virgin Islands, 00802

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PROPOSAL REQUIREMENTS AND CONTRACT DOCUMENTS

00020 – REQUEST FOR PROPOSAL

Government Employees' Retirement System of the Virgin Islands
Headquarters Building Hip Roofs Restoration
3438 Kronprindsens Gade, St. Thomas U.S. Virgin Islands, 00802

GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM OF THE VIRGIN ISLANDS
3438 KRONPRINDSENS GADE, GERS BUILDING – 3RD FLOOR
ST. THOMAS, U.S. VIRGIN ISLANDS 00802

TO CONTRACTORS:

Proposals, entitled **GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM OF THE VIRGIN ISLANDS (GERS) HEADQUARTERS BUILDING HIP ROOFS RESTORATION AT 3438 KRONPRINDSENS GADE, ST. THOMAS, U. S. VIRGIN ISLANDS**, will be received **ONLY** by E-mail to operations@usvigers.com until **3 p.m., Friday, July 2, 2021**. All electronic submissions must include the Proposer's Company Name- Project Name-Due Date in the subject line of E-mail. No Bid will be considered unless received at the specified E-mail by or before the specified time requested for submission. Proposals received after the submission time will not be considered. Proposals will be privately opened. Proposers may not be present. *A Pre-Proposal Conference will be held in GERS' Conference Room, 3rd Floor, at 10 a.m. on Tuesday, June 8, 2021, and potential bidders on this contract are urged to attend.* There will be a site tour immediately following the Pre-Proposal Conference. The *Last Day for all Bidders to submit clarification questions* is, **Friday June 11, 2021 at 5 p.m.** All questions should be submitted by email to Jaredian Design Group at jaredian@vipowernet.net. Drawings and Project Manual can be obtained at www.usvigers.com.

The Project consists of **THE RESTORATION OF THE HIP ROOFS** as shown on the Design Drawings prepared by the Jaredian Design Group – Architects, Engineers and Construction Managers.

The Contract is under and subject to:

- A. Minimum wage rates as established by the Secretary of the U. S. Department of Labor.
- B. Executive Order 11246 of 24 September, 1965, as amended, and to the Equal Employment Opportunity clause.

No Bid may be withdrawn for a period of 30 calendar days after scheduled closing time for receipt of Bids. No Bid Security is required. Proposers shall furnish a Payment Bond, and a Performance Bond if required, each equal to 100% of the Contract Amount. The schedule for completion of the Contract is 150 calendar days after issuance of the Notice To Proceed.

The bid-money value of materials purchased directly by the Contractor together with the bid-money value of the work performed by personnel and facilities provided directly by the Contractor shall be not less than 10 percent of the money value of the work performed under this Contract. Any bid-money value of work performed by Subcontractors for work on the jobsite using Subcontractor' materials, labor, and facilities, will not be included in the percent of work to be completed by the Contractor.

GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM OF THE VIRGIN ISLANDS
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The Contractor agrees to use local personnel for the categories of journeymen, mechanics, laborers, apprentices, or trainees and local products to the maximum extent possible whenever such policy does not increase the cost to the Owner. The Contractor agrees to follow the resident employees' requirements as described in Act No. 5174, Bill No. 16-0218 of the Virgin Islands Code.

Any Contract awarded from the Request for Proposal is expected to be funded by GERS.

GERS reserves the right to waive any informalities, technicalities, or irregularities in; or reject any or all Proposals; or to re-advertise for Bids and to award or refrain from awarding the Contract for the Work.

Scheduling is as Follows:

Request for Proposal Announcement: Friday, May 28, 2021
Pre-Proposal Meeting: Tuesday, June 8, 2021
Clarification Questions Submission: Friday June 11, 2021
Deadline for Submissions: Friday, July 2, 2021
Selection committee reviews: Tuesday, July 6, 2021
Finalists are notified: Wednesday, July 7, 2021
Interview, Presentations, and Reference Checks: Monday, July 12, 2021
Selection of Finalist(s) and Notification: Tuesday, July 13, 2021
Contract Preparation: Tuesday, July 20, 2021

00020 – REQUEST FOR PROPOSAL

Government Employees' Retirement System of the Virgin Islands

Headquarters Building Hip Roofs Restoration

3438 Kronprindsens Gade, St. Thomas U.S. Virgin Islands, 00802

GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM OF THE VIRGIN ISLANDS

3438 KRONPRINDSENS GADE, GERS BUILDING – 3RD FLOOR

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END OF SECTION

SECTION 00100 – INSTRUCTIONS TO PROPOSERS

Government Employees' Retirement System of the Virgin Islands

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1. **DOCUMENTS** – Bidders may obtain drawings and specifications as noted in the Request For Proposal.
2. **EXAMINATION** – Bidders shall carefully examine the documents and the construction site to obtain first-hand knowledge of existing conditions. Contractors will not be given extra payments for conditions which can be determined by examining the site and documents.
3. **QUESTIONS** – Questions about the Specifications shall be submitted to the Owner in writing. Questions must be received by the Owner at least 10 calendar days prior to the date established for submission date. Replies will be issued to Bidders of record and if applicable, will be issued as Addendum to the Specifications and shall become a part of the Contract. The Owner will not be responsible for oral clarification.
4. **SUBSTITUTIONS** – To obtain approval to use unspecified products, Bidder shall submit written requests to the Owner. Requests must be received by the Owner at least 10 calendar days prior to the date established for the submission date. Requests shall clearly describe the product for which approval is asked, including necessary data to demonstrate acceptability. If the product is acceptable, the Owner will approve it in Addendum issued to bidders of record.
5. **BASIS OF BID** – The Bidder shall specify bid prices for the items of work listed and for the total lump-sum bid proposal indicated on a Bid Schedule; failure to comply will be cause for rejection. Segregated bids or assignments will not be considered. Proposers shall provide a Bid Breakdown of major construction tasks, utilizing the Specifications as a format.
6. **PREPARATION OF BIDS** – Bids shall be made on Bid Forms furnished by the Proposer or on facsimiles thereof. Bidders shall fill in all blank spaces and submit two copies. Bids shall be signed with name typed below signature. Where Bidder is a corporation, Bids shall be signed with the legal name of the corporation and the legal signature of an officer authorized to bind the corporation to a contract.
7. **BID SECURITY** – No Bid Security is required.
8. **PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND** – The Proposer shall furnish and pay for bonds covering faithful performance of the Contract and payment of all obligations arising hereunder, if required by GERS. A Performance Bond and a Payment Bond, each in the amount of 100% of the Contract amount, shall be furnished in such a way as the Owner may prescribe and with a surety company acceptable to the Owner. The Bonds, just be issued by a surety licensed to conduct business in the Virgin Islands or issued by a U.S. Treasury listed surety. The Proposer shall deliver said bonds to the Owner not later than the date of execution of the Contract. Failure or neglecting to deliver said bonds, as specified, shall be considered as having abandoned the Contract. The Owner shall make a determination, prior to Contract Award, whether Performance Bond and Payment Bonds are required.
9. **SUBCONTRACTORS** – Names and Qualifications of principal subcontractors shall be listed and attached to the Proposal. There shall be only one subcontractor named for each classification listed. The listing of subcontractors is critical; as the Contractor will not be able to remove a named subcontractor once construction starts without the approval of the Virgin Islands Government Employees' Retirement System (GERS).
10. **SUBMITTAL** – Submit Proposals, including Subcontractors Listing electronically, as directed in Section 00020-Request for Proposals.
11. **DISQUALIFICATION** – The Owner reserves the right to disqualify proposals, before or after the submission date, upon evidence of collusion with intent to defraud or other illegal practices on the part of the Proposer.
12. **NON-DISCRIMINATORY PRACTICES** – Contracts for work under the Bid will obligate the contractor and subcontractors not to discriminate in employment practices.
13. **PERMITS** – The Contractor shall be responsible for obtaining and paying for the Building and Fire Marshall Permits. Contractor shall be responsible in obtaining and paying for all other regulatory permits such as, but not limited to: Plumbing, Electrical – temporary power, and Occupancy throughout the construction phase.
14. **OPENING** – Proposals will be privately opened.

SECTION 00100 – INSTRUCTIONS TO PROPOSERS

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15. AWARD – The Contract will be awarded by the Owner to the most qualified Responsive Proposer whose proposal conforms to the requirements as specified in Section 00120, Proposal Requirements and Conditions, and in Section 00130, Award and Execution of Contract.

16. EXECUTION OF CONTRACT – The Owner reserves the right to accept any bid, and to reject any and all proposals, or to negotiate Contract Terms with the various Bidders when such is deemed by the Owner to be in his best interest.

Notwithstanding any delay in the preparation and execution of the formal Contract Agreement, the Bidder shall be prepared, upon written notice of Bid Acceptance, to commence work within 10 days following receipt of official written order of the Owner to proceed, or on date stipulated in such order.

The accepted Bidder shall assist and cooperate with the Owner in preparing the formal Contract Agreement, and within 10 days following its presentation shall execute same and return it to the Owner.

END OF SECTION

00120 – PROPOSAL REQUIREMENTS AND CONDITIONS

Government Employees' Retirement System of the Virgin Islands

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1. **ADVERTISEMENT (NOTICE TO PROPOSERS)** – The Owner, or their authorized agent, will publish the advertisement at such places and at such times as are required by local laws or ordinances. The published advertisement will state the time and place for submitted sealed proposals; a description of the proposed work; instructions to Proposers as to obtaining drawings and Specifications; bid security required; and the Owner's right to reject any and all bids.
2. **EXAMINATION OF PLANS, SPECIFICATIONS AND SITE** – The Proposer is required to examine the site of the proposed work, the proposal, plans, specifications and Contract forms. They shall satisfy themselves as to the character, quality and quantities of work to be performed; materials to be furnished; and requirements of the proposed Contract. The submissions of a Bid shall be prima facie evidence that the Proposer has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed Contract, plans and specifications.
3. **PREPARATION OF PROPOSAL** – A Proposer's Submission shall consist of the following items:
 1. Transmittal letter.
 2. A copy of the Bid Proposal, completed and executed by the Proposer.
 3. A brief description of the Proposer's management structure, including a listing of the Contractor's key personnel and resumes.
 4. A brief description of the Proposer's relevant, past project experience,
 5. Names of principal subcontractors shall be listed and attached to the Proposal. There shall be only one subcontractor named for each classification listed.
 6. A current copy of Contractor's V.I. License.

Proposers shall fill in all blank spaces on forms required and submit two copies. Bids shall be signed with names typed below signatures. Where the Proposer is a corporation, Bids shall be signed with the legal name of the corporation followed by the name of the State of Incorporation and the legal signature of an authorized to bind the corporation to a Contract. Signature shall be in ink. If the bid is made by an individual, his name and post office address shall be shown. If made by a partnership, the name and post office address of each member of the partnership shall be shown. If made by a corporation, the person signing the Bid shall give the name of the state under the laws of which the corporation was chartered and the names, titles and business addresses of the president, secretary and the treasurer. Anyone signing a Bid as an agent shall file evidence of his authority to do so and that the signature is binding upon the firm or corporation.

4. **IRREGULAR BIDS** – Bids shall be considered irregular for the following reasons:
 1. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind which may render the Bid incomplete, indefinite or otherwise ambiguous.
 2. If the Bid does not contain a unit price for each pay item listed in the Bid.
 - (a) If the Bid contains unit prices that are unbalanced.
 3. The Owner reserves the right to reject any irregular Bid and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.
5. **SUBMITTAL OF PROPOSALS** – Each proposal shall be submitted as PDF's, by E-mail, at operations@usvigiers.com no later than 3:00 p.m. on Friday, July 2, 2021. All electronic submissions must include the Proposer's Company Name-Project Name-Due Date in the subject line of E-mail. No Bid will be considered unless received at the specified E-mail by or before the specified time requested for submission. Proposals received after the submission time will not be considered.
6. **WITHDRAWAL OR REVISION OF PROPOSALS** – A Proposer may withdraw or revise (by withdrawal of one Proposal and submission of another) a Bid, provided that the Proposer's request for withdrawal is received by the Owner in writing or by telegram before the time specified for submission. Revised Proposals will be received at the place specified in the advertisement before the time specified for submission. No Proposal may be withdrawn or modified after the Proposal submission except when the award of contract has been delayed for at least 60 days.
7. **PUBLIC OPENING OF BIDS** – Proposals will not be publicly opened. Proposers may not be present. GERS shall evaluate all proposals submitted, and shall transmit the results of the evaluation to each Proposer upon approval of GERS of the recommendations of the evaluation report.
8. **DISQUALIFICATION OF PROPOSERS** – Proposer shall be considered disqualified for any of the following reasons:

00120 – PROPOSAL REQUIREMENTS AND CONDITIONS

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1. Submitting more than one Bid from the same partnership, firm or corporation under the same or different name.
2. Evidence of collusion among Proposers. Proposers participating in such collusion will be disqualified as Proposers for any future work of the Owner until any such participating Proposer has been reinstated by the Owner as a qualified Proposer.
3. If the Proposer is considered to be in "default" for any reason:
 - (a) Lack of competency of subcontractor(s) proposed for portions of the work.
 - (b) Lack of competency by the Proposer or a sub-contractor(s) as revealed by inability to produce a valid Virgin Islands license, as required by law.
 - (c) Inexperienced Proposers or those whose other qualifications are otherwise unsatisfactory.
 - (d) Failure to pay, or satisfactorily settle, bills due for labor and materials on former contracts in force (with the Owner) at the time the Owner issues the proposal to a prospective Proposer.
 - (e) If a Proposer is a party in any unsettled dispute and/or claim under previous contracts with the Owner.
 - (f) Contract default under previous contracts with the Owner.
 - (g) Unsatisfactory work on previous contracts with the Owner.
 - (h) The Owner reserves the right to disqualify Bids, before or after opening, upon evidence of collusion with intent to defraud or other illegal practices on the part of the Proposer or should Proposer be in default for any of the above reasons.

END OF SECTION

SECTION 00130 – AWARD AND EXECUTION OF CONTRACT

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1. **CONSIDERATION OF PROPOSALS** – After the proposals are opened, they will be compared on the basis of the comparison of the following factors:
 - (a) Management Structure - 20%
 - (b) Relevant Past Project Experience - 20%
 - (c) Financial Strength - 20%
 - (d) Lump-Sum Cost Proposal – 25%
 - (e) Project Approach -15%

Until the award of a Contract is made, the Owner reserves the right to reject a Proposer's Proposal for any of the following reasons:

- (e) If the proposal is irregular as specified in paragraph 5, Irregular Bids, of Section 00120.
- (f) If the Proposer is disqualified for any of the reasons specified in paragraph 10, Disqualification of Proposers, of Section 00120.

In addition, until the award of a Contract is made, the Owner reserves the right to reject any or all Bids and waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable Insular laws or regulations pertaining to the letting of construction contracts; advertise for new Bids; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

2. **AWARD OF CONTRACT** – The award of a contract, if it is to be awarded, will be made within 60 calendar days of the date specified for the proposal submissions, unless otherwise specified therein.
Award of the Contract will be made by the Owner to the most qualified, responsive Proposer whose Proposal conforms to the specified requirements.
3. **CANCELLATION OF AWARD** – The Owner reserves the right to cancel the award without liability to the Proposer, except return of Bid security, at any time before a Contract has been fully executed by all parties and is approved by the owner in accordance with paragraph "Approval of Contract" of this section.
4. **REQUIREMENTS OF CONTRACT BONDS** – If required, at the time of the execution of the Contract, the successful Proposer shall furnish the Owner a surety bond or bonds, which have been fully executed by the Proposer, with the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this paragraph, the surety bonds each shall be in a sum equal to 100% amount of the Contract.
5. **EXECUTION OF CONTRACT** – The successful Proposer shall sign (execute) the necessary agreements for entering into the Contract and return such signed Contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph "Requirements of Contract Bonds" of this section, within 10 calendar days from the date mailed or otherwise delivered to the successful Bidder. If the Contract is mailed, special handling is recommended.
6. **APPROVAL OF CONTRACT** – Under receipt of the Contract and contract bond or bonds that have been executed by the successful Proposer, the Owner shall complete the execution of the Contract in accordance with local laws or ordinances, and return the fully executed Contract to the Contractor. Delivery of the fully executed Contract to the Contractor shall constitute the Owner's approval to be bound by the successful Proposer's Bid and the terms of the Contract.
7. **FAILURE TO EXECUTE CONTRACT** – Failure to the successful Proposer to execute the Contract and furnish the acceptable bond or bonds within 10-calendar day period specified in paragraph "Execution of Contract" of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the Owner.

END OF SECTION

DIVISION 1

GENERAL REQUIREMENTS

PART 1 GENERAL**1.01 PROJECT**

- A. Project Name: GERS HEADQUARTERS BUILDING- HIP ROOFS RESTORATION PROJECT
- B. Owner's Name: GOVERNMENT EMPLOYEES' RETIREMENT SYSTEM OF THE VIRGIN ISLANDS
- C. Architect's Name: JAREDIAN DESIGN GROUP
- D. The Project consists of the removal of the existing foam and corrugated metal roofing from the four (4) existing Hip Roofs at the GERS Headquarters Building, 3438 Kronprindsens Gade, St. Thomas, U. S. Virgin Islands. The removed roofing will be replaced by a standing seam metal roofing system with pre-insulated metal panels.
- E. Owner will remove the following items before start of work:
 - 1. N. A.

1.02 SALVAGE BY CONTRACTOR

- A. Contractor shall remove and store the following, for later reinstallation by Contractor, prior to start of work:
 - 1. N. A.

1.03 WORK BY OTHERS

- A. Furniture and Owner Supplied Equipment.
- B. Artwork.

1.04 OWNER FURNISHED PRODUCTS

- A. Products furnished by Owner include the following categories:
 - 1. OFCI: Owner furnished Contractor installed.
 - 2. OFCR: Owner furnished Contractor rough-in:
- B. Contractor's Responsibilities (for all categories unless otherwise noted):
 - 1. Coordinate installation of Owner furnished products with other portions of the Work.
 - 2. Designate submittal and delivery date for each product affecting construction schedule.
 - 3. Review submittals of Owner furnished products and verify rough-in requirements prior to installation for products in the following categories: OFCI, OFCR. Notify Architect of discrepancies that would affect installation and rough-ins.
 - 4. Promptly inspect products jointly with the Owner, record shortages, damaged or defective products listed in the following categories: OFCI.
 - 5. Protect products from damage after installation.
 - 6. Assemble, install connect, adjust, test and calibrate, and finish products listed in the following category: OFCI.
 - 7. Provide mechanical, plumbing and electrical connections to Contractor installed products including installation of service fixtures for products listed in the following categories: OFCR, OFCI.
 - 8. Afford Owner's forces a reasonable opportunity for delivery and storage of their products and the execution of their work. Where required, Contractor shall properly connect his work to that installed by the Owner's forces.
 - 9. Repair or replace items damaged by Contractor.
 - 10. Receive and unload products at the site for products listed in the following categories: OFCI, OFCR. Handle products at the site, including uncrating and storage for products listed in the following categories: OFCI, OFCR.

1.05 CONTRACTOR FURNISHED PRODUCTS

- A. Products furnished by Contractor consist of products listed in the following category: CFCl.
- B. Contractor's responsibilities:

1. As indicated in the Construction Documents.

1.06 OWNER OCCUPANCY

- A. Owner intends to occupy the Project throughout the construction period.
- B. Contractor shall take precautions to avoid excessive noise or vibration that would disturb the Owner's and the Owner's Tenants operations. Contractor shall provide temporary protection from inclement weather during construction by removing only as much roofing that can be covered in one day by replacement roofing. Contractor shall provide temporary water-proof seal between the new and existing roofing at the end of each day. Provide temporary barricades and scaffolding as required by the International Building Code: Chapter 33, for protection of the general public throughout the duration of construction. When directed by Owner, Contractor shall perform certain operations at designated time of day or night in order to minimize disturbance to Owner's operations.
- C. Schedule the Work to accommodate the Owner's continued occupancy during construction.

1.07 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas permitted by Law, Ordinances, Permits and Contract Documents.
- B. Arrange use of site and premises to allow:
 1. Owner occupancy and operation.
- C. Do not unreasonably encumber site or premises with materials or equipment.
- D. Limit use of site and premises for Work and storage as follows:
 1. Maintain Owner and public access to existing building, parking, drives and walks at all times.
 2. Restrict work and storage to construction areas indicated on Drawings.
 3. Existing building and parking areas may not be used for storage.
 4. Access site only as indicated on the Drawings.
 5. Restrict parking to areas designated by the Owner.
 6. Do not perform operations that would disrupt or delay Owner's daily operations.
 7. Restrict construction personnel from access to other areas of the site and existing building, except as required to perform new and alterations work.
- D. Assume full responsibility for protection and safekeeping of products stored on premises.
- E. Relocate stored products which interfere with operations of Owner.
- F. Do not load structure with weight that will endanger structure.
- G. Emergency Building/Site Exits During Construction: Keep all existing site exits open during construction period. Provide barricade and signage in accordance with all requirements of the local building authorities during construction.
- H. Utility Outages and Shutdown: To be scheduled with the Owner's representative prior to implementing.

1.08 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 1. Requirements of this Section apply to mechanical and electrical installations. Refer to Division – 15 and Division – 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.
 - 2. Demolition of selected portions of the building for alterations is included in Section "Selective Demolition."

1.2 SUBMITTALS

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
 - 7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.3 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Bearing and retaining walls.
 - b. Structural concrete.
 - c. Structural steel.
 - d. Lintels.
 - e. Timber and primary wood framing.
 - f. Structural decking.
 - g. Miscellaneous structural metals.
 - h. Exterior curtain wall construction.
 - i. Equipment supports.
 - j. Piping, ductwork, vessels and equipment.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Shoring, bracing, and sheeting.
 - b. Primary operational systems and equipment.
 - c. Air or smoke barriers.
 - d. Water, moisture, or vapor barriers.

- e. Membranes and flashings.
 - f. Fire protection systems.
 - g. Noise and vibration control elements and systems.
 - h. Control systems.
 - i. Communication systems.
 - j. Conveying systems.
 - k. Electrical wiring systems.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
- 1. If possible retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:
 - a. Preformed metal panels.
 - b. Stucco and ornamental plaster.
 - c. Aggregate wall coating.
 - d. Wall covering.
 - e. HVAC enclosures, cabinets or covers.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
 - 1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
 4. Comply with requirements of applicable Sections of Division – 2 where cutting and patching requires excavating and backfilling.
 5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat.
 4. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.
- D. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.
1. Unless otherwise indicated provide 3-coat Work.
 2. Finish gypsum plaster with smooth-toweled finish. Sand lightly to remove trowel marks and arises.
 3. Cut, patch, point-up and repair plaster to accommodate other construction and to restore cracks, dents and imperfections.

3.4 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01095 | REFERENCE STANDARDS AND DEFINITIONS

Government Employees' Retirement System of the Virgin Islands
Headquarters Building Hip Roofs Restoration
3438 Kronprindsens Gade, St. Thomas U.S. Virgin Islands, 00802

PART 1 – GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. Indicated: The term indicated refers to graphic representations, notes, or schedules on Drawings, or other Paragraphs of Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.
- C. Directed: Terms such as directed, requested, authorized, selected, approved, required and permitted mean directed by the Architect, requested by the Architect, and similar phrases.
- D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. Install: The term describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. Provide: The term provide means to furnish and install, complete and ready for the intended use.
- I. Installer: An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
- J. Project site is the space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to reports on and, if required, to interpret results of those inspections or tests.

1.2 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specification Institute's 16-Division Format and MASTER FORMAT numbering system.
- B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicate.

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2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subject language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by other means when so noted.
 - a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- C. Conflicting Requirements: Where compliance with two or more standard is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and other uncertainties to the Architect for a decision before proceeding.
 1. 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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.
- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the Text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.4 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Procedures for preparation and submittal of application for final payment.

1.2 RELATED SECTIONS

- A. Section 01270 – Unit Prices (if required): Monetary values of unit prices, payment and modification procedures relating to unit prices.

1.3 SCHEDULE OF VALUES

- A. Submit a printed schedule on AIA Form G703 – Application and Certificate for Payment Continuation Sheet.
- B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization, bonds, and insurance, and site demobilization.
- D. Revise schedule to list approved Change Orders, with each Application for Payment.

1.4 APPLICATIONS FOR PROGRESS PAYMENT

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Present required information as typewritten/computer-generated form.
- C. Form: AIAG702 Application and Certificate for Payment and AIA G703 – Continuation Sheet including continuation sheets when required.
- D. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of Work.
 - 3. Scheduled Values.
 - 4. Previous Applications
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Total Completed and Stored to Date of Application.
 - 7. Percentage of Completion.
 - 8. Balance to Finish.
 - 9. Retainage.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original time of Work.
- H. Submit three copies of each Application for Payment.

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- I. Include the following with the application:
 - 1. Transmittal Letter as specified for Submittals in Section 01300.
 - 2. Construction progress schedule, revised and current as specified in Section 01300.
 - 3. Current construction photographs specified in Section 01300.
 - 4. Partial release of liens from major Subcontractors and Vendors.
 - 5. Affidavits attesting to off-site stored products.
- J. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.5 MODIFICATION PROCEDURES

- A. Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract by issuing supplemental instructions on AIA Form G710.
- B. Construction Change Directive: Architect may issue a document, signed by Owner, instructing Construction Manager to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change in Work.
- C. Proposal Request: Architect may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Construction Manager shall prepare and submit a fixed price quotation within 15 days.
- D. Computation of Change in Contract Amount:
 - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Construction Manager's price quotation.
 - 2. For change requested by Construction Manager, the amount will be based on the Construction Manager's request for a Change Order as approved by Owner.
 - 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 - 4. For change ordered by Architect without a quotation from the Construction Manager, the amount will be determined by Architect based on the Construction Manager's substantiation of costs as specified for Time and Material Work.
- E. Substantiation of Costs: Provide full information required for evaluation.
 - 1. Provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material Work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- F. Execution of Change Orders: Architects will issue Change Orders for signatures of parties as provided in the Conditions of the Contract on AIA G701.

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- G. After execution of Change Order, promptly revise Schedules of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- H. Promptly revise Progress Schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

1.6 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01700.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

PART 1 – GENERAL**1.1 SECTION INCLUDES**

- A. Project coordination.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Progress photographs.

1.2 RELATED SECTIONS

- A. Section 01700 – Execution Requirements: Additional coordination requirements.

1.3 PROJECT COORDINATION

- A. Contractor: The Contractor shall be responsible for overall project coordination between subcontractors and trade contractors.
- B. Cooperate with the Owner in allocation of mobilization areas of site; for field offices and storage, for personnel access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Contractor.
- D. Comply with Owner procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts. Particular attention should be given to the Contractor's subcontractor safety policy.
- E. Comply with instructions of the Owner for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work with the Owner.
- G. Make the following types of submittals to the Architect through the Owner:
 - 1. Requests for Interpretation.
 - 2. Requests for Substitution.
 - 3. Shop Drawings, Product Data, and Samples.
 - 4. Test and Inspection Reports.
 - 5. Manufacturer's Instructions and Field Reports.
 - 6. Applications for Payment and Change Order requests.
 - 7. Progress Schedules.
 - 8. Coordination of Drawings.
 - 9. Closeout Submittals.

PART 2 – PRODUCTS (NOT USED)**PART 3 – EXECUTION****3.1 PRECONSTRUCTION MEETING**

- A. Owner will schedule a meeting after Notice of Award and prior to mobilization.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect and invited Consultants.
 - 3. Contractor: Project Manager and Job Superintendent.
 - 4. Major Sub-contractors as requested by the Owner, Architect and Contractor.

C. Minimum Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Submission of progress schedule.
4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
5. Use of premises by Owner and Contractor.
6. Construction facilities and controls provided by Owner.
7. Temporary utilities provided by Owner.
8. Survey and building layout.
9. Security and housekeeping procedures.
10. Schedules.
11. Application for payment procedures.
12. Procedures for testing.
13. Procedures for maintaining record documents.
14. Scheduling.
15. Scheduling activities of Material Testing.

- D. Contractor shall record minutes and distribute copies within five days after meeting to participants, with one copy to Architect, Owner, participants, and those affected by decisions made.

3.2 PROGRESS MEETINGS

- A. Contractor shall schedule and administer meetings throughout the progress of the Work at maximum bi-monthly intervals. A representative from each major trade contractor shall be required to attend these meetings, as requested by the Contractor.
- B. The Contractor shall make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
1. Contractor: Project Manager and Job Superintendent.
 2. Owner's Representative.
 3. Architect.
 4. Major Sub-contractors as appropriate to agenda topics for each meeting.
- D. Minimum Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Maintenance of progress schedule.
 7. Corrective measures to regain projected schedules.
 8. Planned progress during succeeding work period.
 9. Maintenance of quality and work standards.
 10. Effect of proposed changes on progress schedule and coordination.
 11. Other business relating to Work.
- E. Contractor shall record minutes and distribute copies within five days after meeting to participants, with one copy to Architect, Owner, participants, and those affected by decisions made.

3.3 PROGRESS PHOTOGRAPHS

- A. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Architect.

- B. Take photographs on date for each application for a payment and as follows:
1. Site clearing.
 2. Excavations.
 3. Foundations.
 4. Structural framing.
 5. Enclosure of building.
 6. Final completion.
- C. Views:
1. Provide non-aerial photographs from three cardinal views at each specified time, until Date of Substantial Completion.
 2. Consult with Architect for instructions on views required.
 3. Provide factual presentation.
 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- D. Prints: Full color; three prints of each view.
1. Glossy; smooth texture; white tint; single weight; contrast grade 4, extra hard.
 2. Size: 8 x 10 inch; mounted for binder and tabs.
 3. Identify each print on back. Identify name of Project, contract number, phrase, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
- E. Deliver prints with Application for Payment with transmittal letter specified in this Section.

END OF SECTION

01325 | CONSTRUCTION PROJECT SCHEDULE

Government Employees' Retirement System of the Virgin Islands

Headquarters Building Hip Roofs Restoration

3438 Kronprindsens Gade, St. Thomas U.S. Virgin Islands, 00802

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.2 RELATED SECTIONS (NOT APPLICABLE)

1.3 SUBMITTALS

- A. Within 10 days after date established in Notice To Proceed, submit preliminary schedule defining planned operations for the first 30 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 30 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. Submit the number of opaque reproductions that the Contractor requires, plus four copies which will be retained by the Architect.
- G. Submit under transmittal letter form specified in Section 01300.

1.4 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel specialist Consultant specializing in CPM scheduling with two years minimum experience in scheduling construction work of a complexities comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

1.5 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable Specification Section number.
- B. Sheet Size: Multiples of 8-1/2 x 11 inches.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by Specification Section number.

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- C. Identify Work of separate stages and other logically grouped activities.
- D. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required by the Architect. Indicate decision dates for selection of finishes.
- E. Indicated delivery dates for owner-furnished products.
- F. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.

3.4 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.5 UPDATING SCHEDULE

- A. Maintain schedules & record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.

3.6 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, Suppliers, Architect, Owner's Representative, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

PART 1 – GENERAL**1.1 SECTION INCLUDES**

- A. Quality assurance – control of installation.
- B. Tolerances.
- C. References and standards.
- D. Mock-up.
- E. Inspecting and testing laboratory services.
- F. Manufacturers' field services.

1.2 RELATED SECTIONS

- A. Section 01000 General Specifications: Contractor's Shop and Working Drawings.

1.3 QUALITY ASSURANCE – CONTROL OF INSTALLATION

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

1.4 TOLERANCES

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

1.5 REFERENCES AND STANDARDS

- A. For Products or workmanship specified by association, trade, or other consensus standards, complies with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.

- C. Obtain copies of standards where required by product Specification Sections.
- D. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract, nor those of the Architect/Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 MOCK UP (NOT USED)

1.7 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner may appoint, employ, and pay for specified services of an independent firm to perform construction testing services.
- B. The independent firm will perform testing and other services specified in individual sections and as required by the Owner.
- C. Testing reports will be submitted by the independent firm to the Owner indicating services and indicating compliance or non-compliance with the Contract Documents.
- D. Cooperate with independent firm; furnish safe access and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and/or independent firm 48 hours prior to expected time for operations requiring services. These operations include, but are not necessarily limited to:
 - a. Cast-in-place concrete placement.
 - b. Bituminous pavement construction.

1.8 INSPECTION SERVICES

- A. Owner may appoint, employ, and pay for specified services of an independent firm to perform observation.
- B. The independent firm will perform observations and other services specified in individual Specification Sections and as required by the Owner.
- C. Reports will be submitted by the independent firm to the Owner, in duplicate, indicating observations and indicating compliance or non-compliance with Contract Documents.
- D. Cooperate with independent firm; furnish safe access and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and /or independent firm 48 hours prior to expected time for operations requiring services.
- E. Observations do not relieve Contractor to perform Work to the contract requirements.

1.9 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual Specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations. Observer subject to approval of Architect/Engineer.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

01500 | TEMPORARY FACILITIES

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PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary utilities required include but are not limited to:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Telephone service.
 - 4. Storm and sanitary sewer.
- C. Temporary construction and support facilities required include but are not limited to:
 - 1. Storage sheds.
 - 2. Sanitary facilities, including drinking water.
 - 3. Temporary closures.
 - 4. Temporary Project identification signs and bulletin boards.
 - 5. Waste disposal services.
 - 6. Rodent and pest control
 - 7. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities required include but are not limited to:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, lights.
 - 3. Sidewalk bridge or enclosure fence for the area.

1.3 SUBMITTALS

- A. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

1.4 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
 - 1. Building Code requirements.
 - 2. Health and Safety regulations.
 - 3. Utility Company regulations.
 - 4. Police, Fire Department and Rescue Squad rules.
 - 5. Environmental Protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services," prepared jointly by AGC and ASC, for industry recommendations.
 - 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with requirements in Division – 6 Section “Rough Carpentry.”
 - 1. For job-built temporary offices, shops and sheds within the construction areas, provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.
 - 2. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to Ps-1, of sizes and thickness indicated.
 - 3. For fences and vision barriers, provide minimum 3/8” thick exterior plywood.
 - 4. For safety barriers, sidewalk bridges and similar uses provide minimum 5/8” thick exterior plywood.
- C. Paint: Comply with requirements of Division 9 – Section “Finish Painting.”
 - 1. For job-built, shops, sheds, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.
 - 2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
 - 3. For interior walls of temporary offices, provide two coats of interior latex flat wall paint.
- D. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- E. Water: Provide potable water approved by local health authorities.
- F. Open-Mesh Fencing: Provide 11-gauge, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized barbed wire top strand and galvanized steel pipe posts, 1-1/2” I.D. for line posts and 2-1/2” I.D. for corner post.

2.2 EQUIPMENT

- A. General: Provide new equipment; if applicable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4” heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords; use “hard-service” cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

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- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide waterproof connectors to connect separate lengths of electric cord, if single lengths will not reach areas where construction activities are in progress.
- F. Temporary Toilet Units: Provide self-contained single occupant toilet units of the chemical, aerated recirculation, or combustion-type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar non-absorbent material.
- G. First-aid Supplies: Comply with governing regulations.
- H. Fire Extinguishers: Provide hand-carried, portable UL-rated, Class "A" fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, and UL-rated. Class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - 1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 – EXECUTION

3.1 INSTALLATION

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

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 - 3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
 - 4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect, and will not be accepted as a basis of claims for a Change Order.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
 - 1. Sterilization: Sterilize temporary water piping prior to use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
 - 1. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be non-metallic sheathed cable where overhead and exposed for surveillance.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

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

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- B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.
- D. Sanitary facilities include temporary toilets, wash facilities, and drinking water fixtures. Comply with regulations and health codes for the type, number, location and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
 - 1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
- E. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
- F. Temporary Enclosures: Provide temporary closure protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
- G. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner. The Contractor is restricted from the storage of petroleum products (including waste oil) in staging area.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard of Portable Fire Extinguishers and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
- C. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.
- D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- E. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from firms near the site.

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3.5 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete, or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
 - 2. After Substantial Completion, clean and renovate permanent facilities that have been used during the construction period.

END OF SECTION

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PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Products List.
- F. Substitutions.

1.2 RELATED REQUIREMENTS

- A. Section 01400 – Quality Control: Submittal of manufacturer's data.
- B. Section 01700 – Contract Closeout: Operation and maintenance data.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Products include the material, equipment, and systems used on this Project.
- B. Comply with the Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.

2.2 TRANSPORTATION AND HANDLING

- A. Transport products by methods that will avoid product damage and deliver them in undamaged condition in the manufacturer's unopened containers or packaging.
- B. Provide equipment and personnel to handle unloading and storage of the products by methods to prevent soiling or damage.
- C. Promptly inspect the shipments to assure that the products comply with requirements, the quantities are correct, and the products are undamaged.

2.3 STORAGE AND PROTECTION

- A. Store products in accordance with the manufacturer's instructions, with intact and legible seals and labels.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover the products subject to deterioration with an impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing of the materials with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure that products are undamaged, and are maintained under required conditions.

2.4 PRODUCT OPTIONS

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- A. Products specified by Reference Standards or by Description Only: Furnish any product meeting those standards.
- B. Products specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
- C. Products specified by Naming Several Manufacturers: Products of named manufacturers meeting Specifications: No options, no substitutions will be allowed.

2.5 PRODUCTS LIST

- A. Within 7 days after the date of selection by GERS, submit a complete list of major products proposed for use, with name of the manufacturer, trade name, and model number of each product.

2.6 SUBSTITUTIONS

- A. Only within 15 days after date of the Agreement will the Architect/Engineer consider requests from the Contractor for substitutions. Subsequently, substitutions will be considered only when a product becomes unavailable due to no fault of the Contractor.
- B. Document each request with complete data substantiating the compliance of the proposed substitution with the Contractor Documents.
- C. The request constitutes a representation that the Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds, in all respects, the specified product.
 - 2. Will provide the same warranty for substitution as for the specified product.
 - 3. Will coordinate installation and make other changes which may be required for the Work to be complete in all respects.
 - 4. Waives claims for additional cost which may subsequently become apparent.
 - 5. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, or when acceptance will require substantial revision of the Contract Documents.
- D. Substitutions will not be considered when they are indicated or implied on shop drawings or product data submittals without separate written request, or when acceptance will require substantial revision of the Contract Documents.
- E. The Architect/Engineer will determine acceptability of the proposed substitution, and will notify the Contractor of acceptance or rejection in writing within a reasonable time.
- F. Only one request for the substitution will be considered for each product. When substitution is not accepted, provide the specified product.

2.7 SYSTEM DEMONSTRATION

- A. Prior to the final inspection, demonstrate operation of the entire system to the Owner.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

01620 | TRANSPORTATION AND HANDLING

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GENERAL

- A. The Contractor shall provide transportation of all equipment, materials and products furnished under these Contract Documents to the site of the Work. In addition, the Contractor shall provide preparation for shipment and storage, unloading, handling and re-handling, short-term storage, extended storage, storage facilities, maintenance and protection during storage, preparation for installation, and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the Work.

TRANSPORTATION

- A. All equipment shall be suitably boxed, crated, or otherwise protected during transportation.
- B. All equipment shall be shipped and delivered in the largest assembled sections practical or permitted by carrier regulations to minimize the number of field connections.
- C. The Contractor shall be responsible for ensuring that the equipment is assembled and transported in such a manner so as to clear buildings, power lines, bridges, and similar structures encountered during shipment or delivery to the site of the Work.
- D. Where equipment will be installed using existing cranes or hoisting equipment, the Contractor shall ensure that the weights of the assembled sections do not exceed the capacity of the cranes or hoisting equipment.
- E. Small items and appurtenances such as gauges, valves, switches, instruments, and probes, which could be damaged during shipment shall be removed from the equipment prior to shipment and packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.
- F. Temporary shipping braces and supports shall be painted orange or yellow for easy identification.

HANDLING

- A. All equipment, materials, and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation. All equipment, materials, and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Authority prior to being incorporated into the Work.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Shafts and operating mechanisms shall not be used as lifting points. Spreader bars or lifting beams shall be used when the distances between lifting points exceeds that permitted by standard industry practice. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.
- C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground. Tossing of pipes and pipe fittings and accessories is an unacceptable practice. Items tossed shall be inspected by the Architect/Engineer and/or Project Manager. If the Architect/Engineer or Project Manager determines that the product has been comprised, Contractor shall replace product at no additional cost to Authority.
- D. Items such as non-metallic pipe, non-metallic conduit, flagpoles, and lighting poles shall be handled using non-metallic slings or straps. Under no circumstance shall chains or steel cables be used to transport or handle non-metallic products.

END OF SECTION

01630 | STORAGE AND PROTECTION

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GENERAL

- A. Equipment shall be received, inspected, unloaded, handled, stored, maintained, and protected by the Contractor in a suitable location on or off site, if necessary, until such time as installation is required.
- B. Storage and protection of Contractor-furnished equipment shall be strict conformance with the requirements of the Section entitled "General Equipment Stipulations" of these Specifications.

STORAGE

- A. The Contractor shall be responsible for providing satisfactory storage facilities that are acceptable to the Architect/Engineer. In the event that satisfactory facilities cannot be provided on site, satisfactory warehouse, acceptable to the Architect/Engineer, will be provided by the Contractor for such time until the equipment, materials, and products can be accommodated at the site.
- B. Equipment, materials, and products that are stored in a satisfactory warehouse acceptable to the Architect/Engineer will be eligible for progress payments as though they had been delivered to the job site.
- C. The Contractor shall be responsible for the maintenance and protection of all equipment, materials, and products placed in storage and shall bear all costs of storage, preparation for transportation, transportation, re-handling, and preparation for installation and replacement if lost or damaged.
- D. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.
- E. Unless otherwise permitted in writing by the Architect/Engineer, building products and materials such as cement, grout, plaster, gypsum-board, particle-board, resilient flooring, acoustical tile, paneling, finish lumber, insulation, wiring, etc., shall be stored indoors in a dry location. Building products such as rough lumber, plywood, concrete block, and structural tile may be stored outdoors under a properly secured waterproof covering.
- F. Tarpaulins and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarpaulins and covers shall be arranged to prevent ponding of water.
- G. PVC pipe, if stored outside, shall be suitably protected from sunlight (UV) by covering with a tarp. Such covering shall be completed and continual.

EXTENDED STORAGE

- A. In the event that certain items of major equipment such as air compressors, pumps, and mechanical aerators have to be stored for an extended period of time, the Contractor shall provide satisfactory long-term storage facilities that are acceptable to the Architect/Engineer. The Contractor shall provide all special packaging, protective coverings, protective coatings, power, nitrogen purge, desiccants, lubricants, and exercising necessary or recommended by the manufacturer to properly maintain and protect the equipment during the period of extended storage.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Inspection procedures.
 - 2. Project record document submittal
 - 3. Operating and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions – 2 through – 16.

1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Deliver tools, spare parts, extra stock, and similar items.
- B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
 - 1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
 - 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.3 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 - 1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - 3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
 - 4. Submit consent of surety to final payment.
 - 5. Submit a final liquidated damages settlement statement.
 - 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.
 - 1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

2. If necessary, reinspection will be repeated.

1.4 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
 1. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.
 1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.
- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 1. Record documents.
 2. Spare parts and materials.

3. Tools.
4. Cleaning.
5. Warranties and bonds.

3.2 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 1. Complete the following cleaning operations before requesting inspection for Final Acceptance.
 - a. Remove labels that are not permanent labels.
 - b. Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, film and similar foreign substances.
 - c. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean light fixtures and lamps.
 - d. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
 1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

GENERAL

During its progress, the Work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipe structures, as a result of Work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the Work, and the ditches, channels, drains, pipes, structures, and work, etc., shall upon completion of the Work, be left in a clean and neat condition.

On or before the completion of the Work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

Upon completion of the Work, the Contractor shall remove from the sites of the subsurface explorations all of his plant, machinery, tools, equipment, temporary work, and surplus materials; shall, unless otherwise directed or permitted in writing, remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors, and on completion of the Work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be fully charged with lubricant and ready for operation.

The Contractor shall restore or replace, when and as directed, any public or private property damaged by his Work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

END OF SECTION

01730 | GUARANTEE AND WARRANTIES

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Headquarters Building Hip Roofs Restoration
3438 Kronprindsens Gade, St. Thomas U.S. Virgin Islands, 00802

1 – GENERAL

- A. In addition to the Roofing Manufacture 20-year warranty, the Contractor shall warrant all equipment, materials, products, and workmanship provided by the Contractor under the Contract for a period of twelve (12) months after the date of final acceptance of the Work by the Authority.
- B. If, during the warranty period: (a) Any equipment, materials, or products furnished and/or installed by the Contractor are found to be defective in service by reason on the Contractor's faulty process, structural and/or mechanical design or Specifications; or (b) Any equipment, materials, or products furnished by the Contractor shall, as soon as possible after receipt such defective equipment, materials or products, or replace such defective equipment, materials or products.
- C. In the event of multiple equipment failures or major consequences prior to the expiration of the one-year warranty described above, the affected equipment shall be disassembled, inspected, and modified or replaced as necessary to prevent further occurrences. All related components that may have been damaged or rendered non-serviceable as a consequence of the equipment failure shall be replaced. A new twelve (12) month warranty against defective or deficient design, workmanship, and materials shall commence on the day that the item of equipment is reassembled and placed back into operation. As used herein, multiple equipment failures shall be interpreted to mean two (2) or more successive failures of the same kind in the same item of equipment or failures of the same kind in two (2) or more items of equipment. Major equipment failures may include, but are not limited to, cracked or broken housings, piping, or vessels, excessive deflections, bent or broken shafts or structural members, broken or chipped gear teeth, overheating, premature bearing failure, excessive wear, or excessive leakage around seals. Equipment failures which are directly and clearly traceable to operator abuse, such as operating the equipment in conflict with published operating procedures, or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over-or-under lubrication, and using maintenance procedures not conforming with published maintenance instructions, shall be exempted from the scope of the one-year warranty. Should multiple equipment failures occur in a given item or type of equipment, all equipment of the same size and type shall be disassembled, inspected, modified or replaced, as necessary, and re-warranted for one (1) year.

2 – START-UP OF OPERABLE COMPONENTS

- A. Because of the need to maintain operation during construction, it will be necessary to accept and start-up operable components of the project at various times prior to the completion and final acceptance of the entire project.
- B. A component of the project, as used herein, shall mean a complete process subsystem and shall include all associated structures, equipment, piping, controls, etc.
- C. When a component of the project has been completed, checked out, field tested, and made ready for operation, the Contractor shall notify the Architect/Engineer in writing that the component is substantially complete and request an inspection for substantial completion. The Architect/Engineer will schedule the inspection within ten (10) days of the Contractor's request. If he concurs in the Contractor's statement, the Architect/Engineer will notify the Contractor in writing that the component is accepted as substantially complete. At the same time, the Architect/Engineer will submit to the Contractor a list of items that must be completed or corrected before final acceptance can be given.
- D. If a component of the project is needed in order to maintain operation during construction and if it has been accepted as substantially complete, the Contractor shall start up the component when directed by the Architect/Engineer. Once the component has achieved stable and satisfactory operation (minimum 95 percent availability over a 7-day period), the Contractor shall request beneficial occupancy by the Authority. The Authority, if he concurs in the Contractor's statement, that stable and satisfactory operation has been achieved, will notify the Contractor in writing within ten (10) days that he is assuming beneficial occupancy of the component.
- E. On the date that the Authority assumes beneficial occupancy, the following shall occur:
 - 1. The one-year warranties for the component specified in Part 1-A of this section will begin; and
 - 2. The Authority will assume responsibility for operating and maintaining the component.

END OF SECTION

DIVISION 2

SITE CONSTRUCTION

PART 1 – GENERAL**1.1 SUMMARY**

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building.
 - 2. Patching and repairs.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Summary of Work" for use of the building and phasing requirements.
 - 2. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
 - 3. Division 1 Section "Construction Facilities and Temporary Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures for selective demolition operations.
 - 4. Division 1 Section "Contract Closeout" for record document requirements.
 - 5. Division 6 Section "Rough Carpentry" for material and construction requirements for temporary closures.

1.2 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvages, or to remain the Owner's property.
- B. Remove and Salvage: Items indicated to be removed and salvages remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.3 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.
- B. Comply with manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections, for information only, unless otherwise indicated.
- B. Proposed dust-control measures.
- C. Proposed noise-control measures.
- D. Schedule of selective demolition activities indicating the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - 2. Interruption of utility services.
 - 3. Coordination of shutoff, capping, and continuation of utility services.

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- 4. Use of elevator and stairs.
 - 5. Detailed sequence of selective demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
 - 7. Locations of temporary partitions and means of egress.
- E. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations.
- F. Record drawings at Project closeout according to Division 1 Section "Contract Closeout."
- 1. Identify and accurately locate capped utilities and other subsurface structural, electrical or mechanical conditions.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Pre-demolition Conference: Conduct conference at Project site to comply with pre-installation conference requirements of Division 1 Section "Project Meetings."

1.6 PROJECT CONDITIONS

- A. Owner will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
 - 1. Conditions exist at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Asbestos: It is not expected that asbestos will be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Architect and the Owner.
 - 1. Asbestos will be removed by Owner before start of Work.
- D. Storage or sales of removed items or materials on-site will not be permitted.

1.7 SCHEDULING

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

1.9 WARRANTY

- A. Existing Special Warranty: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and materials so as not to void existing warranties.

PART 2 – PRODUCTS (NOT APPLICABLE)

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that existing materials.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by the Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
 - a. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.
- B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
 - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.
- C. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- B. Conduct demolition operations to prevent injury to people and facilities that remain. Ensure safe passage of people around selective demolition areas.
 - 1. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.

3.4 POLLUTION CONTROLS

- A. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of buildings by chute, hoist, or other device that will convey debris to grade level.

3.5 DEMOLITION

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- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 4. Maintain adequate ventilation when using cutting torches.
 - 5. Remove decayed, vermin-infested, or otherwise dangerous, damaged or unsuitable materials and promptly dispose of off-site.
 - 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 7. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors or framing.
 - 8. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
 - 9. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.
- C. Remove no more existing roofing than can be covered in one day by new roofing. Provide temporary waterproof seal between new and existing roofing at the end of each day.

3.6 PATCHING AND REPAIRS

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.
- B. Patching is specified in Division 1 Section "Cutting and Patching."
- C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
 - 1. Completely fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to manufacturer's printed recommendations.
- D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
- E. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
- C. Burning: Do not burn demolished materials.

3.8 CLEANING

- A. Sweep the roof clean on completion of selective demolition operation.
- B. Change filters on air-handling equipment on completion of selective demolition operations.

END OF SECTION

DIVISION 6

WOOD & PLASTICS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Framing with dimension lumber.
 - 2. Wood furring, grounds, nailers, and blocking.
 - 3. Underlayment.

1.2 DEFINITIONS

- A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise specified.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division I Specification Sections.
- B. Product Data for the following products:
 - 1. Underlayment.
 - 2. Construction adhesives.
- C. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee's (ALSC) Board of Review.
- D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:
 - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 - 2. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.
- E. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product from one source and by a single producer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
 - 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

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1. Wood-Preservative-Treated Materials:
 - a. Baxter: J. H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.
 - f. Osmose Wood Preserving, Inc.
2. Fire-Retardant-Treated Materials, Interior Type A:
 - a. Baxter: J. H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.

2.2 LUMBER, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
 1. NELMA - Northeastern Lumber Manufacturers Association.
 2. NLGA - National Lumber Grades Authority (Canadian).
 3. RIS - Redwood Inspection Service.
 4. SPIB - Southern Pine Inspection Bureau.
 5. WCLIB - West Coast Lumber Inspection Bureau.
 6. WWPAA - Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
- D. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 1. Provide dressed lumber, S4S, unless otherwise indicated.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPAC2 (lumber) and AWPAC9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.
 1. Do not use chemicals containing chromium or arsenic.
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 3. Wood framing members less than 18 inches (460 mm) above grade.
 4. Wood floor plates installed over concrete slabs directly in contact with earth.

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- C. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWP A M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.4 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWP A C20 (lumber) and AWP A C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Research or Evaluation Reports: Provide fire-retardant-treated wood acceptable to authorities having jurisdiction and for which a current model code research or evaluation report exists that evidences compliance of fire-retardant-treated wood for application indicated.

2.5 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. Framing Other than Non-Load-Bearing Partitions: Provide framing of the following grade and species:
 - 1. Grade: No. 2.
 - 2. Species: Southern pine; SPIB.
 - 3. Species: Mixed southern pine; SPIB.
 - 4. Species: Any species above.

2.6 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWP A; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWP A of any species.

2.7 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

- A. General: Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance-rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail (where applicable).
 - 1. Thickness: Provide panels meeting requirements specified but not less than thickness indicated.
 - 2. Span Ratings: Provide panels with span ratings required to meet "Code Plus" provisions of APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial."

2.8 STRUCTURAL-USE PANELS FOR UNDERLAYMENT

- A. General: Over smooth subfloors, provide underlayment not less than 1/4 inch (6.4 mm) thick. Over board or uneven subfloors, provide underlayment not less than 11/32 inch (8.7 mm) thick.
- B. Plywood Underlayment for Carpet: For underlayment under 19/32 inch (15.1 mm) thick, provide plywood panels with fully sanded face and as follows:

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1. Grade: APA Underlayment Interior.

2.9 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.10 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWWA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.
 2. Published requirements of metal framing anchor manufacturer.
 3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."
 4. "Table 23-I-Q--Nailing Schedule" of the Uniform Building Code.
 5. "Table 2305.2--Fastening Schedule" of the BOCA National Building Code.
 6. "Table 1705.1--Fastening Schedule," of the Standard Building Code.
- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.
- G. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact,

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or in area of high relative humidity.

- H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screening or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FRAMING, GENERAL

- A. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- B. Install framing members of size and at spacing indicated.
- C. Do not splice structural members between supports.

3.4 INSTALLATION OF STRUCTURAL-USE PANELS

- A. General: Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
 - 1. Comply with "Code Plus" provisions of above-referenced guide.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Underlayment: Nail to subflooring.
 - a. Space panels 1/32 inch (0.8 mm) at edges and ends.

END OF SECTION

DIVISION 7

THERMAL & MOISTURE PROTECTION

076113 - STANDING SEAM SHEET METAL ROOFING

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PART 1 - GENERAL

1.1 SUMMARY

A. Related Sections:

1. Purlin Framing: Division 05 structural steel sections.
2. Underlayment: Division 06 rough carpentry sections.
3. Sealants: Division 07 sealant sections.

1.2 REFERENCES

A. ASTM International (ASTM):

1. ASTM A653/A653M-06 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A792/A792M Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
3. ASTM E1592 Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
4. ASTM E1680 Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
5. ASTM E2140 Standard Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head.

B. FM Global (Factory Mutual):

1. Approval Guide.

C. Underwriters Laboratories, Inc. (UL):

1. UL 580 Tests for Uplift Resistance of Roof Assemblies.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Design roof system to withstand dead loads and live loads prescribed by the governing building code. Minimum 165mi./hr. wind speed.

B. Performance Requirements:

1. Air Infiltration: Not more than 0.5 ft³ (0.014 m³) per minute at a static pressure of 1.57 psf (7.7 kg/m²) when tested in accordance with ASTM E283/ASTM E1680.
2. Water Infiltration: No water leakage when tested in accordance with ASTM E331/ASTM E646 with a water spray of 5 gal/hr ft² (18.9 L/hr m²) at a static pressure of 15 psf (73 kg/m²).
3. Wind Uplift:
 - a. As tested to ASTM E1592.
 - b. 165mph wind speed.

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1.4 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Section **01300 - Submittals**.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA sheet, for specified products.
- C. Shop Drawings: Submit drawings reviewed by or drawn by roofing manufacturer showing arrangement of panels and orientation of panel joints, details of panel joints and panel terminations, details of attachment to supporting structure and details of flashing and closure trim.
- D. Samples: Submit 8 1/2inch x 11inch (216 x 279 mm) samples of specified coating(s) showing texture and color.
- E. Quality Control Submittals:
 - 1. Design Data: Submit structural calculations prepared by a structural engineer licensed in the state in which the project is located.
 - 2. Certificates: Manufacturer's certification that the installer is acceptable.
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions.
- F. Closeout Submittals:
 - 1. Warranty: Manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Trained by and acceptable to the manufacturer.
- B. Regulatory Requirements: In accordance with 2021 International Building Code.

1.6 DELIVERY, STORAGE & HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1.7 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit in accordance with Section 01730- **Guarantees & Warranties** for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
 - 1. Warranty Period: 20 years commencing on Date of Substantial Completion.

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PART 2 - PRODUCTS

2.1 SHEET METAL ROOFING

- A. Manufacturer: Merchant & Evans, Inc., McElroy, MBCI, or approved equal.
- B. Structural Standing Seam Roofing System:
 - 1. Seam Height: 2 1/2 inches (64 mm).
 - 2. Metal: **Alum-zinc coated steel.**
 - 3. Texture: **Smooth.**
 - 4. Finish: **Fluoropolymer, Mill.**
 - 5. Pan Width: **12 inches (305 mm).**

2.2 MATERIALS

- A. Sheet Metal:
 - 1. Alum-Zinc Coated Steel AZ-50: ASTM A792/A792M, **18** gauge.
 - 2. Alum-Zinc Coated Steel AZ-55: ASTM A792/A792M, **18** gauge.
- B. Roof Panel Assembly:
 - 1. UL Class A fire rated.
 - 2. Tested and approved in accordance with UL Category CETW.

2.3 FACTORY FINISHING

- A. Fluoropolymer: Coil coated 70% Kynar 500 or Hylar 5000 based fluorocarbon coating.
 - 1. Color: Colonial Red.

2.4 PRODUCT SUBSTITUTIONS

- A. Substitutions: Substitutions in accordance with Architect's approval.

2.5 THERMAL INSULATION

- A. Polyisocyanurate Board Insulation: Unfaced, preformed, rigid, cellular, polyurethane thermal insulation complying with ASTM C 591, Type 2 with aged R-values of 6.2 at 75 deg F (23.9deg C).

2.6 MISCELLANEOUS MATERIALS

- A. Gypsum Board: Type X fire rated, UL-labeled board of thickness indicated, complying with ASTM C 442 or ASTM C 36.
- B. Fasteners: Self tapping screws, bolts, nuts, self-locking rivets, self-locking bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.

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1. Use aluminum, corrosion-resistant steel, or stainless-steel fasteners for exterior application and galvanized or cadmium-plated fasteners for interior applications.
2. Provide exposed fasteners with heads matching color of roof or wall panel by means of plastic caps or factory applied coating.
3. Provide metal-backed neoprene washers under heads of exposed fasteners bearing on weather side of panels.
4. Locate and space exposed fasteners in true vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.

C. Underlayment: Ice & Water shield underlayment.

D. Accessories: Except as indicated as work of another specification section, provide components required for a complete roof or wall panel system, including trim, copings, fascias, gravel stops, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels.

1. Closure Strips: Closed-cell, self-extinguishing, expanded cellular rubber or cross-linked polyolefin foam flexible closure strips. Cut or premold to match configuration of roof and wall panels. Provide closure strips where indicated or necessary to ensure weathertight construction.
2. Sealing Tape: Pressure-sensitive 100 percent solids polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
3. Joint Sealant: One-part elastomeric polyurethane, polysulfide, or silicone rubber sealant as recommended by the building manufacturer.

E. Bituminous Coating: Cold-applied asphalt mastic, SSPC paint 12, compounded for 15 mil dry film thickness per coat.

2.7 PANEL FABRICATION

A. General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as required to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and dimensional requirements and with structural requirements.

B. Sound Control: Where sound absorption requirement is indicated, fabricate interior liner panels with approximately 1,000 uniformly spaced 1/8-inch-diameter holes per sq. ft. Cover insulation with polyethylene film and provide inserts of wire mesh to form acoustical spacer grid.

C. Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with substrate materials that are noncompatible or could result in corrosion or deterioration of either material or finishes.

D. Fabricate panel joints with captive gaskets or separator strips, which provide a tight seal and prevent metal-to-metal contact in a manner that will minimize noise from movements within panel system.

2.8

A. Secondary Framing: Provide the following secondary framing members:

1. Roof Purlin and Wall Girts: "C"- or "Z"-shaped sections fabricated from 16-gage (0.0598-inch) shop-painted, roll-formed steel. Purlin spacers shall be fabricated from 14-gage (0.0747-inch) cold-formed galvanized steel sections.

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2. Eave Struts: Unequal flange "C"-shaped sections formed to provide adequate backup for both wall and roof panels. Fabricate from 16-gage (0.0598-inch) shop-painted, roll-formed steel.
3. Flange and Sag Bracing: 1-5/8- by 1-5/8-inch angles fabricated from 16-gage (0.0598-inch) shop-painted, roll-formed steel.
4. Base or Sill Angles: Fabricate from 14-gage (0.0747-inch) cold-formed galvanized steel sections.
5. Secondary structural members, except columns and beams, shall be the manufacturer's standard sections fabricated from 14-gage (0.0747-inch) cold-formed galvanized steel.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.3 PANEL SUPPORTS AND ANCHORAGE

- A. Girts, purlin, and other secondary structural panel support members and anchorage shall be installed in accordance with AISC Manual of Steel Construction "Code of Standard Practice."

3.4 PANEL INSTALLATION

- A. General: Comply with manufacturers' instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.
 1. Field cutting of exterior panels by torch is not permitted.
 2. Install panels with concealed fasteners.
 3. Install panels with exposed exterior and interior fasteners, prefinished to match panel finishes.
 4. Install roof panels over minimum 3:12 pitch solid substrate with one ply of felt installed from lower edge up with at least 3-inch side laps and 4-inch end laps.
- B. Accessories: Install components required for a complete roof or wall panel system, including trim, copings, fascias, gravel stops, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, fillers, closure strips, and similar items.
- C. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of panel systems. Provide types of gaskets, sealants, and fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer.

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1. Provide weather seal under ridge cap. Flash and seal roof panels at eave and rake with rubber, neoprene, or other closures to exclude weather.
 2. Refer to other sections of these specifications for product and installation requirements applicable to indicated joint sealers.
- D. Joint Sealers: Refer to other sections of these specifications for post-installation requirements on joint sealers; not work of this section.
- E. Standing Seam Roof Panel System: Fasten roof panels to supports with concealed clip in accordance with the manufacturer's instructions.
1. Install clips at each support with self-drilling/self-tapping fasteners.
 2. At end laps of panels, install tape caulk between panels.
 3. Install factory-calked cleats at standing-seam joints. Apply Snap-on batten to the panels to provide a weathertight joint.
 4. Seaming: Complete seaming of panel joints by operation of portable power-driven equipment of type recommended by panel manufacturer to provide a weathertight joint.
- F. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4 inch in 20'-0" on level/plumb/slope and location/line as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- 3.5 CLEANING AND PROTECTION
- A. Damaged Units: Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by means of finish touch-up or similar minor repair procedures.
- B. Cleaning: Remove temporary protective coverings and strippable films (if any) as soon as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.
- C. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

END OF PROJECT MANUAL