

PROJECT MANUAL

OCCC NORTH/SOUTH BUILDING VAULTED ROOFS MODIFICATIONS AND REPLACEMENTS

AT THE

ORANGE COUNTY CONVENTION CENTER
9400 Universal Blvd.
Orlando, Florida 32819

PREPARED BY:

A/R/C ASSOCIATES, INCORPORATED
601 North Fern Creek Avenue - Suite 100
Orlando, Florida 32803
(407) 896-7875 FAX # (407) 898-6043

Date: May 24, 2016
A/R/C Project No.: 14034.01

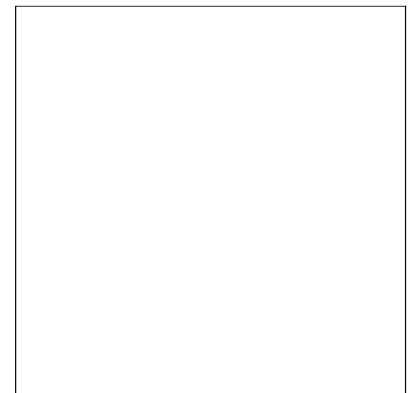


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Details (8 ½ x 11 format)

1.01 – 9.03

The Contractor shall verify receipt of all the pages, drawings and details listed in the index. If any are missing or illegible it is the responsibility of the Contractor to request replacements.

PLANS DRAWINGS AND DETAILS INDEX

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PART I GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this Contract is defined as the **Vaulted Roofs Modifications and Replacements, at the Orange County Convention Center North / South Building, 9400 Universal Blvd., Orlando, Florida 32869**. The work is limited to the four major entrance elements of the building and includes the repair of the glazed curtainwall system, the replacement of the metal roof panels within the designated areas, the replacement of the single-ply membrane at the five curved “shell” roofs and related modifications and replacement work at each of the four entrances.

1.02 CONTRACT METHOD

- A. Construct the work under a single lump sum contract.

1.03 COORDINATION

- A. Coordinate work of the various Sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate work of various Sections having interdependent responsibilities for installing, connecting to and placing in service, such equipment. Differences shall be brought to the Owner’s attention during bid process or remain the responsibility of the Contractor.
- C. Coordinate space requirements and installation of items, such as, but not limited to, mechanical and electrical work which are indicated diagrammatically or otherwise on drawings. Follow routing shown for pipes, ducts and conduits, as closely as practicable; make runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs.
- D. In finished areas (except as otherwise shown), conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Execute cutting and patching to integrate elements of work, uncover ill timed, defective and nonconforming work, provide openings for penetrations of existing surfaces and provide samples as specified in individual sections for testing. Seal penetrations of existing surfaces and provide samples as specified in individual sections for testing. Seal penetrations through floors, walls and ceilings, and fire safe where necessary as part of the lump sum price.

ADMINISTRATIVE PROCEDURES
SECTION 01005

1.04 FIELD ENGINEERING SURVEYING

- A. Provide field engineering surveying services; establish grades, lines and levels, by use of engineering survey practices recognized as standard by the survey industry. Said work shall be required to be provided by a Professional Land Surveyor, registered as such in the State of Florida.
- B. Control datum for survey is that shown on Grading and Drainage Plan. Locate and protect control and reference points, per requirements stated in Part F, Article 6 of the GENERAL CONDITIONS.

END OF SECTION 01005

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project Description and Location
- B. Contractor Use of Premises
- C. Distribution of Related Documents
- D. Protection of Existing Building, Finishes, Furnishings and Equipment.
- E. Owner Occupancy and Access.
- F. Schedule
- G. Project Rain Day Form
- H. Interior Inspection Form
- I. Exterior Inspection Form
- J. Asbestos Free Material

1.2 RELATED DOCUMENTS

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

1.3 PROJECT DESCRIPTION AND LOCATION

- A. The Work of this Contract is defined as the **Vaulted Roofs Modifications and Replacements, at the Orange County Convention Center at the North / South Building, 9400 Universal Blvd., Orlando, Florida 32819.** The work will be constructed under a single lump sum contract.
- B. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 specification sections, apply to work on this contract. The Owner intends to award a single prime base bid contract, titled "General Construction Contract," for Work to be performed for this Project. The Contractor shall comply with the requirements of the General Conditions and the Supplementary Conditions in accomplishing his Work on this Project.
- C. Base Bid General Construction Contract: Includes all general trades, roofing, flashing, and related mechanical and electrical items specified in the Project Specifications and Work shown on the Drawings
 - 1. The Contractor's Duties include:
 - a. Provide and pay for all labor, materials, equipment, and installation costs of

SUMMARY OF WORK
SECTION 01010

- items described within these documents. Provide and pay for all costs associated for all necessary tools, construction equipment, and protection of Existing Work.
 - b. The Contractor shall be responsible for the demolition and proper disposal of existing items and materials relative to this Contract
 - c. Comply with all listed and applicable Codes, Standards and Specifications.
- D. The Contractor shall be responsible for the Work as specified herein and as indicated on the Drawings. Although the majority of the Drawings are "to scale," the Contractor is directed to field verify all dimensions and assumptions used for determining material quantities and requirements. No additional monies will be allowed to the Contractor for use of "scaling instruments" to determine material quantities, lack of adequate field investigation, or for other reasons.
- E. The scope of work shall include, but not be limited to the following:

Vaulted roof modifications and replacements to the four major entrance elements of the building, the repair of the glazed curtainwall system, the replacement of the metal roof panels within the designated areas, the replacement of the single-ply membrane at the five curved "shell" roofs and related modifications and replacement work at each of the four entrances. All products and materials that are to be installed on this project shall be new, provided by the Contractor, and included in this lump sum bid.

1. Glazed Curtainwall Repairs: The contractor shall convert the curtainwall system from an internal drainage water control system to a barrier system to prevent moisture from entering the building wall system and interior. The following work is included:
 - a. Remove the existing decorative aluminum frame covers to access the conceal frame and water seal locations.
 - b. Remove a portion of the existing frame extrusions as required to install the proposed sill flashing system.
 - c. Drill and fill designated frame sections with pourable sealer to control and redirect internal drainage within the curtainwall frame as detailed.
 - d. Remove existing sealant and trim and portions of the existing glazing gaskets as needed to allow all perimeter joints of glazing to be sealed with silicone. Apply silicone sealant to all joints within aluminum frame system to prevent water entry.
 - e. Install new continuous sill flashing at the base of the curtainwall as detailed, which is to be anchored to the face of the existing curtainwall frame system.
 - f. Reinstall the decorative aluminum frame covers, provide new mechanical anchorage due to frame modifications.
2. Metal Roof Replacement: The contractor shall remove and replace the existing metal roof system to correct existing flashing problems which allow water intrusion into the existing building wall system and interior. The following work is included:
 - a. Remove and recycle the existing standing seam metal roof system down to the existing underlayment at the designated areas; remove existing edge flashing and other associated flashings as required. Existing underlayment, gypsum roof board and rigid insulation board shall remain in place.
 - b. After any needed deck repairs and preparation, install a self-adhering modified bitumen underlayment over the entire roof deck area.

SUMMARY OF WORK
SECTION 01010

- c. Install all new blocking, sheathing, and metal trim per the project details prior to installation of the roof system.
 - d. Install all new prefinished edge metal, valleys, and other anchorage metals, “strip-in” with a self-adhering modified bitumen flashing membrane per the project details.
 - e. Install new metal roof panels over the roof deck surface and underlayment as specified in this manual and defined by the roofing manufacturer’s engineering for this project.
 - f. Provide and install all transition wall, expansion joint, rake edge, step counterflashing and similar cap flashings as detailed within the project documents.
3. Metal Roof / Single-ply Roof Angled Area Dividers: The contractor shall remove the existing aluminum composite panels and replace the cap with prefinished aluminum in a manner similar to a conventional coping cap. The following work is included:
- a. Remove the existing composite aluminum panel coping cap on the area divider, replace any of the underlying sheathing which is damaged or deteriorated.
 - b. Install a self-adhering modified bitumen underlayment over the entire area divider and strip-in to the metal roof area underlayment.
 - c. Provide new thermoplastic membrane base flashing at the single-ply roof side of the area divider, heat weld to the existing roof membrane and carry over the top of the area divider.
 - d. Install a new pre-finished aluminum coping cap in a “stepped” manner per the project details, secure to continuous cleats along both outer edges.
 - e. Cut existing aluminum composite wall panels at transition walls, reinforce and provide blocking as required for new transition flashings per project details.
 - f. Provide and install any specialty fabrications and terminations in sequence with the coping cap installation.
4. Thermoplastic Single-ply Roof Replacement: The contractor shall remove and replace the existing membrane roof system at the five barrel vaults to correct existing flashing problems which allow water intrusion into the existing building wall system and interior. The following work is included.
- a. Remove existing membrane roof system down to the existing substrate at the designated areas; remove existing edge flashing and other associated flashings as required. Existing gypsum roof board (if present) and rigid insulation board shall remain in place.
 - b. After any needed deck repairs and preparation, install a new area divider along the base of the vaulted roofs to provide a separation from the metal roof and act as a gutter for the vaulted roofs per the project details.
 - c. Install all new blocking, sheathing, and metal trim per the project details prior to installation of the roof system.
 - d. Install all new prefinished edge metal, transitions, receivers and other anchorage metals per the project details.
 - e. At the transition to the main building roof from the large “shell”, construct a metal capped, segmented curb to provide a conventional base flashing condition per the project details.
 - f. Install new fleece-backed thermoplastic membrane roof system over the gypsum roof board substrate, fully adhere and mechanically fasten membrane

as specified in this manual and defined by the roofing manufacturer's engineering for this project.

Provide and install all transition wall, rake edge, counterflashing and similar cap flashings as detailed within the project documents.

5. Miscellaneous Work:
 - a. Remove existing lightning protection system. Properly store for re-installation, damaged components may not be reused.
 - b. Re-install lightning protection system in accordance with specifications, details and UL requirements. Upon completion, system shall be inspected by a UL representative and a 'Letter of Findings' provided as certification that the system has been installed in accordance with applicable codes and regulations.

1.4 CONTRACTOR USE OF SITE AND PREMISES

- A. General: During the construction period, the Contractor shall have limited use of the premises for construction operations, including use of the site. The Contractor shall coordinate which areas are acceptable to Convention Center Staff for use during the life of the project. The Contractor's use of the premises is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portion of the project.
 1. Portions of the facility shall remain occupied and operational while work is in progress. All work shall be fully coordinated in writing with Orange County Convention Center Project Manager prior to commencement of work. Material and equipment deliveries shall be made during normal business hours.
- B. General: Limited use of the premises to construction activities in areas indicated within the limit of the premises. The Contractor may use any portion of the site for storage or work areas only with prior approval from The Orange County Convention Center Project Manager.
 1. Confine operations to areas within Contract limits indicated on the Drawings. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
 2. Keep driveways and entrances serving the premises clear and available to the Owner and the Owners' employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site
 3. Burial of Waste Materials: Do not dispose of organic and hazardous material on site, either by burial or by burning.
 4. Where appropriate, maintain the existing building in a watertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.
 5. Contractor will move any stored material and equipment, which interfere with operations of the Owner or other contractors at no additional cost to the Owner.
 6. Comply with Owner's requirements for ingress and egress procedures, prohibitions against firearms, procedures for transportation of workers, safety and fire prevention requirements and all applicable pollution control requirements. Refer to the following

reference requirements:

- a. Orange County Safety and Health Manual:
<http://www.orangecountyfl.net/VendorServices/OrangeCountySafetyandHealthManual.aspx>
 - b. Orange County Policy Manual page 96 regarding Firearms:
<http://www.orangecountyfl.net/portals/0/resource%20library/employment%20-%20volunteerism/Policy%20Manual.pdf>
7. Contractor to require all employees and subcontractors to wear non-objectionable clothing; prohibit revealing clothing and articles of clothing with offensive writings displayed. The contractor shall require offending personnel to leave the premises until such clothing is changed.
 8. Contractor employees and subcontractors will not fraternize with County employees or the general public during the entire construction period.
 9. Use of sound equipment (such as boom boxes, stereos, radios, etc.) is not allowed.
 10. Contractor and their personnel shall abide to Orange County Tobacco free policy while on any Orange County Convention Center property. This policy shall apply to building, parking lots, parks, break areas and worksites. Tobacco is defined as tobacco products, including but not limited to: Cigars, cigarettes, pipes, chewing tobacco and snuff. Failure to abide by the policy may result in civil penalties levied under Chapter 386, Florida Statutes and/or Contract enforcement remedies. Refer to the following documents:
 - a. Orange County Smoking Policy:
<http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/Employee%20Handbook.pdf>
 11. Conduct that is disrespectful, abusive or otherwise objectionable to the Owners' employees or general public will not be allowed at any time during the construction period. Repetitive complaints and violations of the requirements listed above will be cause for dismissal and or permanent removal of offending personnel from the project.
 12. Contractor to coordinate with the Owner the site location for storage of equipment, machinery, materials, tools and a construction waste dumpster.
 13. Contractor shall at all times keep the premises free of all waste or surplus materials, rubbish and debris, which is caused by contractor employees or subcontractors resulting from their work. Contractor shall maintain a safe work environment to all building occupants during the construction period.
- C. The contractor may work on the weekends at his or her discretion with prior written approval from Orange County Convention Center Project Manager. Weekend work shall not be an additional cost to the Owner. The contractor will coordinate with the Orange County Convention Center Project Manager for access to the building on weekends and after hours work.
- D. Access to Site: Limited to agreed-upon staging areas and access routes.
- E. Emergency Building Exits During Construction: Maintain at all times.
- F. Time Restrictions for Performing Interior Work: To be coordinated with Owner as required..

- G. Utility Outages and Shutdown: Allowed only upon coordination with and notification of the Owner.
 - H. Be responsible for items of work and material stored on premise.
- 1.5 SECURITY AND IDENTIFICATION
- A. All costs for background investigations will be Contractor's responsibility. The County shall have the right to request any additional investigative background information including, but limited to, the employment record, Right-To-Know records, E-Verify system records (if the Contractor uses this service as a means to determine employment eligibility, available through www.uscis.gov), training records, payroll records, position for which hired including site location of any personnel assigned to perform the services. The Contractor shall furnish, in writing, such information to the extent allowed by law, prior to commencement of services. The County reserves the right to conduct its own investigation of any employee of the Contractor.
 - B. Background checks for the contractor's staff must be approved by Orange County Convention Center Security Team prior to working in any County facility. Contractors are responsible for obtaining the necessary forms for background checks for work at the Orange County Convention Center. All contractor's staff background checks will be sent to the Orange County Convention Center Project Manager for approval.
 - C. For security purposes and to maintain privacy, please submit a FDLE Background Checks via e-mail the subject line of the email must contain the following *****EXEMPT*****
 - D. The Orange County Convention Center will inform the contractor of their Background Check results. Upon Background Check approval, the contractor's staff shall arrange an appointment with the Orange County staff to obtain a Orange County photo ID badge. An affidavit of Identity form (issued by the contractor) and a State of Florida ID or Drivers License will be required.
 - E. Contractor's employees will not be allowed in Orange County Convention Center facilities without completed and approved background investigations.
 - F. Work hours will be scheduled around business activity. Business activity is considered to be Orange County Convention Center office/administrative staff located in or adjacent to construction/renovation site or Orange County Convention Center clients renting convention space located in or adjacent to construction/renovation site. Contractor will be required to mobilize more than once to accommodate Orange County Convention Center show schedules.

1.6 DISTRIBUTION OF RELATED DOCUMENTS

- A. The Contractor is solely responsible for the distribution of ALL related documents/drawings to ALL appropriate vendors/subcontractors to ensure proper coordination of all aspects of the project and its related parts during bidding and construction.

1.7 PROTECTION OF EXISTING BUILDING, FINISHES, FURNISHINGS AND EQUIPMENT

- A. Comply with all requirements of Section Division 1 of these specifications in regards to protection and cleaning of the existing site, building, finishes, furnishings and equipment. See section 01520 for specific requirements for construction aids.
- B. Prior to construction beginning at any interior location, the contractor shall coordinate with the owner sensitive areas that will require security clearance due to the nature of the buildings function.
- C. It is the contractor's responsibility to protect the existing construction and finishes from water intrusion during the course of this project.
- D. The contractor shall police and clean the interior and exterior areas of work of this project and discard all debris in the appropriate contractor provided waste receptacle / "dumpster" at the end of each work day. Comply with Division 1 of these specifications fully.

1.8 OWNER OCCUPANCY AND ACCESS

- A. The Owner will be occupying the building during construction. Normal occupancy hours are 7:00 a.m. to 6:00 p.m. Monday through Friday, however this may vary with show activity. The contractor is to coordinate with the Owner's representative for areas in the building where work may be performed during normal business hours.
- B. Work performed after normal business hours can be done provided the area where work is done is fully operational and back in original condition prior to beginning of the next business day. Such placing of equipment and partial occupancy shall not constitute acceptance of the total work.
- C. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- D. Schedule the Work to accommodate this requirement.
- E. Comply with established Owner Policies.
- F. Maintain "Good Housekeeping" on site as directed by Owner and Architect.
- G. Access for ongoing inspections to the premises and work underway by the Owner and Architect shall not be restricted.

1.9 SCHEDULE

- A. A progress schedule shall be made to include:
 - 1. A start date.
 - 2. A reasonable progression of work by Phase, Building, Task; i.e.
 - 3. A start and finish date for construction materials and components listed in Divisions 2 thru 16 as defined by Division 1 of these specifications.

1.10 PROJECT RAIN DAY FORM

- A. Maintain on a daily basis and submit with each Application for Payment, the Project Rain Day Form attached at the end of this section. Project Rain Day Form shall be signed by the Owner's Representative or Architect daily. See article 8.3 of the General Conditions for additional information regarding how delays due to weather are addressed.

1.11 INTERIOR INSPECTION FORM

- A. Prior to commencing work, the Contractor will schedule a meeting with the Owner's Representative or Architect, to inspect and document the condition of the building interior(s) in both written and digital video or photographic form. Log conditions of ceiling tiles, lights, walls and flooring materials using the Interior Inspection Form attached at the end of this Section. Submit two copies of the digital files and the form signed by the Contractor and Owner's Representative to the Architect prior to the start of construction.

1.12 EXTERIOR INSPECTION FORM

- A. Prior to commencing work, the Contractor will schedule a meeting with the Owner's Representative or Architect, to inspect and document the condition of the building exterior conditions in both written and digital video or photographic form. Log conditions of exterior walls, building attachments, sidewalks, miscellaneous paving and landscaping using the Exterior Inspection Form attached at the end of this Section. Submit two copies of the digital files and the form signed by the Contractor and Owner's Representative to the Architect prior to the start of construction.

PART 2 PRODUCTS

2.01 ASBESTOS FREE MATERIAL

- A. Contractor shall provide a written and notarized statement on company letterhead(s) to certify and warrant that ONLY ASBESTOS FREE MATERIALS AND PRODUCTS were provided as required by the Architect in Section 01400, QUALITY CONTROL. Such statement shall be submitted with the final payment request. Final payment shall not be made until such statement is submitted. Contractor agrees that if materials containing asbestos are subsequently discovered at any future time to have been included in the construction, the Contractor shall be liable for all costs related to the redesign or modification of the construction of the project so that materials containing asbestos are removed from the facility. If construction has begun or has been completed pursuant to

SUMMARY OF WORK
SECTION 01010

a design that includes asbestos containing materials, the Contractor shall also be liable for all costs related to the abatement of such asbestos.

PART 3 PRODUCTS (Not Used)

END OF SECTION 01010

PROJECT RAIN DAY FORM

Month: _____
Project Name: _____
Project No: _____
Contractor: _____
Owner's Authorized Rep.: _____

DAY	MORNING COND./TIME	AFTERNOON COND./TIME	SUPERINTENDENT SIGNATURE	AUTH. OWNER'S REP. SIGNATURE
1				
2				
3				
4				
5				
6				
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PAYMENT APPLICATION PROCEDURES
SECTION 01027

PART I GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. The Contractor's Construction Schedule and Submittal Schedule are included in Section 01300 – SUBMITTALS

1.03 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Submit the Schedule of Values to the Owner at the earliest feasible date, but in no case later than Preconstruction Meeting. Refer to the suggested Schedule of Values format attached to this section.
 - 2. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
 - 1. Identification: Include the following project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect
 - c. Project Number
 - d. Contractor's name and address
 - e. Date of submittal
 - 2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed (see Schedule of Values format attached this section):
 - a. Generic name
 - b. Related Specification Section
 - c. Change Orders (numbers) that have affected value

PAYMENT APPLICATION PROCEDURES
SECTION 01027

- d. Dollar Value
 - e. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent
3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items:
- a. A value will be given for at least every major specification section (subsections can logically be grouped together).
 - b. A single material subcontractor (i.e. sod, window glazing) will not be required to be broken down into labor and material unless it is anticipated the materials will be stored and invoiced prior to installation.
 - c. All multiple item subcontracts or work items (i.e. concrete, roofing, painting, mechanical, electrical items, etc.) will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - d. Mobilization (move-on, bond, insurance, temporary office and sanitary service installation) shall not exceed 2 1/2% of contract price.
 - e. Each type of Roofing will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - f. Curtainwall repairs will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - g. Area Divider Repairs will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - h. Sheet Metal Flashing will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - i. Plumbing will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - j. HVAC will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - k. Electrical will be shown broken down at least in labor and material (all taxes, burden and overhead and profit included).
 - l. Logical grouping of specification subsections is permitted.
4. Round amounts off to the nearest whole dollar, the total shall equal the Contract Sum.
5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

PAYMENT APPLICATION PROCEDURES
SECTION 01027

6. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.
 - a. At the Contractors' option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
7. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the contract sum.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as reviewed by the Owner representative and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the Final Application for Payment involve additional requirements. See items G, I, J and K of this section.
- B. Payment Application Times: The period of construction work covered by each Application of Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use the County's most updated form as the form for Application for Payment. Form given at the Preconstruction Conference.
- D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.
 1. Entries shall match data on the Schedule of Values and Contractors' Construction Schedule. Use updated schedules if revisions have been made.
 2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit **five (5) original executed copies** of each Application for Payment to the Project Manager by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.

PAYMENT APPLICATION PROCEDURES
SECTION 01027

1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Project Manager.

- F. Payment will be processed once a month. Payment for item will be based on percentage completed as determined and approved by the County Project Manager or invoice for stored materials. Retainage (10%) will be held for all applications.

- G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work. Application shall also include all items listed in Part H. below.

- H. Final Payment Application: Administrative actions and submittals, which must precede or coincide with submittal of the final payment. Application for Payment includes the following:
 1. Completion of Project Close-Out requirements
 2. Completion of items specified for completion after Substantial Completion (Punch List)
 3. Contractor's Release of Lien (on Owner's form)
 4. Consent of Surety
 5. Power of Attorney
 6. Asbestos-free letter

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01027

CONTRACT MODIFICATION PROCEDURES / CHANGE ORDERS
SECTION 01035

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.03 MINOR CHANGES IN THE WORK

- A. Supplemental instructions authorizing minor changes in the work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Project Manager.

1.04 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Proposed changes in the work that will require adjustment to the Contract Sum or Contract Time will be issued by the Project Manager, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
 - 1. Proposal requests issued by the Project Manager are for information only. Do not consider them instruction either to stop work in progress, or to execute the proposed change.
 - 2. Unless otherwise indicated in the proposal request, within 7 days of receipt of the proposal request, submit to the Project Manager from the Owner's review, an estimate of cost necessary to execute the proposed change.
 - a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the work will have on the Contract Time.
 - d. Contractor and subcontractors will provide a complete detailed labor and material breakdown to justify change order request amount.
- B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions in mutual accord with the Owner Representative's findings require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

CONTRACT MODIFICATION PROCEDURES / CHANGE ORDERS
SECTION 01035

1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in Section 01631 Product Substitutions- if the proposed change in the work requires that substitution of one product or system for a product or system not specified.
5. Contractor and subcontractors will provide a complete detailed labor and material breakdown to justify change order request amounts.

1.05 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Project Manager may issue a Construction Change Directive instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.07 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Change Order Proposal Request, the Project Manager will issue a Change Order for signatures of the Owner and Contractor on County's Change Order form, as provided in the Conditions of the Contract.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01035

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Coordination and project conditions.
 - 2. Coordination with Owner Requirements
 - 3. Preconstruction meeting.
 - 4. Site mobilization meeting.
 - 5. Progress meetings.
 - 6. Pre-installation meetings.
 - 7. General Installation provisions
 - 8. Cutting and patching.
 - 9. Special procedures.
 - 10. Cleaning and protection

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

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.

- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 COORDINATION WITH OWNER REQUIREMENTS

- A. The Owner will be occupying the building during the work. All existing exits and any existing fire protection/life safety systems shall be continuously maintained and operational unless other measures are taken which provide equivalent safety per the Florida Building Code requirements. The contractor is to submit a "Construction Safety Plan" depicting how they will keep exit ways protected and in a safe condition while the buildings are occupied. Stipulate how the fresh air and exhaust fans will be kept in continued use while the buildings are occupied.
- B. Stipulate in the "Construction Safety Plan" how the contractor will keep the building(s) occupied during the roof replacement operations.
- C. Roof loading and overhead crane operations shall be scheduled as much as practicable during times the facilities are unoccupied.
- D. HVAC exhaust and fresh air equipment are not to be shut down while the buildings are occupied without Owner's prior knowledge and permission.
- E. Contractor shall consult with local governing authorities having jurisdiction regarding noise abatement requirements and construction operations, if applicable.
- F. A copy of all required city, county and state licenses that are applicable to this project shall be supplied to the Owner's representative prior to the appropriate work commencing.
- G. The Contractor shall perform any trimming, pruning or relocation of trees or significant landscape materials as needed to fulfill the requirements of work on this project. Failure to adequately protect the existing landscaping material will require replacement of these materials at no additional cost to the Owner.
- H. The Contractor and contractor personnel shall observe the following rules of conduct prescribed by the owner in regard to work on this project. They include but are not limited to:
 - 1. Workmen are not to traverse any walkway between buildings or buildings that are not included in this contract as well as new work that has been completed.
 - 2. All contractor and subcontractor vehicles are to be parked in designated areas only. This will be determined during the pre-construction meeting.
 - 3. No smoking is permitted on the project site.
 - 4. Radios, tape or CD players ("boom boxes") are not to be utilized at the site.
 - 5. No firearms or other weapons are to be brought to the site

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

6. Contractor shall coordinate project access, parking and egress of all personnel and tradesmen with the Owner and the Owner's administrative personnel.
- I. Lack of coordination as specified in this and other sections of the contract documents are in grounds for assessment of back charges and/or termination in order to remediate the situation

1.4 PRECONSTRUCTION MEETING

- A. Owner will schedule meeting after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer, Contractor and any subcontractors and suppliers the contractor may wish to include.
- C. At the Preconstruction meeting submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers
- D. Agenda:
 1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
 5. Designation of personnel representing parties in Contract, and Architect/Engineer.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout.
 7. Scheduling.
- E. Contractor shall record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

1.5 SITE MOBILIZATION MEETING

- A. Owner will schedule meeting at Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Architect/Engineer, Special Consultants, Contractor, Contractor's Superintendent, and major Subcontractors.
- C. Agenda:
 1. Use of premises by Owner and Contractor.
 2. Owner's requirements and occupancy.
 3. Construction facilities and controls provided by Owner.

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

4. Temporary utilities provided by Owner.
5. Security and housekeeping procedures.
6. Schedules.
7. Application for payment procedures.
8. Procedures for testing.
9. Procedures for maintaining record documents.

D. Contractor shall record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

1.6 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals.

B. Contractor shall make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

E. Contractor shall record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

1.7 PRE-INSTALLATION MEETINGS

A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.

B. Require attendance of parties directly affecting, or affected by, Work of specific section.

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within three days after meeting to participants, with two copies to Architect/Engineer, Owner, and those affected by decisions made.

PART 2 PRODUCTS – (Not Used)

PART 3 EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to Project Manager for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect/Project Manager for final decision.

3.2 CUTTING AND PATCHING

- A. Employ skilled and experienced personnel to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material to full thickness of penetrated element.
- J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- K. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

3.3 SPECIAL PROCEDURES

- A. Materials: As specified in product sections; match existing with new products for patching and extending work.
- B. Employ skilled and experienced personnel to perform alteration work.
- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to permit installation of new work and finishes.
- G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original or specified condition.
- I. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- J. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect/Engineer for review.
- K. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition; to Architect/Engineer for review. Request instructions from Architect/Engineer.
- L. Trim existing doors to clear new floor finish. Refinish trim to original or specified condition.
- M. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- N. Finish surfaces as specified in individual product sections.

PROJECT MANAGEMENT & COORDINATION
SECTION 01040

3.4 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as directed by the Project Manager and as frequently as necessary to ensure its integrity and safety through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where the applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessively high or low temperatures
 - 3. Excessively high or low humidity
 - 4. Air contamination or pollution
 - 5. Water
 - 6. Solvents
 - 7. Chemicals
 - 8. Soiling, staining and corrosion
 - 9. Rodent and insect infestation
 - 10. Combustion
 - 11. Destructive testing
 - 12. Misalignment
 - 13. Excessive weathering
 - 14. Unprotected storage
 - 15. Improper shipping or handling
 - 16. Theft
 - 17. Vandalism

END OF SECTION 01040

CUTTING AND PATCHING
SECTION 01045

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 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.

1.03 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.

CUTTING AND PATCHING SECTION 01045

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.

1.04 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. Foundation construction
 - b. Bearing and retaining walls
 - c. Structural concrete
 - d. Structural steel
 - e. Lintels
 - f. Timber and primary wood framing
 - g. Structural decking
 - h. Miscellaneous structural metals
 - i. Stair systems
 - j. Exterior curtain wall construction
 - k. Equipment supports
 - l. Piping, ductwork, vessels and equipment
 - m. Structural systems of special construction in Division 13.
- 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. Refer to Divisions 15 and 16 regarding Fire Rated Penetrations.
 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
 - l. Special construction specified by Division-13 Sections

CUTTING AND PATCHING

SECTION 01045

- 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. Processed concrete finishes
 - b. Preformed metal panels
 - c. Window wall system
 - d. Stucco and ornamental plaster
 - e. Acoustical ceilings
 - f. Carpeting
 - g. Wall covering
 - h. HVAC enclosures, cabinets or covers
 - i. Roofing systems

PART 2 PRODUCTS

2.01 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 unless otherwise indicated by Architect/Owner. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.01 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 all 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.

3.02 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 and 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.

3.03 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 carborundum saw or diamond core drill.
 - 4. Comply with requirements of applicable Sections of Division-2 where cutting and patching required excavating and backfilling.
 - 5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required 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.

CUTTING AND PATCHING
SECTION 01045

- 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 smooth painted surfaces, extend final coat over entire unbroken surfaces containing the patch, after the patched area has received primer and second coat.

3.04 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 materials to their original condition.

END OF SECTION 01045

REFERENCE STANDARDS AND DEFINITIONS
SECTION 01095

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 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 the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as shown, noted, scheduled and specified are used, it is to help the reader locate the reference; no limitation on location is intended.
- C. Directed: Terms such as directed, requested, authorized, selected, accepted, required, and permitted mean directed by the Project Manager, requested by the Architect/Project Manager and similar phrases.
- D. Approved: This term approved means accepted, where 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 is used to mean supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. Install: The term install is used to describe operations at 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 an entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier for performance of 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. The term experienced, when used with the term Installer, means having a

REFERENCE STANDARDS AND DEFINITIONS

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minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

2. Trades: Use of titles 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 trades persons of the corresponding generic name.

- J. Project Site is the space available to the Contractor for performance of 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 Laboratories: A testing laboratory is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.03 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16 Division format and MASTER FORMAT numbering system.

- B. Specification Content: This Specification uses certain conventions in the use 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 the abbreviated type. Words and meaning shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the context of the Contract Documents so indicates.

 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, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
 - a. The words, shall be shall be included by inference wherever a colon (:) is used within a sentence or phrase.

REFERENCE STANDARDS AND DEFINITIONS

SECTION 01095

1.04 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 extended reference. Such standards are made part of the Contract Documents by reference.
1. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. **Publication Dates:** Comply with the technical standards that were in effect when the documents were approved by the local authority having jurisdiction, which shall be used throughout this project.
- C. **Conflicting Requirements:** Where compliances with two or more standards are specified, and the standards may establish different or conflicting requirements for minimum quantities or quality levels. Refer requirements that are different, but apparently equal, and uncertainties to the Architect for a decision before proceeding.
1. **Minimum Quantity or Quality Levels:** The quantity of 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. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for the context of the requirements. Refer uncertainties to the Architect/Owner 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 that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed for performance of a required construction activity. The Contractor shall obtain copies directly from the publication source or any other authorized source.
 2. Obtain copies of referenced standards listed in individual specification sections. Maintain copy at job site during progress of the specific work.
- 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. See Trade Reference List at the end of this Section refer to the Encyclopedia of Associations, published by Gale Research Co., available in most libraries.

REFERENCE STANDARDS AND DEFINITIONS
SECTION 01095

1.05 GOVERNING REGULATIONS/AUTHORITIES

- A. The Architect has contacted authorities having jurisdiction where necessary to obtain information necessary the preparation of Contract Documents. Contact authorities having jurisdiction directly for information and decisions having a bearing on the work.

1.06 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 regulation bearing upon performance of the Work.

1.07 TRADE REFERENCES

Acronyms for abbreviations used in the Specifications or other Contract Documents mean the recognized name of the trade association, standards generating organization, authority that have jurisdiction or other entity applicable to the context of the text provision.

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturer's Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACIL	American Council of Independent Laboratories
ACPA	American Concrete Pipe Association
ADC	Air Diffusion Council
AGA	American Gas Association
AHA	American Hardboard Association
AI	Asphalt Institute
AIHA	American Industrial Hygiene Association

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AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ASA	Acoustical Society of America
ASC	Adhesive and Sealant Council
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineers
ASTM	American Society of Testing of Materials
AWI	Architectural Woodwork Institute
AWPB	American Wood Preservers Bureau
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders <input type="checkbox"/> Manufacturers Association
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
DHI	Door and Hardware Institute
DLPA	Decorative Laminate Products Association
EIMA	Exterior Insulation Manufacturers Association

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FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineering and Research
GA	Gypsum Association
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IESNA	Illuminating Engineering Society of North America
MBMA	Metal Building Manufacturer's Association
ML/SFA	Metal Lath/Steel Framing Association
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NAAMM	National Association of Architectural Metal Manufacturers
NAPA	National Asphalt Pavement Association
NAPF	National Association of Plastic Fabricators (Now DLPA)
NBHA	National Builder's Hardware Association (Now DHI)
NCMA	National Concrete Masonry Association
NEC	National Electric Code
NECA	National Electric Contractors Association
NEII	National Elevator Industry, Inc.
NFPA	National Fire Protection Association
NHLA	National Hardwood Lumber Association
NPA	National Particle board Association
NPCA	National Paint and Coatings Association
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NWMA	National Woodwork Manufacturers Association (Now NWWDA)

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NWWDA	National Wood Window and Door Association (Formerly NWMA)
PDI	Plumbing and Drainage Institute
RFCI	Resilient Floor Covering Institute
RMA	Rubber Manufacturers Association
SDI	Steel Deck Institute
S.D.I.	Steel Door Institute
SGCC	Safety Glazing Certification Council
SHLMA	Southern Hardwood Lumber Manufacturers Association (Now HMA)
SIGMA	Sealed Insulating Glass Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SJI	Steel Joist Institute
SPRI	Single Ply Roofing Institute
SSPC	Steel Structures Painting Council
SWI	Steel Window Institute
TCA	Tile Council of America
UL	Underwriters Laboratories
WCMA	Wall Covering Manufacturers Association
WRI	Wire Reinforcement Institute
WSFI	Wood and Synthetic Flooring Institute

1.08 FEDERAL GOVERNMENT AGENCIES

- A. Names and titles of federal government standard or Specification producing agencies are frequently abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard of Specification producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up-to-date as of the date of the Contract Documents.

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CE Corps of Engineers
(US Department of the Army)
Chief of Engineers - Referral
Washington, DC 20314 (202) 272-0660

CFR Code of Federal Regulations
Available from the Government Printing Office
North Capitol St. Between G and H Street, NW
Washington, DC 20402 (202) 783-3238

(MATERIAL IS USUALLY FIRST PUBLISHED IN THE FEDERAL REGISTER)

CPSC Consumer Product Safety Commission
5401 Westbard Avenue
Washington, DC 20816 (800) 638-2772

CS Commercial Standard
(US Department of Commerce)
Government Printing Office
Washington, DC 20402 (202) 377-2000

DOC Department of Commerce
14th Street and Constitution Ave., NW
Washington, DC 20230 (202) 377-2000

DOT Department of Transportation
400 Seventh St., SW
Washington, DC 20590 (202) 426-4000

EPA Environmental Protection Agency
401 M. St., SW
Washington, DC 20460 (202) 382-2090

FAA Federal Aviation Administration
(U.S. Department of Transportation)
800 Independence Avenue SW
Washington, DC 20590 (202) 366-4000

FCC Federal Communications Commission
1919 M. Street NW
Washington, DC 20554 (202) 632-7000

NBS National Bureau of Standards
(U.S. Department of Commerce)
Gaithersburg, MD 20899 (301) 921-1000

SUBMITTAL PROCEDURES
SECTION 01300

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:
 - 1. Contractor's Construction Schedule
 - 2. Submittal Schedule
 - 3. Daily Construction Reports
 - 4. Shop Drawings
 - 5. Product Data
 - 6. Samples
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Permits
 - 2. Applications for Payment
 - 3. Performance and Payment Bonds
 - 4. Insurance Certificates
 - 5. List of Subcontractors with start and finish dates (update as necessary)
 - 6. Schedule of Values
 - 7. Construction Schedule
- C. The Schedule of Values submittal is included in Section 01027 -Applications for Payment.
- D. Inspection and test reports are included in Division 1 - Quality Control Services.

1.03 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

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- a. The Project Manager reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
- a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Project Manager will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a. Project name
 - b. Date
 - c. Name and address of Architect
 - d. Name and address of Contractor
 - e. Name and address of subcontractor
 - f. Name and address of supplier
 - g. Name of manufacturer
 - h. Number and title of appropriate Specification Section
 - i. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Project Manager using transmittal form as provided by the Project Manager. Submittals received from sources other than the Contractor will be returned without action.
1. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitation. Include Contractor's certification that information complies with Contract Document requirements.

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- 2. Transmittal Form: As provided by the Project Manager
- D. Contractor shall be responsible for cost of re-review of rejected submittals, shop drawing, etc. Costs for re-review shall be reimbursed to the County by deducting the cost from the Contractors monthly progress payments. Costs to be determined by applying the consultants standard billing rates, plus 10% handling by the County.
- E. Substitution request to specified products will be made within 30 days of Notice to Proceed. After the 30 day period, no requests for substitutions from the Contractor will be considered.
 - 1. Substitution submitted within the first 30 days will have product data from specified and requested substitute submitted together and demonstrate better quality, cost savings if of equal quality, or show benefit to the County for accepting the substitute.
- F. Once submittals are approved or approved as noted, they will be scanned and converted to PDF documents with OCR (optical character recognition) and given to the owner.

1.04 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. See General Conditions: Article 18

1.05 SUBMITTAL LOG

- A. After development and acceptance of the Contractor's construction schedule, prepare a complete log of submittals.
 - 1. Coordinate submittals log with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
 - 2. Prepare the log in chronological order; include all submittals required. Provide the following information:
 - a. Scheduled date for the first submittal
 - b. Related Section number
 - c. Submittal category
 - d. Name of subcontractor
 - e. Description of the part of the work covered
 - f. Scheduled date for resubmittal
 - g. Scheduled date the Architect's final release or approval.
 - 3. All submittals must be received within the first 25% of contract time.
- B. Distribution: Following response to initial submittal, print and distribute copies to the Project Manager, subcontractors, and other parties required to comply with submittal

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dates indicated. Post copies in the project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- C. Log Updating: Revise the log after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.06 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Project Manager at weekly intervals:
1. List of subcontractors at the site
 2. Approximate count of personnel at the site
 3. High and low temperatures, general weather conditions
 4. Accidents and unusual events
 5. Meetings and significant decisions
 6. Stoppages, delays, shortages, losses
 7. Meter readings and similar recordings
 8. Emergency procedures
 9. Orders and requests of governing authorities
 10. Change Orders received, implemented
 11. Services connected, disconnected
 12. Equipment or system tests and start-ups
 13. Partial completions, occupancies
 14. Substantial Completions authorized

1.07 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered a Shop Drawings and will be rejected.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
1. All required dimensions
 2. Identification of products and materials included
 3. Compliance with specified standards

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4. Notation of coordination requirements
 5. Notation of dimensions established by field measurement
 6. Sheet Size: Except for templates, patterns and similar full-size Drawings on sheets at least 8 1/2" x 11" but no larger than 24" x 36".
 7. Initial Submittal: Submit one correctable translucent reproducible print and one blue-or black-line print for the Project Manager's review; the reproducible print will be returned.
 8. Initial Submittal: Submit 2 blue-or black-line prints for the Architect's review; one will be returned.
 9. Final Submittal: Submit 5 blue-or black-line prints; submit 7 prints where required for maintenance manuals. 3 prints will be retained; the remainder will be returned.
 10. Final Submittal: Submit 3 blue-or black-line prints; submit 5 prints where required for maintenance manuals. 2 prints will be retained; the remainder will be returned.
 - a. One of the prints returned shall be marked-up and maintained as a Record Documents.
 11. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connections with construction.
- C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
1. Preparation of coordination Drawings is specified in section Project Coordination and may include components previously shown in detail on Shop Drawings or Product Data.
 2. Submit coordination Drawings for integration of different construction elements. Show sequence and relationships of separate components to avoid any conflict including conflicts in use of space.
 3. Contractor is not entitled to additional payments due to lack of compliance with this Section.

1.08 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawing".
1. Mark each copy to show applicable choices and options. When printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the

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following information:

- a. Manufacturer's printed recommendations
 - b. Compliance with recognized trade association standards
 - c. Compliance with recognized testing agency standards
 - d. Application of testing agency labels and seals
 - e. Notation of dimensions verified by field measurement
 - f. Notation of coordination requirements
 - g. Manufacturers local representative and phone number.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.
 4. Submittals: **Submit six (6) copies** of each required submittal. The Project Manager will return two (2) sets to the Contractor marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the Installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.09 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of materials, color range sets, and swatches showing color, texture and pattern.
 1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's/Owner's Sample. Include the following:
 - a. Generic description of the Sample
 - b. Sample source
 - c. Product name or name of manufacturer
 - d. Compliance with recognized standards
 - e. Availability and delivery time
 2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of

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these characteristics between the final submittal and the actual component as delivered and installed.

- a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
- a. Preliminary submittals will be reviewed and returned with the Architect's/Owner's mark indicating selection and other action.
4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.
5. Maintain sets of Samples, as returned, at the project site, for quality comparisons throughout the course of construction.
- a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field Samples specified in individual sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the work will be judged.
 - a. Comply with submittal requirements. Process transmittal forms to provide a record of activity.

1.10 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect/Project Manager will review each submittal, mark to indicate action taken, and return promptly.
 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Architect/Project Manager will stamp each submittal with a

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uniform, self-explanatory action stamp. The stamp will be appropriately marked, similarly as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked “**No Exceptions Taken**” - **APP**, that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
2. Final-But-Restricted Release: When submittals are marked “**Make Corrections As Noted**” – **A/C**, that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Returned for Resubmittal: When submittal is marked “**Revise and Resubmit**” – **R/R**, do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked “**Revise and Resubmit**” to be used at the Project site, or elsewhere where work is in progress.
4. Rejected: When submittal is marked “**Rejected**” - **REJ** it does not comply with requirements of the Contract Documents. Submittal must be discarded and entirely new submittal shall be forwarded to the Project Manager without delay.

PART 2 PRODUCTS (Not Applicable)

PART 3 Execution (Not Applicable)

END OF SECTION 01300

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.
- B. Section 06100 – Rough Carpentry
- C. Section 07410 – Standing Seam Metal Roofing
- D. Section 07530 – Single-ply Thermoplastic Roofing
- E. Section 07620 – Sheet Metal Flashing and Trim
- F. Section 07900 – Joint Protection
- G. Section 08446 – Aluminum Curtainwall Repairs
- H. Section 16670 – Lightning Protection

1.02 SUMMARY

- A. Furnish, install and maintain any and all construction aids and equipment necessary to perform the work of this project as determined by the Contractor and their sub-contractors.
- B. Construction aids may include scaffolds, staging, ladders, stairs, ramps, runways, such facilities and equipment. Refer to respective sections for particular requirements for each trade.
- C. Standards: Materials and equipment must comply with all Federal, State and local codes and regulations. Contractor shall obtain required permits from local authority having jurisdiction, and pay any associated fees.
- D. Provide and maintain a protected and defined path of access and emergency egress for the public and building staff throughout the construction period.
- E. Provide adequate temporary measures to protect the existing building structure, materials and finishes for the duration of the construction period.
 - 1. Minimum protective measures for the existing roof systems to remain have been defined within the project details, but the contractor may take any additional protective measures they deem necessary.
 - 2. The prime contractor is responsible for the protection of the existing building from damage by their staff and all their sub-contractors, a pro-active approach to protection by the prime contractor is encouraged.

- 3. Repair and/or replacement of all damaged materials and finishes is the responsibility of the contractor.
- F. The installation and use of any construction aid which imposes any additional load on the building structure, such as scaffolding; must be reviewed and approved by the Owner prior to its use or installation.
- G. Remove all construction aids upon completion of work and restore all existing surfaces to "pre-project" conditions.

1.03 SUBMITTALS

- A. Provide a schedule of constructions aids to be utilized for this project for the Owner's review, include adequate information to clearly illustrate the material or equipment being used, the location of use and the duration of use.
- B. For any construction aid which imposes any additional load on the building structure, such as scaffolding; provide shop drawings showing layout, tiebacks, type of anchors, anticipated imposed loads, etc., for review and approval by the Owner and their consultants. Shop drawings are to be created by a Florida licensed engineer and include their stamp or embossed seal.
 - 1. Due to the complexity of this structure in the area of work, the design of scaffolding or any other imposed loads must be coordinated with the structural engineer of record for the original construction, which is Walter P. Moore & Associates, Inc., 300 South Orange Avenue, Suite 1150, Orlando, Florida 32801; contact Javier Balma, Ph.D., P.E. at 407-418-2218 or jbalma@walterpmoore.com.
 - 2. The Owner will retain and compensate Walter P. Moore & Associates, Inc. to analyze, review and coordinate any temporary loads to be imposed on the structure during the work of this project. Their involvement will begin only after the contract has been awarded, and will be limited to review of submissions by the specialty engineer retained by the contractor to evaluate the effect of the temporary loads on the existing structure, and site observations to confirm that construction aids conform to the approved shop drawings.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.
- B. Provide construction aids and equipment required by personnel and to facilitate execution of work; scaffolds, staging, ladders, stairs, ramps, runways, such facilities and equipment. Refer to respective sections for particular requirements for each trade.

- C. Provide any miscellaneous materials needed for a full and complete installation of any construction aid and/or protective measure.
- D. Maintain all facilities and equipment in a first-class condition.

2.02 PROTECTIVE MATERIALS

- A. Plywood for protection board: 5/8" minimum nominal thickness, square edge, CDX rated for limited exterior exposure.
- B. Insulation board for protection: 1" minimum thickness, square edge, type V expanded polystyrene, 100 psi minimum compressive strength, 0.3% maximum water absorption. Rigid insulation board with equivalent properties may be utilized with Owner approval.
- C. Fasteners: Fastener size and attachment pattern to be as defined by the project details, or as necessary by specific project conditions. Fasteners to be treated or coated for corrosion resistance in compliance with FM 4470.

PART 3 EXECUTION

3.01 PREPARATION

- A. Review site conditions and factors, which affect construction procedures and construction aids, including adjacent structures and site condition, which may be affected by execution of work. Discuss conditions with Consultant and Owner's representative.

3.02 GENERAL

- A. Comply with applicable safety requirements, and all requirements within the appropriate technical sections.
- B. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of Owner.
- C. Use of construction aids at specific times at specific areas of the building must be coordinated with the Owner and the show schedule for the facility, the show schedule may dictate the relocation and/or disassembly of construction aids if not properly coordinated.

3.03 SCAFFOLDING

- A. Install to comply with applicable safety requirements, and according to the Owner approved shop drawings, any variance in the field must be reviewed and approved by the Owner prior to use of the scaffolding as installed.
 - 1. Provide tiebacks to building only as shown on the approved shop drawings.
 - 2. Provide a minimum 4" high toe boards at the outside perimeter of all planked levels.
 - 3. All planks are to be wired to scaffolding.
 - 4. The use of tiebacks at window opening will not be permitted.

3.04 REMOVAL

- A. Completely remove temporary materials, equipment and services when construction needs can be met by use of permanent construction, or at the completion of project.
- B. Clean, repair damage caused by installation or by use of temporary construction aids. Remove any foundations and underground installations for construction aids.
- C. Grade areas of site affected by temporary installations to required elevations and slopes, restore surfaces and materials, clean the area.
- D. Restore existing facilities used for temporary purposes to original condition, clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01520

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section 01300 -Submittals.
- C. Standards: Refer to Section 01095 - Reference Standards and Definitions for applicability of industry standards to products specified.
- D. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section 01300 - Product Substitutions.

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents such as "specialties", "systems", "structure", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the term "material", "equipment", "system" and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature that is current as of the date of the Contract Documents.
 - b. "Foreign Products", as distinguished from "domestic products", are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens nor living within the United States and its possessions.
 - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.04 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Project Manager. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
 1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
 - a. Related Specification Section Number
 - b. Generic name used in Contract Documents
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address
 - e. Supplier's name and address
 - f. Installer's name and address
 - g. Projected delivery date, or time span of delivery period.
 2. Initial Submittal: Within 30 days after date of commencement of the work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 - a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
 3. Complete Scheduled: Within 45 days after date of commencement of the Work, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 4. Architect's Action: The Architect will respond in writing to the Contractor within 2 weeks of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers on products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:
 - a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.05 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be

compatible with products previously selected, even if previously selected products were also options.

- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data.
 - a. Name of product and manufacturer
 - b. Model and serial number
 - c. Capacity
 - d. Speed
 - e. Ratings
 - f. Additional pertinent information

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deteriorating and loss, including theft.
1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate in prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situation on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous project experience. Procedures governing product selection include the following:
1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
 - a. Where products or manufacturers are specified by name, accompanied by the term "or equal" or "or approved equal" comply with the Contract Document provisions concerning 'substitutions to obtain approval for use of an unnamed product.
 2. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of those products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 3. Descriptive Specification Requirements: Where Specifications describe products or assemblies, listing exact characteristics required, with or without use of a brand or trade names, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated.
 - a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
 5. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

MATERIALS AND EQUIPMENT
SECTION 01600

6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning 'substitutions' for selection of a matching product in another product category, or for noncompliance with specified requirements.
7. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, pattern, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.
8. Asbestos free materials: No products containing asbestos shall be used for any part of the work for this project. Provide verification.

PART 3 EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each project securely in place, accurately located and aligned with other work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01600

SUBSTITUTION PROCEDURES
SECTION 01631

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling request for substitutions made after award of the Contract.
- B. The Contractor's Installation Schedule and the Schedule of Submittals are included under Section 01300 - Submittals.
- C. Standards: Refer to Section 01095 – Reference Standards and Definitions for applicability of industry standards to products specified.

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of installation required by Contract Documents proposed by the Contractor during bidding and after award of the Contract are considered requests for "substitutions". The following are not considered substitutions:
 - 1. Only substitutions presented by Bidders during the bidding period, and included by addendum into the bidding documents prior to bid opening and award of Contract, are considered as included in the Contract Documents, and are not subject to requirements specified in this Section for substitutions.
 - 2. Revisions to Contract Documents requested by the Owner or Architect.
 - 3. Specified options of products and installation methods included in Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

- A. Substitution Request Submittal: After the bid is awarded, a request for substitution will be considered if received within thirty (30) days after commencement of the Work, as long as this time allowance will not impact the construction schedule.

SUBSTITUTION PROCEDURES SECTION 01631

1. Submit **three (3) copies** of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitution, and the following information, as appropriate:
 - a. Product Data, including Drawings, and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
 - e. A statement indicating the substitution's effect on the Contractor's construction schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. Certification by the Contractor that the Substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
3. Architect's Action: Within two weeks of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request if needed. Within two (2) weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Decision on the use of a product substitution or its rejection by the Architect is considered final. Acceptance will be in the form of a Change Order.

SUBSTITUTION PROCEDURES
SECTION 01631

PART 2 PRODUCTS

2.01 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise request will be returned without action except to record noncompliance with these requirements.
1. Extensive revisions to Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of Contract Documents.
 3. The request is timely, fully documented and properly submitted.
 4. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the work promptly or coordinate activities properly.
 5. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 6. A substantial advantage is offered to the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar consideration.
 7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
 8. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
 9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.
- B. The Contractor's submittal and Project Manager's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the

SUBSTITUTION PROCEDURES
SECTION 01631

Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

- C. Substitution request constitutes a representation that the Contractor:
1. Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product.
 2. Will provide the same warranty for substitution as for specified product.
 3. Will coordinate installation and make other changes which may be required for work to be complete in all respects.
 4. Waives claims for additional costs which may subsequently become apparent. All costs associated with the substitution will be paid by the Contractor regardless of approvals given, and regardless of subsequent difficulties experienced as a result of substitutions.

END OF SECTION 01631

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for project close-out, including but not limited to:
1. Inspection procedures
 2. Project record document submittal. (substantial completion requirements)
 3. Operating and Maintenance Manual Submittal (substantial completion requirements).
 4. Submittal of warranties (substantial completion requirement).
 5. Final cleaning
- B. Close-out requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.
- C. Final Payment to be made when the County has received all required close-out documents.

1.03 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 coincided 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. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

- B. Inspection Procedures: On receipt of a request for inspection, the Project Manager will either proceed with inspection or advise the Contractor of unfilled requirements. The Project Manager 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. Results of the completed inspection will form the basis of requirements for final acceptance.
 2. Should the project fail to meet the standards required for Substantial Completion as defined in the documents, the Contractor will pay the expense of a second inspection by the Architect/Consultants and the Owner. Cost will be deducted from the Contractor's retainage.

1.04 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 complete 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 or Owner'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 Project Manager.
 4. Submit final meter readings for utilities, a measured record of stored fuel and similar data as of the date of Substantial Completion, or when the Owner took possession of the responsibility for corresponding elements of the Work.
 5. Submit consent of surety to final payment.
 6. Submit a final liquidated damages settlement statement
 7. 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 certification 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.

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

1.05 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. Provide for project photographs if deemed necessary by Owner's representative.
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, and print, suitable titles, dates and other identification on the cover of each set.
 5. Provide **three (3)** additional sets of black line drawing sets of As-Builts Drawings. (color copies)
- 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 Project Data.
1. Upon completion of the Work, submit **two (2)** copies of Record Specifications to the Architect for the Owner's records.
- D. Record Project Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variation 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 **one (1) complete set** of Record Product Data in the three ring binder (indexed) to the Architect for the

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

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 record and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Project Manager for the Owner's records.
- G. Maintenance Manuals: Organize operating and maintenance data into **five (5) suitable sets** of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
1. Emergency instructions
 2. Spare parts list
 3. Copies of warranties
 4. Wiring diagrams
 5. Recommended turn-around cycles
 6. Inspection procedures
 7. Shop Drawings and Product Data
 8. Fixture lamping schedule

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 CLOSE-OUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that required regular maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. All items shall be provided or competed prior to Certificate of Substantial Completion being issued by the Owner. Include a detailed review of the following items:
1. Maintenance manuals
 2. Record documents
 3. Spare parts and materials

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

4. Tools
5. Lubricants
6. Fuels
7. Identification systems
8. Control sequences
9. Hazards
10. Cleaning
11. Warranties and bonds
12. Maintenance agreements and similar continuing commitments
13. On-site instructions to County maintenance personnel on major systems operations such as HVAC as per technical specifications.

B. As part of instruction for operating equipment, demonstrate the following procedures, prior to the Owner issuing Certificate of Substantial Completion:

1. Start-up
2. Shutdown
3. Emergency operations
4. Noise and vibration adjustments
5. Safety procedures
6. Economy and efficiency adjustments

3.02 PROJECT CLOSE-OUT MANUALS AT SUBSTANTIAL COMPLETION

- A. Submit Project Close-out Manuals prior to issuance of final application for payment. Provide **three (3) copies**.
- B. Bind in commercial quality 8 ½" x 11" three ring binder, indexed with hardback, cleanable, plastic covers.
- C. Label cover of each binder with typed title PROJECT CLOSE-OUT MANUAL, with title of project; name, address, and telephone number of Contractor and name of responsible Principal.
- D. Provide table of contents: Neatly typed, in the following sequence:
 1. Final Certificate of Occupancy
 2. Warranty Service Subcontractors Identification List
 3. Final Lien Waivers and Releases
 4. Warranties and Guarantees
 5. Systems Operations and Maintenance Instruction
 6. Manufacturer's Certificates and Certifications
 7. Maintenance Service Contracts
 8. Spare Parts Inventory List
 9. Special Systems Operating Permits or Approvals
 10. Asbestos free materials notarized statement

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

- E. Provide all documents required by each specification section listed in the Project Manual. List the individual documents by section in sequence indicated in the Table of Contents of the Project Manual.
- F. Identify each document listed in the Table of Contents with the number and title of the specification section in which specified, and the name of the product or work item.
- G. Separate each section with index to sheets that are keyed to the Table of Contents listing.
- H. Warranty Service Subcontractors List shall identify subcontractor supplier, and manufacturer for each warranty with name, address and emergency telephone number.
- I. Electronic Close-out DVD: At the completion of the project, submit one copy of a DVD with entire project close out information below in PDF format. All letter, legal and brochure size sheets shall be portrait and the As-built drawings will be landscape. All fonts will be Arial. All items will be in PDF with OCR (Optical Character Recognition). This will enable a search engine to identify words on the scanned documents.
 - 1. Contacts: Set up a separate PDF for the contacts. No bookmarks are needed for this section.
 - 2. As-Builts: All as-built drawings will be landscape.
 - 3. Submittals: All technical submittal items (approved and approved as noted) will be provided and sorted by the 16 standard divisions. Bookmarks will be needed for the appropriate divisions.
 - 4. Operations and Maintenance Manual: Specify the division name only in the bookmarks (1-16). Please note that all items will be in PDF with OCR (Optical Character Recognition). This will enable a search engine to identify works on the scanned documents.
 - 5. Permitting: This should include the Certificate of Occupancy and any other document that the Project Manager may include pertaining to the permitting for the project.

3.03 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

PROJECT CLOSEOUT REQUIREMENTS
SECTION 01700

Certification of Substantial Completion.

- a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finished to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. 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. Remove waste and surplus materials from the site in an appropriate manner.
- C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
- D. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction.
- E. 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 01700

PROJECT WARRANTIES AND BONDS
SECTION 01740

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contractor Documents, including manufacturer's standard warranties on products and special warranties.
1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 2. General close-out requirements are included in Section 01700 - Project Close-Out Requirements.
 3. Specific requirements for warranties for the work and products and installations that are specified to be warranted are included in the individual Sections of Division 2 through 16.
 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.03 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- B. Reinstatement of Warranty. When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents.

PROJECT WARRANTIES AND BONDS
SECTION 01740

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligation, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligation, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept work for the Project where a special warranty, certification, or similar commitment is required on such work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.04 WARRANTY PERIOD

- A. The Contractor shall participate with the County and the Architect's representative, at the beginning of the tenth month of the warranty period, in conducting an on-site review and evaluation of all items of equipment, materials and workmanship covered by the warranties and guarantees. Contractor shall act promptly and without cost to the County to correct all defects, problems, or deficiencies determined as such by the Architect/Owner during on the site review.
- B. All warranties and guarantees shall commence on the date of Substantial Completion except for items which are determined by the County to be incomplete or a non-comply status at the time of Substantial Completion. The coverage commencement date for warranties and guarantees of such work shall be the date of the County's acceptance of that work.
- C. Warranty period shall be manufacturer's standard for product specified except where specific warranty periods are specified in individual sections. But in no case less than one year.

1.05 SUBMITTALS

- A. Submit written warranties to the Owner prior to the date certified for Substantial Completion. If the Architect's Certificate of substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the work, submit written warranties upon request of the Project Manager.
 - 1. When a designated portion of the work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Project Manager within fifteen days of completion of that designated portion of the work.

PROJECT WARRANTIES AND BONDS
SECTION 01740

- B. Special Warranties: When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepared a written document that contains appropriate terms and identification, ready for executing by the required parties. Submit a draft to the Architect for approval prior to final execution.
1. Refer to individual Sections of Division 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.
- C. Form of Submittal: At Final Completion compile **two (2) copies** of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Submittal Binders: Bind **three (3) sets** of warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 1/2" by 11" paper.
1. Provide heavy paper dividers with Celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.
 3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01740

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Existing Project and Site Conditions observed by A/R/C Associates.
 - 2. Bidder Responsibility to verify existing conditions.
 - 3. Internet link to field investigation photographs by A/R/C Associates.

- B. Related Sections:
 - 1. Section 01010 – Summary of Work

1.2 EXISTING PROJECT / SITE CONDITIONS

- A. Key Plan: The Roof Area numbers are indicated in the Specifications and on the Drawings. The Key Plan also indicates assumed deck types as a reference only and is attached at the end of this section.

- B. Field Investigation: A field investigation was conducted by A/R/C Associates, Incorporated on **October 10, 2014** during which time the exposed conditions were observed. Limited existing construction record drawings and specifications were available for A/R/C to verify. The details of the project indicated and existing conditions are based on typical construction practices. A/R/C offers no assurance that all varying conditions have been discovered, or that any Owner furnished information is completely accurate. It shall be the responsibility of each bidder to make additional inspections as they may judge to be a necessity.
 - 1. Our office also took numerous photographs of the various conditions for reference during our design process, those are also being made accessible through a website, the link for which is:

<https://app.box.com/s/qlmub3t5y9p9x7x2nbsq>

- C. Verification of Dimensions: The approximate dimensions shown for each roof area are the result of reconstruction of the building design from field measurements taken by A/R/C Associates. This information is given to assist prospective Bidders in establishing the approximate scope of the project. As a prerequisite for bidding the project, however, all dimensions shall be field verified by each Bidder so that the dimensions and areas utilized in bidding the project will be confirmed or corrected by the Bidder.

**EXISTING CONDITION ASSESSMENT
SECTION 02010**

- D. Condition of Structure:
1. The Owner assumes no responsibility for actual condition of the structure.
 2. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practicable. However, variations may occur due to the Owner's ongoing operations.
 3. Prior to bidding, inspect and verify visible existing conditions of Project, including elements subject to damage or to movement during reroofing.
 - a. Conflicts and problems shall be reported to the Architect for resolution prior to bidding.
 - b. Failure to report these conflicts places the responsibility on the Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
 4. During construction, inspect conditions affecting installation of Products, or performance of work.
 - a. Report unsatisfactory or questionable conditions to Architect in writing; do not proceed with work until Architect has provided further instructions.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolition of designated roofing / siding and removal of materials from site.
- B. Related Sections:
 - 1. Division 1 - General Requirements

1.2 QUALIFICATIONS

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

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of roofing, safety of adjacent structures, dust control and disposal.
- B. Notify affected utility companies before starting work and comply with their requirements.
- C. Do not close or obstruct roadways, sidewalks, and hydrants without permits.
- D. Conform to applicable regulatory procedures when hazardous or contaminated materials are present

1.4 SCHEDULING

- A. Schedule work under the provisions of Division 1.
- B. Schedule Work to coincide with new re-roofing work.
- C. Describe demolition removal procedures and schedule.

1.5 PROJECT CONDITIONS

- A. Existing Conditions:
 - 1. Report conflicts or problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices.
- B. Protect existing landscaping materials, appurtenances, structures and adjacent roofs which are not to be demolished.

3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures and occupants.
- B. Cease operations immediately if adjacent structures appear to be in danger. Notify Architect. Do not resume operations until directed.
- C. Conduct operations with minimum interference to public or private accesses. Maintain egress and access at all times.

3.3 DEMOLITION

- A. Remove demolished materials from site.
- B. Do not burn or bury materials on site. Leave site in clean condition.
- C. Remove temporary work.
- D. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect in accordance with requirements of Division 1.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Miscellaneous framing.
 - 2. Nailers and blocking,
 - 3. Field fabricated expansion joint curbs and curb extensions,
 - 4. Preservative treatment of wood where indicated.

- B. Related Sections:
 - 1. Section 07536 – Preparation for Re-roofing
 - 2. Section 07410 – Standing Seam Metal Roofing
 - 3. Section 07620 – Sheet Metal Flashing and Trim

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A208.1 - Mat-Formed Wood Particleboard.

- B. American Wood-Preservers' Association:
 - 1. AWP Standard U1, UC 1-4 - All Timber Products - Preservative Treatment by Pressure Process.

- C. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

- D. National Fire Protection Association:
 - 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

- E. Southern Pine Inspection Bureau:
 - 1. SPIB - Standard Grading Rules for Southern Pine Lumber.

- F. Underwriters Laboratories Inc.:
 - 1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

- G. U. S Department of Commerce National Institute of Standards and Technology:
 - 1. DOC PS 1 - Construction and Industrial Plywood.
 - 2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
 - 3. DOC PS 20 - American Softwood Lumber Standard.

1.3 SUBMITTALS

- A. Section 01300 - Submittal Procedures
- B. Product Data: Submit technical data on
 - 1. Wood
 - 2. Fasteners and Anchors
 - 3. Wood preservative treatment materials and application instructions.
 - 4. MSDS of treatment materials.
- C. Samples:
 - 1. Fastener types : Two (2) of each type
 - 2. Material Samples, if requested by the Architect.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. Lumber Grading Agency: Certified by DOC PS 20.
 - 2. Lumber: DOC PS 20.
- B. Apply label from agency approved by authority having jurisdiction to identify each preservative treated and fire retardant treated material.
- C. Perform Work in accordance with current Florida Building Code requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Lumber Grading Rules: SPIB.
- B. Miscellaneous Framing/Blocking: Stress Group D 1x and 2x No. 2 Grade Southern Yellow Pine species, 19 percent maximum moisture content, pressure preservative treated where indicated.

2.2 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. All fasteners: Stainless steel for high humidity and treated wood locations, hot dipped galvanized steel elsewhere.
 - 2. All fasteners which penetrate the steel deck at a location exposed to view by the public from the underside must be coated white to match the roof deck.
 - 3. Nails: ASTM F1667; ring-shanked, except as otherwise directed.
 - 4. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

2.3 FACTORY WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment) for wood (exterior, above ground): AWPA U1, use category 3 (UC3) using water borne preservative with 0.25 pounds per cubic foot of wood product.
- B. Wood Preservative (Pressure Treatment) for wood (exterior, in contact with ground): AWPA U1, use category 4 (UC4) using water borne preservative with 0.40 pounds per cubic foot of wood product.
- C. Wood preservatives shall not contain arsenic or arsenate.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01039 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify substrate conditions are ready to receive blocking, curbing and framing.

3.2 PREPARATION

- A. Coordinate placement of blocking, curbing and framing items.

3.3 INSTALLATION

- A. General:
 - 1. Discard material with defects which might impair quality of work and units which are too small to fabricate work with minimum joints or optimum joint arrangement.
 - 2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
 - 3. Securely attach carpentry work to substrate by anchoring and fastening as shown or as required by recognized standards. Countersink fastener heads on exposed carpentry work.
 - 4. Use fasteners and anchorages as indicated. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Holes drilled oversized or wallered out, shall be re-drilled.
 - 5. Place horizontal members, crown side up.
 - 6. Construct curb members of solid wood sections.
 - 7. Do not install wood nailers or sheathing more than one day in advance from installation of roofing. Install dry-in felt over any wood nailers and sheathing.

- B. Nailers, Blocking and Curb Extensions:
1. Coordinate curb extensions and installation of wood nailers with roof construction work.
 2. Provide blocking and edging wherever shown and where required for screeding or attachment of other work.
 3. Set members level and plumb, in correct position.
 4. Construct curb members of single pieces.
 5. Curb roof openings, except where prefabricated curbs are provided. Form corners by alternating lapping side members.
 6. Attach to substrates as required to support applied loading. Countersink bolts and nuts with washers flush with surfaces, unless otherwise shown.
 7. Where new members are doubled, ends shall be lapped and thoroughly spiked to each other and to bearing members.
 8. Where new members bear on concrete, securely fasten to same by bolts or lag screws on centers as called for on drawings, staggered. Provide heads of all bolts or lag screws with large-head washers.
 9. Round edges and corners of wood plates where flashing occurs.

3.4 SCHEDULES

- A. Roof Perimeter Nailers, Curbs and Curb Extensions: See project manual details and plans for sizes and locations.
- B. General Framing Lumber (as applicable): See project manual details and plans for sizes.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of existing standing seam metal roof system, existing thermoplastic single-ply roofing membrane, and repair of associated construction materials in preparation for installation of the specified roof system, curtainwall repairs, and any other work necessary within the scope of this project.

1.2 RELATED SECTIONS

- A. Section 02070 - Selective Demolition.
- B. Section 07410 – Standing Seam Metal Roofing.
- C. Section 07530 – Thermoplastic Single-ply Membrane Roofing.
- D. Division 16 for requirements in regard to electrical work.

1.3 REFERENCES

- A. ASTM C208 - Insulating Board (Cellulosic Fiber), Structural and Decorative.

1.4 SYSTEM DESCRIPTION

- A. Remove any roof mounted equipment as needed to properly repair and or replace the associated roof penetration flashings.
- B. Complete removal of any and all materials required to properly perform the repairs to existing curtainwall system and the installation of the specified roofing and flashing systems shown by these documents.

1.5 QUALIFICATIONS

- A. Materials Removal Firm: Company specializing in performing the work of this Section with minimum three years experience.

1.6 PRE-INSTALLATION CONFERENCE

- A. Attend conference specified in Division 1.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not compromise existing roofing membrane, or building envelope by leaving open or unsealed penetrations through the roof deck and/or building walls when weather conditions threaten the integrity of the building contents or intended continued occupancy.
- B. Maintain continuous temporary protection prior to and during installation of new roofing system.

1.8 SCHEDULING

- A. Schedule work under the provisions of Division 1.
- B. Schedule work to coincide with commencement of new construction.

1.9 COORDINATION

- A. Coordinate work under provisions of Division 1.
- B. Coordinate the work with other affected mechanical and electrical work associated with roof penetrations.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Temporary Protection: Sheet polyethylene; provide weights to retain sheeting in position.
- B. Protection Board: ASTM C208, Roof Insulating Board type, cellulose fiber board.
- C. Self-Adhesive SBS Modified Bitumen Underlayment and Flashing Membrane: Rubberized (SBS) asphalt bonded to a polyester or fiberglass reinforcing mat, 40 mil (1 mm) minimum total thickness, single-sided, self-adhesive, with a strippable treated release paper. Surface to be non-skid surface, (textured, fabric scrim and/or sanded).
 - 1. Acceptable Products include:
 - a. Protecto Wrap Co. Rain Proof - 40
 - b. Tamko TW Metal and Tile Underlayment
 - c. Soprema Sopralene Stick
 - d. Architect approved equal product

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions under provisions of Division 1.
- B. Verify that existing roof surface is clear and ready for work of this section.

3.2 PREPARATION

- A. Sweep roof surface clean of loose matter. Remove loose refuse and dispose off site.

3.3 MATERIALS REMOVAL

- A. Remove existing materials as indicated by the project documents.
- B. Remove existing materials only to the extent necessary to provide a smooth and working surface for new construction and maintain the buildings in a weathertight condition.

3.4 TEMPORARY PROTECTION

- A. Protect finished Work under provisions of Division 1.
- B. Provide temporary protective sheeting over uncovered deck surfaces.
- C. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights or temporary fasteners.
- D. Provide for surface drainage from sheeting to existing drainage facilities.
- E. Do not permit traffic over unprotected or repaired deck surface.
- F. More permanent protection should be provided by the use of a self-adhesive underlayment and flashing membrane.

3.5 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Division 1.
- B. Inspection will identify the exact limits to material removal and necessity of drilling holes thru lightweight concrete.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removal and recycling of the existing metal roof system.
 - 2. New preformed, pre-finished standing seam metal roof panel system.
 - 3. New self-adhesive, modified bitumen underlayment.
 - 4. New flashings, trim, anchorage, and accessories.

- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 01010 – Summary of Work
 - 3. Section 06100 – Miscellaneous Rough Carpentry
 - 4. Section 07530 – Thermoplastic Single-Ply Membrane Roofing
 - 5. Section 07620 – Sheet Metal Flashing and Trim
 - 6. Section 07900 - Joint Protection.
 - 7. Section 16670 – Lightning Protection.

1.2 REFERENCES

- A. American Society of Civil Engineers (ASCE)
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

- B. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA - 620 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Aluminum Substrates.
 - 2. AAMA - 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
 - 3. AAMA - 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

- C. ASTM International (ASTM):
 - 1. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A 792 - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 3. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 4. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
 - 5. ASTM D 226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and Waterproofing.
 - 6. ASTM D 412 - Standard Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.

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7. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
8. ASTM D 6757 - Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing.
9. ASTM E 283 - Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
10. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Doors, and Curtain Walls by Uniform Static Air Pressure Differential.
11. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
12. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.3 SYSTEM DESCRIPTION

- A. The general scope of the work is to remove the existing standing seam metal roof system at the four designated areas and install a new snap-lock seamed prefinished aluminum roof system over a self-adhesive, modified bitumen underlayment, properly flashing into the adjacent building and cladding systems.
- B. Design Requirements; design roof system to withstand:
 1. Live and dead loads in accordance with 2010 Florida Building Code.
 2. Minimum wind pressures in accordance with current editions of ASCE 7 and the 2010 Florida Building Code with maximum allowable deflection of L/180, tested in accordance with ASTM E 1592.
 3. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 180 degrees F.
- C. Performance Requirements:
 1. Air leakage: Maximum 0.03 CFM per square foot of roof area, measured at reference differential pressure across assembly of 6.24 PSF, tested to ASTM E283.
 2. Water leakage: None. Tested to ASTM E331 with test pressure of 6.24 PSF.

1.4 SUBMITTALS

- A. Submittals for Review:
 1. Submit under provisions of Division 1.
 2. Shop Drawings: Show scaled layouts of panel configuration. Indicate only those conditions which differ from or are not included in the project documents.
 3. Product Data:
 - a. Show system components (panels, trim, and accessories).
 - b. Provide data on metal type, finishes, characteristics and general recommendations from metal panel manufacturer.
 - c. Current Florida Product Approval or Miami-Dade Notice of Acceptance which meet or exceed the design requirements of this project.

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4. Manufacturer's written installation instructions: Indicate special handling criteria, installation sequence, and cleaning procedures and certifications.
 5. Engineer's Calculations:
 - a. Provide calculations which have been prepared, signed and sealed by a Florida Registered Structural Engineer based on the performance and test data obtained from the manufacturer's ASTM E 1592 testing program.
 - b. Submit six copies of the ASTM E 1592 test results with the structural calculations for review by the Owner and the Architect.
 6. Samples:
 - a. After color selection submit three (3) sets of two (2) interlocking roof panel samples, approximately 24" to 36" wide by 30" long, in selected color on representative backing.
 - b. Fasteners: Submit three (3) samples of each fastener type.
- B. During Construction: Provide documentation of existing metal roofing and flashing material being properly recycled, any compensation is to be kept by the contractor and reflected in the cost of the project.
- C. Closeout Submittals
1. Warranties: Panel system weathertightness and finish warranties.
- 1.5 MOCK-UP
- A. If requested, provide mock up of the metal roofing system under provisions of Division
 - B. Construct metal roofing mock up, three (3) feet long (or two panel widths), minimum width which includes metal panels mounted to substrate illustrating typical methods and materials for the standing seam support, deck anchorage, hemmed lower edge and cleat, boxed upper edge, metal 'Z' closure piece, sealant application and ridge cap flashing installation
 - C. Mock up may remain as part of the Work if continuous from eave to ridge, located at a rake edge and if approved as installed by the Owner and Architect.
- 1.6 QUALITY ASSURANCE
- A. Materials Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with five (5) years current documented experience.
 - B. Manufacturer's Field Inspection and Services
 1. Manufacturer of roofing products shall provide qualified personnel to observe field conditions of surfaces and installation, quality of workmanship, as applicable, and to make appropriate recommendations.
 2. Representative shall visit the project throughout the progress of the work as necessary to ensure the quality of workmanship. Site visits shall be schedule as follows:
 - a. Pre-construction meeting

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- b. Major construction segments
 - c. Perform Manufacturer's final inspection prior to Architect's Substantial Completion Inspection.
 - d. Attend called meetings.
 - 3. Representative shall submit written reports within three (3) days to Architect listing observations, recommendations and other related comments
- C. Coordinated Installation: Except as otherwise indicated, perform roofing and flashing work as a single integrated unit of work, without division of responsibility between separate installers (a Single Installer responsibility is required)
- D. Installer Qualifications: Work of this Section shall be performed by a single installer and shall be a firm specializing in metal roofing system work for at least five (5) years documented experience and approved by the system manufacturer.
 - 1. Applicator shall have completed a minimum of three (3) projects of a similar nature and size within the last five (5) years.
 - 2. A minimum of 35% of the work must be performed by full-time employees of the applicator with a minimum of six (6) months continuous documented work experience with that company.
 - 3. The Owner reserves the right to request submission of appropriate documentation of the above defined qualifications within twenty-four (24) hours after the bid. Failure to submit documentation upon request, or to meet the above defined experience qualifications, may be grounds for disqualification of the bid.
- E. If requested by the Owner, submit a copy of a list of projects, (with project name, location, date, size, roof system, cost and references). The list shall contain contacts and phone numbers.
- F. The installation shall be performed by a roofing contractor who has been trained by the manufacturer and certified in writing as an installer approved by the manufacturer of the metal roofing (and siding). Certificate holder must be employed by roofing contractor and be present at the jobsite for the duration of the project.
- G. Submit a copy of the manufacturer's certification with the Bid.
- H. Maintain full-time supervisor/foreman, not a workman/foreman, on job site during times that roofing work is in progress. Supervisor must have minimum of three (3) years experience in roofing work of same or similar products manufacturer as bid. Submit a copy of their resume with project experience with the bid.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver to site, store, protect and handle products under provisions of Division 1.
- B. Store and protect panels from moisture due either from precipitation or condensation, damage by construction traffic, temperature extremes, mud, dust sand, oil, grease or dirt.

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- C. Protect panels from contact with any materials that could cause staining or discoloration of finish.
- D. Stack preformed and prefinished material in such a manner as to prevent twisting, bending, warping, surface damage, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage

1.8 ENVIRONMENTAL CONDITIONS

- A. Do not install underlayment at ambient or surface temperatures less than 40 degrees F or on wet or frozen substrate.

1.9 PROJECT CONDITIONS

- A. The roofing applicator and sheet metal installer shall verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring services required and other visible conditions prior to Bidding. Information used in the design was obtained from original design drawings, existing records and site inspection
- B. Conflicts and problems shall be reported to the Architect prior to Bidding, for resolution. Failure to report these conflicts and problems places the responsibility on the Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner
- C. Replace or restore to original condition any materials or work damaged during construction.
- D. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas
- E. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.

1.10 WARRANTIES

- A. Manufacturer's Warranty: Furnish a **twenty (20) year** materials and total roof (weather tight) system performance warranty inclusive of newly installed (roofing) materials from existing wall / deck to exterior finished surfaces. The warranty terms and conditions are to comply with the "Manufacturer's Notice of Intent to Issue Roof Warranty" attached at the end of this Section and includes in part:
 - 1. A twenty (20) year warranty providing coverage against chipping, cracking, fading, or delamination of panel finish.
 - 2. A twenty (20) year warranty providing coverage against rupture, perforation, or structural failure of aluminum panels.
- B. Applicator's Warranty: Furnish a **three (3) year** applicator warranty in accordance with the provisions attached Applicator's Warranty form attached at the end of this Section.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturers & products are as follows:
- | | | | |
|-----|---------------------------------------|----------------|--|
| 1. | ATAS International, Inc. | Dutch Seam | www.atas.com |
| 2. | Berridge Manufacturing Co. | Cee-Lock | www.berridge.com |
| 3. | Centria Architectural Systems. | SDP 175 | www.centria.com |
| 4. | Drexel Metals, Inc. | DMC 175S | www.drexelmetals.com |
| 5. | Englert, Inc. | S2000 Series | www.englertinc.com |
| 6. | Firestone / Una-Clad | UC-14 Panel | www.firestonebpco.com |
| 7. | Fabral. | Slim Seam | www.fabral.com |
| 8. | Imetco | 1 3/4" SnapLok | www.imetco.com |
| 9. | Merchant & Evans, Inc. | Classic Rib | www.ziprib.com |
| 10. | Morin Corporation | SWL Profile | www.morincorp.com |
| 11. | Petersen Aluminum Corp. | Snap Clad | www.pac-clad.com |
| 12. | Architect approved equivalent system. | | |
- B. All metal roofing systems shall have current Florida Product Approval or Miami-Dade Notice of Acceptance which meet or exceed the design requirements of this project.
- C. Substitutions: Considered and processed under the provisions of Division 1.
- D. Being listed as a pre-qualified manufacturer does not release the manufacturer from providing complete and acceptable submittal requirements.

2.2 MATERIALS

- A. Aluminum Sheet:
1. ASTM B209, alloy 3015-H14 or equivalent.
 2. Recycled Content: Minimum 75 percent recycled aluminum, with minimum 40 percent classified as post consumer.

2.3 FABRICATION

- A. General:
1. Provide roofing panels roll formed to profile indicated and specified. Provide flashing, closures, fillers, metal expansion joints, ridge covers, roof panel mounting clips, gable and eave trim, gutters and other sheet metal accessories factory formed and finished. Material and finish shall be as specified.
 2. Allowances for thermal expansion: Pre-engineered metal roof system shall be designed, fabricated, and installed to allow relative movement between roof panels and purlins, gables and ridges due to thermal expansion and contraction without causing damage to the system or permanent deformation to any of the system components. Roof panels are to be continuous from eave to ridge, intermediate end laps are not permitted.

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- B. Roof Panels:
1. Materials: Fabricate panels from Aluminum; 0.040 inch minimum, roll formed, smooth (non-embossed), aluminum sheet, 3105H274 aluminum per AA standards, actual gauge to be determined based on data obtained from ASTM E-1592 testing.
 2. Panel Profile: 1.75 inch minimum height, (2" maximum) standing seams spaced at 18 inches on center with intermediate stiffening ribs similar to the existing roof panels, and interlocking edges. Panels shall be designed to provide full seam side laps when installed.
 3. Trim: Profiles as indicated or as required, fabricated from same material and finish as panels, unless specifically noted otherwise.
 4. Panel Length: Roll form panels and trim to required profiles in longest practicable lengths. Roof panel are to be continuous from eave to ridge, intermediate end laps are not permitted.
 5. The majority of the metal flashings associated with the roofing shall be provided in pre-finished aluminum to match the new roof panels. See specification Section 07620 – Sheet Metal Flashing and Trim, Article 3.5 for the flashing metal schedule.

2.4 FINISHES

- A. Panels and Trim: Panels shall be factory painted with a full strength fluoropolymer finish. Paint shall contain 70-75% KYNAR 500 resin and applied, (0.80 mils thickness), over manufacturer's primer, (0.20 mils thickness), with a total system thickness of 1.00 mils per ASTM D 1400. Gloss to be 20-30% per ASTM D 523 at 60 degrees.
1. The design intent is to match the finish of the existing metal roof panels to remain as closely as possible, if a match acceptable to the Owner is not available from the manufacturer's standard color chart, an alternate manufacturer with an acceptable color match shall be utilized. Back side shall be factory painted with polymer paint.
- B. The physical characteristics of the exterior coating shall be measured by the following laboratory weather simulating tests to obtain test results justifying a manufacturer's **twenty (20) year** warranty:
1. Humidity Resistance at 95°F and 100% R.H. in accordance with ASTM D 2247: 1000 hours.
 2. Salt Spray Resistance at 5% Salt Fog per ASTM B 117: 1000 hours.
 3. Reverse Impact Resistance in accordance with ASTM D 2794: No cracking or loss of adhesion.
 4. Resistance to Accelerated Weathering - in an Atlas Model XX-R Dew Cycle Weather-O-Meter in accordance with ASTM D 822: 5000 hours.
 5. Abrasion Resistance to falling sand in accordance with ASTM D 968: 65 liters minimum.
 6. Chemical/Acid/Pollution Resistance:
 - a. Chemical spot tests in accordance with ASTM D 1308 procedure 5a, for Hydrochloric Acid, Sulfuric Acid and Sodium Hydroxide: No effect.

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- b. Chemical spot tests in accordance with ASTM D 1308 procedure 5b, for Muriatic Acid and Tincture of Iodine: No effect.
- c. Resistance to sulfur dioxide in accordance with "KESTERNICH" cyclic test, (DIN 50018 and ASTM G 87): 15 cycles minimum.
- 7. Gloss finish shall be maintained evenly over entire surface in accordance with ASTM D 523.
- 8. Accessory finishes: The same warranty that applies to panel finishes shall apply to sheet metal accessories.

2.5 ROOF UNDERLAYMENT SHEET MATERIAL

- A. Material: 40 mil minimum thickness, polyester or otherwise reinforced to prevent tearing, SBS modified asphalt waterproofing and underlayment membrane sheet, single-sided, self-adhesive, with a strippable treated release paper. Surface to be non-skid surface of mineral granules, fabric scrim and/or sanded. Acceptable Products are limited to:
 - 1. InterWrap Titanium PSU
 - 2. Protecto Wrap Co. Rain Proof - 40
 - 3. Tamko TW Metal and Tile Underlayment.
 - 4. Soprema Sopralene Stick.
 - 5. Architect approved equivalent product, must be approved prior to use.

2.6 ACCESSORIES AND FASTENERS

- A. Standing Seam Roof/Wall Panel Mounting Clips: Manufacturer's required stainless steel or nylon coated aluminum mounting clip with 6" x 6" x 18 gauge galvanized steel bearing plate minimum, (or as required by the manufacturer) due to existing rigid insulation. Size, shape, thickness and capacity of mounting clip to be as required to meet the design loads indicated. No field modifications of, or anchorage through the mounting clip will be permitted which will limit the ability of the roof system to accommodate thermal movement.
- B. Sheet Panel Fasteners: Manufacturer's required fasteners. (appropriate length for use intended)
 - 1. Provide "Scots" type fasteners with integral and protected neoprene washers under heads of fasteners bearing on weather side of panels
 - 2. Use stainless steel fasteners for exterior application and galvanized or cadmium plated fasteners for interior applications. Lock rivets where required are to be stainless steel. Use painted fasteners where fastening into painted panel or trim.
 - 3. Locate and space fastenings for true vertical and horizontal alignment. Use proper type fastening tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.
 - 4. Use of exposed fasteners is not permitted, except where specifically allowed by the project details.
 - 5. All fasteners which penetrate the steel deck at a location exposed to view by the public from the underside must be coated white to match the roof deck.

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- C. Flexible Panel End Closure Strips: Closed cell, expanded cellular rubber, self-extinguishing, cut or pre-molded to match corrugation configuration of roofing and/or siding panels. Provide where indicated and necessary to ensure weathertight construction.
- D. Prefabricated Pipe Flashing "Boot": Roof manufacturer's standard compression molded EPDM rubber tapered pipe flashing unit with 1" wide flexible aluminum base. Material to be ozone and ultraviolet resistant. Basis of design to be EPDM Deck-Mate by Portals Plus, Inc. of Bensenville, IL or approved equal.
- E. Joint Protection: As specified in Section 07900.
- F. Miscellaneous Accessories: Except as indicated as work of another specification section, provide components required for a complete roofing system, including trim, coping, fascias, sills, corner units, ridge closures, clips, seam covers, battens, flashing, sealants, gaskets, fillers, closure strips and similar items. Match materials and finishes of preformed painted panels. The same warranty that applies to panel finishes shall apply to sheet metal accessories.

PART 3 EXECUTION

3.1 GENERAL

- A. Pre-engineered metal roofing system shall be installed in strict conformance with manufacturer's instructions. Roof panels shall be installed to allow for relative movement between roof panels and ridge, gables, fascias and other components of the roof system

3.2 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secured.
- C. Verify deck is clean and smooth, free of depressions, waves, or projections and properly sloped.
- D. Verify deck surfaces are dry. If applicable, verify flutes of metal deck are clean and dry.
- E. Verify roof openings, curbs, pipes, conduit, sleeves, ducts, and vents through roof are solidly set, and cant strips and reglets are in place
- F. At framed openings for mechanical equipment: provide shapes of proper design and size to reinforce opening and to carry loads and vibrations imposed, including equipment furnished under mechanical or electrical work. Securely attach to building structural frame.

3.3 INSTALLATION OF UNDERLAYMENT

- A. Clean and prepare existing underlayment to remain as directed by the manufacturer.
- B. Starting at low edge, apply underlayment horizontally on roof. Weatherlap each sheet 4 inches over preceding sheet. Lap ends 6 inches minimum.
- C. Press to full bond with substrate without voids, wrinkles, bridging, or fishmouths. Seal ends and edges.
- D. Lap underlayment minimum 12 inches over hips and ridges from both sides. Apply 36 inch wide strip centered lengthwise over ridge.
- E. Extend minimum 4 inches up abutting vertical surfaces.

3.4 INSTALLATION OF METAL ROOF PANELS

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install aligned, level, and plumb.
- C. Fasten panels to underlying metal deck using concealed panel clips, provide 6" x 6" x 18 gage galvanized steel bearing plates under each panel clip. Anchorage size, type and locations to be defined by the roofing manufacturer's project specific engineering. Exposed fasteners are permitted at trim members where specifically indicated by project details only.
- D. Install panels in continuous lengths from eave to ridge without end joints.
- E. Install trim to maintain visual continuity of system.
- F. Install joint sealers and gaskets to prevent water penetration.
- G. Flash penetrations through roofing with metal trim to match panels:
 - 1. Install flashings at roof panel penetrations, transitions and terminations per the project details, properly lap all components, provide sealant as a secondary means of weatherproofing.
 - 2. Install metal rain collar and joint sealant at top of pipe penetrations.
 - 3. Install water diverter (cricket) at uphill side of square and rectangular penetrations.
- H. Installation Tolerances:
 - 1. Variation from location: Plus or minus 1/4 inch.
 - 2. Variation from plane: 1/4 inch in 10 feet.

3.5 ADJUSTING AND TOUCH-UP PAINTING

- A. Apply manufacturer's supplied touch-up paint, at the discretion of the Architect, to any scratches or scrapes or other deficiencies in the painted metal finish
- B. All raw edges of the metal roof panels or flashing which may be left exposed due to either factory or field cutting and may be subject to oxidation or corrosion are to receive manufacturer's supplied touch-up paint.
- C. Any fasteners which penetrate the steel deck at a location exposed to view by the public from the underside which do not match the finish of the underside of the roof deck must be coated or painted white to match the roof deck.

3.6 CLEANING AND PROTECTION

- A. Cleaning: Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.
- B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashing and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

END OF SECTION

MANUFACTURER'S NOTICE OF INTENT TO ISSUE ROOF WARRANTY
(Standing Seam Metal Roofing)

Whereas

herein called the "Roofing System Manufacturer" hereby gives notice to:

Owner: _____

Address: _____

of its Notice of Intent to issue its Roof Warranty, to the Owner for the Project,

Project: _____

Address: _____

incorporating the Manufacturer's _____

_____ roofing system or product is installed in accordance with the Contract Documents.

Manufacturers' Notice of Intent to Issue Roof Warranty in conformance with the Contract Documents shall be executed by the manufacturer as part of the Product Data submittals prior to the start of construction. The contractor shall submit a single form, only from a specified manufacturer, and shall include items 1 and 2 as follows:

1. A detailed description of the components of the manufacturer's system proposed and a list of any other component and accessories, proposed for use in the system that is provided by other manufacturers or suppliers.
 - a) A statement that the Manufacturer's Representative has thoroughly reviewed the job conditions and project manual, (plans, specifications & details). Having reviewed the above items and project requirements in detail, the Representative will provide a written response to the Design Professional ten days prior to the bid date, if conflicts between the Manufacturer's requirements occur with the above listed documents.

2. A sample of the Manufacturer's Roof Warranty shall be attached to and submitted with this form and the submittal package. The manufacturer shall delete all exceptions relative to system failure from high wind uplift pressures due to gale force winds and windstorms below a nominal wind speed of 120 mph and below the following "Unfactored / (Nominal) Wind Uplift Pressures as calculated per the Florida Building Code and ASCE 7:

a)	Interior of Roof (Zone 1):	- 39 psf
b)	Perimeter of Roof (Zone 2):	- 45 psf
c)	Corners of Roof (Zone 3):	- 45 psf

3. **Twenty (20)** year total roof system warranty inclusive of all newly installed roofing materials, all included products and accessories, including all metal flashings, from existing roof substrate or deck to finish membrane, whether supplied by the membrane manufacturer or by others. Provide a "No Dollar Limit", single source responsibility, non-deductible roofing warranty inclusive of all material and labor in full compliance with all the requirements of the project specifications.

MANUFACTURER'S NOTICE OF INTENT
TO ISSUE ROOF WARRANTY - page 2

- a) The manufacturer shall modify the roof warranty to include total labor coverage for the warranty period and to cover damage to all newly installed roof materials and insulation down to the roof deck resulting from water penetration.
 - b) The manufacturer shall modify the roof warranty to state that the Owner has the right to make emergency repairs without voiding the warranty if the manufacturer or applicator does not respond within 24 hours to notification by the Owner of a defect or leak.
 - c) The manufacturer shall modify the roof warranty to state that annual inspections with written reports by the Owner, and resulting maintenance, are sufficient to fulfill the periodic inspection requirements of the manufacturer's warranty.
4. The manufacturer's Representative shall conduct a Post-Construction field inspection no earlier than **eleven (11) months**, and no later than **twelve (12) months** after the Date of Substantial Completion. Submit a written report within seven (7) days of this visit to the Owner's Maintenance Dept. listing observations, conditions and any recommended repairs or remedial action.
5. The manufacturer will, during the **second (2nd)**, and **fifth (5th)**, year of this warranty, inspect the roof system and provide a written Executive Summary of the Roof Condition to the Owner.

Further, the manufacturer acknowledges that the applicator:

Roof Applicator's Name: _____

Address: _____

has been approved to install this roof system since _____, _____ and meets the criteria for an approved applicator listed in the Project Manual.

By signing the above, the Authorized Representative of said Manufacturer certifies and represents the Roofing System Manufacturer with the authority to contract and make the above representations to the Owner.

By: _____ Date: _____
Signature of Authorized Representative

Name: _____ Title: _____

Witness: _____ Date: _____

APPLICATOR'S WARRANTY FOR ROOFING

Whereas _____

of (Address) _____

herein called the "Roofing Contractor", has performed roofing, flashing and sheet metal and associated ("work") on following project:

Owner: _____

Address: _____

Name and Type of Building: _____

Address: _____

Area of Work: _____

Date of Acceptance: _____

Warranty Period: **Three Years** Date of Expiration:

The Roofing Contractor hereby certifies to the Owner as a "Final Statement of Compliance" that the finished roof membrane (and insulation) system was installed in compliance with the approved contract documents.

AND WHEREAS Roofing Contractor has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks, faulty or defective materials, roofing components deemed faulty or in disrepair, and workmanship for designated the Warranty Period.

NOW THEREFORE Roofing Contractor hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work, and as are necessary to maintain said work in watertight condition.

This Warranty is made subject to the following terms and conditions.

1. Specifically excluded from this Warranty are damages to roofing work and other parts of the building, and to building contents, caused by: a) lightning, windstorm; b) fire; c) failure of roofing system substrate or structure (including cracking, settlement, excessive deflection, deterioration, and decomposition). When work has been damaged by any of the foregoing causes, Warranty shall be null and void until such damage has been repaired and until cost of the repairs has been paid by the Owner or by another responsible party as so designated.
2. The Roofing Contractor is responsible for damage to work covered by this Warranty, and is not liable for consequential damages to building or building contents, resulting from leaks or faults or defects of work.

3. The Owner shall promptly notify Roofing Contractor of observed, known or suspected leaks, defect, disrepair or deterioration. The Contractor shall guarantee to respond to all notifications within **twenty-four (24) hours** and to make all such repairs as deemed necessary to correct said leaks or defects to a satisfactory condition to the Owner. Repairs shall be made by workman in the current employment of the Contractor. Subcontracting of repair work is not permitted.

4. The definition of faulty roofing components or roofing in disrepair includes, but is not limited to the following:
 - A. Failures of applicator applied finishes at any metal flashing components.
 - B. Cracks or breaks in metal roof panels or flashing components.
 - C. Disengagement of flashing from concealed cleats.
 - D. Defects in the quality of work or materials.
 - E. Leaks of any kind.

5. This Warranty is recognized to be the only warranty of the Roofing Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of roofing failures. Specifically, this Warranty shall not operate to relieve Roofing Contractor of responsibility for performance of original work in accordance with requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this

_____ day of _____, 20_____.

Roofing Contractor Firm

Signature of Authorized Person

Title

(SEAL)

Witness

THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING

SECTION 07530

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Drawings, the general provisions of the Contract, including General and Supplementary Conditions and Division 1 requirements apply to work in this Section
 2. Single-ply thermoplastic roofing system, insulation, flashing and roofing accessories, integrally related to roof installation,
 3. Manufacturer's Notice of Intent to Issue Roof Warranty form, to be submitted as part of the Product Data submittals as defined by section 01300.
 4. Applicator Warranty for Roofing form, to be submitted upon completion of the project.
- B. Related Sections:
1. Section 01520 – Construction Aids
 2. Section 06100 - Rough Carpentry: Wood nailers, blocking and curbs.
 3. Section 07620 - Sheet Metal Flashing and Trim

1.2 REFERENCES

- A. ASTM International
1. ASTM D 471 - Test Methods For The Effects of Rubber- Liquid Properties
 2. ASTM D 751 - Test Method of Coated Fabrics
 3. ASTM D 882 - Test Method for Tensile Properties of Thin Plastic Sheathing
 4. ASTM D 1204 - Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
 5. ASTM D 2136 - Test Method for Coated Fabricates -Low Temperature Bend Test
 6. ASTM D 2240 - Test Method for Rubber Property
 7. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester Based Sheet Roofing
 8. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials
- B. NFPA
1. NFPA 255 - Test of Surface Burning Characteristics of Building Materials
- C. FM Global
1. FM - Roof Assembly Classifications
 2. FM DS 1-28 – Wind Loads to Roof Systems and Roof Deck Securement
 3. FM 4450 – Approval Standard for Class 1 Insulated Steel Deck Roofs
- D. NRCA (National Roofing Contractors Association)
1. NRCA - Roofing and Waterproofing Manual

THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING

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- E. Underwriters Laboratories, Inc.
 - 1. UL - Fire Hazard Classifications
 - 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials
 - 3. UL 790 – Tests for Fire Resistance of Roof Covering Materials.
 - 4. UL 1256 – Fire Test of Roof Deck Construction
 - 5. UL 1897 – Uplift Tests for Roof Covering Systems.

1.3 PROJECT DESCRIPTION

- A. Fully adhere a PVC / Elvaloy based thermoplastic single-ply membrane with woven polyester fabric reinforcement and a fleece backing to a 1/4" thick gypsum roof board which has been mechanically fastened through the existing polyisocyanurate rigid insulation board to the underlying metal roof deck. The thermoplastic single-ply membrane shall also be mechanically fastened as required by the manufacturer's engineering to comply with specified wind pressure requirements. Upon completion a 20 year NDLE manufacturer's weathertightness warranty with a wind rider for the project design pressures is to be provided.

1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide membrane materials, base flashing materials, insulation, fanfold insulation board and vapor retarders.
- C. Manufacturer's Installation Instructions: Indicate special precautions required for seaming the membrane.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Field Reports: Submit under provisions of Division 1.
- F. Contractor shall submit certification from a Florida Registered Engineer showing that the new roof system meets or exceeds current ASCE 7 requirements. (Provide supporting calculations)
- G. All products used shall be asbestos free.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual except where NRCA details differ from the project manual details.
- B. Maintain one copy of the NRCA document on site.

THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING
SECTION 07530

- C. Work that is closely associated with flexible sheet roofing, including vapor barriers, insulation, flashing and counterflashing, expansion joints (if applicable), and joint sealers, is to be performed by the installing applicator of the primary roofing system.
- D. Manufacturer of the roofing materials shall provide qualified technical representatives to observe field conditions of surfaces and installation, quality of workmanship as applicable, and to make appropriate recommendations.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with five years current documented experience.
- B. Applicator: A single installer specializing in performing the work of this section with three current years documented experience and approved by system manufacturer.
 - 1. The installation shall be done by a roofer approved in writing by the manufacturer of the thermoplastic material 10 days prior to Bidding.
- C. Supervisor: Maintain a full-time non working supervisor, on job site during roofing work in progress. Supervisor shall have five current years minimum documented experience of roofing work similar to scope of specified roofing.
- D. Manufacturer's Field Inspection and Services Representative:
 - 1. Manufacturer of the roofing materials shall provide qualified personnel to observe field conditions of surfaces and installation, quality of workmanship as applicable, and to make appropriate recommendations.
 - 2. Representative shall visit the Project throughout progress of the work.
 - a. Initial pre-installation meeting.
 - b. Site visits at maximum of one week intervals.
 - c. Prior to Substantial Completion inspection, a final inspection shall be made by manufacturer's representative.
 - d. Called meetings.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly fire hazard requirements and regulations of jurisdictional authorities, Florida Building Code.
- B. All roofing materials to be Class A as tested in compliance with ASTM E 108 -Standard Test Methods for Fire Tests of Roof Coverings.
- C. FM: Roof Assembly Classification, Class 1 Construction. Comply with ASCE 7 and the current Florida Building Code wind up-lift requirements.
- D. Thermal Resistance: Roofing system with thermal resistance properties of insulating materials, designated by R-values, as noted in Construction Documents.

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- E. Material Safety Data Sheets (MSDS): For all roofing products.
- F. Contractor shall submit certification from a Florida Registered Engineer showing that the new roof system meets or exceeds ASCE 7 wind uplift requirements. (Provide supporting calculations).
- G. The contractor will be responsible for obtaining a Building Permit from the Building Department of the governing jurisdiction, and any required submittals and inspections thereafter. Signed and sealed copies of the construction documents will be provided by the Owner, all other required documentation is to be provided by the contractor.
 - 1. The Contractor is to complete and submit all required forms, license and insurance documentation prior to obtaining the building permit.
 - 2. The Contractor is to provide any required Product Approval information to the governing Building Department based on the specific project conditions and actual manufacturers and products to be used for this work.
 - 3. The Contractor is to verify the inspection requirements with the governing Building Department and obtain those inspections as required without impacting the progress of the work.

1.8 CERTIFICATION

- A. Materials: For each material specified with a standard or reference material designation, certification labels shall appear on each package of bulk-shipments to project with certificate of compliance.
- B. Installer: Provide two copies of all certification to Architect prior to beginning roofing work.
- C. The Contractor: shall have pull tests conducted on the job site in compliance with Florida Building Code TAS 105 with the specified fasteners to determine the pull-out resistance of the existing deck. Submit the data to the Architect for review and approval before installation of any roofing materials.
- D. The Contractor: shall confirm the roof deck is dry, (12% maximum by moisture meter testing), in compliance with Florida Building Code TAS 126 prior to or upon removal of the existing roof membrane system.

1.10 MOCKUP

- A. Provide mockup of roof membrane system and associated components and accessories under provisions of Section 01 45 00.
- B. Mockup Size: 10 x 10 feet, including gypsum cover board, and typical base and counterflashing specified; at location designated.
- C. Mockup may remain as part of the Work.

THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING

SECTION 07530

1.9 PRE-INSTALLATION CONFERENCE

- A. Convene meeting one week prior to commencing work of this section at project site, with 72 hours minimum notice to participants. Meeting to include Contractor, Roofer, and Subcontractors, governing authorities, test agencies, product manufacturers, Architect and the Owner Representative.
- B. Review requirements, Contract Documents, submittals, sequencing, availability of materials and installation facilities, proposed installation schedule, requirements for inspections and testing or certifications, forecasted weather conditions, governing regulations, insurance requirements, and proposed installation procedures.
- C. Record discussion on matters of significance; furnish copy of recorded discussions to each participant. Discuss roofing system protection requirements for construction period extending beyond roofing installation/

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver to site, store, protect, and handle products under provisions of Division 1.
- B. Deliver material in manufacturer's original, unopened containers with manufacturer's labels intact and legible.
- C. Deliver material requiring fire resistance classification to the job with labels attached and packaged as required by labeling service.
- D. Deliver enough material to allow continuous work.
- E. Store rolls, cans and drums of cements, primers, and coatings, on end and over clean raised platforms.
- F. Store and handle materials to protect them from.
 - 1. Moisture, whether due to precipitation, or condensation.
 - 2. Damage by construction traffic.
 - 3. Temperatures over 110 degrees F or below 40 degrees F.
 - 4. Temperatures over 110 degrees F or below 40 degrees F.
 - 5. Mud, dust, sand, oil and grease.
- G. Select and operate material handling equipment and store materials to keep from damaging existing construction or applied roofing.
- H. Immediately remove and dispose of wet materials.
- I. Comply with fire, safety, and environmental protection regulations.
- J. Do not store materials on roof decks, nor position roofing installation equipment on roof decks, in concentrations exceeding design live loads.

THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING

SECTION 07530

- K. Take special precautions against traffic on roofing when ambient temperature is above 80 degree F. Avoid heavy traffic on the work during installation.

1.11 PROJECT CONDITIONS

- A. Existing Conditions:
 - 1. The roofing applicator and sheet metal installer shall verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring services required and other visible conditions prior to Bidding.
 - 2. Report conflicts and problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
 - 3. Replace or restore to original condition any materials or work damaged during construction.
 - 4. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas.
 - 5. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.

1.14 SAFETY REQUIREMENTS

- A. All work shall be in compliance with OSHA safety standards and regulations with emphasis on Section 29 CFR 1910, including but not limited to the following requirements.
 - 1. Provide facility administrator one day prior notice before commencing with work or moving to new areas.
 - 2. Proper identification and clothing, to work at all times. Only the facility administrator is permitted in the facility.
 - 3. The Contractor shall provide sufficient temporary barricades in order to contain passage ways around tankers, trash chutes, hoisting areas and areas below roof edges where work is conducted.
 - 4. Fire extinguishers are required, one on the ground and one on the roof deck.
 - 5. Seal all possible seepage areas, before using liquids or adhesive materials.
 - 6. Power driven shot fasteners are not permitted.
 - 7. All pumps shall use rigid pipes.
 - 8. No flammable or explosive substance or equipment for repairs or alterations shall be introduced in a building of normally low or ordinary hazard classification while the building is occupied unless the condition of use and safeguards provided are such as not to create any additional hazard or handicap to egress beyond the normally permissible conditions in the building.
 - 9. Protect building and adjacent surfaces from spillage and repair or replace damaged materials at no cost to Owner.

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- B. All toxic substances enumerated in the Florida Substance List established pursuant to S.442.103 that are to be used in the construction, repair or maintenance of educational facilities are restricted to usage according to the following provisions:
 - 1. Before any such substance may be used, the Contractor shall notify the Owner in writing at least three working days prior to using the substance. The notification shall contain:
 - a. The name of the substance to be used;
 - b. Where the substance is to be used; and
 - c. When the substance is to be used.
 - 2. The Owner shall take all reasonable actions to ensure that the Contractor complied with the safety precautions and handling instructions set forth in the material safety data sheet for each substance used by the Contractor so that usage of the substance poses no threat to the health and safety of residents, instructors and the general public.

- C. All "hot work" in conjunction with this project shall be performed in compliance with the precautions defined within the "FM Global Hot Work Permit System".

1.12 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing membrane during inclement weather ambient temperatures below 40 degrees F.
- B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- C. Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with requirements of this section and warranty compliance requirements.

1.13 COORDINATION

- A. Coordinate work under provisions of Division 1.
- B. Coordinate the work with installing associated wood blocking and nailers, roofing, expansion joints and area dividers, and metal flashing as the work of this section proceeds.

1.14 SEQUENCING

- A. Organize operations so work can simultaneously proceed on the various aspects including roofing and flashing so at the end of each day the work done that day will be substantially complete.

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- B. Roof area shall be substantially complete prior to beginning another roof area; utilize multiple crews for multiple roof area construction. Phasing of roof construction by area is not permitted.
- C. Sequence equipment removal with covering of deck openings with plywood strong enough to prevent injuries from falling through. Contractor shall install waterproof covering over plywood and tie-in to existing membrane to achieve complete watertightness.

1.15 WARRANTY

- A. Applicator's Warranty: **Two (2) year workmanship warranty.** (Refer to "*Applicator's Warranty for Roofing*" at end of this Section). **Submit upon completion of Work.**
- B. Manufacturer's Warranty: **Twenty (20) year total roof system warranty** inclusive of roofing materials, included products and accessories from deck to finish membrane (Refer to "*Manufacturer's Notice of Intent to Issue Roof Warranty*" at end of this Section).

PART 2 PRODUCTS

2.1 THERMOPLASTIC ROOFING SYSTEM

- A. New single-ply thermoplastic roofing membrane shall be fleece backed and intended to be fully adhered to the underlying roof substrate material and mechanically fastened. Roofing membrane system shall have Florida Product Approval and comply with ASCE 7 and Florida Building Code wind uplift requirements as defined by the documents for this project:
 - 1. Elvaloy (KEE) thermoplastic, 60 mil minimum thickness, polyester reinforced membrane which meets or exceeds all requirements of ASTM D 6754. Membrane is to be fully adhered; all seams and joints are to be heat-welded. Color is to be neutral cream or white. Approved products are as follows:

a.	GAF Building Products	Everguard PVC XK 60 mil
b.	Flex Membrane International	Fleece Back 60 Elvaloy KEE
c.	Johns Manville	JM PVC FB 60
d.	Republic Powdered Metals	Cooley C3 FB KEE
e.	Seamen Corporation	Fibertite SM-FB
- B. Manufacturers and Approved Products:
 - 1. Obtain primary thermoplastic roofing from a single manufacturer and provide secondary materials only as recommended by the manufacturer of the primary material, as specified.
 - 2. The Drawings are generic and not based on a specific manufacturer. Detail deviations will be accepted so as to permit utilization of the selected manufacturer's standard products and details when, in the Design

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Professional's judgment, such deviations do not materially detract from the original design concept or intended performance.

a. Submit proposed deviations to Design Professional for approval in writing prior to ordering materials that are in the category of substitutions.

3. Substitutions are Not Permitted.

2.2 MECHANICAL FASTENERS

A. For mechanically fastened anchorage of the new roof membrane: Fastener type and attachment pattern to be as defined by the manufacturer based on the specific project conditions and published test reports for their product.

B. For mechanically fastened anchorage of the new gypsum roof board: Fastener type and attachment pattern to be as defined by the manufacturer based on the specific project conditions and published test reports for their product.

C. For fastening flashing to wood: Stainless steel annular threaded, 11 or 12 gage shanks, 1" long, driven through a minimum 30 gage 1" diameter flat stainless steel cap.

D. For all other locations: Provide size, type, material and finish as required, matching material being fastened.

E. All fasteners which penetrate the steel deck at a location exposed to view by the public from the underside must be coated white to match the roof deck.

2.3 ROOF MEMBRANE ADHESIVE

A. Membrane Adhesive:

1. Manufacturer approved adhesive for selected membrane.

2.4 GYPSUM ROOF BOARD

A. Gypsum Roof Board (Glass fiber reinforced/faced gypsum): as approved for use within a 20 year warranted roof system by the roofing manufacturer, with the following characteristics:

1. Board Type: manufacturer standard product for use over polyisocyanurate insulation and over metal decks.

2. Manufacturer and Product: Georgia-Pacific Corporation, Gypsum Division, Dens-Deck Prime Roof Board or approved equal.

3. Board Size: 4 feet x 8 feet x 1/4" thick.

4. Compressive Strength: Nominal 900 psi in accordance with ASTM C 473

5. Water Absorption: Maximum 10% in accordance with ASTM C 1177

6. Board Edges: Square.

7. UL Fire Rating: Conforms to ANSI/UL, Class A.

8. Flame Spread/Smoke Developed: ASTM E 84 – 0/0

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- B. Contractor's Option: Gypsum Roof Board (Glass fiber reinforced with no face layer) : as approved for use within a 20 year warranted roof system by the roofing manufacturer, with the following characteristics:
1. Board Type: manufacturer standard product for use over polyisocyanurate insulation and over metal decks.
 2. Manufacturer and Product: United States Gypsum Company, Securock Roof Board or approved equal.
 3. Board Size: 4 feet x 8 feet x 1/4" thick.
 4. Compressive Strength: Nominal 1800 psi in accordance with ASTM C 473.
 5. Water Absorption: 10 In accordance with ASTM C 1177
 6. Board Edges: Square.
 7. UL Fire Rating: Conforms to ANSI/UL, Class A.
 8. Flame Spread/Smoke Developed: ASTM E 84 – 5/0

2.5 WOOD

- A. See Section 06100 – Miscellaneous Rough Carpentry

2.6 DOUBLE SIDED ADHESIVE FLASHING TAPE

- A. Approved manufacturers:
1. Protecto Wrap Company
 2. Polyken
 3. W.R. Grace

2.7 SEALANTS: As specified in Section 07900.

2.8 SEALANT PRIMER: As recommended by the sealant manufacturer to suit application.

2.9 MISCELLANEOUS MATERIALS:

- A. All other materials and accessories, not specifically described, but required for a complete and proper installation of roofing, shall be products of, or recommended by the primary roof material manufacturer and with Architect's approval.

PART 3 EXECUTION

3.1 GENERAL

- A. Total Installation Concept:
1. The specified system is a total roofing system, not a patched up, chopped up, spliced or added to or on roofing system. Therefore, this type of application will not be acceptable.
 2. If a section of roof requires reworking or patching, the entire area or section of roofing shall be replaced. This shall mean from edge to edge of roof.

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- B. Manufacturer's Installation Requirements:
1. In addition to the specified procedures, the roofing installer shall install roofing in accordance with the procedures required by the roofing material manufacturer for the proper execution of the work and issuance of the warranty.
 2. The roofing installer shall review the specified procedures for possible conflicts, prior to Bidding, for resolution by Architect.
- C. Watertightness Imperative:
1. The work specified shall not preclude the use of procedures that will maintain the building watertight. Therefore, the Contractor, while conforming to these contract documents, shall utilize skill and procedures to keep water out of these buildings while construction is in progress.
 2. At the end of each day's roofing installation and prior to the onset of inclement weather, the new section of roofing shall be temporarily sealed with cut-offs to the unfinished substrates, projections through the roof and to the surrounding intersections so that no moisture may enter roofing or into structure before work resumes. Remove cutoffs before work resumes.
- D. Insurance Code Compliance:
1. Install system for (and test where required to show) compliance with governing regulations and with the following requirements.
 - a. Underwriters Laboratories "Class A" Fire Classified.
 - b. Current Florida Building Code and ASCE 7 wind up-lift resistance criteria
- E. Coordinate the installation of insulation, roofing sheets, flashing, stripping, coatings and surfacings, so that membrane edges are not exposed to precipitation or exposed overnight. Provide cutoffs at end of each day's work to cover exposed sheets and insulation.
- F. Environmental Impact: Ensure that fresh air intakes in the area of new roofing construction are properly sealed or filtered. Coordinate user requirements for temporary equipment shutdown as needed
- G. Interior Work: Coordinate installation of associated ceiling repairs with user schedules and peak-use times.
- H. Off Hour Work: The following roof construction activities must be coordinated and scheduled to occur while those spaces immediately below the required work are not occupied.
1. Removal or installation of heavy roof top equipment.
 2. Structural and/or deck repairs
 3. Loading or unloading of materials.
 4. Any interior (below structural roof deck) work.

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3.2 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secured.
- C. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to eaves.
- D. Verify deck surfaces are dry. Verify flutes of metal deck are clean and dry.
- E. Verify roof openings, curbs, pipes, conduit, sleeves, ducts, roof drains and vents through roof are solidly set.
- F. Roof membrane manufacturer's technical representative is to inspect the roof deck / substrate conditions prior to application of roofing materials to verify the substrate is acceptable to receive the proposed roofing system in compliance with the appropriate Florida Product Approval Installation Instructions. A written report stating such is to be submitted to the Owner and Architect for their review and records

3.3 APPLYING GYPSUM ROOF BOARD

- A. General:
 - 1. The Contractor shall confirm all field dimensions for proper sizing of gypsum roof board in relation to the existing insulated structural metal deck, cut board as required to fit the existing roof conditions.
 - 2. The Contractor shall prepare surface of existing insulation to receive the gypsum roof board and single ply system. Provide additional mechanical fastening as may be required for compliance with specified wind loads and to provide a smooth substrate for the roof membrane.
 - 3. Install only as much gypsum roof board in any one day as can be covered by the completed membrane in the same day.
 - a. Edge of boards shall be loosely butted to adjoining board with approximately a 1/16 inch gap to accommodate movement.
 - 4. Prior to roof membrane application, remove excess dust from surface of board insulation by brooming, blowing and/or vacuuming.

3.4 APPLYING THERMOPLASTIC ROOFING SYSTEM

- A. General:
 - 1. Organize the various aspects of the work so at the end of each day the area completed on that day is substantially complete.
 - 2. Due to the site conditions, the applicator may install individual panels, or pre-fabricate sections with appropriate anchorage tabs prior to positioning membrane on the sloped roof sections.

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- B. Field Sheets (Prefabricated Rolls)
1. Rolls shall be installed straight to chalk lines maintaining the best lay flat characteristics possible.
 2. Un-roll approximately 30 feet of the membrane and position the roll over the properly installed / prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate, or a full panel width.
 3. Apply a 100% continuous coat of adhesive to the substrate, (and underside of membrane if using "contact" adhesive).
 4. Adjoining rolls shall overlap the fastened edge a minimum of 4" maintaining proper shingling to avoid back water seams. (See manufacturer's details for fastener spacing location).
- C. Mechanical Attachment:
1. Roll the panel (or prefabricated roll) out along the chalk line 24' and adjust the roll so that panel is lying flat and square to the line. Pull the roll snug (not taut) and fasten with approved fasteners and stress plate according to the manufacturer specified spacing along the uphill edge.
 2. If working with prefabricated panels, fasten each tab snug; starting at the top and continue down-slope to secure each tab in sequence with the adhesive application, until the entire roll has been fastened. Refer to the manufacturer's approved fastening pattern.
 3. If working with individual rolls, fasten the upslope edge of the roll according to specified fastener spacing requirements prior to overlapping the next roll. Lap rolls a minimum of 4" and a maximum of 6", staggering the factory seams so that each seam will fall an equal distance between the factory seams, roll to roll.
 4. Fasten the side laps of the roll with two fasteners and stress plates per panel. (See manufacturer's details for proper spacing and location of side lap fastener pattern.) Allow a minimum of two inches (2") from the edge of the stress plate to the edge of the overlapping membrane side lap to leave sufficient room to apply the field welded seam (minimum 1.5 inches) and to avoid back water seams or water dams.
- D. Adhesive Procedures:
1. The amount of substrate that can be coated with a workable amount of adhesive will be determined by application method, ambient temperature, humidity and available man power.
 2. To insure proper application and curing of the adhesive, it is recommended that the outside air temperature be above 40 F.
 3. Adhesive may be applied by roller or by spraying.
 4. Roller applied adhesive should utilize a solvent resistant 1/2" nap roller.
 5. Spray applied adhesive must be spread out by roller to insure a smooth, even, 100% coverage of the substrate with no globs, puddles or similar irregularities.
 6. Allow the solvents in the adhesive to dissipate to the point that the adhesive is stringy to the touch. Do not allow adhesive to "dry out" completely.

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- E. Hot Air Welding:
 - 1. General:
 - a. All field seams exceeding 10 feet in length shall be welded with an approved automatic welder, unless not possible due to project conditions.
 - b. All field seams must be clean and dry prior to initiating any field welding.
 - c. Remove foreign materials from the seams (dirt, oils, etc.) with acetone or approved alternative. Use clean cotton cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
 - d. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.
 - 2. Hand Welding
 - a. The lap or seam area of the membrane would be intermittently tack welded to hold the membrane in place.
 - b. The back "interior" edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass.
 - c. The nozzle of the hand-held hot air welder shall be inserted into the lap at a 45° angle to the lap. Once the polymer on the material begins to flow, a hand roller shall be used to apply pressure at a right angle to the tip of the hand welder. Properly welded seams shall utilize a 1-1/2" wide nozzle, to create a homogeneous weld, a minimum of 1-1/2" in width.
 - d. Smaller nozzles may be used for corners and other field detailing, maintaining a minimum 1" weld.
 - 3. Automatic Machine Welding:
 - a. Proper welding of the membrane can be achieved with a variety of automatic welding equipment. Refer to manufacturer's specific recommendations and requirements.
 - b. Follow all manufacturer's instructions for the safe operation of the automatic welder.
 - c. Follow local code requirements for electric supply, grounding and surge protection.
 - d. The use of a dedicated, portable generator is highly recommended to insure a consistent electrical supply, with fluctuations that can interfere with weld consistency.
 - e. Properly welded seams shall utilize a 1-1/2" wide nozzle, to create a homogeneous weld, a minimum of 1-1/2" in width.

3.5 FLASHING

- A. Clean all vents and stacks to bare metal. All protrusions must be properly secured to the roof deck with approved fasteners. Remove and discard all lead, pipe and drain flashing. Flash all penetrations according to approved details.

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3.6 Remove all loose and/or deteriorated flashing.

- A. All flashing shall be fully adhered to properly prepared, approved substrates with manufacturer's recommended mastic applied in sufficient quantity to insure total adhesion.
- B. The base flange of all membrane flashing shall extend out on to the plane of the deck, beyond the wood nailer to a maximum width of 8 inches.
- C. Vertical flashing shall be terminated no less than 8 inches above the plane of the deck with approved termination bar and counterflashing or metal cap flashing.
- D. Complete all inside and outside corner flashing details with the manufacturers preformed corners or an approved field fabrication detail.
- E. Probe all seams with a dull pointed probe to insure the weld has created a homogeneous bond.
- F. Install penetration accessories in strict accordance with approved details. Insure penetrations accessories have not impeded in any way the working specification.

3.7 METAL FLASHING

- A. Perimeter edge details are to be fabricated from 0.040" thick aluminum laminated with a 0.020 mil polymeric coating. Interior flashing metal (not visible from ground) shall be 24 gauge stainless steel. Refer to Section 07620 – Sheet Metal Flashing and Trim.
- B. Fasten all metal flashing to wood nailers or approved substrate with approved fasteners 8 inches on center.
- C. Break and install coated metal in accordance with approved details. Insure proper attachment with 1/4 inch expansion joints and the installation of a minimum 2 inch bond breaker tape prior to sealing the joint.
- D. Heat weld a 6 inch wide strip of membrane over the coated metal expansion joints.

3.8 COMPLETION

- A. Remove any and all debris, excess materials and scrap of any kind from the roof and surrounding premises prior to demobilization.
- B. Inspect all field welds, detailing and terminations to insure a 100% watertight installation.

3.9 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Contract Documents.

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- B. Correct identified defects or irregularities.
- C. Require site attendance of roofing and insulation materials manufacturers during installation of the Work.

3.10 TOUCH-UP PAINTING

- A. Any fasteners which penetrate the steel deck at a location exposed to view by the public from the underside which do not match the finish of the underside of the roof deck must be coated or painted white to match the roof deck.

3.11 CLEANING

- A. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their instructions.
- B. Repair or replace defaced or disfigured finishes caused by work of this section.
 - 1. Trash and scraps are a hazard and shall be collected and disposed of immediately.
 - 2. The applicator shall remove all masking protection equipment, materials and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.
 - 3. Where existing sod has been damaged, install new sod in an acceptable manner blending the edges of new sod to existing surrounding sod.
 - a. Do not place new sod over existing sod. Excavate so that top plane of new sod will conform to adjacent plane of existing sod. Match new sod with existing sod type

3.12 PROTECTION

- A. Protect building surfaces against damage from roofing work.
- B. Protect surfaces where traffic must continue over finished roof membrane.
- C. Upon completion of roofing work (including associated work) advise Owner of recommended procedures for surveillance and protection of roofing during remainder of construction period. At the end of the construction period, or at a time when remaining construction work will in no way affect or endanger roofing, make a final inspection of roofing and prepare a written report to Owner and Architect describing nature and extent of deterioration or damage, if any, found in the work.
- D. Repair or replace deteriorated or defective work found at time of final inspection. Repair damages to roofing which occurred subsequent to roofing installation and prior to final inspection.

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- E. Repair or replace the adjacent roofing and associated work outside the scope of work of this contract but damaged by the work of this contract to a condition free of damage and deterioration at time of substantial completion.

END OF SECTION

MANUFACTURER'S NOTICE OF INTENT TO ISSUE ROOF WARRANTY

Thermoplastic Single-ply Roofing

Whereas

herein called the "Roofing System Manufacturer" hereby gives notice to:

Owner:

Address: _____
of its Notice of Intent to issue its Roof Warranty, to the Owner for the Project,

Project: _____

Address: _____
incorporating the Manufacturer's _____

roofing system or product is installed in accordance with the Contract Documents.

A. Manufacturers' Notice of Intent to Issue Roof Warranty in conformance with the Contract Documents shall be executed by the manufacturer as part of the Product Data submittals prior to the start of construction. The contractor shall submit a single form, only from a specified manufacturer, and shall include items 1 and 2 as follows:

1. A detailed description of the components of the manufacturer's system proposed and a list of any other component and accessories, proposed for use in the system that is provided by other manufacturers or suppliers.
 - a). A statement that the Manufacturer's Representative has thoroughly reviewed the job conditions and project manual, (plans, specifications & details). Having reviewed the above items and project requirements in detail, the Representative will provide a written response to the Design Professional ten days prior to the bid date, if conflicts between the Manufacturer's requirements occur with the above listed documents.
2. A sample of the Manufacturer's Roof Warranty shall be attached to and submitted with this form and the submittal package. The manufacturer shall delete all exceptions relative to system failure from high wind uplift pressures due to gale force winds and windstorms below a nominal wind speed of 120 mph and below the following "Unfactored / (Nominal) Wind Uplift Pressures as calculated per the Florida Building Code and ASCE 7:

a)	Interior Roof (Zone 1)	-64.0 PSF
b)	Perimeter of Roof (Zone 2)	-75.0 PSF
c)	Corners of Roof (Zone 3)	-75.0 PSF
3. **Twenty (20)** year total roof system warranty inclusive of roofing materials, all included products and accessories, including all metal flashings, from roof deck to finish membrane, whether supplied by the membrane manufacturer or by others. Provide a "No Dollar Limit", single source responsibility, non-deductible roofing warranty inclusive of all material and labor in full compliance with all the requirements of the project specifications.

MANUFACTURER'S NOTICE OF INTENT
TO ISSUE ROOF WARRANTY - page 2

- a). The manufacturer shall modify the roof warranty to include total labor coverage for the warranty period and to Cover damage to roof materials and insulation down to the roof deck resulting from water penetration.
 - b). The manufacturer shall modify the roof warranty to state that the Owner has the right to make emergency repairs without voiding the warranty if the manufacturer or applicator does not respond within 24 hours to notification by the Owner of a defect or leak.
 - c). The manufacturer shall modify the roof warranty to state that annual inspections with written reports by the Owner, and resulting maintenance, are sufficient to fulfill the periodic inspection requirements of the manufacturer's warranty.
4. The manufacturer's Representative shall conduct a Post-Construction field inspection no earlier than **eleven (11) months**, and no later than **twelve (12) months** after the Date of Substantial Completion. Submit a written report within seven (7) days of this visit to the Owner's Maintenance Dept. listing observations, conditions and any recommended repairs or remedial action.
5. The manufacturer will, during the second (2nd), and fifth (5th), year of this warranty, inspect the roof system and provide a written Executive Summary of the Roof Condition to the Owner.

Further, the manufacturer acknowledges that the applicator:

Roof Applicator's Name: _____

Address: _____

has been approved to install this roof system since _____, _____ and meets the criteria for an approved applicator listed in the Project Manual.

By signing the above, the Authorized Representative of said Manufacturer certifies and represents the Roofing System Manufacturer with the authority to contract and make the above representations to the Owner.

By: _____ Date: _____
Signature of Authorized Representative

Name: _____ Title: _____

Witness: _____

Date: _____

APPLICATOR'S WARRANTY FOR ROOFING

Whereas _____

of (Address) _____

herein called the "Roofing Contractor", has performed roofing, flashing and sheet metal and associated ("work") on following project:

Owner: _____

Address: _____

Name and Type of Building: _____

Address: _____

Area of Work: _____

Date of Acceptance: _____

Warranty Period: **Two (2) Years**

Date of Expiration: _____

The Roofing Contractor hereby certifies to the Owner as a "Final Statement of Compliance" that the finished roof membrane (and insulation) system was installed in compliance with the approved contract documents.

AND WHEREAS Roofing Contractor has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks, faulty or defective materials, seam failure, improper attachment of roofing to decking or insulation to decking, waves and fish-mouths in the sheet waterproofing, improper flashing attachment, water ponding, improper installation of roof drains and scuppers, improper installation of roof curbs, roofing components deemed faulty or in disrepair, and workmanship for designated the Warranty Period.

NOW THEREFORE Roofing Contractor hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work, and as are necessary to maintain said work in watertight condition.

This Warranty is made subject to the following terms and conditions.

1. Specifically excluded from this Warranty are damages to roofing work and other parts of the building, and to building contents, caused by: a) lightning, windstorm; b) fire; c) failure of roofing system substrate or structure (including cracking, settlement, excessive deflection, deterioration, and decomposition). When work has been damaged by any of the foregoing causes, Warranty shall be null and void until such damage has been repaired and until cost or repairs has been paid by the Owner or by another responsible party as so designated.

2. The Roofing Contractor is responsible for damage to work covered by this Warranty, including consequential damages to building or building contents, resulting from leaks or faults or defects of work.
3. The Owner shall promptly notify Roofing Contractor of observed, known or suspected leaks, defect, disrepair or deterioration. The Contractor shall guarantee to respond to all notifications within twenty-four (24) hours and to make all such repairs as deemed necessary to correct said leaks or defects to a satisfactory condition to the Owner. Repairs shall be made by workman in the current employment of the Contractor. Subcontracting of repair work is not permitted.
4. The definition of faulty roofing components or roofing in disrepair includes, but is not limited to the following:
 - A. Blisters in roofing.
 - B. Improper attachment of roofing to decking or insulation to decking.
 - C. Cracks or ridging in roofing membranes.
 - D. Delamination, shears or tears in membrane.
 - E. Improper flashing attachment.
 - F. Water ponding.
 - G. Improper installation of roof drains and scuppers.
 - H. Improper installation of roof curbs.
 - I. Defects in the quality of work or materials.
 - J. Leaks of any kind.
5. This Warranty is recognized to be the only warranty of the Roofing Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of roofing failures. Specifically, this Warranty shall not operate to relieve Roofing Contractor of responsibility for performance of original work in accordance with requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this

_____ day of _____, 20_____.

Roofing Contractor Firm

Signature of Authorized Person

Title

Witness

(SEAL)

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
1. Flashings and counterflashings at metal roofing.
 2. Valley, transition and cap flashings at metal roofing.
 3. Flashings and counterflashings at thermoplastic membrane roofing.
 4. Valley, transition and cap flashings at thermoplastic membrane roofing.
 5. Sill and transition flashings at the curtainwall system.
 6. Miscellaneous sheet metal flashing at all roof areas.
 7. Miscellaneous sheet metal accessories
- B. Related Sections:
1. Section 06100 - Miscellaneous Rough Carpentry.
 2. Section 07410 – Standing Seam Metal Roofing.
 3. Section 07530 – Thermoplastic Single-Ply Membrane Roofing
 4. Section 07900 – Joint Protection.
- C. References:
1. ASTM International:
 - a. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - b. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process.
 - c. ASTM A792/A792M - Standard Specification for Steel Sheet, Aluminum-Zinc Coated by the Hot-Dip Process.
 - d. ASTM B29 – Standard Specification for Refined Lead.
 - e. ASTM B32 - Standard Specification for Solder Metal.
 - f. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
 - g. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 - h. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
 - i. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 2. National Roofing Contractors' Association:
 - a. NRCA – National Roofing Contractors' Association Manual.
 3. Sheet Metal and Air Conditioning Contractors:
 - a. SMACNA - Architectural Sheet Metal Manual..

1.2 SUBMITTALS

- A. Section 01300 - Submittal Procedures: Submittal procedures.

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- B. Shop Drawings: Submit shop drawings for any condition not shown on plans and details.
- C. Product Data: Submit data on manufactured components metal types, finishes, and characteristics.
- D. Samples:
 - 1. Submit two samples 12 x 12 inch in size illustrating a typical external corner, internal corner, material and finish.
 - 2. Submit two samples 12 x 12 inch in size illustrating metal finish color.

1.3 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA and standard details and requirements.
- B. Failure to install work in strict accordance with provisions of this Section, is subject to total rejection of the work specified herein.
- C. Maintain copy of document on site.

1.4 QUALIFICATIONS

- A. Fabricator and Installer: Company specializing in sheet metal work with minimum five years documented experience.

1.5 PRE-INSTALLATION MEETINGS

- A. Section 01300 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials causing discoloration or staining.

1.7 COORDINATION

- A. Section 01039 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate application of flashings with application of roofing, protruding material, and roof accessories to provide a complete weathertight installation according to the specified warranty requirements.

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PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Stainless Steel: ASTM A 167; Type 304, soft temper, 22 ga. or 24 ga. thickness unless otherwise specified; smooth 2B finish.
- B. Zinc-Coated Steel: Commercial quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, 24 gage except as otherwise indicated.
- C. Aluminum: ASTM B 209, alloy 3003, temper H14, AA-C22A41 mill finish or prefinished as noted by details; thickness as noted by details and schedule within this section.
- D. Coated Sheet Metal for Thermoplastic Roofs: Membrane manufacturers approved coating laminated to 0.040" thick, mill finish aluminum, ASTM B 209, alloy 3003
- E. If any of above is noted to be prefinished, exposed surfaces shall be factory painted with a full strength fluoropolymer finish. Paint shall contain 75% KYNAR 500 resin and applied, (0.80 mil thickness), over manufacturer's primer, (0.20 mil thickness), with a total system thickness of 1.00 mil per ASTM D 1400. Gloss to be 20-30% per ASTM d 523 at 60 degrees.

2.2 ACCESSORIES

- A. Termination Bar: Aluminum ASTM B-209, Alloy 6061, Temper T-6, mill finish; sizes 1/8" thick by 1-1/2" with rounded edges.
- B. Sheet Metal Fasteners:
 - 1. Fasteners: Stainless steel
 - 2. Exposed fasteners are prohibited, and may only be used where specifically permitted by the project details or the Architect.
 - 3. Fasteners being on weather side of metal are to be a minimum #10 size "Scots" type screw with metal-backed neoprene washer integral with the head of the screw, or 3/16" diameter minimum steel rivet.
 - 4. Use stainless steel fasteners for exterior application and cadmium plated fasteners for interior applications. Use painted fasteners where fastening into painted panel or trim.
 - 5. All fasteners which penetrate the steel deck at a location exposed to view by the public from the underside must be coated white to match the roof deck.
 - 6. Locate and space fastenings for true vertical and horizontal alignment. Use proper type fastening tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.
- C. Fasteners: Stainless steel: Fastener size and penetrations into various substrates should be as follows:
 - 1. Wood: ¼ inch screw x 2 inch penetration or
1½ inch annular ring stainless steel roofing nail.
 - 2. Concrete / CMU: ¼ inch "zamac" nail-in x 1 ½ inch penetration.

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- D. Fastener Schedule: Anchorage for below assumed to be into wood blocking, see details for other specifics.
1. Continuous Cleats: 1½ inch annular ring stainless steel roofing nails at 6 inches on center maximum.
 2. See Fastener Schedule sheets included as part of the project documents.
 3. For all conditions not covered, refer to fastener specifications above or consult with Architect.
- E. Dry-in Membrane: Forty (40) mils minimum thickness, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet.
1. Interwrap Titanium PSU 30
 2. Protecto-Wrap Rainproof 40
 3. Soprema Sopralene Stick
 4. Tamko TW Metal and Tile underlayment
 5. Architect approved (prior to bidding) equivalent product.
- F. Primer: Asphaltic based primer for flanges set in adhesive.
- G. Protective Backing Paint (bituminous coating): FS-TT-C 494; Cold applied asphalt mastic, SSPC paint 12 compounded for 15 mil dry film thickness per coat.
- H. Sealant: Sealant specified in Section 07 90 00.
- I. Plastic Cement: ASTM D 4586, Type I.
- J. Flashing Tape (concealed application): Double sided, gray extruded or preformed, 99% solids, cross linked polyisobutylene compound, non-sag, non-toxic, non-staining, permanently elastic self adhesive tape. One eighth (1/8) inch minimum thickness, 3/4" minimum width unless otherwise noted on the drawings.
1. Pecora Corporation Extru-Seal Glazing Tape
 2. Tremco Construction Products 440 II Tape
 3. Equivalent products as approved by the Owner or Architect.
- K. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- L. Solder: ASTM B 32; type suitable for application and material being soldered.
- M. Sheet Metal Adhesive for aluminum and pre-finished metal: SciGrip SG300 Series adhesive, 2 component system as manufactured by SCIGRIP Americas, 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, (www.scigrip.com) or Architect approved equal.

2.3 FABRICATION

- A. Form sections shape indicated on Drawings, accurate in size, square, and free from distortion or defects.

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- B. Fabricate cleats of same material as sheet metal, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. At all metal roofing termination and transition assemblies / flashing which are to be fabricated using pre-finished metal per the project details; utilize the specified sheet metal adhesive in lieu of soldering or welding, unless noted otherwise by the details
- E. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- F. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- G. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.
- H. Prein edges of stainless steel sheet. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints. (Heliarc shop formed aluminum joints).
- I. Perform soldering work slowly, with properly heated irons to thoroughly heat seam material and sweat solder through full width of seam that shall show not less than 1 inch of evenly flowed solder.
 - 1. Start soldering immediately after application of flux.
 - 2. Solder flat locked seams.
- J. Fabricate vertical faces with bottom edge formed outward 1 inch and hemmed to form drip.
- K. Fabricate flashings to allow toe to extend 1 1/2" over wood nailers. Return and brake edges.
- L. At all fabrication of thermoplastic coated aluminum, remove coating from metal surfaces to be joined, bond metal surfaces and all joints using the specified epoxy adhesive per the manufacturer's recommendations.
- M. Heat weld the manufacturer approved thermoplastic flashing membrane over all joints in PVC coated metal flashing fabrications once epoxy adhesive has set.

2.4 FINISH

- A. Prepare metal surfaces to be painted in accordance with Section 09900. All stainless steel flashings to remain unfinished, except as noted by details or when included as a fabrication within an otherwise prefinished trim component, in which case, prepare surfaces in accordance with the finish manufacturer's published recommendations.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mils when dissimilar metals are in contact.

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- C. Isolate dissimilar metals with accepted isolation paint or other accepted materials.
- D. All thermoplastic coated metal is to remain exposed and unfinished.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01039 - Administrative Requirements: Coordination and project conditions.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- C. Verify roofing termination and base flashings are in place, sealed, and secure.
- D. Do not proceed with work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted counterflashing (reglets) to lines and levels indicated on Drawings. Seal top of counterflashing (reglets) with sealant.
- C. Paint concealed metal surfaces with protective backing paint to minimum dry film thickness of 15 mils where applicable.

3.3 INSTALLATION

- A. Secure flashing in place using concealed fasteners. Use exposed fasteners only where specifically permitted by the project details.
- B. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- C. Solder, weld or epoxy adhere per metal type metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- D. Apply sealant at lap and splice joints as indicated by the project details. Heat weld the manufacturer approved thermoplastic flashing membrane over all joints in PVC coated metal flashings
- E. Apply modified bitumen cement compound between metal flashing and bituminous underlayment and/or flashing membrane as indicated by the project details. At other locations utilize self-adhesive butyl flashing tape as specified above.

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- F. All straight joints in coping cap and fascia metal shall be formed with a minimum of cutting, and assembled in a manner to allow overlap of materials and the underlying cleat for sealant contact
- G. Seal metal joints watertight.

3.4 TOUCH-UP PAINTING

- A. Any fasteners which penetrate the steel deck at a location exposed to view by the public from the underside which do not match the finish of the underside of the roof deck must be coated or painted white to match the roof deck.

3.5 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspection will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.6 SCHEDULE (Metal Roofing)

	Location	Metal Type	Thickness	Finish
A.	Edge Metal Transition Fabrications	Aluminum	0.040"	Kynar
B.	Edge Metal and Rake Metal	Aluminum	0.040"	Kynar
C.	Continuous Cleats (Edge Metal)	Aluminum	0.050"	Mill
D.	Fascia Metal and Skirt Metal	Aluminum	0.040"	Kynar
E.	Counterflashing & Skirts	Aluminum	0.040"	Kynar
F.	Counterflashing Receiver	Stainless Steel	24 gage	Mill
G.	Counterflashing Retainer Cleats	Aluminum	0.032"	Kynar
H.	Valley Metal, Ridge & Hip Caps	Aluminum	0.040"	Kynar
I.	Head Wall Transition Fabrications	Aluminum	0.040"	Kynar
J.	Metal Roof "Z-closures"	Aluminum	0.050"	Kynar
K.	Roof Penetration Collar Flashings	Stainless Steel	24 gage	Painted
L.	Blocking/cleats	galvanized steel	18 gage	Mill
M.	Miscellaneous metal flashing and transitions: Mill finish 24 gage stainless steel, or pre-finished 0.040" aluminum as required by Architect.			

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3.7 SCHEDULE (Thermoplastic Roofing)

	Location	Metal Type	Thickness	Finish
A.	Edge Metal Transition Fabrications	Aluminum	0.040"	PVC
B.	Edge Metal and Rake Metal	Aluminum	0.040"	PVC
C.	Continuous Cleats (Edge Metal)	Aluminum	0.040"	Mill
D.	Arched Roof Transition Flashing	Aluminum	0.040"	PVC
E.	Main Roof Transition Flashing	Aluminum	0.040"	Mill
F.	Counterflashing & Skirts	Aluminum	0.040"	Mill
G.	Counterflashing Receiver	Aluminum	0.040"	Mill
H.	Counterflashing Retainer Cleats	Aluminum	0.040"	Mill
I.	Miscellaneous metal coated 0.040" aluminum flashing and transitions:			Mill finish
	0.040" aluminum, or PVC as required by Architect.			

3.8 SCHEDULE (Area Dividers)

	Location	Metal Type	Thickness	Finish
A.	Area Divider Coping Cap	Aluminum	0.040"	Kynar
B.	Coping Cap Fabrications	Aluminum	0.040"	Kynar
C.	Continuous Cleats (Edge Metal)	Aluminum	0.050"	Mill
D.	Coping Cap Splice Joint Covers	Aluminum	0.040"	Kynar
E.	Counterflashing & Skirts	Aluminum	0.040"	Kynar
F.	Counterflashing Receiver	Aluminum	0.040"	Kynar
G.	Counterflashing Retainer Cleats	Aluminum	0.040"	Kynar
H.	Miscellaneous metal flashing and transitions: Mill finish 24 gage stainless steel, or pre-finished 0.040" aluminum as required by Architect			

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Silicone building sealants
 - 2. Silicone seals
 - 3. Joint backing and accessories as may be required for refurbishment of metal framed skylight and glazing systems.

- B. Related Sections:
 - 1. Section 07410 – Standing Seam Metal Roofing
 - 2. Section 07620 – Sheet Metal Flashing and Trim
 - 3. Section 08446 – Aluminum Curtainwall Repairs

1.2 REFERENCES

- A. ASTM
 - 1. ASTM C 639 - Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants.
 - 2. ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer
 - 3. ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
 - 4. ASTM C 794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
 - 5. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
 - 6. ASTM C1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.
 - 7. ASTM C 1184 – Standard Specification for Structural Silicone Sealants
 - 8. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
 - 9. ASTM C 1248 - Standard Test Method for Staining Porous Substrate by Joint Sealants.
 - 10. ASTM C 1330 – Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants
 - 11. ASTM C 1401 – Standard Guide for Structural Sealant Glazing
 - 12. ASTM D 412 - Standard Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers – Tension
 - 13. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 - 14. ASTM D 2240 - Rubber Property Durometer Hardness.

- B. Government Services Administration (GSA), Commercial Item Descriptions (CID):
 - 1. GSA CID A-A-272A - Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
 - 2. GSA CID A-A-1556 -Sealing Compound Elastomeric Type, Single Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures).

1.3 DEFINITIONS

- A. Structural bite: Minimum width or contact surface of structural silicone sealant on both glass panel and support frame. (ASTM C1401).
- B. Glueline thickness: Width of installed structural silicone sealant. (ASTM C1401).

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Products Data: Submit data for silicone sealant, primer, joint backing, and other accessories. Include material safety data sheets (MSDSs) and certifications showing compliance with specified standards.
- C. Shop drawings detailing sealant joints and indicating dimensions, materials, structural bite, glueline thickness, joint profile, and support framing.
- D. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.
- E. Warranty: Include coverage for installed sealants and accessories failing to achieve watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

1.5 QUALITY ASSURANCE

- A. Perform work in strict accordance with sealant manufacturer's requirements for preparation of surfaces and material installations instructions.
- B. Maintain one copy of each document covering installation requirements on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience, and approved by manufacturer.

1.7 MOCKUP

- A. Section 01 40 00 - Quality Requirements: Requirements for mockup.
- B. Construct mockup of sealant joints in conjunction with window, wall and roof mockups specified in other sections.
- C. Construct mockup with specified sealant types and with other components noted.

1. Determine preparation and priming requirements based on manufacturers recommendations; take action necessary for correction of failure of sealant tests on mock-up.
2. Verify sealants, primers, and other components do not stain adjacent materials.

D. Locate where directed by Architect/Engineer.

E. Incorporate accepted mockup as part of Work.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

C. Existing Conditions:

1. Verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring services required and other visible conditions prior to Bidding.
2. Report conflicts and problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
3. Replace or restore to original condition any materials or work damaged during construction.
4. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas.
5. Failure to install the work in strict accordance with provisions of this Section is subject to total rejection of work specified herein.

1.9 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with sections referencing this section.

1.10 WARRANTY

A. Installer's five [5] year workmanship warranty.

B. Manufacturer's twenty (20) year material warranty for properly installed silicone sealant.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Dow Corning Corporation, P.O. Box 994, Midland, MI 48686-0994; (800) 248-2481; www.dowcorning.com/construction.

2.2 SEALANT

- A. Dow Corning 795 Silicone Building Sealant: One-component, neutral-cure, RTV (room temperature vulcanizing) silicone rubber sealant for structural and non-structural glazing, structural attachment of panel systems, and above-grade weathersealing joints with most common construction materials.
1. ASTM C920, Type S, Grade NS, Class 50, Use NT, G, A, and O.
 2. ASTM C1184, Type S, Use G, A, and O.
 3. GSA CID A-A-272A - Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
 4. GSA CID A-A-1556 -Sealing Compound Elastomeric Type, Single Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
 5. Characteristics /Physical Properties:
 - a. Color: Black / Gray
 - b. Curing time: 7 to 14 days
 - c. Tack-free time: 3 hours
 - d. Working time: 20 to 30 minutes
 - e. Curing time: 7 to 14 days
 - f. Full adhesion time: 14 to 21 days
 - g. Flow, sag, or slump: 0.1 inch, tested in accordance with ASTM C639.
 - h. Volatile organic compound (VOC) content: 28 grams/liter
 - i. Volatile organic compound (VOC) content: 28 grams/liter
 - j. Cured sealant properties after 21 days at [77 degrees F] [25 degrees C] and 50 percent relative humidity.
 - 1) Joint movement capability: Plus and minus 50 percent, tested in accordance with ASTM C719.
 - 2) Hardness: 35-durometer hardness, Shore A, tested in accordance with ASTM D2240.
 - 3) Maximum peel strength: [32 ppi] [5.7 kg/cm], tested in accordance with ASTM C794.
 - 4) Tensile adhesion modulus, tested in accordance with ASTM C1135:
 - i. At 25 percent extension: 45 psi.
 - ii. At 50 percent extension: 60 psi.
 - 5) Staining: None on concrete, marble, granite, limestone, and brick, when tested in accordance with ASTM C1248.
 - 6) Service temperature range: Minus 40 to plus 300 degrees F
 - 7) Weathering after 10,000 hours, tested in accordance with ASTM C1135 using QUV Weatherometer:
 - i. At 25 percent extension: 35 psi.
 - ii. At 50 percent extension: 50 psi.

- B. *Dow Corning 123 Silicone Seal*: Preformed, ultra-low modulus silicone extrusion for bonding to substrates with silicone sealant.
 - 1. Roll width: Approximately 2 inches (field verify)
 - 2. Color: Black
 - 3. Characteristics /Physical Properties:
 - a. Hardness: 25-durometer hardness, Shore A, tested in accordance with ASTM C 661.
 - b. Properties, tested in accordance with ASTM D 412:
 - 1) Tensile strength: 400 psi.
 - 2) Elongation: 400 percent
 - c. Tear strength, die B: [100 ppi] [17.5 kN/m], tested in accordance with ASTM C 624.
 - d. Surface: Grooved to facilitate bending.

2.3 ACCESSORIES

- A. Substrate Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Sealant backing: Provide backing complying with ASTM C 1330 Type B non-absorbent, bi-cellular material with surface skin or as recommended by sealant manufacturer.
 - 1. Size: Greater than joint opening by 25% minimum.
- D. Bond Breaker: Pressure sensitive tape to prevent adhesion to joint fillers or joint surfaces at back of joint and allow sealant movement.
 - 1. Type: Polyethylene or other plastic tape recommended by sealant manufacturer.
- E. Glazing setting blocks and spacers: Compatible with silicone sealant and recommended by sealant manufacturer.
 - 1. Acceptable materials: Silicone, Alcryn, polyurethane foam type, and vinyl extrusions.
 - 2. Unacceptable materials: EPDM, neoprene, Santoprene, Krayton, and other similar organic materials are not acceptable.
 - 3. Prior to installation, setting blocks and spacers shall be tested for compatibility.
- F. Masking tape: Non-staining, non-absorbent type compatible with silicone sealant and adjacent surfaces

PART 3 EXECUTION

3.1 GENERAL

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Prepare substrates and apply silicone sealant and silicone seal in accordance with manufacturer's instructions and reviewed submittals
- C. Site install glass panels specified in Section 08 88 00 – Metal Framed Skylight Glazing
- D. To ensure compatibility and correct sizes, coordinate provision of glass, support framing, and sealants
- E. Handle, store, and apply materials in compliance with applicable Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), volatile organic compound (VOC), and other regulations and manufacturer's material safety data sheets (MSDSs).
- F. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

- A. Inspect existing joints to be repaired and new substrates to receive silicone seal. Ensure surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, and previous films and coatings.
 - 1. Ensure surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, and previous films and coatings.
 - 2. Ensure that metal framing surfaces to receive glazing are flat and smooth without slots, serrations, and other irregularities.
 - 3. Verify aluminum framing has alodine, anodized, fluorocarbon paint, polyester powder coat finish, or other acceptable finish or material. Mill-finish aluminum is not an acceptable substrate for structural silicone sealant.
- B. Remove existing joint sealant materials. Clean joints and remove joint sealant residue. Repair deteriorated or damaged substrates as recommended by silicone sealant manufacturer to provide suitable substrate. Allow patching materials to cure.
- C. Clean substrates to receive silicone sealant and silicone seal.
 - 1. Porous surfaces: Abrasive-clean followed by blasting with oil-free compressed air.
 - 2. Nonporous surfaces: Use two-cloth solvent wipe in accordance with ASTM C 1193.
- D. Adhesion test: Apply silicone sealant to small area and perform adhesion test in accordance with ASTM C1193, Method A, to determine if primer is required to achieve

adequate adhesion. If necessary, apply primer at rate and in accordance with manufacturer's instructions.

- E. Masking: Apply masking tape as required outlining area where silicone seal will be applied, to protect adjacent surfaces, to ensure straight bead line and facilitate cleaning.
- F. Protect elements surrounding Work of this section from damage or disfiguration.

3.3 INSTALLATION

A. **Silicone Sealant:**

1. Spacers and setting blocks: Install as indicated on drawings and reviewed shop drawings. Ensure joint openings and recesses are accurately sized.
2. Sealant backing: Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
3. Bond breaker: Install on backside of joint where backing is not feasible.
4. Temporary glass support: Use temporary fasteners, clips, two-sided adhesive, and other means to retain glass panels while sealant is applied and allowed to cure as approved by the design professional.
5. Use sealant-dispensing equipment to push sealant bead into opening. Fill joint opening to full and proper configuration. Apply in continuous operation. Ensure sealant fills entire joint and firmly contacts all surfaces. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
6. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
7. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 - a. Minimum joint width: 1/4"; use 1:1 width/depth ratio.
 - b. Width/depth ratio of 2:1.
 - c. Neck dimension no greater than 1/2 of joint width.
 - d. Surface bond area on each side not less than 75 percent of joint width.
8. Install bond breaker where joint backing is not used
9. Tooling: Before skinning or curing begins, tool sealant with metal spatula:
 - a. Provide concave, smooth, uniform, sealant finish. Eliminate air pockets and ensure complete contact on both sides of joint opening.
 - b. Tool joints with one continuous stroke.
 - c. Do not use water, soap, or alcohol to facilitate tooling.

B. **Silicone Seal:**

1. Within 10 minutes of sealant application, press silicone extrusion into wet sealant. Apply consistent pressure with roller to ensure uniform contact with 3/8 inch minimum bonding area.
2. Complete horizontal joints prior to vertical joints. Lap vertical sealant over horizontal joints. At joint ends, cut extrusion with razor knife.

- C. Perform installation in accordance with ASTM C1193 and manufacturer's instructions.

- D. Cleaning: Remove masking tape and excess sealant.
 - 1. Uncured sealant: Within 10 minutes of application, remove uncured sealant with solvent-dampened cloth, wearing solvent-resistant gloves.
 - 2. Completely cured sealant: Carefully cut or scrape away.
 - 3. Neck dimension no greater than 1/2 of joint width.
 - 4. Surface bond area on each side not less than 75 percent of joint width.
- E. Allow sealant to fully cure before adhesive is stressed. Use test specimens formed at time of sealant application to verify curing time. When cured, remove temporary glass supports
- F. Ensure installed sealant is not painted as part of other construction operations.

3.4 FIELD QUALITY CONTROL

- A. Perform adhesion tests in accordance with manufacturer's instructions and ASTM C1193, Method A, Field-Applied Sealant Joint Hand-Pull Tab.
 - 1. Perform 5 tests for first 1,000 linear feet of applied silicone sealant and 1 test for each 1,000 feet of applied sealant thereafter or perform 1 test per floor per building elevation minimum.
 - 2. For sealants applied between dissimilar materials, test both sides of joint.
- B. Sealants and/or Seals failing adhesion test shall be removed, substrates cleaned, sealants and seals re-installed, and re-testing performed.
- C. Follow all requirements and maintain test log for structural/weatherseal applications and submit report to Architect indicating tests, locations, dates, results, and remedial actions.

3.5 FINAL CLEANING

- A. Section 01700 - Execution and Closeout Requirements: Final Cleaning.
- B. Clean adjacent soiled building surfaces.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01700 - Execution and Closeout Requirements: Protecting Installed Construction.
- B. Protect sealants until cured.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Removal, modification and reinstallation of cosmetic trim on curtainwall.
 - 2. Drilling curtainwall components and injection of waterproofing fillers.
 - 3. Installation of new fabricated aluminum sill flashing.
 - 4. Installation of mechanical anchorage system for cosmetic trim.
 - 5. Pre-cleaning of existing glass and framing prior to refurbishment activities.
 - 6. Removal and disposal of existing sealant material.
 - 7. Application of sealant (wet glazing) to existing curtainwall system.
 - 8. Preservative treatment of wood where indicated.

- B. Related Sections:
 - 1. Section 07620 – Sheet Metal Flashing and Trim.
 - 2. Section 07900 – Joint Protection / Sealants

1.2 REFERENCES

- A. American Architectural Manufacturers Association (AAMA)
 - 1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 2. AAMA 800 - Voluntary Specifications and Test Methods for Sealants
 - 3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
 - 4. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
 - 5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

- B. American National Standards Institute (ANSI)
 - 1. ANSI Z 97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

- C. American Society of Civil Engineers (ASCE)
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

- D. Consumer Product Safety Commission (CPSC)
 - 1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

- E. Glass Association of North America (GANA):
 - 1. Engineering Standards Manual.
 - 2. Glazing Manual.
 - 3. Laminated Glass Design Guide.

- F. Flat Glass Manufacturers Association (FGMA).

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- G. Insulating Glass Manufacturers Alliance (IGMA):
 - 1. IGMA TB-3001 - Sloped Glazing Guidelines.
 - 2. SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units.

1.3 SUBMITTALS

- A. Section 01300 - Submittal Procedures
- B. Product Data: Submit technical data on
 - 1. Sealants and filler compounds, (see also section 07900).
 - 2. Metal flashing materials and components, (see also 07620).
 - 3. Fasteners and Anchors, (see also section 07620).
- C. Closeout Submittals: Provide according to section 01700 and the following:
 - 1. Project record documents.
 - 2. Installer's written warranty.

1.4 QUALIFICATIONS

- A. Applicator: Company specializing in performing Work of a similar nature to the designated repairs within this section with minimum three years documented experience

1.5 MOCK-UP

- A. Prior to curtainwall repairs beginning in earnest, execute a mock-up of repairs which are to be performed at a location designated by the Architect and Owner. The mock-up will serve to clarify the repair methods and procedures for all parties involved and establish a quality of work for the remainder of the project.
 - 1. Mock-up shall include adequate area along the lower portion of the existing curtainwall to demonstrate the repairs at a vertical mullion, the transition from a level to curved sill, and repairs at an intermediate radiused mullion.
 - 2. Repairs to be demonstrated shall include drilling and filling of extrusions, application of new sill flashing, installation of trim cap anchor system and wet glazing with sealant.
 - 3. Notify architect and owner one week in advance of beginning work on the mock-up, due to the complexity of the repairs, the architect will schedule periodic visits during execution of the mock-up to assist with interpretation of design intent.
 - 4. Once the mock-up is completed and approved by the architect and owner, it shall be maintained in undisturbed condition as long as possible as a construction aid prior to being integrated into the finished work.

1.6 QUALITY ASSURANCE

- A. Perform work in strict accordance with sealant manufacturer's requirements for preparation of surfaces and material installations instructions.

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- B. Maintain one copy of each document covering installation requirements on site.
- C. Perform Work in accordance with current Florida Building Code requirements.

1.7 WARRANTY

- A. Provide a two (2) year material and workmanship warranty under provisions of Section 01700 –Execution and Closeout Requirements

PART 2 PRODUCTS

2.1 MATERIALS

- A. Aluminum Sheet: ASTM B 209, alloy 3003, temper H14, AA-C22A41 mill finish or prefinished where exposed to view with a factory applied, full strength fluoropolymer finish. Paint shall contain 75% KYNAR 500 resin and applied, (0.80 mil thickness), over manufacturer's primer, (0.20 mil thickness), with a total system thickness of 1.00 mil per ASTM D 1400. Gloss to be 20-30% per ASTM d 523 at 60 degrees. See section 07620 for accessories and associated materials.
- B. Sealant at Glazing: Dow Corning 795 one-component, neutral-cure, room temperature vulcanizing, silicone rubber sealant. See section 07900 for additional information.
- C. Sealant / Filler within Curtainwall: Dow Corning 1299 one-component, neutral-cure, room temperature vulcanizing, self-leveling silicone rubber sealant intended for use in fenestration assemblies. See section 07900 for additional information
 - 1. Validated AAMA Component as Narrow Joint Seam Sealer per Specification 803.3-10, Type II.
 - 2. Characteristics /Physical Properties:
 - a. Color: Clear
 - b. Curing time: 7 to 14 days
 - c. Volatile organic compound (VOC) content: less than 60 grams/liter.

2.2 ACCESSORIES

- A. Substrate Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Sealant backing: Provide backing complying with ASTM C 1330 Type B non-absorbent, bi-cellular material with surface skin or as recommended by sealant manufacturer.
 - 1. Size: Greater than joint opening by 25% minimum.

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- D. Bond Breaker: Pressure sensitive tape to prevent adhesion to joint fillers or joint surfaces at back of joint and allow sealant movement.
 - 1. Type: Polyethylene or other plastic tape recommended by sealant manufacturer.
- E. Glazing setting blocks and spacers: Compatible with silicone sealant and recommended by sealant manufacturer.
 - 1. Acceptable materials: Silicone, Alcryn, polyurethane foam type, and vinyl extrusions.
 - 2. Unacceptable materials: EPDM, neoprene, Santoprene, Krayton, and other similar organic materials are not acceptable.
 - 3. Prior to installation, setting blocks and spacers shall be tested for compatibility.
- F. Masking tape: Non-staining, non-absorbent type compatible with silicone sealant and adjacent surfaces.

PART 3 EXECUTION

3.1 GENERAL

- A. Contractor to verify the existing conditions before starting work. Inspect all surfaces and components to confirm conditions are acceptable for the specified work.
- B. Handle, store, and apply materials in compliance with applicable Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), volatile organic compound (VOC), and other regulations and manufacturer's material safety data sheets (MSDSs).

3.2 PREPARATION

- A. Remove the cosmetic trim cap extrusions and associated spline clips; label, store and protect for reinstallation.
- B. Grind or cut to remove the lower spline extrusion along the window sill as indicated in the project details.
- C. Clean all surfaces to receive new flashings and sealants in accordance with the manufacturer's instructions and approved submittals.
- D. Inspect existing joints to be repaired and new substrates to receive silicone seal. Ensure surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, and previous films and coatings.
 - 1. Ensure surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, and previous films and coatings.

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2. Ensure that metal framing surfaces to receive glazing are flat and smooth without slots, serrations, and other irregularities.
 3. Verify aluminum framing has alodine, anodized, fluorocarbon paint, polyester powder coat finish, or other acceptable finish or material. Mill-finish aluminum is not an acceptable substrate for structural silicone sealant.
- E. Remove existing joint sealant materials. Clean joints and remove joint sealant residue. Repair deteriorated or damaged substrates as recommended by silicone sealant manufacturer to provide suitable substrate. Allow patching materials to cure.
- F. Clean substrates to receive silicone sealant and silicone seal.
1. Porous surfaces: Abrasive-clean followed by blasting with oil-free compressed air.
 2. Nonporous surfaces: Use two-cloth solvent wipe in accordance with ASTM C 1193.
- G. Adhesion test: Apply silicone sealant to small area and perform adhesion test in accordance with ASTM C1193, Method A, to determine if primer is required to achieve adequate adhesion. If necessary, apply primer at rate and in accordance with manufacturer's instructions.
- H. Masking: Apply masking tape as required outlining area where silicone seal will be applied, to protect adjacent surfaces, to ensure straight bead line and facilitate cleaning.
- I. Protect elements surrounding Work of this section from damage or disfiguration.

3.3 INSTALLATION

A. **Silicone Sealant:**

1. Spacers and setting blocks: Install as indicated on drawings and reviewed shop drawings. Ensure joint openings and recesses are accurately sized.
2. Sealant backing: Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
3. Bond breaker: Install on backside of joint where backing is not feasible.
4. Temporary glass support: Use temporary fasteners, clips, two-sided adhesive, and other means to retain glass panels while sealant is applied and allowed to cure as approved by the design professional.
5. Use sealant-dispensing equipment to push sealant bead into opening. Fill joint opening to full and proper configuration. Apply in continuous operation. Ensure sealant fills entire joint and firmly contacts all surfaces. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
6. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
7. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 - a. Minimum joint width: 1/4"; use 1:1 width/depth ratio.

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- b. Width/depth ratio of 2:1.
 - c. Neck dimension no greater than 1/2 of joint width.
 - d. Surface bond area on each side not less than 75 percent of joint width.
 - 8. Install bond breaker where joint backing is not used
 - 9. Tooling: Before skinning or curing begins, tool sealant with metal spatula:
 - a. Provide concave, smooth, uniform, sealant finish. Eliminate air pockets and ensure complete contact on both sides of joint opening.
 - b. Tool joints with one continuous stroke.
 - c. Do not use water, soap, or alcohol to facilitate tooling.
 - B. Silicone Seal:**
 - 1. Within 10 minutes of sealant application, press silicone extrusion into wet sealant. Apply consistent pressure with roller to ensure uniform contact with 3/8 inch minimum bonding area.
 - 2. Complete horizontal joints prior to vertical joints. Lap vertical sealant over horizontal joints. At joint ends, cut extrusion with razor knife.
 - C.** Perform installation in accordance with ASTM C1193 and manufacturer's instructions.
 - D.** Cleaning: Remove masking tape and excess sealant.
 - 1. Uncured sealant: Within 10 minutes of application, remove uncured sealant with solvent-dampened cloth, wearing solvent-resistant gloves.
 - 2. Completely cured sealant: Carefully cut or scrape away.
 - 3. Neck dimension no greater than 1/2 of joint width.
 - 4. Surface bond area on each side not less than 75 percent of joint width.
 - E.** Allow sealant to fully cure before adhesive is stressed. Use test specimens formed at time of sealant application to verify curing time. When cured, remove temporary glass supports
 - F.** Ensure installed sealant is not painted as part of other construction operations.
- 3.4 FIELD QUALITY CONTROL**
- A.** Perform adhesion tests in accordance with manufacturer's instructions and ASTM C1193, Method A, Field-Applied Sealant Joint Hand-Pull Tab.
 - 1. Perform 5 tests for first 1,000 linear feet of applied silicone sealant and 1 test for each 1,000 feet of applied sealant thereafter or perform 1 test per floor per building elevation minimum.
 - 2. For sealants applied between dissimilar materials, test both sides of joint.
 - B.** Sealants and/or Seals failing adhesion test shall be removed, substrates cleaned, sealants and seals re-installed, and re-testing performed.
 - C.** Follow all requirements and maintain test log for structural/weatherseal applications and submit report to Architect indicating tests, locations, dates, results, and remedial actions.

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3.5 FINAL CLEANING

- A. Section 01700 - Execution and Closeout Requirements: Final Cleaning.
- B. Clean adjacent soiled building surfaces.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01700 - Execution and Closeout Requirements: Protecting Installed Construction.
- B. Protect sealants until cured.

END OF SECTION

BASIC ELECTRICAL REQUIREMENTS
SECTION 16050

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Basic Electrical Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Requirements.

1.2 SCOPE OF WORK

- A. Electrical Contract work includes:
 1. Disconnection and reconnection of roof top equipment.
 2. Removal of all abandoned cables, conduits, pipes, fixtures, and such items related to this trade as governed and required by the specified roof installation; raising of curbs and supports.
 3. Extension of branch circuit and equipment connections due to raising of curbs and supports.
 4. Reinstallation and reconnection of all said equipment to be retained.
 5. Relocation of roof top cables and conduit to below deck.

1.3 WORK SEQUENCE

- A. Install work in to accommodate Owner's occupancy requirements during the construction period. Coordinate electrical schedule and operations with Owner and Architect/Engineer and other Trades.

1.4 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.5 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Electrical work to be done by a licensed electrical contractor. The electrical supervisor shall be present while work is being performed.
- C. Submit shop drawings and product data grouped to included complete submittals of related systems, products and accessories in a single submittal.
- D. Mark dimensions and values in units to match those specified.

1.6 REGULATORY REQUIREMENTS

- A. Electrical: Conform to NFPA 70, National Electrical Code, (N.E.C.), - 2014 Edition.
- B. Life Safety: NFPA 101 Life Safety Code, 2012 Edition.

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SECTION 16050

- C. Electrical work to be done by a licensed electrical contractor. The electrical supervisor shall be present while work is being performed.
- D. Install all work in accordance with the latest edition of all applicable regulations and governing codes, including the Florida State Requirements for Educational Facilities (SREF) and the current edition of the Florida Building Code (FBC), Section 423.

1.7 PROJECT CONDITIONS

- A. Existing Conditions
 - 1. Verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring surfaces required and other visible conditions prior to bidding. Nailer height indicated on the details may vary from actual requirement; coordinate nailer height prior to bidding.
 - 2. Report conflicts or problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
 - 3. Replace or restore to original condition any materials or work damaged during construction.
- B. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- C. All dimensions indicated on the drawings are based on project record drawings and field measurements. Make necessary reasonable adjustments to quantities in field in order to provide a complete project.
- D. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Owner and Architect/Engineer before proceeding.

1.8 SEQUENCING AND SCHEDULING

- A. Construct Work in sequence under provisions of Division 1.
- B. Coordinate all work with Roofing Contract.
- C. Notify Owner, in writing, at least 48 hours in advance of any service interruptions.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS THAT WORK BE COMPLETE

- A. Provide same products or type of construction as that in existing equipment.
 - 1. Generally, Contract Documents do not define products or standards of workmanship present in existing installation. The Contractor shall determine products by inspection/testing and workmanship by use of the existing as a sample for comparison.
- B. Presence of a product, finish, or type of equipment requires that reinstallation shall be performed as necessary to make work complete and consistent with identical standards of quality of existing product.

- 2.2 Anchors and Fasteners: Use anchors and fasteners of a type designed and intended for use in the base material to which the material or support is to be attached and capable of supporting the intended load and withstanding any associated stresses and vibrations. Do not use wooden plugs for fastening.

PART 3 EXECUTION

3.1 INSPECTION AND PREPARATION

- A. Inspection
 - 1. Examine conditions under which electrical work is to be performed and notify Prime Contractor and Architect in writing of unsatisfactory conditions.
 - 2. Do not proceed with electrical work until unsatisfactory conditions have been corrected.
 - 3. All electrical equipment and systems should be operated in the presence of representatives of the Contractor and representatives of the Owner prior to any demolition, or prior to disconnecting any electrical wiring in order to establish that all these systems are in proper working order at the start of the project.

This will establish the degree of responsibility that this Contractor will have when he is required to place these electrical systems back in working order at the end of the project.

- B. Disconnection
 - 1. List and disconnect existing roof top conduits as shown on the drawings.
 - a. Prior to disconnection of any electrical system, prepare a checklist of existing system conditions.
 - b. Submit the checklist with any comments to the Architect.

3.2 INSTALLATION

- A. General
 - 1. Use good workmanship in the installation of all electrical materials and equipment.
 - 2. Install equipment level, plumb and true with the structure and other equipment.
 - 3. Firmly secure all materials in place.
 - 4. Materials embedded in concrete or masonry or otherwise part of the structure are considered sufficiently supported.
 - 5. Use hardware and accessory fittings of a type designed, intended and appropriate for the use and complement the items with which they are used.

- B. Wiring Methods
 - 1. Install all wiring in conduit or approved raceways unless otherwise indicated.
 - 2. Firmly and securely fasten conduits to or support from the building or structural member. Use changes and supports that are standard catalog items of a type compatible with the suitable for the intended use. Twisted wire hangers and supports are not acceptable.
 - 3. Do not pull conductors into conduits until all work which may cause damage to the wires is completed. Install wire and cables so as not to damage the insulation or cable sheath. Pull all conductors to be installed in a raceway together.
 - 4. Keep conductor splices to a minimum. Provide splices and taps with at least the equivalent mechanical strength and insulation as the conductors. Provide splice and tap devices of the proper size and type for the use and compatible with the conductor material.

- C. Reconnection: Reconnect electrical systems as specified above, and test for proper operation.
 - 1. Reinstallation and reconnection of equipment and systems shall comply with governing electrical codes.
 - 2. Prepare a checklist of system conditions after reconnections.
 - 3. Submit the checklist with any comments to the Architect.

- D. Electrical conduits, pipes, wires, cables, fixtures, and such related items shall not be in contact with roof membrane, roofing sheet metal, and related roofing accessory items, except as shown on drawings and as specified.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Air terminals and interconnecting conductors.
 - 2. Grounding and bonding for lightning protection.

- B. Related Sections:
 - 1. Section 07410 – Standing Seam Metal Roofing.
 - 2. Section 07620 – Sheet Metal Flashing and Trim.
 - 3. Section 07530 – Thermoplastic Single-Ply Membrane Roofing.
 - 4. Section 07900 – Joint Protection.

1.2 REFERENCES

- A. Lightning Protection Institute
 - 1. LPI-175 - Lightning Protection Installation Standard.
 - 2. LPI-176 - Lightning Protection System Material and Components Standard.
 - 3. LPI-177 - Inspection Guide for LPI Certified Systems.

- B. National Fire Protection Association
 - 1. NFPA 780 – Standard for the Installation of Lightning Protection Systems.

- C. Underwriters Laboratories
 - 1. UL 96 - Lightning Protection Components
 - 2. UL 96A - Installation Requirements for Lightning Protection Systems.

1.3 SYSTEM DESCRIPTION (SCOPE)

- A. The existing roof top lightning protection system (conductors, air terminals, fasteners, clips, etc) located on roof areas within the scope of this project is to be removed and new system installed. Existing undamaged and non-deteriorated conductors and air terminals may be re-used in the new system being installed. All other accessories required for proper installation and functioning of a completed system shall be new. The existing down leads and grounding systems if undamaged and in usable condition are to remain.

- B. The new roof top system shall be compatible with existing building system and comply with NFPA and UL requirements and LPI standards.

- C. Work shall be accomplished by a certified lightning protection contractor as required by article 1.8 of this Section.

- D. Upon completion of the roofing and flashing replacement, obtain the services of Underwriters Laboratories, Inc. to provide an inspection and a new “Master Label” for the lightning protection system in accordance with UL 96A. If obtaining a “Master

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Label” would require modification of building components and/or systems outside of the scope of work of this project, then a “Letter of Findings” is to be provided

- E. Preparation of the new roof membrane surface to receive the lightning protection system shall be the responsibility of the roofing contractor.
- F. Installation of the new roof top lightning protection system and connection to the existing down lead system shall not affect the roof system warranty in any way.
- G. It will be the responsibility of the roofing contractor to coordinate and schedule the lightning protection work under this section.

1.4 SUBMITTALS

- A. Section 01300 - Submittals: Procedures for submittals.
- B. Shop Drawings: Indicate layout of air terminals, grounding electrodes, and bonding connections to structure and other metal objects on roof top. Include terminal, electrode, and conductor sizes, and connection and termination details.
- C. Product Data: Provide dimensions and materials of each component, and include indication of listing in accordance with UL 96.
- D. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.5 PROJECT CLOSEOUT SUBMITTALS

- A. Section 01700 - Contract Closeout.
- B. Record actual locations of air terminals, grounding electrodes, bonding connections, and routing of system conductors in project record documents.
- C. Submit ‘Letter of Findings’ or UL Master Label from Underwriters’ Laboratories indicating approval of the lightning protection system.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 780.
- B. Perform Work in accordance with UL 96A.
- C. Perform Work in accordance with LPI-175 and provide LPI Certification.
- D. The contractor shall furnish a UL Master Label or UL Letter of Findings upon completion of the installation.

- E. Work shall be performed under the supervision of an LPI Certified Master Installer, and an LPI System Certification shall be delivered upon completion of the installation.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in lightning protection equipment with minimum three years documented experience.
- B. Installer: Authorized installer of manufacturer with minimum three years documented experience. The installing contractor company shall be listed with the Lightning Protection Institute, and Underwriters' Laboratories, Inc. The installation contractor shall have personnel on staff Certified by the LPI as a Master Installer or Master Installer – Designer of lightning protection systems. LPI qualified staff shall provide supervision of the installation to ensure conformance to the Standards.

1.8 PROJECT CONDITIONS

- A. Existing Conditions:
 - 1. Verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring surfaces required and other visible conditions prior to bidding.
 - 2. Report conflicts or problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
 - 3. Replace or restore to original condition any materials or work damaged during construction.

1.9 REGULATORY REQUIREMENTS

- A. Product Listing: UL 96 and LPI-176.

1.10 PRE-INSTALLATION CONFERENCE

- A. Section 01 30 00 - Coordination and Meetings: Pre-installation meeting.
- B. Convene one week prior to commencing work of this section.

1.11 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.12 COORDINATION

- A. Section 01039 - Coordination and Meetings.
- B. Coordinate work with roofing installations.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All materials used in the installation shall be new and shall comply in weight, size and composition as required by UL 96A and NFPA 780 and shall be labeled or listed by Underwriters Laboratories Inc. for use in lightning protection systems. The system furnished under this specification shall be the standard product of a manufacturer regularly engaged in the production of lightning protection equipment. The manufacturer shall be listed by UL as a recognized manufacturer of lightning protection components.

- B. Manufacturers:
 - 1. East Coast Lightning Equipment, Inc.
 - 2. ERICO International Corporation (lightning protection equipment)
 - 3. Harger Lightning Protection, Inc.
 - 4. Heary Brothers Lightning Protection, Inc.
 - 5. Robbins Lightning Protection, Inc.
 - 6. Thompson Lightning Protection, Inc.
 - 7. Section 01 60 00 – Product Requirements: Product options and substitutions. Substitutions permitted per Division 1.

2.2 COMPONENTS

- A. Class I materials shall be used on structures that do not exceed 75 feet in height and Class II materials shall be used on structures that are 75 feet or higher above average grade.

- B. Copper materials shall not be mounted on aluminum surfaces including Galvalume, galvanized steel and zinc; this includes these materials that have been painted.

- C. Aluminum materials shall not come into contact with earth or where rapid deterioration is possible. Aluminum materials shall not come into contact with copper surfaces.

- D. Air Terminals: Air terminals shall be 1/2" by 12" for Class 1 installations and 5/8" by 12" for Class 2 installations solid aluminum (matching existing) and shall extend at least 10 inches above the object to be protected. All air terminal bases shall be cast aluminum. The air terminals shall be spaced so as not to exceed 20' apart around the outside perimeter of the roof or the ridge and not over 50' apart through the center of flat roof areas. The air terminals in the center roof area shall be 5/8" by 24" solid aluminum. All "field" air terminal bases shall be of the "non-penetrating" adhesive type. Perimeter coping air terminal bases shall be mechanically attached as indicated by project details.

- E. Decorations: None

- F. Grounding Rods: Solid Copper

- G. Ground Plate: Copper
- H. Conductors: Aluminum (match existing).
- I. Cable Straps: One or two hole straps as appropriate. Attachment to metal roofing and associated flashing is permitted only as indicated by project details. Avoid any penetration of the metal roofing and flashing in the field of the system.
- J. Cable Connections and Splices: Bolted pressure clamp type shall be used. Crimp type connections shall not be used. All connectors to be compatible with aluminum conductor cables.
- K. Anchor Plates and Holders for Conductor Cable: Non-penetrating aluminum with adhesive bases for flashing and roof- top installations. May be (1) bolted pressure clamp type or (2) crimp type similar to details shown.
- L. Sealant: Silicone sealant per section 07900, which is compatible with the pre-finished metal roofing system being installed.
- M. Epoxy adhesive is to be used to adhere any base plates to metal surfaces, approved product is as follows: SciGrip SG300 Series adhesive, 2 component system as manufactured by SCIGRIP Americas, 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, (www.scigrip.com) or Architect approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with NFPA 780, UL 96A, and LPI-175.
- B. Connect conductors using mechanical connectors and/or an exothermic welding process. Protect adjacent construction elements and finishes from damage.
- C. Bond exterior metal bodies on building to lightning protection system and provide intermediate level interconnection loops 60 feet (18 m) on center.
- D. During installation, no penetration is permitted of the metal roofing system and/or flashing components by mechanical fasteners unless specifically detailed within the project documents; epoxy adhesive attachment of the base and anchor plates is required otherwise.
- E. Where any part of the protection system is exposed to mechanical injury, it shall be protected by a nonconductive material. If metal pipe or tubing is used for protecting conductors, the conductor shall be electrically connected to the pipe or tubing at both ends. Conceal down conductors in PVC (Schedule 40) conduit.

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- F. Where necessary, connect copper equipment to aluminum surfaces using UL recognized bimetal transition fittings. Lead coating is not acceptable as a bimetal transition fitting.
- G. **Roof Conductors:** A perimeter cable shall be installed around the entire main roof areas, and all penthouses. Each perimeter cable shall be connected to at least (2) down leads, providing a two-way path to ground for each air terminal. All center roof air terminals shall be interconnected with conductors to the outside perimeter cable. Conductors on the flat roof areas may be run exposed. Ground connections shall be made around the perimeter of each roof and to the main down conductor at a maximum distance of 100'-0" on center.
- H. **Down Conductors:** Existing shall be used where properly tested and approved for UL labeling. New down conductors, if required, shall be concealed and installed in 1" PVC (Schedule 40) conduit. Each perimeter roof cable shall be connected to at least two down leads. The average distance between down leads shall not exceed 100' from upper roof to lower roof, or from roof to ground terminals. Irregularly shaped structures may require extra down conductors to provide a two-way path to ground from each air terminal.
- I. **Interconnection of Metals:** All metal bodies within 6' of the conductor shall be bonded to the system with proper fittings and conductor. Connections between dissimilar metals shall be made with UL recognized bimetallic connections.
 - 1. Bonding of all metallic objects and systems at roof levels and elsewhere on the structure shall be complete. Primary bonds for metal bodies of conductance shall be bonded with appropriate fittings and full-size conductor; and shall consist of, but not limited to the following: Roof exhaust fans, HVAC units with related piping ductwork, exhaust vents and any other roof piping systems, cooling towers, and rail systems, window washing tracks, antenna mast for TV, radio or microwave, flag poles, roof handrails and/or decorative screens, roof ladders, skylights, metal plumbing stacks, etc. Exterior architectural metal fascia and/or curtain walls or mullions, which extend the full height of the structure shall also be bonded, if not inherently bonded thru the building frame.
 - 2. Metal bodies of inductance located within 6' of a conductor or object with secondary bonds, shall be bonded with secondary cable and fittings. Typical of these are: roof flashings, parapet coping caps, gravel guards, isolated metal building panels or siding, roof drains, down spouts, roof insulation vents and any other sizeable miscellaneous metals, etc.
- J. **Concealed Conductors:** All concealed conductors shall be installed in 1" PVC (Schedule 40) Conduit.
- K. **Fasteners:** Conductor fasteners shall be UL recognized adhesive type of non-corrosive metal, have ample strength to support conductors and shall be spaced not to exceed 3'-0" centers.

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- L. Roof Penetration: Utilize existing thru-roof conductor down leads, but install new thru-structure assemblies as detailed within the project documents, the lightning protection installer shall furnish the "approved" thru-structure assemblies for installation by the roofing contractor. All work related to the installation and sealing of the thru-structure assemblies shall be furnished by the roofing contractor.
- M. Grounding: The system shall be connected to the existing grounding terminals located at the base of the structure. Where ground terminations do not exist, the contractor is to provide. Ground connections shall be made around the perimeter of the structure and in no case shall average over 100'-0" apart. Ground terminals shall be 5/8" in diameter and shall be driven to a minimum depth of 32'-0". One ground shall have connection to the water system where the water supply enters the building. In case of rock ledge or other conditions making it impossible to comply with the above, trenching or a copper ground plate will be permitted; providing it will meet UL requirements.
- N. Common Grounding: Provide necessary common grounds between the lightning protection system and the electric and telephone service entrance cables, TV and radio antenna grounds.
- O. Coordination of Lightning Protection Work and Re-roofing Work: Provide removal of existing rooftop system and installation of new rooftop system as required to perform roof replacement work. Provide temporary connections required to maintain existing lightning protection affected by new construction. Permanently bond together any existing systems to new system.

3.2 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Assurance: Field inspection, testing, and adjusting.
- B. Upon completion of equipment installation, obtain the services of Underwriters Laboratories, Inc. to provide an inspection and a new "Master Label" for the lightning protection system in accordance with UL 96A. If obtaining a "Master Label" would require modification of building components and/or systems outside of the scope of work of this project, then a "Letter of Findings" is to be provided.
- C. Perform inspection and testing in accordance with LPI-177.

3.3 PROJECT COMPLETION AND CLOSEOUT

- A. Provide to Owner three (3) copies of the As-built Drawings.
- B. Attach Master Label to the building as directed by the Owner, or provide a UL "Letter of Findings" at the completion of the system installation.

END OF SECTION