Rains Independent School District
Elementary and Intermediate Schools
1759 W. US Highway 69
Emory, Texas 75440

8/15/2022

2022 ROOF REPLACEMENT
PROJECT NO. DAL.2022.001044

August 15, 2022

Prepared by:

Amtech Solutions
5550 Granite Parkway - Suite 285
Plano, Texas 75024
(972) 690-6044

Document 00 0010 – TABLE OF CONTENTS

ROOF REPLACEMENT

ELEMENTANTARY AND INTERMEDIATE SCHOOLS ROOF REPLACEMENT
RAINS INDEPENDENT SCHOOL DISTRICT

Document 00 0010 – TABLE OF CONTENTS

ROOF REPLACEMENT

ELEMENTANTARY AND INTERMEDIATE SCHOOLS ROOF REPLACEMENT
RAINS INDEPENDENT SCHOOL DISTRICT

END OF TABLE OF CONTENTS

Rains Independent School District
1759 W. US Highway 69
Emory, Texas 75440
Phone: 212-408-2955

RAINS INDEPENDENT SCHOOL DISTRICT- ELEMENTARY AND INTERMEDIATE SCHOOLS ROOF REPLACEMENT
REQUEST FOR COMPETITIVE SEALED PROPOSAL

DATE: 08/15/2022

CONTACT NAME: G.F. Jeff Fisher, Assistant Superintendent of Finance
Tel: 903-473-2222 x. 4114
Email: fisherj@rainsisd.org

Please also send a digital copy of your bids to the following email addresses. The subject in the email must be "Rains Independent School District Roof Bid – Company_Name":

Jeff Fisher: fisherj@rainsisd.org
Wahid Manawi: wahidmanawi@amtechsls.com
Ron Erdman: ronerdman@amtechsls.com

INSTRUCTIONS TO ALL INTERESTED OFFERORS:

1. Offerors shall submit one (1) original Proposal Form in response to this Request for Competitive Sealed Proposal (RFCSP).
   Proposals to be submitted via email no later than September 23rd, 2022 at 1:00PM.

2. The substantial completion date is as follows:

   (TBD)

3. It is anticipated that a Notice of Award will be issued by Rains ISD on or before **October 7, 2022**, and that a Notice to Proceed will be issued within 10 days of award pending an executed contract.

4. A contract will not be awarded on opening day. Rains ISD will only authorize the execution of a contract after consideration of responses and upon conclusion of contract negotiations.

Acceptance of responses shall not constitute or imply Rains ISD's acceptance of the suitability of the offeror or responses.

5. This RFCSP contains the plans and specifications for the project and also includes the evaluation criteria that will be used to evaluate the submitted proposals. Proposal Documents for the project can be obtained from the project engineer.

6. This proposal shall be submitted using the following format:

   8.1 Section 1: **General Information**

   8.2 Section 2: **Criterion 1 -** Offeror's proposed price and required documents: Completed Proposal Form, Bid Bond. (60 %)

   8.3 Section 3: **Criterion 2 -** Offeror's experience on commercial and/or public entity projects of similar size, type, and complexity (25 %)

   8.4 Section 4: **Criterion 3 -** Offeror's proposed on site Project Foreman/Superintendent management experience on commercial and/or public entity projects of similar size, type, and complexity (10 %)

   8.5 Section 5: **Criterion 4 -** Offeror's past performance for similar projects in Tampa (5 %)

7. The Proposal must be signed by an individual, identified by name and title, who is authorized to bind the offeror to a contract.

8. All questions regarding the plans or specifications for this project shall be directed to the Architect/Engineer. Any changes to the proposal must be executed by an addendum. All questions regarding the Competitive Sealed Proposal submission(s) shall be directed to Mr. G.F. Jeff Fisher at Rains ISD at fisherj@rainsisd.org.

9. Contract Documents:

   Project drawings and specifications can be obtained after 1:00 PM on **August 16, 2022** as follows:

   Digital copies (in PDF Format) can be obtained from Amtech Solutions, Inc. or Rains ISD via fisherj@rainsisd.org or wahidmanawi@amtechsls.com.

_____

Mr. G.F Jeff Fisher
Rains Independent School District

RAINS INDEPENDENT SCHOOL DISTRICT- ELEMENTARY AND INTERMEDIATE SCHOOLS ROOF REPLACEMENT

EVALUATION CRITERIA

Offerors are required to answer all requested information set forth below. Failure to provide requested information or purposeful omissions of requested information may result in Rains ISD determining the offeror's proposal non-responsive. Proposal must be submitted using the following format.

Offerors will be evaluated on criteria 1 through 4 below and the importance of each criterion is provided below as a percentage of the decision-making process. A final selection will be made based on a variety of factors and not necessarily a quantifiable score. Rains ISD evaluation committee will then proceed to negotiate a contract with the selected offeror. If the negotiations are unsuccessful, Rains ISD will notify said offeror that negotiations have been terminated and will proceed to negotiate with the next highest ranked offeror. Rains ISD will continue this process until a contract has been reached.

Rains ISD retains the right to apply all criteria as appropriate. Rains ISD specifically request offerors to answer or provide information according to the following selection criteria. Please answer all questions to the best of your ability.

Section 1: General Information (0)
Section 2: Criterion 1 - Offeror's proposed price (60%)
Section 3: Criterion 2 - Offeror's experiences (25%)
Section 4: Criterion 3 - Offeror's proposed on site Project Foreman/Superintendent management experience (10%)
Section 5: Criterion 4 - Offeror's past performance in Tampa area (5%)

SECTION 1 – General Information

1. Name of Firm: _____

   Address of Principle Office: _____

   Phone: _____ Fax: _____

   Form of Business Organization: _____

   Responsible Contact Personnel:

   Name_____ Cell #_____ E-mail_____

   Name_____ Cell #_____ E-mail_____

   Name_____ Cell #_____ E-mail_____

2. How many years has your organization been in business in its current capacity?

3. How many years has your organization been in business under its present name?

4. Under what other or former names has your organization operated?

5. Claims and suits (If the answer to any of the questions below is yes, please attach details).

   5.1 Has your organization ever failed to complete any work awarded to it?

   5.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

   5.3 Has your organization filed any lawsuits or requested arbitration or mediation with regard to construction contracts within the last fifteen years?

6. Within the last fifteen years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

7. Provide your company's safety experience modified rate for each of the last three years, and OSHA 300 Log.

8. Provide your company's written Quality Control plan.

9. Provide a letter of financial solvency and bonding capacity from your financial institution and Surety Company.

SECTION 2 – Proposed price and required documentation (60 %)

CRITERION 1: Offeror's proposed price (60 %)

1. Offeror's must submit the completed Proposal Form, Bid Bond.

SECTION 3 – Offeror's Experiences (25 %)

CRITERION 2: Offeror's experience with commercial and/or public entity projects of similar size, type and complexity

1. List projects completed or ongoing, within the last five (5) years, of similar size, type and complexity to this project where your company was the general/prime contractor of record. Please list projects in chronological order beginning with the most recent If you are submitting your list of projects using your own spreadsheet, **you must submit your list in the following format, otherwise use Appendix "A" provided with this RFP**

Project Name, Description & Location	Project size in Sq.ft.	Contact Name/Phone Number/Email	Engineer/Engineer Contact Name/Phone Number/Email	Contract Amount	Completion Date or Percent Complete
Roof Replacement at XYZ School	135,000			$2,000,000	January 31, 2020

2. Rains ISD will contact references listed in Criterion 2 – Offeror's Experience.

SECTION 4 - Proposed on site Project Foreman (10 %)

CRITERION 3: Offeror's proposed Project Foreman/Superintendent management experience on commercial and/or public entity projects of similar size, type, and complexity

1. Please provide the name of each project foreman/superintendent, project name, description, location, date completed, contract amount and capacity served on the projects where project foreman/superintendent has demonstrated experience managing subcontractors on construction/renovation projects of similar size, type and complexity if you are submitting your list of projects using your own spreadsheet **you must submit your list in the following format, otherwise use Appendix "B" provided with this RFP.**

   Project Foreman/Superintendent Name: John Doe

Project Name, Description and Location	Date Completed	Contract Amount	Capacity served
Roof Replacement at XYZ School	August 31, 2020	$1,000,000	Project Foreman

SECTION 5 – Past Performance (5 %)

CRITERION 4: Offeror's past performance for similar size projects in Tampa area:

1. Provide a list of all projects performed in Tampa area. Include project name, date completed, and total value of project.

SUPPLEMENTAL GENERAL CONDITIONS

Article 1. Construing the Contract Documents:

In the event of ambiguity or conflict in the Contract Documents: Supplemental General Conditions take precedence over General Conditions; Specifications take precedence over Drawings; figures take precedence over scale dimensions; and descriptive notes take precedence over general notes or code indications; unless the contrary intention is apparent.

Except as provided above, changes in Contract Documents made with the consent of all parties in ink control those printed or typed, and typewritten provisions control over printed, multilettered, or photocopied provisions.

In the event errors, conflicts, omissions or discrepancies are noted in the Contract Documents or in the work done by others affecting his work, Contractor shall notify Engineer at once and Engineer will issue instructions to correct such errors, conflicts or discrepancies. This includes typographical errors in the Specifications and notational errors on the Drawings, where doubtful of interpretation. If, any such errors, conflicts omissions or discrepancies have been noted, Contractor proceeds with the work so affected without instructions from the Engineer, he shall make good any resulting damage or defect.

Article 2. Drawings and Specifications:

There are certain intricacies of construction, which are impracticable to specify in detail or to fully cover on the Drawings, but all such details are to be worked out along the lines of good practice, and in compliance with the ordinances covering such work.

Contractor, upon completion of the Project, shall furnish Engineer with record drawings showing actual location in line and elevation of all new exterior utility lines within the limits of the site and of any relocation from that shown on the Drawings of concealed piping, wiring, cable or conduit within the lines of the building.

Article 3. Laying out Building:

Contractor shall employ an experienced and competent licensed surveyor or civil engineer to establish a permanent bench mark to which easy access may be had during the progress of the Work, determine all lines and grades, and verify same from time to time during the progress of the Work.

Article 4. Materials:

Unless otherwise indicated in the Contract Documents, all materials shall be new, in strict compliance with the Specifications and the best of their respective kinds.

Before ordering any materials or doing any work, Contractor shall verify all measurements at the site and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of any difference between actual dimensions and the measurements indicated on the Drawings. Any differences, which may be found, shall be submitted to Engineer for his consideration and instructions before ordering material or proceeding with the work.

Materials shall be furnished at such times and in such quantities as to insure the uninterrupted progress of the work according to schedule. Materials stored shall be properly protected for weather or damage.

Upon receipt of notice from Engineer that any material placed in the Project or on the site is not of the quality specified or has been improperly placed, Contractor shall remove same from the site or have same replaced, as the case may be, within seventy-two (72) hours after receipt of such notice.

Article 5. Testing of Materials:

All testing of materials and equipment used in the construction of the Project shall be conducted at the discretion of Owner and at Owner's expense, unless otherwise specifically provided in the Contract Documents. Any retesting of material or equipment that fails to meet the requirements of the specifications will be at Contractor's expense.

Article 6. Handling Materials:

Contractor shall be responsible for the proper care and protection of all materials, tools and equipment delivered to the site for his use.

When any room of the Project is used as a shop, storeroom, or otherwise, the Contractor will be held responsible for any repairs, patching or cleaning arising from such use.

Contractor shall protect and be responsible for any damage to his work or material, from the date of the Contract until the date of acceptance, and shall make good without cost to Owner, any damage or loss that may occur during this period.

Cement, lime, gypsum and other materials affected by the weather shall be covered and protected to keep them free from damage at all times.

Contractor shall store all materials as directed, in a manner that will allow the Engineer or Owner's representative to inspect them. Should any material be found defective or in any way not in accordance with the Contract, such material, without regard to the state of completion, may be rejected by Engineer and, if so rejected, shall be removed at once from the premises by Contractor installing same.

Article 7. Substitute Materials, Products, Methods or Services:

In certain instances specific materials, products, methods and services have been specified by brand or trade name partly for the purpose of establishing the effect or standard of quality desired. Upon the prior written approval of Engineer, substitutions for such specifically named materials, products, methods or services may be made provided the materials, products, methods or services desired to be substituted have been proven to Engineer to provide the effect or standard of quality desired. The decision of the Engineer is absolute and final.

Article 8 Salvaged Materials:

Used materials belonging to Owner or obtained from demolition or excavation operations at the site of the Project and reconditioned for incorporation into the Project are hereafter termed “salvaged materials”. Similar materials, owned by parties other than Owner and purchased, or to be purchased, for incorporation into the Project, are termed” second hand material”.

Salvaged materials may be incorporated into the Project only if allowed in the Contract Documents.

Article 9. Excess Excavated Material & Construction Debris

Excess excavated material and construction debris, unless specifically stated otherwise, is the property of the contractor and will be removed from the site on a weekly basis or sooner if directed by owners’ representative so as to maintain a safe site.

Article 10. Temporary Facilities:

Contractor shall make temporary connections for all utilities necessary during construction and shall remove them after completion of the Project.

Contractor shall provide and maintain sanitary facilities for workmen at the job in accordance with the laws of Florida and the code and ordinances of the Owner and building management. Contractor shall completely remove such facilities when the Project is completed.

All or a portion of the work necessary to complete the Project may be done on or near buildings which presently are in use as schools, or will be so used before the completion of such Project, and the Contractor must take all precautions necessary to the protection of the students, employees and the public during the term of such Construction Contract.

In conjunction with, but not in lieu of the requirements of Article 10.2.3 of the General Conditions, the contractor shall provide an six-foot, commercial grade chain link fencing around the entire construction area for the duration of the project as a minimum safety separation. This fence shall be equipped with vehicular and pedestrian gates with locks.

The Contractor shall maintain the construction fences and gates in a state of good repair at all times for the duration of the project. Gates shall be kept locked at all times when the Contractor's or his sub-contractor's personnel are not on the site. Any condition of the construction fence and/or gates which the Engineer or Owner deems hazardous will be corrected immediately. If such conditions are not corrected immediately upon verbal or written notice, the Owner will correct the hazardous conditions and the cost of the corrective action will be deducted from the Contractor's payment.

Article 11. Cooperation with Owner and City Building Officials:

When required, Contractor shall notify the proper official of the Owner in advance of all stopping and starting of construction. Contractor shall cooperate with City officials at all times. If any authorized City official, or authorized representative of Owner, should deem an inspection necessary, Contractor shall provide the proper facilities to insure that such official, or representative, can conveniently examine and inspect the work. The Contractor shall document all City inspections by recording the date and time of the inspection and the name of the inspector. This information shall be submitted by the Contractor to the Engineer on a monthly basis along with Contractor's request for payment.

The Contractor shall submit copies of all City permits, interim inspections, and final inspections, including a Certificate of Occupancy where required, for the project showing compliance with code requirements of the entities with jurisdiction with the Record Documents for the Project.

SECTION 3 – Offeror's Experience (22)

Offeror's experience with commercial and/or pubic entity projects of similar size, type, and complexity

CRITERION 2:

1. List projects, completed or ongoing, within the last seven (7) years, of similar size, type, and complexity to this project where your company was the general/prime contractor of record. Please list projects in chronological order beginning with the most recent.

Project Name, Description & Location	Project size in Sq Ft	Contact Name/Phone Number/Email	Architect: Contact Name/Phone Number/Email	Contract Amount	Completion Date or Percent Complete

SECTION 4 – Offeror's Proposed On-site Project Foreman	**Offeror's proposed Project Foreman management experience on commercial and/or public entity projects of similar size, type, and complexity**

CRITERION 3:

1. Please provide the name of the project foreman, project, date completed, contract amount and capacity served on the projects where project foreman has demonstrated experience managing subcontractors on construction/renovation projects of similar size and complexity in the format below.

Project Foreman Name:
_____

Project Name, Description & Location	Date Completed	Contract Amount	Capacity served

AMTECH SOLUTIONS
Founded on building sciences

PROJECT CLOSEOUT CHECKLIST

PROJECT:	**PROJECT NO:**
OWNER:	**CONTRACT NO:**
CONTRACTOR:	**DATE:**
ENGINEER: Amtech Solutions Inc.	

Purpose:
The purpose of this document is to provide a quick reference checklist for use by the Project Manager and or Project Administrator to ensure that all appropriate activities related to the Project Closeout has been addressed.

	Verification					
ITEMS	**DATE OF COMPLETION**	**DATE OF SUBMISSION**	**DATE OF SIGNATURE BY**	**DATE OF SIGNATURE BY**	**DATE OF SIGNATURE BY**	**INITIALS**
Final Pay Application -						
Contractor's Affidavit of Release of Liens						
Contractor's Affidavit of Payment of Debts & Claims						
Consent of Surety to Final Payment						
Manufactures' Warranties						
Contractor's Warranties						
Roof Warranties						
Sheet Metal Warranties						
Asbestos Free Letter						
Certificate of Substantial Completion						
Contractor's Release of Liens						
Final Submittals						
As-Builts						
O&M Manuals						
Amtech Final Punch Walk						
Punch List Report Returned with Photo Documentation						

Page 1

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

Alternate #3 Bid: Recover existing roofing system with new mechanically attached pre-primed coverboard with a new single ply PVC Membrane Roofing System with a 20 year NDL Manufactures Warranty and a 2" Hail Warranty and additional items.

DOLLARS ($)

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

C. INTERMEDIATE SCHOOL

Base Bid – Prepare existing roofing surface and Install new flood coat on hot asphalt with new white granules and additional items.

DOLLARS ($)

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

Alternate #1 Bid: Recover existing roofing system with new mechanically attached pre-primed coverboard with a new 2-ply modified bitumen granulated cap sheet with a 20 year NDL Manufactures Warranty and additional items.

DOLLARS ($)

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

Alternate #2 Bid: Recover existing roofing system with new 5-course coating system with a 20-year NDL Manufacturers Warranty and additional items.

DOLLARS ($)

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

Alternate #3 Bid: Recover existing roofing system with new mechanically attached pre-primed coverboard with a new single ply PVC Membrane Roofing System with a 20 year NDL Manufactures Warranty and a 2" Hail Warranty and additional items.

DOLLARS ($)

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

D. INTERMEDIATE SCHOOL & ELEMENTARY SCHOOL

If One Contractor is awarded both schools please provide the combined price for both schools below

Base Bid – Prepare existing roofing surface and Install new flood coat on hot asphalt with new white granules and additional items.

	DOLLARS ($ _____ **)**
[Print or type in words, Bidder's Total Bid Price. Written words govern.]	**[PRINT OR TYPE IN FIGURES]**

Alternate #1 Bid: Recover existing roofing system with new mechanically attached pre-primed coverboard with a new 2-ply modified bitumen granulated cap sheet with a 20 year NDL Manufactures Warranty and additional items.

	DOLLARS ($ _____ **)**
[Print or type in words, Bidder's Total Bid Price. Written words govern.]	**[PRINT OR TYPE IN FIGURES]**

Alternate #2 Bid: Recover existing roofing system with new 5-course coating system with a 20-year NDL Manufacturers Warranty and additional items.

	DOLLARS ($ _____ **)**
[Print or type in words, Bidder's Total Bid Price. Written words govern.]	**[PRINT OR TYPE IN FIGURES]**

1.2. 1.2. The Bidder accepts the Drawings and Specifications as satisfactory and adequate for proper execution of the Work, and understands that claims for additional compensation or time, because Bidder did not familiarize itself with the Contract Documents or any condition that might affect the Work, will not be allowed.

1.3 Contractor is required to qualify their submitted bid proposal with material availability, material order confirmation, manufacturer purchase orders, and anticipated dates of material delivery, within one-to-two weeks from Notice of Award/Notice to Proceed.

E. CONTRACT TIME:

1.3. Bidder agrees to substantially complete the Work within _____ calendar days from the date of Notice to Proceed.

F. SCHEDULE OF ROOF AREA and INTENDED MANUFACTURER:

1.4. Provide total roof area and proposed membrane manufacturer in spaces below.

1.5. TOTAL ROOF AREA: Elementary School _____sq. ft. Intermediate School _____Sq. Ft.

1.6. INTENDED MANUFACTURER –

1. Modified Bitumen Manufacturer_____ _

2. Coating Manufacturer_____
3. PVC Manufacaturer

1.7.

PART 3 - _____

_____

G. SCHEDULE OF UNIT PRICES:

1.8. Bidder proposes following sums as additions to or deductions from the Base Bid amount for Unit Price Work more fully described in referenced Specification Sections in the Contract Documents. Bidder must provide an amount for each Unit Price item listed or entire Bid may be considered non-responsive.

	SPECIFICATION SECTION	ITEM	UNIT PRICE	UNIT OF MEASURE
1.9.	06 1055	2" x 4" nailer	_____	Per Lin. Ft.
1.10.	06 1055	2" x 6" nailer	_____	Per Lin. Ft.
1.11.	06 1055	Steel Deck Replacement	_____	Per Sq. Ft.
	07 5400 & 07 5400	Wet Insulation Removal & Replacement	_____	Per Sq. Ft.

H. ADDENDA:

1.12. Bidder acknowledges receipt of following Addenda:

Addenda Number: _____ Dated _____
_____ Dated _____

I. LIQUIDATED DAMAGES

1.13. Bidder understands that Liquidated Damages, as defined in General Conditions, will be included in the Form of Agreement Between Owner and Contractor.

J. PERFORMANCE AND PAYMENT BONDS:

1.14. Bidder agrees to provide bonds covering faithful performance of the Contract and payment of all obligations arising from the Contract.

1.15. The following amount is presented as line item for the required Bonds (not included in base bid)

_____

_____ **DOLLARS ($** _____ **)**

[Print or type in words, Bidder's Total Bid Price. Written words govern.]

[PRINT OR TYPE IN FIGURES]

K. CONTRACTOR'S PERSONNEL:

1.16. Bidder proposes the following full-time employees for this Project. If acceptable to the Owner and Architect, Bidder agrees to employ them for duration of the Work at the positions indicated, and agrees not to remove them from the Work nor replace them with others except as otherwise allowed in the Contract Documents.

Project Manager: _____

L. SIGNATURES:

PART 4 - Bidder: _____

[Print or type full name of proprietorship, partnership, corporation, or joint venture*]

Organization: ☐ Proprietorship ☐ Partnership ☐ Corporation ☐ Joint Venture

***** If Bid is Joint Venture, add additional Bid Form signature sheets for each Joint Venture member.

PART 5 - [Check One]

By: _____ _____

[Signature] [Date]

NAME: _____ _____

[Print or type name] [Title]

Address: _____

[Mailing]

_____

[Street, if different than mailing]

PART 6 - Telephone: _____ _____

[Print or type telephone number] [Print or type FAX number]

State of Incorporation: (if applicable)

_____

M.

N. CERTIFICATIONS:

1.17. I, _____, certify that I am a duly authorized officer of the Above-named corporation, which is authorized to do business in the State of Texas. I further certify that the following named persons:

_____ _____

[Print or type name] [Title]

_____ _____

[Print or type name] [Title]

_____ _____

[Print or type name] [Title]

1.18. by authority of the above-named corporation's board of directors and within the scope of its corporate power, are authorized to sign the Proposal, Agreement, and all other Contract Documents related to this Contract.

By: _____ _____
[Signature] [Title]

NAME: _____ _____
[Print or type name] [Date]

END OF SECTION 00410

SECTION 00 2200
CONSTRUCTION PHASE DRAFT DOCUMENTS AND OWNER REQUIREMENTS

DOCUMENT 00 5213

AGREEMENT FORM

1 OWNER-CONTRACTOR AGREEMENT

1.1 The Agreement between the Owner and the Contractor shall be on AIA DOCUMENT A104 - 2017 edition, as modified to meet the Conditions of this Project. The modified document “DRAFT AIA Document A104 – 2017” is provided after this section. The General Conditions of the Agreement between the Owner and The Contractor shall be as defined in AIA Document A201 - 2017 edition, as modified to meet the Conditions of this Project.

END OF DOCUMENT

SECTION 00 7213

GENERAL CONDITIONS FOR PROJECT

PART 1 - GENERAL

1.1 DRAWINGS, SPECIFICATIONS AND RELATED DATA

A. INTENT OF DRAWINGS AND SPECIFICATIONS

1. The intent of the Drawings and Specifications is that the Contractor furnish all labor, materials, equipment, and transportation necessary for the proper execution of the Work, unless specifically noted otherwise. The Contractor shall do all the Work shown on the drawings and as described in the Specifications and all incidental Work considered necessary to fully complete the Project in a substantial and acceptable manner ready for use, occupancy, and operation by the Owner.

B. DEFINITIONS

1. Whenever used in the Contract Documents, the following terms shall have the meanings indicated, which shall be acceptable to both the singular and plural thereof:

ACT OF GOD- An earthquake, cyclone, or other cataclysmic phenomenon of nature. Rain, wind, flood or other natural phenomenon of normal intensity for the locality shall not be construed as an Act of God and no representation shall be made to the Contractor for damages to the Work resulting therefrom.

ADDENDA- Written or graphic instruments issued prior to the execution of the Agreement, which modify or interpret the Contract Documents, Drawings, and Specifications, by additions, deletions, clarifications or corrections.

AGREEMENT- The Contract executed by the Owner and Contractor covering the performance of the Work described in the Contract Documents.

BID- The offer Proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

BIDDER- Any person, firm, or corporation submitting a Bid for the Work,

CHANGE ORDER- A written amendment of the Contract between the Owner and the Contractor, authorizing an addition, deletion, or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the contract price or contract time.

CONTRACT AMOUNT- The total monies payable to the Contractor under the terms and conditions of these Contract Documents.

CONTRACT DOCUMENTS- The contract, including Advertisement, Instructions to Bidders, Proposal, Contract, Bonds, Certificate of Insurance, Contractors Declaration, General Conditions, Supplemental General Conditions, Construction Specifications, Supplemental Specifications, Drawings, Addenda, Notice of Award, Notice to Proceed, Change Orders and those documents necessary for the Project.

CONTRACT TIME- The number of calendar days stated in the Proposal for the completion of the Work.

CONTRACTOR- The Person, Firm, or Corporation with whom the Owner has executed the Agreement.

DRAWINGS- The part of the Contract Documents that show the characteristics and scope of the Work to be performed and which have been prepared or approved by the Owner's Agent.

FIELD ORDER- Written directives issued by the Owner's Agent as authorized by the Owner, to the Contractor. Field orders may take the form of instructions or authorizations in reference to performance of the Work. Field orders may also be interpretations or clarifications of the Contract Documents. Field orders do not change the content, nor shall they be interpreted as a change in the Contract Documents.

GOVERNING AGENCY- Public authority (state, county, township, or other public agency), or their boards, commissions, departments, etc. which has statutory ownership or control of the referred to facility or area.

GROSS PROPOSAL AMOUNT- The total sum of all of the amounts obtained by extending the Contractor's Bid Prices, time the Owner's Agent Estimated Quantities; on Lump Sum Contracts, the Lump Sum Amount Bid.

INCIDENTAL TO THE PROJECT- Incidental items of Work required but not specifically listed in the Proposal and for which no separate payment will be made. The costs associated with such incidental items are to be included in the Proposal Prices Bid for Items of Work, specifically listed in the Proposal and included in the Gross Proposal Amount.

INCIDENTAL TO ITEM (AS DESIGNATED) - Incidental items of Work required but not specifically listed in the Proposal and for which no separate payment will be made. The costs associated with such Work are to be included in the Price Bid for the specific Item so designated and listed on the Proposal.

NOTICE OF AWARD- The written notice of the acceptance of the Bid from the Owner to the successful Bidder.

NOTICE TO PROCEED- Written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the commencement date and completion date for the Work.

OWNER- A Public, quasi-public or authority, corporation, association, partnership, or individual for whom the Work is to be performed.

OWNER'S AGENT- A duly appointed representative of the Owner, to perform as his Agent in the administration of the Work. All business conducted by an Owner's Agent shall be in the best interest of the Owner and shall be as if conducted by the Owner.

OWNER'S REPRESENTATIVE- A duly appointed representative of the Owner delegated to assist in the administration of the Contract.

PLANS- The Drawings as prepared by the Owner's Agent or Representative which will show the characteristics and scope of the Work to be performed and which are a part of the Contact Documents.

PROJECT- The undertaking to be performed as provided in the Contract Documents.

PROPOSAL- The offer of a bidder to perform the Work described in the Contract Documents when made out and submitted on the Prescribed Competitive Sealed Proposal Forms; properly signed and guaranteed.

PUNCH LIST- A list of uncompleted work given to the Contractor by the Owner's Agent or Representative.

SHOP DRAWINGS- All drawings, diagrams, illustrations, brochures, schedules, and other data prepared by the Contractor, a subcontractor, Manufacturer, Supplier or distributor that illustrates how specific portions of the Work shall be fabricated and/or installed.

SPECIFICATIONS- A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

SUBCONTRACTOR- An individual, firm, or corporation having a direct contract with the Contractor, or with another Subcontractor, for the construction of a part of the project.

SUBSTANTIAL COMPLETION DATE- That date as certified by the Owner's Agent or Rep. when the construction of the Project, or a specified part thereof, is sufficiently completed in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purpose for which it is intended.

SUPPLIER- Any person or organization who supplies materials or equipment for the work, including that fabricated to a special design, but who does not perform labor at the site.

WORK- All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

WRITTEN NOTICE- Any notice to any party of the Agreement relative to any part of this agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party or his authorized representative on the Work.

C. ABBREVIATIONS

1. The following abbreviations, as used in the Contract Documents, have the listed meanings:

ARC	Amtech Solutions Inc. (Roof Consultant, Architect, Special Consultant)
A.S.T.M.	American Society for Testing and Materials
BOCA	Building Officials Congress of America
FM	Factory Mutual
IN	Inches
IBC	International Building Code
ICC	International Code Council
IECC	International Energy Conservation Code
IEBC	International Existing Building Code
IMC	International Mechanical Code
IPC	International Plumbing Code
LBS	Pounds
NBS	National Bureau of Standards
NFPA	National Fire Prevention Association
SPEC	Specification
SBC	Standard Building Code
UBC	Uniform Building Code
UL	Underwriters Laboratory

D. ADEQUACY OF DRAWINGS AND SPECIFICATIONS

1. Responsibility for adequacy of the design and for sufficiency of the Drawings and Specifications shall be borne by the Owner. The complete requirements of the Work

to be performed under the Contract shall be set forth in Drawings and Specifications to be supplied by the Owner through the Owner's Agent as representative of the Owner. Drawings and Specifications furnished shall be in accordance with the Contract Documents and shall be true and accurate developments thereof. All information concerning utilities shown on the Drawings were obtained using the best information available. No guarantee is given or implied that the information or the location shown is absolutely correct, or that other facilities, in addition to those shown, are not present and may be encountered.

E. DIMENSIONS

1. Figured dimensions on the Drawings will be used in preference to scaling the Drawings. Where dimensions are not shown on the Drawings and are required for the Contractor to properly construct the work, Contractor shall obtain such dimensions by **field measurements.**

F. CONFLICTS

1. If there are conflicts among the Supplemental Specifications, the Drawings and/or the Detailed Specifications, the Supplemental Specifications shall govern over both the Drawings and the Detailed Specifications; and the Detailed Specifications shall govern over the Drawings.

G. DISCREPANCIES IN DRAWINGS AND SPECIFICATIONS

1. Any discrepancies found between the Drawings and Specifications and site conditions, or any errors or omissions in the Drawings or Specifications shall be immediately reported to the Owner's Agent, who shall promptly correct such error or omission in writing. Any work done by the Contractor after his discovery of such discrepancies, errors, or omissions shall be done at the Contractor's risk.

H. SPECIFICATIONS BY REFERENCE

1. Where reference is made in the Specifications to specifications or standards of any technical society association, governmental agency, etc., it is understood and agreed that such specifications or standards are a part of the Specification as though fully repeated therein. In interpreting any specification or standard referred to, terms such as "Purchaser", "Owner," and the like shall be understood to mean the person or the organization designated as the Owner in the Contract, acting by and through it's duly constituted legislative body. Terms such as "Supplier", and the like shall mean the Contractor. It is understood and agreed that the use or application of any specification or standard referred to shall not necessarily be restricted to that which may be named in the title or the specification or standard, but shall be used or applied as set forth in these specifications.
2. The Contractor shall secure copies of standards and specifications referred to herein. A copy of each specification or standard referred to is on file in the Owner's Representative's or Agent's Office. It is assumed that a Contractor bidding this Work shall be qualified and experienced in the type of Work involved and will have access to the specifications or standards referred to.

I. COPIES OF THE DRAWINGS AND SPECIFICATIONS

1. Except as provided for otherwise, all copies of the Drawings and Specifications reasonably necessary for the execution of the Work shall be furnished to the Contractor without charge.

J. DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

1. One complete set of all Drawings and Specifications and other data prepared, shall be maintained at the job site and shall be available to the Owner, Owner's Agent or Rep. at all times.

K. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

1. All original or duplicate Drawings and Specifications, and other data prepared, shall remain the property of the Owner's Agent, and they shall not be reused on other work, but shall be returned to him upon completion of the work upon demand.

1.2 LIMITATION OF LIABILITY, INDEMNIFICATION AND INSURANCE

A. LIMITATION OF LIABILITY

1. The Contractor affirmatively represents that he is skilled and experienced in the use and interpretation of Drawings and Specifications such as those included in the Bidding Documents of this Contract. Further, he also affirmatively represents that he has carefully reviewed the Drawings and Specifications of this Contract and that has based his Bid solely on these Documents, not relying in any way on any explanation or interpretation-oral or written-from any other source.

2. Unless the Contractor shall give written notice to the design professional of any ambiguities contained in the Drawings or Specifications prior to the Submission of his Bid, the Contractor agrees that he shall be conclusively presumed that the Contractor has exercised his aforementioned skill and experience and found the Drawings and Specifications sufficient and free from ambiguities, errors, or omissions for the purpose of determining his Contract Bid Price for the performance of the Work in conformity with the Drawings and Specifications.

3. Submission of a Bid without prior written notice to the Owner's Agent or any claimed ambiguities, errors or omissions shall constitute a waiver of any and all bid-price-related claims by the Contractor that are based upon any alleged ambiguities, errors, omissions or the like in the Drawings or Specifications.

B. INDEMNIFICATION

1. See Section 00 5213 – Contractor's Contract.

C. QUALIFICATION OF INSURANCE COMPANIES

1. All insurance required under these Specifications shall be furnished by an insurance company qualified to do business in the state in which the Work is located and shall have a rating of "A" as listed in the current issue of A.M. Best's "Key Rating Guide".

D. WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE

1. See Section 00 5213 – Contractor's Contract

E. COMPREHENSIVE GENERAL LIABILITY INSURANCE

1. See Section 00 5213 – Contractor's Contract.

2. **Before starting the Work, the Contractor shall file with the Owner, certificates of the insurance described above, acceptable to the Owner.**

F. COMPREHENSIVE MOTOR VEHICLE LIABILITY INSURANCE

1. The Contractor shall procure and maintain during the life of this Contract Comprehensive Motor Vehicle Liability Insurance in an amount not less than $1,000,000.00 for combined single limit each occurrence. The policy shall include coverage for owned, non-owned, and hired motor vehicles.

G. UMBRELLA EXCESS LIABILITY INSURANCE

1. See Section 00 5213 – Contractor's Contract.

H. ADDITIONAL INSURED

1. The Owner will be named as an additional insured on all required insurance.

I. IMMUNITY

1. Any immunity of the Owner shall not be a defense from the insurance carrier.

1.3 ROOF CONSULTANT - OWNER - CONTRACTOR RELATIONS AND AUTHORITY

A. CONTRACTOR'S AUTHORITY AND RESPONSIBILITY

1. The Contractor shall supervise and direct the Work efficiently and with his best skill and attention. Contractor will be held solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will be responsible for ensuring that the finished Work complies accurately with the Contract Documents.

2. The Contractor's attention is directed to the "Safety and Health Regulation for Construction: (and subsequent amendments) promulgated by the United States Department of Labor, identified as OSHA Safety and Health Standards General Industry Standards, covering Safety and Health Standards for construction. These rules and regulation are incorporated by reference in these Contract Documents and all Work under this Contract shall be performed in compliance with them.

B. CONTRACTOR'S SUPERINTENDENT

1. A qualified superintendent who is acceptable to the Owner's Agent shall be maintained on the Work and at the job site at all times work is commencing and shall give efficient supervision to the Work until its completion. The superintendent shall have full authority to act in behalf of the Contractor.

C. CONTRACTOR'S RIGHT TO SUSPEND WORK OR TERMINATE CONTRACT

1. The Contractor may suspend Work or terminate the Contract upon 10 days written notice to the Owner and the Consultant, for any of the following reasons:

a. If an order of any court, or other public authority caused the Work to be stopped or suspended for a period of 6 months through no act or fault of the Contractor or his employees.

b. If the Owner should fail to make any progress payments within 45 days after an Owner's Agent verification for payment has been issued or agreed upon.

D. SUSPENSION OF WORK BY THE OWNER

1. The Work, or any portion thereof, may be suspended at any time by the Owner for his convenience, provided that he gives the Contractor five days (5) written notice of said suspension. The Contractor shall resume the Work upon written notice from the Owner. If the Owner does not give written notice to resume work within 30 (thirty) days of the date of the notice of suspension, the Contractor may abandon that portion of the Work so suspended and shall be entitled to payment in accordance with these specifications.

E. OWNERS RIGHT TO CORRECT DEFICIENCIES

1. Upon failure of the Contractor to perform the Work in accordance with the Contract Documents, including any requirements with respect to the schedule of completion and after five (5) days written notice to the Contractor and the receipt of a written statement of deficiencies from the Owner's Agent, the Owner may, without prejudice to any other remedy he may have, correct such deficiencies.

F. OWNER'S RIGHT TO TERMINATE CONTRACT AND COMPLETE THE WORK

1. In the event of any default by the Contractor, and upon receiving written notice from the Owner's Agent certifying cause for such action, the Owner shall have the right to terminate the employment of the Contractor after giving ten (10) days termination,

the Owner may take possession of the Work and of all materials, tools, and equipment thereon and may finish the Work by whatever method and means he may elect. It shall be considered default by the Contractor whenever he shall:

a. Declare bankruptcy, becomes insolvent, or assigns his assets for the benefit of his creditors.

b. Disregards or violates important provisions of the Contract Documents or Owner's Agent instructions or fails to make prompt payment thereof.

G. AUTHORITY OF OWNER'S AGENT

1. No Agent of the Owner shall have power to revoke, alter, enlarge, or relax the stipulations or requirements of the Specifications without the Owners prior approval.

H. OWNER'S ROOF CONSULTANT RESPONSIBILITY AND AUTHORITY

1. The Roof Consultant shall assist the Owner in decisions pertaining to questions which may arise as to the quality and acceptability of the materials furnished, Work performed, rate of progress of Work, interpretation of Drawings and Specifications, and all questions as to the acceptable fulfillment of the Contract on the part of the Contractor.

2. The Owner's Roof Consultant will not be responsible for the construction means, methods, controls, techniques, sequences, procedures, or construction safety.

I. ROOF CONSULTANT'S DECISIONS

1. All claims of the Contractor shall be presented to the Roof Consultant for his assistance in the Owner's decision, which shall be made in writing within a reasonable amount of time. The Owner's decision shall then be final and conclusive.

J. SUSPENSION OF WORK BY ROOF CONSULTANT

1. The Roof Consultant shall have the authority (with Owner's permission) to suspend the Work, wholly or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for prosecution of the Work, or failure on the part of the Contractor to carry out the provisions of the Contract or to supply materials meeting the requirements of the Specifications. The Contractor shall not suspend operation without the Roof Consultant's Written Permission.

2. Should it become necessary to suspend work, Contractor shall pay for the:

a. Removal of all material from the job site.

b. Placement of all material into a secured and bonded type warehouse.

c. Costs of material storage until such time as approval from the Owner is given to resume.

d. Costs of installing water cutoffs that are expected to withstand protracted periods of exposure.

K. RIGHTS OF VARIOUS INTEREST

1. Whenever Work is being done by Owner's forces or by other Contractors adjoining to Work covered by this Contract, the respective rights of the various interests involved shall be established by the Roof Consultant and the Owner to secure the completion of the various portions of the Work in general harmony.

1.4 CONTRACT EXECUTION

A. ASSIGNMENT OF THE CONTRACT

1. Neither the Contractor nor the Owner shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, there under, without written consent of the other party involved.

B. NOTICE OF AWARD

1. Award of the Contract, if it is awarded, will be to the lowest responsible, responsive Bidder whose proposal complies with all requirements prescribed and whose Bid is in the Owner's best interest. The Owner shall have the right to refuse any and all bids as he sees fit. The award, if made, will be made within the number of days specified in the Bidding Documents (if specified), after the scheduled closing time for receipt of the bids.
2. The Contract shall be deemed to have been awarded after the Owner has accepted the Proposal and a formal "Notice to Proceed" has been served upon the intended awardee by the Owner. Notice placed in the United States Mail properly addressed to the address given by the Bidder in his Proposal shall constitute valid service.

C. NOTICE TO PROCEED

1. Following execution of the Agreement by the Owner, a written Notice to Proceed with the Work shall be given to the Contractor. From then on the Contractor shall begin and shall prosecute the Work regularly without interruption thereafter (unless otherwise directed in writing by the Owner), with such forces as to secure the completion of the Work within the Contract Time.

D. CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER AND ROOF CONSULTANT

1. After receipt of the Notice to Proceed from the Owner and prior to the start of construction, the Contractor shall notify the Owner and Roof Consultant, when the Work is to commence. The Owner shall be allowed seventy-two (72) hours, if needed, to arrange for inspection and testing of the Work.

E. CONTRACTOR'S RESPONSIBILITY TO NOTIFY GOVERNING AGENCIES

1. The Contractor shall notify all governing agencies and all concerned utility companies 48 hours prior to the start of construction. Additional notification shall be given by the Contractor to all the above mentioned parties 48 hours prior to crossing, connecting to, or working in the vicinity of any right-of-way utility owned or controlled by any of the concerned parties.

F. SEPARATE CONTRACTS

1. The Owner may let other contracts in connection with the Work of the Contractor to other trades if the Project so requires. The Contractor shall cooperate with the other Contractors with the storage of materials and execution of their work. It shall be the Contractor's responsibility to inspect all Work by other Contractors affecting his Work and to report to the Roof Consultant any irregularities that will not permit him to complete his Work in a satisfactory manner. His failure to notify the roof Consultant of such irregularities shall indicate the Work of other Contractors has been satisfactorily completed to receive his Work.

G. SUBCONTRACTS

1. At the time specified by the Bidding and Contract Documents, or when requested by the Roof Consultant, the Contractor shall submit in writing to the Owner for the Owner's approval, the names of the Subcontractors proposed for scheduled Work. Subcontractors may not be changed except at the request, or with the approval of, the Owner.

2. The Contract Documents shall not be construed as creating any contractual relation between any Subcontractor and the Owner. The Contractor shall bind every Subcontractor by the terms of the Contract Documents.

H. ORAL AGREEMENTS

1. No oral agreement, order, objection, claim or notice by any party shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act what-so-ever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification. **Get agreements in writing!**

I. CHANGES IN THE WORK

1. The Owner may, as the need arises, order changes in the Work throughout additions, deletions, or modifications without invalidating the Contract. The Owner reserves the right to delete or add work costing up to 30% of the original total Contract Amount without penalty or changes in the Unit Prices shown in the Proposal. Payment and time of completion affected by such changes shall be adjusted at the time of ordering such changes.

J. EXTRA WORK

1. New and unforeseen items of work found to be necessary, and which cannot be covered by any item or combination of items for which there is a Contract Price, shall be classed as Extra Work. The Contractor shall do such Extra Work and furnish such materials as may be required for the proper completion or construction of the whole Work contemplated, upon written notice from the Owner as approved by the Roof Consultant. In the absence of such written notice, no claim for Extra Work shall be considered. Extra Work shall be performed in accordance with these specifications; or special provisions shall be done in accordance with the best practice as approved by the Consultant. Extra Work as required in an emergency to protect life and property shall be performed by the Contractor as required.

K. TIME FOR COMPLETION AND LIQUIDATION DAMAGES

1. It is hereby understood and mutually agreed by and between the Contractor and Owner that the date of beginning and the time for completion as specified in the Bidding Documents are **ESSENTIAL CONDITIONS** of this Contract; and it is further mutually understood and agreed that the Work embraced in this Contract shall be commenced on a date to be specified in the "Notice to Proceed". The Contractor agrees that said Work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will insure full completion, in an acceptable manner thereof, within the time specified.

2. The Contractor affirms that the time for completion of the Work described here is a reasonable time for completion of the Work and that he has sufficient plan, equipment and man power to accomplish the Work within the specified time for completion. It is further agreed that **TIME IS OF THE ESSENCE** of each and every portion of this Contract and of Individual Specification Sections wherein a definite and certain length of time is fixed for the performance of any act what so ever; and where under the Contract an additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall become the essence of this Contract.

3. WORK IS TO BE PERFORMED WITHIN TIME LIMITS ESTABLISHED IN THE BIDDING AND CONTRACT DOCUMENTS OR IN THE "NOTICE TO PROCEED." SHOULD THE WORK NOT BE COMPLETED BY THE SPECIFIED DATE, THE CONTRACTOR FURTHER

AGREES TO COMPENSATE THE OWNER AT THE RATE OF **$250.00 A DAY**. THIS COMPENSATION WILL BE DEDUCTED FROM THE RETAINAGE HELD BY THE OWNER.

L. EXTENSION OF THE CONTRACT TIME

1. A delay beyond the Contractor's control, occasioned by an Act Of God, or an act or omission on the part of the Owner, or by strikes, lockouts, fire, or similar occurrences, may entitle the Contractor to an extension of time by which to complete the Work, as determined by the Roof Consultant. However, the Contractor shall within five (5) days after the beginning of such delay, give written notice to the Owner of the cause of said delay.

1.5 USE OF LANDS AND PROPERTY

A. PERMITS AND LICENSES

1. The Contractor shall procure and pay for all permits, licenses and fees necessary for the execution of Work.

B. LANDS BY THE OWNER

1. The Owner shall provide the lands upon which the Contractor and the Work of the Contract is to be performed and/or which is to be used for the rights-of-way or access all as shown on the Drawings. Any delay in furnishing these lands by the Owner shall be deemed proper cause of adjustment in the Contract Amount and in the Time of Completion.

C. LANDS BY CONTRACTOR

1. Any additional land and access thereto not shown on the Drawings that may be required for temporary construction procedures or facilities or for storage of materials shall be procured and provided by the Contractor with no liability to the Owner.
2. The Contractor shall confine his apparatus and storage of materials and operation of his workers to those areas described in the Drawings and Specifications and such additional areas which he may provide as approved by the Owner and Roof Consultant.

D. PRIVATE PROPERTY

1. The Contractor shall not enter upon private property for any purpose without obtaining written permission. Copies of such written permission shall be furnished to the Owner and Roof Consultant upon request. He shall be responsible for the preservation of all private property, trees, monuments, fences, etc., along the adjacent street, right-of- way, etc., and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damage to pipes, conduits, and other structures.

E. PATENTS AND ROYALTIES

1. If any design, device, material, or process covered by letters, patents or copyrights is used by the Contractor, he shall provide for such use by legal agreement with the Owner of the patent or copyright, or by a licensee of such Owner, and shall indemnify and save harmless the Owner of the Project from any and all loss or expense on account thereof, including its use by the Owner of the Project.

F. LAWS TO BE OBSERVED

1. The Contractor shall give all notices and comply with all federal, state, and local laws, ordinances, and regulations, in any manner affecting the conduct of the Work, and all such orders and decrees as exist or may be enacted by bodies or tribunals having any

jurisdiction or authority over the Work, and shall indemnify and save harmless the Owner against any claim or liability arising from, or based on, the violation of any such law, ordinance, regulation order, or decree, whether by himself, his employees or Subcontractors.

1.6 WORKMANSHIP AND MATERIALS

A. QUALITY OF EQUIPMENT AND MATERIALS

1. In order to establish standards of quality, the Roof Consultant and Owner have, in the Specifications, referred to certain products by name and catalog number. This procedure is not to be construed as eliminating from competition other manufacturers where fully suitable in design. However, if the Contractor does desire to make substitutions, he shall observe the following:

a. The Contractor shall furnish the complete list of proposed desired substitutions prior to submitting his Proposal, together with such engineering, catalog and performance history data as the Owner and Consultant may require.

b. The Contractor shall abide by the Owner's decision and judgement when proposed substitute materials or items of equipment are judged not acceptable and shall furnish those items, materials and/or equipment as specified.

c. All proposed substitutions shall be submitted to the Owner for review prior to Bid opening in a manner so as to allow for review see specification section 01300 and 01610.

d. Approved changes must be in writing and no substitutes will be used unless the Contractor receives written approval from the Owner.

B. CHARACTER OF WORKERS

1. The Contractor shall at all times be responsible for the conduct and discipline of his employees and/or any subcontractors or persons employed by the subcontractors. All workers must have sufficient knowledge, skill and experience to perform properly the Work assigned to them. Any foreman or workman employed by the Contractor or Subcontractor who, in the opinion of the Roof Consultant, does not perform his work in a skillful manner, or appears to be incompetent or to act in a disorderly or intemperate manner shall, at the written request of the Roof Consultant be immediately removed from the job site and shall not be employed again in any portion of the Work without the approval of the Roof Consultant.

C. MATERIALS FURNISHED BY THE CONTRACTOR

1. All materials used in the Work shall meet the requirements of the respective Specification and shall be new materials and no material shall be used until it has been approved by the Owner. All materials not otherwise specifically indicated shall be furnished by the Contractor.

1.7 PUBLIC SAFETY

A. COMPLIANCE WITH APPLICABLE STANDARDS AND REGULATIONS

1. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in conjunction with the Work. Contractor shall take all the necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to: All employees on the Work and to other persons who may be affected thereby; all the Work and all the materials or equipment to be incorporated therein whether in storage on or off the site; and other property at the site or adjacent thereto including trees, shrubs, lawns, walks,

pavements, roadways, and those structures and utilities not designed for removal, relocation or replacement in the course of construction.

2. The Contractor shall comply with all applicable **laws, ordinances, rules, regulations,** and **orders** of any **public body** having jurisdiction. The Contractor shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. The Contractor shall notify the Owner of adjacent utilities and properties when prosecution of the Work may affect those items.

B. PROTECTION OF PERSONS AND PROPERTY

1. In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Consultant in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor, if in fact the material is asbestos or PCB and has not been rendered harmless. The Work in the affected areas shall be resumed in the absence of asbestos or PCB, or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Consultant on which arbitration has not been demanded, or by arbitration under other articles. The Contractor shall not be required to perform without consent any Work relating to asbestos abatement or PCB.

2. To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Consultant, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or PCB and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party; indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Subparagraph.

C. WARNING SIGNS AND BARRICADES

1. The Contractor shall provide adequate signs, fences, barricades, signal lights and watchmen, and shall take all necessary precautions for the protection of the Work and safety of the public. Said warning and protection devices shall comply with the requirements of the governing agencies involved.

D. PUBLIC SAFETY AND CONVENIENCE

1. The Contractor shall at all times conduct his Work to insure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the Work, and to insure the protection of persons and property in a manner satisfactory to the Owner and proper governmental authority. All local, state and national laws, ordinances, rules, and regulations pertaining to the kind, use and loading of all apparatus, equipment, and material shall be complied with as well as all other reasonable precautions required by the Owner, to insure safe working

conditions. Fire hydrants, water supply valves, and gas valves on or adjacent to the Work shall be accessible at all times.

2. The Contractor has sole responsibility for the proper construction of the Project and is solely responsible for the safety in, on and about the Job site; control of the safety or adequacy of any equipment, building component, scaffolding, sheeting, bracing, forms, or other Work aids; and superintending the Work. Construction review or inspection by the Owner shall not relieve the Contractor from the above responsibilities.

E. WORK DURING AN EMERGENCY

1. The Contractor shall perform any Work and shall furnish and install any materials and equipment necessary during an emergency endangering life and property. In all cases he shall notify the Roof Consultant and Owner of the emergency as soon as possible, but he shall not wait for instructions before proceeding to properly protect both life and property.

1.8 MEASUREMENT AND PAYMENT

A. BREAKDOWN OF CONTRACT AMOUNT

1. In cases where a Lump Sum Contract Amount forms the basis for payment under the Contract, the Contractor shall, within ten (10) days of receipt of the Notice to Proceed, submit a complete breakdown of the Contract Amount in the form of a Schedule of Values. The breakdown shall show the value assigned to each part of the Work, including an allowance for profit and overhead. Upon approval of the breakdown by the Owner, it shall be used as a basis for all requests for payment. The approved breakdown will not be considered as fixing a basis for additions to or deductions from the Contract Amount.

2. In cases where the Unit Prices form the basis for payment under the Contract, the summation of the amounts determined by multiplying the total number of each of the completed units of Work by the Unit Price stated in the Proposal for that item shall be used as the basis for payment requests. The number of units contained in the Proposal is approximate only, and final payment will be made for the actual number of units that are incorporated into or made necessary by the Work covered in the Contract.

B. REQUESTS FOR PAYMENT

1. Periodically (at the specified times, but not more than once a month), the Contractor shall submit to the Owner, a request for Payment for Work performed. A copy of the Contractor's Declaration (in a form attached at the rear of this division) shall be completed, signed and attached to each request for Payment. Also, to be included shall be any Waivers of Lien required from subcontractors and suppliers as well as any other periodic reports required (such as monthly payrolls, etc.,).

2. In cases where a Lump Sum forms the basis for payment under the Contract, the Request for Payment shall indicate the Work completed to date on the items listed in the approved "Schedule of Values". If the Request for Payment includes materials and equipment, stored on the site, it shall be accompanied by **PAID INVOICES** from the manufacturer or supplier, or such other information satisfactory to the Owner.

3. In cases where Unit Prices form the basis for payment under the Contract, the Request for Payment shall state the Units of Work completed to date. If the Request for Payment includes materials and equipment stored at the site, it shall be accompanied by invoices from the manufacturer or supplier or such other information as deemed satisfactory to the Owner.

4. In cases where Lump Sum Items are included in a Unit Price Contract, the Contractor shall be paid for the percentage of Work completed, as determined by the Owner and assisted by the Roof Consultant.

C. ROOF CONSULTANT'S VERIFICATION FOR PAYMENT

1. If so requested by the Owner, the Roof Consultant shall review the Request for Payment from the Contractor to assist the Owner in making completion verification. Within ten (10) days of the Owner's request the Roof Consultant shall verify or estimate the Work completed and/ or the materials at the Job site.

D. PROGRESS PAYMENTS TO THE CONTRACTOR

1. Not later than the 30th day after receipt of the Roof Consultant's verification for Payment, the Owner shall make a Progress Payment to the Contractor on the basis of such verification: but to insure proper performance of the Contract, the Owner shall retain 5% of the amount of the Roof Consultant's verification for payment until completion and acceptance of all Work covered by the Contract.

E. OWNER'S RIGHT TO WITHHOLD PROGRESS PAYMENTS

1. The Owner may withhold any Progress Payment, in whole or in part, on the Roof Consultant's verification for Payment, to the extent necessary to protect himself from loss on account of any of the following causes discovered subsequent to the submittal of the Roof Consultant's verification:
    a. Defective Work.
    b. Evidence indicating probable filing of claims by other parties against Contractor
    c. Failure of Contractor to make payment to Sub-Contractors and/or material suppliers.
    d. Damage to another Contractors Work.
    e. Failure to submit periodic reports required by the Contract Documents.
    f. Damage to Owner's premises other than scheduled Project Area.

F. PAYMENT FOR REJECTED WORK AND MATERIALS

1. The removal of rejected Work and materials and the execution of such Work in an acceptable state shall be done at the expense of the Contractor; and he shall pay the costs of replacing other Contractor's Work which is destroyed or damaged by the removal and subsequent replacement of the rejected Work or materials.

G. PAYMENT FOR UNCORRECTED WORK

1. Should the Owner or Consultant direct the Contractor not to correct Work that has been damaged or that has not been performed in accordance with the Contract Documents, an equitable deduction from the Contract Price shall be made to compensate the Owner for the uncorrected Work.

H. PAYMENT FOR WORK DONE BY OTHERS

1. The costs of the Work performed by the Owner in removing construction equipment, tools, and supplies and for correcting any deficiencies shall be paid by the Contractor.

I. PAYMENT FOR WORK SUSPENDED BY THE OWNER

1. If the Work or any part thereof shall be suspended by the Owner, through no fault of the Contractor, the Contractor will then be entitled to payment for all Work done up to that suspended Work plus a negotiated value (not to exceed 10%) of the uncompleted Work to compensate for overhead, plant expense, anticipated profit, and restock of material.

1.9 PAYMENT FOR WORK DONE BY THE OWNER FOLLOWING HIS TERMINATION OF THE CONTRACT

A. If the Owner terminates the Contract due to fault of the Contractor (as detailed in B.09.05), no further payments shall be due the Contractor until the Work is completed, and settlements have been resolved by both parties. The costs incurred by the Owner to have the Work completed by another Contractor due to default as herein provided shall be as certified by the Owner and enter into resolution agreements.

B. PAYMENT FOR EXTRA WORK

1. Written notice of claims for payments for Extra Work shall be given by the Contractor within ten (10) days after the receipt of the Request for Extra Work from the Owner. No claim for payment of extra work shall be valid unless so made. In all cases the Contractor's itemized estimate sheets showing all labor and material shall be submitted to the Roof Consultant. The Owner's order for extra Work shall be in the form of a Change Order to be signed by both the Owner and Contractor and shall specify any extension of the Contract Time and one of the following methods of payment:

a. Unit Price or combinations of unit prices which formed the basis of the original Contract.

b. A Lump Sum Price based on the Contractor's estimate approved and accepted by the Owner.

c. Actual Cost of Direct Work by the Contractor plus 15% mark-up for overhead and profit. Actual Cost of Subcontract Work plus 5% mark-up for overhead and profit. Actual costs are assigned the following:

1) Labor costs shall be the amount shown on the Contractor's payroll plus benefits (workers compensation, taxes, union benefits, etc.)

2) Material costs shall be the net price paid by the Contractor to his supplier for that material delivered to the site, verified by invoices.

3) Equipment rental shall be the actual costs incurred for necessary equipment actually used for the Work. All costs shall be in accordance to the invoices provided by the rental company plus those fuel and lubricant rates as certified by the rental company.

1.10 COMPLETION AND ACCEPTANCE OF THE WORK

A. GUARANTEES

1. The Contractor shall warrant all materials and workmanship furnished for a period of two (2) years for the date placing the Work in service regardless of the terms of any manufacturer or supplier warranties.

B. USE OF COMPLETED PORTIONS OF THE WORK

1. The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions may not have expired; but such taking possession and use shall not be deemed as acceptance of any Work not completed in accordance with the Contract Documents.

2. If such prior use increases the cost of, or delays, the completion of uncompleted Work or causes refinishing of completed Work, the Contractor shall be entitled to such extra compensation, or extension of time or both as the Owner, Contractor and Consultant resolve.

C. RELEASE OF LIENS

1. The Contractor shall deliver to the Owner a complete release of all liens or claims arising out of this Contract before any retained percentages or the final request for payment is paid. If any lien or claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner such amounts as the Owner may have been compelled to pay in discharging such liens or claims, including all costs and a reasonable attorney's fee.

D. ACCEPTANCE AND FINAL PAYMENT

1. When the Contractor shall have completed all the Work in accordance with the terms of the Contract Documents, the Contractor shall submit to the Owner the following items for review.
    a. A signed Contractor's Declaration that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents.
    b. A signed Contractor's Affidavit on a form acceptable to the Owner.
    c. Release of Liens described above.
    d. Waiver of Liens from all suppliers and Subcontractors indicating that all debts incurred have been paid in full.
    e. Letters of Release approving final payment to the Contractor from all parties concerned with the Work. This may include utilities, surety companies, municipalities, etc.
2. The Consultant shall assist the Owner in verifying these items if so requested and assist in verifying the Final Contract Amount which shall be the Contract Amount plus all extra work additions that have been approved and less all approved deletions or deductions, if requested.
3. Thereafter, the Owner shall review all data supplied for conformance with Contract requirements and when approved will accept the Work, release the Contractor (any legal rights of the Owner, required guarantees, and correction of Faulty Work after Final Payment) and make final payment to the Contractor.

E. CORRECTION OF FAULTY WORK AFTER FINAL ACCEPTANCE

1. The approval by the Owner and Roof Consultant of the Final Request for Payment, and the making of the final payment by the Owner shall not relieve the Contractor of responsibilities for faulty materials or workmanship.
2. The Owner shall promptly give the Contractor notice of any faulty materials or workmanship discovered within the first 2 years after the date of written acceptance of the Work; and the Contractor shall promptly replace any such defects. The Roof Consultant may assist in resolving or deciding all conflicts of fact regarding such defects.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section 00 7213

SECTION 01 1000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. See the RFP and HHS Exhibits including the Uniform General Conditions (UGC).

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Type of the Contract.
   3. Use of premises.
   4. Owner's occupancy requirements.
   5. Work restrictions.
   6. Specification formats and conventions.

B. Related Sections include the following:
   7. THS Bidding Requirements, Contract Conditions, and Bid Form: See the RFP and HHS Exhibits.

   8. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Roof Repair/Replacement.
   1. Project Location:
      a. Terrell State Hospital, 1200 E. Brin St, Terrell, Texas 75160.

B. Owner:
   9. Owner's Representatives: Tanya Berry, AIA, NCARB, Project Manager, HHSC Maintenance and Construction, Texas Health and Human Services Commission. Matthew Schoenfeld, Plant Maintenance Manager, Terrell State Hospital (TSH).
   10. Architect: Amtech Solutions, 13601 Preston Rd, Suite W1030, Dallas, Texas 75240
   11. Architect's Representatives: Amelia Potee, RA, LEED AP.

C. The Work consists of the following:
   1. Membrane Replacement, including but not limited to:
      a. Roof membrane removal.
      b. Base flashings removal.
      c. Unused accessory removal.
      d. Installation of new membrane system.
      e. Greenhouse glazing removal & new glazing installation.

D. This is Not an FM insured Facility. Factory Mutual (FM) standards are referenced as representative of Quality Standards.

1.4 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to areas designated to fall within the Contract limits.
   1. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.
   2. Driveways and Entrances: Keep driveways, loading areas**,** and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      f. Schedule deliveries to minimize use of driveways and entrances.
      g. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Use of Existing Buildings: Maintain existing buildings in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.5 OWNER'S OCCUPANCY REQUIREMENTS

A. Owner Occupancy: Owner will occupy the buildings during the construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Owner shall endeavor to allow maximum access to facilitate completion of the Work as established by the Construction Schedule. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
   3. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
   4. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.6 WORK RESTRICTIONS

A. On-site Work Hours: Work shall generally be performed from 8:00 am to 5:00 pm, Monday through Friday.
   5. Weekend Hours: As approved by Owner.
   6. Early Morning Hours: (Before 8:00 am). As approved by Owner.
   7. Hours for Utility Shut-downs: Only when explicitly approved by Owner.
   8. Hours for Core Drilling and other Noisy Activities: As approved by Owner.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   9. Notify Architect and Owner not less than three days in advance of proposed utility interruptions.
   10. Do not proceed with utility interruptions without Architect's and Owner's written permission.

C. Nonsmoking Buildings: Smoking is not permitted within the buildings or within the Project work areas. Smoking will be allowed only within designated smoking areas.

1.7 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.

11. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

12. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section 01 1000

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:
1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

A. Unit Price is an amount proposed by bidders, stated on the Bid Form provided in the RFP, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Required Unit Prices are listed in the RFP Bid Form.

End of Section 01 2200

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Sections include the following:
1. Division 01 Section "Unit Prices" for administrative requirements for using unit prices.
2. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Engineer will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Engineer's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Engineer.
   1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   4. Include costs of labor and supervision directly attributable to the change.
   5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
   6. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use AIA Document G709 for Proposal Requests.

1.5 CHANGE ORDER PROCEDURES

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

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Engineer may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 CONTRACT MODIFICATION FORMS

A. Contract Modification Forms: Forms which contain all required information other than AIA forms may be submitted for review.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section 01 26 00

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   a. Procedures for submittals required by the Contract Documents including, but not limited to the following:

      i. Submittal Schedule
      ii. Project Directory
      iii. Product List
      iv. Shop Drawings
      v. Product Data
      vi. Samples
      vii. Information Submittals
      viii. Colors, Finishes and Patterns Submittals
      ix. Operating and Maintenance Manuals
      x. Field Samples and Mock-Ups
      xi. Composite Coordination Drawings
      xii. Sample and Final Warranties
      xiii. Request for Information (RFI'S)
   b. Final Distribution of Submittals

B. Related Requirements:
   a. Documents affecting the work of this Section include, but not limited to:
      i. Owner/Contractor Construction Agreement and General Conditions of the Contract.
   b. Substitution Procedures
   c. Construction Schedules
   d. Closeout Procedures
   e. Individual requirements for submittals are described in other Sections of these Specifications.
   f. Refer to Section 00 22 00 Construction Phase Draft Documents and Owner Requirements for more information.

C. Work Not Included:
   a. Not required submittals will not be reviewed or processed by the Consultant unless requested to do so by the Owner.

1.2 DEFINITIONS

A. Submittals:Shop Drawings, Product Data, Samples or other data pertaining to the construction of the Work which the Contractor is required by Contract Documents to submit to the Consultant or Owners Representative for review for the purpose of illustrating how the Contractor proposes to conform to the requirements and design concepts expressed in the construction drawings and specifications.

B. Shop Drawings: Are drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor, Subcontractor, Manufacturer, Supplier or Distributor to illustrate some portion of the work.

C. Product Data: Are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, data sheets, templates, patterns, reports,

calculations, and other similar information furnished by the Contractor to illustrate materials, supplies or equipment for some portion of the Work.

D. Samples: Are physical examples which illustrate materials, supplies, equipment, or workmanship (fabricated and un-fabricated) and establish standards by which the Work will be judged.

E. Mock-Ups: Are a special form of samples, that are typically too large or otherwise inconvenient for handling in specified manner for transmittal of sample submittals.

F. Miscellaneous:Submittals relating directly to the work including, but not limited to, sample warranties, warranties, maintenance agreements, reports, work records, quality testing reports, certifying reports, performance reports, record drawings (as-builds), operating and maintenance manuals, field measurement data, and similar information, devices and materials applicable to the Work and not processed as a shop drawing, product data, samples, or mock-up.

1.3 GENERAL

A. Do not commence any portion of the work requiring submittals until reviewed by Consultant. Any fabrication, erection, setting or other work done in advance of review by Consultant shall be done entirely at the Contractor's risk.

B. Review of submittal by Consultant shall be made only for general arrangement, appearance, and conformity to the design intent as contained in the construction drawings and specifications. This review does not relieve the Contractor from responsibility for errors or omissions in designs for which the Contractor is responsible. The Contractor remains responsible for compliance with all requirements of the Contract Documents, and for its safe and successful completion of the Work.

C. Consultant review does not include dimensions, or quantities nor does it consider means, methods, techniques, sequences, operations of construction, safety, precautions, or programs incidental thereto, which are the sole responsibility of the Contractor.

D. Comments noted by Consultant apply to all similar conditions.

E. Shop Drawings, Product Data, Samples, Mock-Ups shall in no case be considered Contract Documents but are to be treated only as instruments of convenience and facility to further the progress of the Work.

F. Miscellaneous systems not specifically specified but installed to meet code requirements or for any other reason are subject to Consultants review prior to installation.

G. Submittals and supporting data shall be prepared by the Contractor and shall be submitted to the Consultant as the instruments of the Contractor.
   1. Contractor shall check the drawings of its sub-contractors, suppliers, etc. as well as its own drawings before submitting them to the Consultant.
   2. Manufacturer standard details that do not reflect specific and actual project conditions will not be accepted.
   3. Contractor shall ascertain that submittals meet all requirements of the Contract Documents and also conform to the structural and space conditions. If submittals vary from Contract Documents, for any reason,

Contractor shall make special mention thereof in its letter of transmittal and describe the reasons why there are variations.

4. Prior to submittal to Consultant, each submittal submitted for review shall be stamped, dated, and signed by Contractor, verifying that it has been checked by the Contractor to be in accordance with the Contract Documents. Submittals not signed by the Contractor will be returned without review by the Consultant.
5. Tabulate checklist by each Specification Section. Provide copy of checklist at beginning of submittals for each Specification Section.

H. Maintain returned final set of reviewed submittals at project site, in suitable condition and available for quality control comparisons by Consultant, Owner and others. Each trade shall have final set of trade specific reviewed submittals at project site, in suitable condition and available to supervisors, foreman, leaders, and responsible person in charge, staff, and employees, etc.

I. Within ten (10) days after award of Contract, Contractor shall provide to Consultant two copies of complete list of submittals as required in each Specification Section. Submittals that do not require color selection, color charts, mock-ups, textures, physical samples, etc. shall be transmitted electronically.

J. Review comments of Consultant/Owner will be shown on one reproducible copy when it is returned to the Contractor. Contractor shall make and distribute additional copies as required for its purposes and as required within Construction Documents.

K. Manufacturer's standard data sheets, shop drawings, details, etc. shall be modified to delete information which is not applicable and shall be supplemented to provide additional information where so required.

L. If submittals are submitted electronically, submit as one file not as individual components.

M. Manufacturer shall review and approve all shop drawings.

1.4 COORDINATION OF SUBMITTALS

A. Prior to submittal, use all means necessary to fully coordinate all material, including but not limited to:
   1. Determine and verify all interface conditions, catalog numbers and other data.
   2. Coordinate with all trades as required.
   3. Clearly indicate deviations from requirements of the Contract Documents.
   4. Verify each item and corresponding submittal conforms to requirements of the Contract Documents in all respects.

B. The following products must be provided but will not be reviewed except for interface within the Work, unless indicated otherwise:
   1. Material Safety Data Sheets for all materials, supplies, etc.

C. By affixing the Contractor's signature to each submittal, the Contractor certifies that this coordination has been performed.

1.5 GROUPING OF SUBMITTALS

A. Unless otherwise indicated, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
   a. Provide submittals for each Section in its entirety as a group. Partial submittals will be rejected as not complying with the provisions of the Contract. The Contractor may be held liable for delays so occasioned.

B. When resubmitting, resubmit entire submittal for each Section requiring resubmittal. Do not resubmit partial submittals. Partial submittal shall be not be reviewed by the Consultant and will be returned un-reviewed to the Contractor.

1.6 SUBSTITUTIONS/VARIATIONS

A. Substitutions request shall be written, timely and submitted in accordance with the procedures specified.

B. Any delay in construction caused by requests of the Contractor to substitute materials, items of equipment or assemblies of construction shall be the responsibility of the Contractor; the Owner will not entertain any requests for damages caused by such delays. Review by the Owner of substituted items shall not relieve the Contractor of its responsibilities under the Contract and the various guarantees/warranties provided therein.

C. Contractor must validate that any substitutions/variations from Contract Documents are compatible and provide the specified guarantees/warranties.

1.7 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals. Refer to the Draft Submittal Cover Sheet in Division 00.
   1. When information is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
   2. On resubmittals, reference the original submittal number.
   3. Resubmittals shall be nomenclated by the submittal number followed by .01, .02, etc.

B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking. Include a checklist of submittals for each Section.

C. On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly show the submittal number in which the item was included.

D. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times. Make the submittal log available to the Consultant for review weekly or upon request.

E. Where Mock-ups and similar samples are indicated in individual work Sections and cannot be transmitted in standard fashion, process transmittal form to provide a record of activity.

PART 2 – SUBMITTALS

2.1 PROJECT DIRECTORY

A. After execution of the Contract but prior to commencement of Work, Contractor shall submit to Consultant a “Project Directory” listing subcontractors, vendors, suppliers, etc. on the Project and giving a brief description of their scope of work, firm name, contact person, address, phone number, email address and fax number.

2.2 PRODUCT LIST

A. Within five (5) days after award of Contract, Contractor shall provide to Consultant five copies of complete list of submittals as required in each Specification Section. Submittals that do not require color selection, color charts, mock-ups, textures, physical samples, etc. shall be transmitted electronically.

B. Tabulate checklist by each Specification Section. Provide copy of checklist at beginning of submittals for each Specification Section.

C. For products specified only by reference standard, include with listing of each product:
   1. Name and address of manufacturer.
   2. Trade name.
   3. Model or catalog designation.
   4. Manufacturer’s data.
      a. Performance and test data.
      b. Reference standards.

2.3 SHOP DRAWINGS

A. Shop drawings shall be accurately drawn to scale, completely dimensioned, and sufficiently large to show all pertinent aspects of the item and its method of connection to the Work (or as specifically indicated elsewhere in the other sections of these specifications).
   1. Show plan and section views as necessary to clearly show construction details and methods.
   2. Maximum sheet size permitted will be 36 inches by 48 inches. Minimum sheet size permitted will be 8.5 inches by 11 inches.

B. Title shop drawings with the name of the Project and list the applicable divisions, sections, and details on each sheet.

C. Submit separate items on separate sheets.

D. The reproduction of any Contract Documents for use in a shop drawing submittal is not permitted.
   1. The Contractor may request drawings/backgrounds from the Consultant to use in his preparation of Shop Drawings. The Consultant will send drawings, via email, only after the following is completed:
      a. Contractor to complete the “CAD Release and Indemnity Agreement” to be provided by the Owner; sign and return to the Consultant.
      b. Requests for drawings prepared by Consultants shall be directed to Consultants office and be subject to their policies. Consultants and

sub-consultants retain the right to issue/not issue their drawings to be used for Shop Drawing preparations.

E. Contractor to assume in its agreed cost to the Owner that it will not receive any drawings from the Consultant to use for his preparation of Shop Drawings. The Contractor should assume in its agreed cost to the Owner that the Contractor will prepare custom Shop Drawings for each Specification Section.

F. Manufacturer standard drawings/details that do not reflect specific and actual project conditions will not be accepted.

G. Project specific shop drawings shall be submitted to manufacturer for review and acceptance prior to being submitted to Consultant. Shop drawings that do not bear the stamp and/or approval of the manufacturer shall be returned to the Contractor without being reviewed.

H. Drawings shall show how multiple systems and interdisciplinary work will be coordinated.

2.4 PRODUCT DATA

A. Manufacturer's standard date sheets, drawings, details shall be modified to delete information which is not applicable and shall be supplemented to provide additional information where so required.

B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data shall:
1. Have each copy clearly marked to identify pertinent materials, products, models, finishes, etc.
2. Show clearly standard options included.
3. Show dimensions and clearances required.
4. Shoe performance characteristics and capacities.
5. Show wiring diagrams and controls and show necessary rough in requirements for utility services and connections, where applicable.
6. Include manufacturer's installation instructions on 8.5 inch by 11.5 inch sheet size.

C. Identify each item of product data by reference to sheet and detail of Contract Drawings and by specific reference to Division and Specification Section. At the end of each section provide data sheets for items required to meet code or complete Work that are not specifically referenced or specified.

D. Where product data, as submitted, contains extraneous information, unmarked options, or is incomplete, it will be returned to the Contractor without review.

E. When contract requires extended or special warranty terms, warranty sample must specifically state warranty language to address extended or special warranties.

2.5 SAMPLES

A. Contractor shall forward, at its own expense, samples designated for use on the Project. Include material, equipment, textures, colors, and fabrics in sizes and quantities as required by the Drawings and Specifications or as requested by the Consultant. Where there is an expected range of color or texture variation for the specified item, submit sufficient number of samples to illustrate range.

B. Submit and resubmit samples until accepted by Consultant/Owner.

C. No review of sample shall be taken in itself to change or modify the Contract requirements.

D. Finishes, materials and workmanship in the completed Project shall match accepted samples.

E. No samples shall be incorporated into the Work, unless otherwise specified or specific approval is given by the Consultant and Owner.

F. Samples shall not be returned to the Contractor.

2.6 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria
   1. Where professional design services or certifications by a design professional are specifically required by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Consultant.

B. Delegated-Design Services Certification
   1. In addition to shop drawings, product data, and other required submittals, submit paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to the Contractor to be designed or certified by a design professional.
   2. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, load, and other factors used in performing these services.

2.7 COLORS & FINISHES

A. Unless the color or pattern are shown or specified, whenever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the Consultant for review and selection.

B. Completely describe the relative cost and capabilities of each color and pattern, unless available colors and patterns have identical costs and wearing capabilities.

2.8 FIELD SAMPLES AND MOCK-UPS

A. Erect at project site at a location specified by Consultant. Comply with requirements herein.

B. Provide field samples or mock-ups as required in Specification Sections.

C. Mock-ups shall be size and shape as specified in individual Sections.

D. Each sample shall be complete and finished and must be representative of final finished product. Do not start work until after Consultant has reviewed mock-ups.

A. RFI's shall be submitted by the Contractor or by subcontractors to the Contractor who shall then assign the request an RFI Number and forward the request to the Consultant. RFI's from contractors under separate contract with the Owner, and performing work concurrently with the Work under this contract, shall submit RFI's through the Contractor for coordination.

B. Subcontractors shall not submit RFI's directly to the Consultant. The Contractor shall make his best effort to answer and respond to a subcontractor's RFI before submitting it to the Consultant.

C. Each RFI shall be given a discrete, conservative number such as 001, 002, 003 etc. Revisions or resubmittal of the same RFI shall maintain the original RFI number but be otherwise identified with a suffix such as 001A, for first revisions, or 001B for second revisions, etc.

D. Contractor shall identify in the RFI the specific issue that the Contractor is requesting information on, where it is referred to in the Contract Documents, and what is the Contractor's proposed solution to the RFI. RFI's not addressing these three issues will be rejected.

E. The Consultant's response to the RFI's will confirm a stated interpretation or otherwise interpret the design intent and may include furnishing an alternative conflict resolution.

F. The Consultant will review and process RFI's within 10 working days. It is acknowledged and understood that some RFI's will take longer to review and respond than others.

G. Contractor shall prepare and maintain a log and status of RFI's. Contractor shall provide copy of RFI log to Consultant weekly and upon request.

2.9 OPTIONS AND/OR CLARIFICATIONS

A. If the Construction Documents have not detailed an item of work called for in the Contract, Contractor shall advise Consultant/Owner of "how to" recommendations on materials and methods for installation on project.
   1. The proposal shall be submitted to the Consultant/Owner by drawings and descriptive material, include a detailed, itemized cost breakdown, if any.
   2. The means of work recommended shall not create a hardship on the project schedule.
   3. Work as proposed shall not be started without written approval by Owner.

PART 3 - EXECUTION

3.1 TIMING OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dated for installation to provide all time required for reviews, necessary approvals, possible revisions, resubmittals, and for placing orders and securing delivery.

B. In scheduling, allow for review by the Consultant in a timely manner, following the Consultant's receipt of the submittal.

C. Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the Contract completion date.

3.2 PROCEDURES FOR ACTION SUBMITTALS

A. Submit as specified in the General Conditions and Specifications Sections.
   1. Submittals shall be made to Consultant by mail, hand delivery and/or email. Submittal items requiring physical samples, etc. shall be submitted by mail or hand delivery. Submittals made only by fax shall not be reviewed.
   2. Subcontractors shall make submittals through Contractor. Only submittals submitted though Contractor and returned by Consultant through Contractor shall be considered as having been reviewed.
   3. If more than one resubmittal of the same items or its component is required, the Contractor will be billed for additional review time and materials at current billing rates of the Consultant.

B. Unless otherwise agreed or requested, Owner shall be provided with a copy of transmittals only.

C. Copies required in each submittal shall be as follows unless otherwise mutually agreed:
   1. Shop drawings, product data, etc.: Electronic copy in PDF format via email, FTP, or other secure file transfer protocol format, and one set of bound prints if requested by Consultant.
   2. Samples: Unless otherwise specified, submit samples in quantity, which is required to be returned, plus 2 which will be retained by the Consultant and Owner.
   3. By prearrangement in specific cases, a single sample may be submitted for review, and when reviewed, be installed in the Work, at a location agreed upon by the Owner.

D. Identification:
   1. Properly identify each submittal with name of Project, Contractor, subcontractor, and date.
   2. Accompany each submittal by an acceptable transmittal form referring to Project name and Specifications Section number, and paragraph number, for identification of each item.
   3. Consecutively number shop drawings for each Section of Work; retain numbering system throughout all revisions.
   4. Allow clear space on each drawing, product data, and sample for stamp of Contractor and Consultant. Where clear space is not available on samples, submit with tags or stickers attached.

E. Stamp each shop drawing, product data sheet, and sample to certify that is has been coordinated and checked for completeness and compliance with requirements of Work, Project, and Contract Documents.

F. Consultants Review:
   1. General:
      a. Except for finish, color and other aesthetic matters left to the Consultants decision by Contract Documents, Consultant's review of shop drawings, product data, and samples is only for Contractor's convenience in following work and does not relieve Contractor from responsibility for deviations from requirements of Contract Documents.
      b. Do not construe Consultant's review as a complete check or relief from responsibility for errors or omissions of any sort in shop drawings or schedules or from necessity of furnishing work as required by Contract Documents that may not have been shown on shop drawings.
      c. Consultant's review of separate items does not constitute review of complete assembly in which it functions.
      d. Review comments of the Consultant will be shown when it is returned to the Contractor. The Contractor shall make and distribute copies as are required for its purposes.
   2. Submittals not stamped by the Contractor and submittals which, in the Consultant's opinion, are incomplete, contain numerous errors, or have not been checked or have only been checked superficially will be returned to the Contractor for resubmittal.
   3. Processing:
      a. Consultant will review submittals in accordance with agreed upon "Submittal Schedule" and will return them to the Contractor with Consultants stamp.
      b. Notations by Consultant which increase the Contract cost or time of completion shall be brought to the Consultants attention in writing before proceeding with work. Failure to do so will result in the increased cost being borne by the Contractor.
      c. If for any reason the Contractor cannot comply with the notations, Contractor shall re-submit submittal. In the transmittal letter accompanying the re-submittal, clearly describe the reasons for not being able to comply with notations.

G. Action and Distribution:
   1. Submittals shall be made directly to Consultant, with additional copy sent directly to Owner's Representative. Owner's Representative will forward review comments directly to Consultant for incorporation.
   2. Consultants reviewed submittal will be returned to the Contractor for distribution.

H. Revisions:
   1. Make revisions pertinent to by comments on the submittal.
   2. If the Contractor considers any required revisions to be a change, they shall so notify the Consultant and Owner as provided in the General Conditions.

3. Show each revision by number, date and subject in a revision block on the submittal.
4. If for any reason the Contractor cannot comply with the notations, Contractor shall resubmit the submittal.

I. Revisions after review: When a submittal has been reviewed by the Consultant, resubmittal for substitution of material or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary, or unless directed by the Owner.

3.3 PROCEDURES FOR INFORMATIONAL SUBMITTALS

A. Provide informational submittals for each Specification Section.

B. Copies required in each submittal shall be as follows unless otherwise mutually agreed:
1. Shop drawings, product data, etc.: Electronic copy in PDF format via email, FTP, or other secure file transfer protocol format, and one set of bound prints if requested by Consultant.
2. Samples: Unless otherwise specified, submit samples in quantity, which is required to be returned, plus 2 which will be retained by the Consultant and Owner.
3. By prearrangement in specific cases, a single sample may be submitted for review, and when reviewed, be installed in the Work, at a location agreed upon by the Owner.

C. The following items shall be considered “Information Submittals” whether or not identified as such in the Specification Sections. Submit the following:
1. Qualifications Data
2. Certificates for or from the following:
   a. Installers
   b. Manufacturers
   c. Products and Materials
3. The following reports:
   a. Material and Product test reports
   b. ICC-ES Evaluation Reports
   c. Preconstruction Test Reports
   d. Compatibility Test Reports
   e. Field Test Reports
4. Maintenance Data
5. Design Data
6. Manufacturer’s Instructions
7. Manufacturers Field Reports are to be provided to the Consultant within 2 days of inspection.
8. Insurance Certificates and Bond
9. Photographic Documentation
10. Material Safety Data Sheets
11. Schedule of values for invoicing
12. Construction Schedule and work plan
13. Chain of command for project
14. List of all personnel on project

3.4 PROCEDURES FOR DEFERRED SUBMITTALS

A. Deferred approval submittal shall first be submitted to Consultant. If the Consultant reviews the submittal with corrections noted, those corrections must be addressed and the submittal returned to the Consultant. Once the Consultant has no comments on a submittal, it will be returned and shall be resubmitted with the approval by all government authorities having jurisdiction.

B. The Contractor shall then submit to these government agencies and make revisions required by these agencies until approved by all authorities having jurisdiction.

C. When approval has been obtained by all governing agencies having jurisdiction, the approved submittal shall be resubmitted to the Consultant for final review. It is the Contractors responsibility to verify acceptability of government agency required revisions with the Consultant. If Consultant makes revisions to the government agency revisions, it is the responsibility of the Contractor to resubmit to the government agency for approval of Consultants noted corrections.

3.5 PROCEDURES FOR CLOSEOUT AND MAINTENANCE MATERIAL SUBMITTALS

A. Comply with requirements specified in Closeout Procedures.

B. Contractor shall submit all close out documents as required by the Contract Documents including but not limited to, warranties, certificates, affidavits, etc.

C. Provide all close out submittals, warranties, maintenance manuals for all systems as specified within Contract Documents.

D. Provide Record Drawings and As-built drawings.

E. Coordinate all warranties to start on the same date, use date of substantial completion for the entire project as warranty start date.

3.6 FINAL DISTRIBUTION AFTER REVIEW

A. In addition to copies of submittals required by the Contractor, subcontractors, suppliers, fabricators, etc., Contractor shall make distribution to:
   1. Contractor’s jobsite file.
   2. Project Record Documents file, see additional requirements specified here in “Project Record Documents”.

END OF SECTION

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:
   4. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
   5. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

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

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

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

A. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

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

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

C. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five (5) previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

D. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

E. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

F. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

G. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

6. Specification Section number and title.
7. Description of test and inspection.
8. Identification of applicable standards.
9. Identification of test and inspection methods.
10. Number of tests and inspections required.
11. Time schedule or time span for tests and inspections.
12. Entity responsible for performing tests and inspections.
13. Requirements for obtaining samples.
14. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:
   15. Date of issue.
   16. Project title and number.
   17. Name, address, and telephone number of testing agency.
   18. Dates and locations of samples and tests or inspections.
   19. Names of individuals making tests and inspections.
   20. Description of the Work and test and inspection method.
   21. Identification of product and Specification Section.
   22. Complete test or inspection data.
   23. Test and inspection results and an interpretation of test results.
   24. Name and signature of laboratory inspector.
   25. Recommendations on retesting and re-inspecting.

1.6 QUALITY ASSURANCE

H. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

I. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

J. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

K. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

L. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

M. Specialists: Certain sections of the Specifications require that specific construction activities be performed by entities who are recognized experts in those operations. Satisfy qualification requirements indicated for Specialists engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

N. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   26. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   27. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

O. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
3. Demolish and remove mockups when directed, unless otherwise indicated.

1.7 QUALITY CONTROL

A. Contractor Responsibilities: When specified in individual sections, restrict execution of specified Work to Applicators and Personnel meeting indicated qualifications.
1. Install all roofing materials using personnel directly employed by Roofing Contractor with NDL certification from roofing material manufacturer - no Sub-Contracting permitted.
2. Assign a qualified, full time, non-working supervisor to be on Project site at all times during installation of Work. This supervisor is to have good communication skills and be able to communicate with Owner’s Representative and Applicator’s workers.
3. Designate a responsible Project Manager or Superintendent to inspect all installed Work, particularly tie-ins and temporary flashings, at end of each working day and as otherwise required to ensure water-tightness. Inspection to be verified by signature on a Form signifying installation is in accordance with specified requirements.

B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

C. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

28. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

29. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

30. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

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

31. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

32. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

33. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

34. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

35. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

36. Do not perform any duties of Contractor.

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

37. Access to the Work.

38. Incidental labor and facilities necessary to facilitate tests and inspections.

39. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

40. Facilities for storage and field curing of test samples.

41. Delivery of samples to testing agencies.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 10 days of date established for commencement of the Work.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Contractor shall engage an licensed specialist to conduct a post-project roof infrared moisture scan on all roof areas and provide a written report with infrared thermography. Specialist shall be pre-approved by the owner and the architect prior to start of work.

B. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

42. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
43. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
44. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
45. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
46. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
47. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

48. Date test or inspection was conducted.
49. Description of the Work tested or inspected.
50. Date test or inspection results were transmitted to Architect.
51. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."

B. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

End of Section 01 4000

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections:
1. Division 01 Section "Summary" for limitations on utility interruptions and other work restrictions.
2. Division 01 Section "Execution" for progress cleaning requirements.

1.3 USE CHARGES

A. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

B. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.

C. Lumber and Plywood: Comply with Owner's standard requirements.

2.2 TEMPORARY FACILITIES

A. Roofing Material Storage: Storage of materials may be permitted on site with permission of the Owner. Refer to the Uniform General Conditions (UGC) for requirements on storage and invoicing.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
   1. Connect temporary service to Owner's existing power source, as directed by Owner.

E. Telephone Service: Provide temporary or cellular telephone service accessible for use by all construction personnel
   1. At each telephone, provide a list of important telephone numbers.
      a. Police and fire departments.
      b. Ambulance service.
      c. Contractor's home office.
      d. Consultant's office.
      e. Owner's office.
      f. Prime (Roofing) subcontractors' field and home offices.

3.3 SUPPORT FACILITIES INSTALLATION

A. Parking: Arrange with Owner for temporary parking areas for construction personnel.
   1. Restrict Contractors' personnel to assigned areas.
   2. When site space is not adequate, provide additional off-site parking.

B. Project Identification and Temporary Signs: Install signs where indicated, or as required to inform and to direct public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

D. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
   1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 01 Section "Summary."

B. Equipment Enclosure Fence: Before construction operations begin, furnish and install enclosure fence around operating equipment in a manner that will prevent people and animals from easily entering area except by entrance gates.
   1. Extent of Fence: As required to enclose operating equipment and staging areas or as determined sufficient to accommodate construction operations.

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

3.5 OPERATION, TERMINATION, AND REMOVAL

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

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

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

1. Termination and Removal: At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

End of Section 01 5000

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Sections include the following:
   1. Division 01 Section "Substitution Request Form" to submit Substitution Requests.
   2. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

A. Product List: Submit a list in tabular form, showing Contractor's selections from specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
   1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
   2. Form: Tabulate information for each product under the following column headings:
      a. Specification Section number and title.
      b. Generic name used in the Contract Documents.
      c. Proprietary name, model number, and similar designations.
   3. Architect's Action: Architect will respond in writing to Contractor within 10 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Use Substitution Request Form provided as Section 01 6100 – Substitution Request Form following this Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
      e. Samples, where applicable or requested.
      f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
      g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
      h. Cost information, including a proposal of change, if any, in the Contract Sum.
      i. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
      j. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
   3. Architect's Action: If necessary, Architect will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request.
      a. Form of Acceptance: Change Order.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, products selected shall be compatible with products previously selected, even if previously selected products were also options.
   1. Contractor is responsible for providing products and construction methods compatible with products and construction methods necessary for their proper application.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

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

C. Storage:
   1. Store products to allow for inspection and measurement of quantity.
   2. Store materials in a manner that will not endanger Project structure.
   3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   4. Store cementitious products and materials on elevated platforms.
   5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
   6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   7. Protect stored products from damage and liquids from freezing.
   8. Periodically inspect to assure Products are undamaged and are maintained under specified conditions.
   9. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
3. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:
1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
    a. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received not less than 7 days prior to the Bid Due Date. Requests received after that time will be returned unopened.

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

7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

End of Section 01 6000

SECTION 01 6100 - SUBSTITUTION REQUEST FORM

TO: **AMTECH SOLUTIONS / RAINS INDEPENDENT SCHOOL DISTRICT** DATE: _____

PROJECT: **Roof Replacement – ELEMENTARY AND INTERMEDIATE SCHOOLS**

This Proposed Substitution is hereby submitted for consideration for the Specified Product listed below.

Section	Paragraph	Specified Product

Proposed Substitution: _____

Provide complete technical information on Proposed Substitution, including laboratory tests, if applicable. Include complete information on changes to the Work required for proper installation of proposed Product, including revisions to Contract Documents; effect on other Sections or other Trades. Provide specific information on manufacturer, model, accessories, options, etc.

☐ Information Attached ☐ No Changes Required

Does proposed substitution affect dimensions shown on Contract Drawings in any way?

Primary effect(s) on other Trades?

Primary difference(s) between Proposed Substitution and Specified Product (if none, state none):

Location and source for service and parts for Proposed Substitution:

Contract Time will be:

☐ Increased ☐ Decreased ☐ Unchanged

By: _____ Days

Contract Sum will be:

☐ Increased ☐ Decreased ☐ Unchanged

By: $ _____ (Amount)

Reason for substitution:

The undersigned Contractor (Design/Builder) has reviewed fully this Proposed Substitution, including its impact on the Work, and certifies it matches or exceeds the performance, durability, appearance, size and other characteristics of the Specified Product. The Contractor (Design/Builder) further agrees to execute all work required to properly install the Proposed Substitution in accordance with the Contract Documents.

SUBMITTED:	APPROVED: **Amtech Solutions**	ACCEPTED: **Rains Independent School Districts**
CONTRACTOR	SPECIAL CONSULTANT	OWNER
	5550 Granite Pwky #285	1759 W. US Highway 69
	Plano, Texas 75024	Emory, Texas 75440
ADDRESS	ADDRESS	ADDRESS
SIGNATURE	SIGNATURE:	SIGNATURE
PRINTED NAME AND TITLE	PRINTED NAME AND TITLE	PRINTED NAME AND TITLE
DATE	DATE	DATE

SECTION 01 7300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Construction progress documentation.
   3. Photographic documentation.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.
   7. Correction of the Work.

B. Related Sections include the following:
   1. Division 01 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
   2. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Construction Progress Documentation: Provide a Contractor's Construction Schedule for the entire construction period from Notice to Proceed to Final Completion. At intervals agreed upon issuance of the contract, issue:
   1. Progress Reports indicating activity description, early and late start and finish dates, duration, remaining duration, and total float in calendar days.
   2. Construction Reports as may be requested by the Owner.
   3. Special Reports following unusual events. Notify Owner and Architect immediately of any critical events prior to preparation of report.

B. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate, and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   3. Examine roofs, parapets, adjacent surfaces, and critical appurtenances for suitable conditions where products and systems are to be installed.
   4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

D. Discovered Conditions: During performance of the Work including demolition and installation of new systems, conditions may be revealed that require repair or replacement of items (whether or not identified in UNIT PRICES section of the CSP).
   1. Provide photographic documentation of discovered conditions so as to be able to determine nature and extent of damage, and of required repair or replacement.

3.2 PREPARATION

A. Existing Conditions: Before beginning construction, verify the existence and locations of mechanical and electrical systems, and points of connection of utility systems.

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

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

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation"; AIA form G716, "Request for Information", or similar equivalent form approved in advance by the Owner's Consultant.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.

G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start and test equipment and operating components to confirm proper operation. Immediately notify Owner of any malfunctioning units.

B. Adjust operating components for proper operation without binding.

C. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

End of Section 01 7300

SECTION 01 7700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section. Refer to Division 00 Draft Documents and Owner Requirements Form E803 – Closeout Checklist.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.
   2. Warranties.
   3. Final cleaning.

B. Related Sections include the following:
   1. Division 01 Section 01 7300 - "Execution" for progress cleaning of Project site.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Prepare and submit Project Record Documents, operation and maintenance manuals and similar final record information.
   5. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   6. Complete final cleaning requirements, including touchup painting.
   7. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
   1. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit two copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

2.2 CLOSEOUT DOCUMENTS

A. Prepare all data in the form of an informational manual.

B. Submittal Time: Submit Closeout Documents for all portions of the Work with Final Completion documentation.

C. Organize Closeout Documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Binders: Bind documents in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Dividers: Provide heavy paper dividers with plastic-covered tabs for each separate Part. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Covers: Identify each binder with typed or printed titles, "PROJECT CLOSEOUT DOCUMENTS", list title of Project; identify subject matter of contents.
   4. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified.
   5. Arrangement: Internally subdivide binder contents into logically organized parts as described below.
      a. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
      b. Part 2: Items Required By General Conditions of the Contract for Construction (AIA Document A201-1997) including:
         1) Certificate of Substantial Completion.
         2) Contractor's Affidavit of Payment of Debts and Claims (*AIA Document G706).*
         3) Contractor's Affidavit of Release of Liens (*AIA Document G706A).*
         4) Release of Lien from all Subcontractors.
         5) Release of Lien from all Suppliers.
         6) Certificate of Liability Insurance (ACORD 25-S 1/95).
         7) Consent of Surety.
         8) Final Release.
      c. Part 3: Project documents and certificates, including the following:
         1) Declaration, Certificates and other submittals listed above.
         2) Original and photocopies of Contractor's and Manufacturers' warranties.
         3) Shop drawings and product data.
         4) Part 4 (if required): Operation and maintenance instructions arranged by system and subdivided by specification section.
   6. Text: Manufacturer's printed data or typewritten data on 20-pound white paper.
   7. Drawings: Provide with reinforced punched binder tab. Bind in with text; folded to size of text.

2.3 OPERATION AND MAINTENANCE DATA

A. Prepare data in the form of an instructional manual. Include in "PROJECT CLOSEOUT DOCUMENTS" binder if possible.

B. Submit two copies of completed volumes in final form 3 days prior to final inspection.

C. Submit two final volumes revised, within ten days after final inspection.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. If affected by roof replacement and renovations, clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      g. Sweep concrete floors broom clean in unoccupied spaces.
      h. If affected by roof replacement and renovations, vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
      i. Clean transparent materials, including mirrors and glass in doors, skylights and windows. Replace chipped or broken glass damaged by the Work of this Project. Polish glass, taking care not to scratch surfaces.
      j. Remove labels that are not permanent.
      k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
         1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
      l. If affected by roof replacement and renovations, replace disposable air filters and clean permanent air filters.
      m. Leave Project clean.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

End of Section 01 7700

SECTION 00 21 13 – INSTRUCTION TO BIDDERS

PART 1 - GENERAL

1.1 NOTICE OF REQUEST FOR CLOSED SEALED PROPOSAL AND SPECIFICATIONS

A. RAINS ISD will receive CLOSED SEALED PROPOSALS the RAINS ISD Business Building 1759 US-69, Emory, Texas 77440, not later than **2:00 PM, Friday, September 23, 2022** for the following:

Roofing Improvements for:
RAINS ISD Elementary * Intermediate School

B. Proposals shall be sealed in a separate envelope addressed as follows (hand delivery only):

Rains ISD
2022 Roofing Projects
G. F. "Jeff" Fisher, M.Ed., CPA, RTSBA
Assistant Superintendent of Finance
1759 US-69, Emory, Texas 77440
All correspondence shall bear the following identifications:
Roofing Improvements for:
Rains ISD Elementary & Intermediate School

C. Contact Information:

1. Owner:

Rains ISD
1759 US-69, Emory, Texas 77440

Administration (Point of Contact for Procedural Questions):

G. F. "Jeff" Fisher, M.Ed., CPA, RTSBA
Assistant Superintendent of Finance
1759 US-69, Emory, Texas 77440
Office: 903.473.2222 Ext 4114
E: Jeff Fisher fisherj@rainsisd.org

2. Technical (Point of Contact for Material and Installation Questions):

Ronnie Erdman
President
Amtech Solutions
5550 Granite Parkway , Suite 285
Plano, TX 75024
Office: 972-690-6044
Email: ronerdman@amtechsls.com

D. Pre Bid Meeting:

1. A **NON-MANDATORY** PRE BID MEETING will be held at **2:00 P.M. on Thursday, September 8, 2021**, Outside of the Business Office , 1759 US-69, Emory, Texas 77440 for the purpose of reviewing the project specifications, proposal documents, contractor qualifying requirements.
2. **Site visits will begin at 2:30 PM at the Elementary School Followed by the Intermediate School.**
3. Email ronerdman@amtechsls.com for Plans and Specifications.
4. Each contractor must examine the roof area(s) hereafter described as the Project, and be familiar with existing conditions.

E. Proposal shall be accompanied by an acceptable proposal bond or certified cashier's check drawn on a local bank, payable to the Rains ISD, for an amount not less than five percent (5%) of the total amount of the proposal. This proposal security shall become the property of the Owner as liquidate damages in the event the successful contractor fails to execute and deliver a contract, along with specified surety and statutory bonds, within ten days after the received notice of the acceptance of his proposal by the Owner.

1.2 GENERAL CONDITIONS

A. Contract:
1. By executing the contract, the contractor represents that he has visited the site, familiarized himself with all conditions under which the work is to be performed, and correlated his observations with the requirements of the contract.
2. Contract Type: Successful respondent will be required to enter into a contract in a construction form Agreement between Owner and Contractor.
3. The contract will be awarded to the lowest responsible qualified contractor, but the Owner reserves the right to reject any or all proposals. Contractors not responsive to the specifications and other requirements will be rejected.
4. Work under this contract may commence upon award of contract and as specified. Timely completion of the work specified is an essential condition of this contract. Progress meeting(s) between Owner, Contractor, and Manufacturers Representative to review and discuss job progress will be scheduled.

B. Bonds:
1. Simultaneous with delivery of the executed contract, the contractor shall secure and pay for performance and labor and material payment bonds issued by a bonding company licensed to transact business in the State of Texas. Bonds shall conform to requirements set forth elsewhere in the contract documents. Payment and Performance Bonds shall be supplied within ten (10) days of execution. The Contractor shall execute in accordance with the provisions of Chapter 2253, Texas Government Code, a Payment Bond in the amount of the total construction price, solely for the protection of those supplying labor, materials and/or equipment in the prosecution of the subject contract. The Contractor shall execute in accordance with the provisions of said Chapter 2253, Texas Government Code, a Performance Bond in the amount of the total

contract price conditioned upon the faithful performance of the contract, solely for the protection of the Owner.

2. Each bond shall be executed by a corporate surety or sureties authorized to do business in the State of Texas and acceptable to the Owner. If any bond is for more than 10 percent of the surety's capital and surplus, the Owner may require certification that the company has reinsured the excess portion with one or more reinsures authorized, accredited, or trusteed to do business in the State. A reinsure may not reinsure for more than 10 percent of its capital and surplus. If a surety upon a bond loses its authority to do business in the State, the Contractor shall within thirty (30) days after such loss furnish a replacement bond at no added cost to the Owner.
3. Each bond shall be accompanied by a valid Power-of-Attorney (issued by the surety company and attached, signed and sealed with the corporate embossed seal, to the bond) authorizing the attorney in fact who signs the bond to commit the company to the terms of the bond, and stating any limit in the amount for which the attorney can issue a single bond.

C. Insurance:

1. The Contractor shall not commence work until he has obtained all insurance required and such insurance has been approved by the Owner. The Contractor shall take out and maintain during the life of the contractor such public liability, property damage, and compensation insurance as shall protect him, the Owner and any subcontractor, from claims and damages for personal injury, including accidental death, and property damages which may arise from operations of this contract.
2. A Certificate evidencing the required insurance and specifically quitting the indemnification provision set forth in this agreement shall be delivered to the Owner prior to commencement of the work and shall provide that any change restricting or reducing coverage or the cancellation of any policies under which certificates are issued shall not be valid as respects the Owner's interest therein until the Owner has received 30 days' notice in writing of such change or cancellation.
3. The insurance required shall be written for not less than any limits of liability indicated below.
   a. Workmen's Compensation – Statutory
      1) Employees Liability $1,000,000
   b. Comprehensive General Liability
      1) Bodily Injury: Each Person $1,000,000
         Each Occurrence/Aggregate $1,000,000
      2) Property Damage: Each Occurrence/ Aggregate $1,000,000

   or

      3) Combined Coverage Limit $3,000,000
   c. Automobile Liability:
      1) Bodily Injury: Each Person $500,000
         Each Occurrence $500,000
      2) Property Damage: Each Occurrence $250,000

   or

      3) Combined Coverage Limit $750,000
   d. Independent Contractors Liability-Same limit as #2 above.
   e. Products and Completed Operations-Same limits as #2 above, commencing with issuance of final certificate of payment and remaining in effect for one (1) year.
   f. Property Damage Liability Insurance will provide X, C and U coverage, as applicable.
   g. Umbrella Excess Liability-$1,000,000

D. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work specified. Permits and licenses necessary for the execution of the work shall be paid for by the Contractor.

E. The Contractor shall not discriminate against any person in the performance of work under this contract because of race, religion, color, sex, physical handicap, national

origin, or ancestry. In all solicitations of advertisements for employees, the Contractor shall include the phrase "Equal Opportunity Employer" or a similar phrase to be approved by the State Commission of Civil Rights.

F. The Contractor shall at all times enforce proper conduct among his employees and shall not employ on the project any unfit person or any workman not skilled in the task assigned to him.

1.3 SPECIAL CONDITIONS

A. The material manufacturer's representative shall be present during the critical stages of the work, as required by the specifications, for the purpose of monitoring the installation of materials. The Contractor shall cooperate with the manufacturer's representative, correcting any deficiencies he brings to the Contractor's attention, and affording him ample opportunity and time to check the work as it progresses. This shall not relieve contractor of its sole responsibility for proper workmanship.

B. The Contractor will be held responsible for determining if weather conditions on any given day will permit successful completion of work started on that day. Where removal of existing roof is required, the Contractor will remove no more roof area than can be replaced on the same day, carrying the new work to a point where a glaze coat has been applied. Building interiors must be kept dry at all times. The Contractor shall also cooperate with the Owner to provide dust covers and clean-up as required for all interior spaces below the re-roofing project area.

C. The Contractor shall at all times keep the premises free from accumulation of waste materials or rubbish caused by his operations. On completion of the work, he shall remove all waste materials and rubbish from and about the project, as well as all tools, equipment, and surplus materials.

D. **TIME** is of the essence. The owner desires the project to be completed as soon as practical once the Notice to Proceed has been issued. The Contractor shall provide the Owner with a work schedule prior to start of construction and up-date it as required.
   1. Actual work must begin by the date established in the official Notice to Proceed and all work must be completed within the time indicated on the offeror's Proposal Form.
   2. The Contractor agrees that if his Proposal is accepted by the Owner, he will substantially complete all work called for in the Contract Documents as specified and if the work is not complete by such time as indicated on the Proposal Form, he agrees to pay the Owner as liquidated damages, the sum of five hundred dollars ($500.00) for each calendar day after such time that the work remains incomplete.
   3. Allowances for weather days will be permitted upon approval of the Owners representative, as long as the request(s) for time extension(s) are submitted promptly.
   4. The Contractor is advised that the work schedule must be coordinated with the Owner's representative and the Facility Director to ensure that events and

personnel are disrupted as little as possible. This may include adjusting the work schedule or work stoppage special events or other times as determined by the Facility Director. It may be necessary to work on weekends or after-hours, in order to complete the required work with as little disruption as possible.

5. The anticipated start date for this project will be **November, 2022**.

E. The Contractor is also advised to take extra precautions as necessary to ensure the safety of all county personnel, visitors, and others during construction.

F. In order to apply for payment, the Contractor shall submit an Application and Certificate for Payment with Continuation Sheet (AIA document G702 and G703) to the Consultant for verification and approval. Application and Certificate for Payment shall be submitted in three (3) originals and shall include all required information.

G. Upon completion of the work, a final inspection will be conducted by the Owner's representative and the materials manufacturer's representative. After satisfactory correction of any deficiencies found during final inspection, the Owner will issue a written acceptance of the work, the date of such acceptance to establish the date of completion.

H. Any details or practices not covered by these specifications or other contract documents shall be in full compliance with current NRCA Roofing Manual, good roofing practice, and with acceptable fire and wind insurance requirements and/or local building codes.

1.4 PROVISIONS FOR RFCSP PROPOSALS

A. Additional terms and conditions:

1. Duty to keep current license: Contractor shall maintain in current status all federal, state and local licenses, bonds and permits required for the operation of the business conducted by Contractor. Contractor shall remain fully informed of and in compliance with all ordinances and regulations pertaining to the lawful provision of services under the contract. Owner reserves the right to stop work and/or cancel the contract of any Contractor whose license(s) expire, lapse, are suspended or terminated.
2. Survival Clause: All applicable software license agreements, warranties or service agreements that were entered into between Contractor and Customer under the terms and conditions of the Contract shall survive the expiration or termination of the Contract. All Purchase Orders issued and accepted by Order Fulfiller shall survive expiration or termination of the Contract.
3. Delivery: Contractor shall deliver said materials purchased on this contract to the Owner issuing a Purchase Order. Conforming product shall be shipped within 7 days of receipt of Purchase Order. If delivery is not or cannot be made within this time period the Contractor must receive authorization from the purchasing agency for the delayed delivery. At this point the participating entity may cancel the order if estimated shipping time is not acceptable.

4. Inspection & Acceptance: If defective or incorrect material is delivered, purchasing agency may make the determination to return the material to the Contractor at no cost to the purchasing agency. The Contractor agrees to pay all shipping costs for the return shipment. Contractor shall be responsible for arranging the return of the defective or incorrect material.
5. Invoices: The awarded Contractor shall submit invoices to the participating entity clearly stating “Per RFCSP Contract”. The shipment tracking number or pertinent information for verification shall be made available upon request.
6. Tax Exempt Status: Since this is a national contract, knowing the tax laws in each state is the sole responsibility of the Contractor.
7. Additional Charges: All deliveries shall be freight prepaid, F.O.B. destination and shall be included in all pricing offered unless otherwise clearly stated in writing.
8. Prevailing Wage: It shall be the responsibility of the Contractor to comply, when applicable, with the prevailing wage legislation in effect in the jurisdiction of the purchaser. It shall further be the responsibility of the Contractor to monitor the prevailing wage rates as established by the appropriate department of labor for any increase in rates during the term of this contract and adjust wage rates accordingly.
9. Current products: Proposals shall be for materials and equipment in current production and marketed to the general public and education/government agencies at the time the proposal is submitted.
10. Discontinued products: If a product or model is discontinued by the manufacturer, Contractor may substitute a new product or model if the replacement product meets or exceeds the specifications and performance of the discontinued model and if the discount is the same or greater than the discontinued model.
11. Options: Optional equipment for products under contract may be added to the contract at the time they become available under the following conditions: 1) the option is priced at a discount similar to other options; 2) the option is an enhancement to the unit that improves performance or reliability.
12. Warranty conditions: All supplies, equipment and services shall include manufacturer's 20 year NDL standard warranty with a 2” Hail Warranty for the PVC Membrane System and Two (2) year labor warranty unless otherwise agreed to in writing.
13. Cleanup: Contractor shall clean up and remove all debris and rubbish resulting from their work as required or directed by Owner. Upon completion of the work, the premises shall be left in good repair and an orderly, neat, clean and unobstructed condition.
14. Preparation: Contractor shall not begin a project for which Owner has not prepared the site, unless Contractor does the preparation work at no cost, or until Owner includes the cost of site preparation in a purchase order. Site preparation includes, but is not limited to: moving furniture, installing wiring for networks or power, and similar pre-installation requirements.
15. Registered sex offender restrictions: For work to be performed at schools, Contractor agrees that no employee or employee of a subcontractor who has been adjudicated to be a registered sex offender will perform work at any time when students are or are reasonably expected to be present. Contractor agrees that a violation of this condition shall be considered a material breach and may

result in the cancellation of the purchase order at the Owner's discretion. Contractor must identify any additional costs associated with compliance of this term. If no costs are specified, compliance with this term will be provided at no additional charge.

16. Safety measures: Contractor shall take all reasonable precautions for the safety of employees on the worksite, and shall erect and properly maintain all necessary safeguards for protection of workers and the public. Contractor shall post warning signs against all hazards created by its operation and work in progress. Proper precautions shall be taken pursuant to state law and standard practices to protect workers, general public and existing structures from injury or damage.
17. Smoking: Persons working under the contract shall adhere to local smoking policies. Smoking will only be permitted in posted areas or off premises.
18. Stored materials: Upon prior written agreement between the Contractor and Owner, payment may be made for materials not incorporated in the work but delivered and suitably stored at the site or some other location, for installation at a later date. An inventory of the stored materials must be provided to Owner prior to payment. Such materials must be stored and protected in a secure location and be insured for their full value by the Contractor against loss and damage. Contractor agrees to provide proof of coverage and/or addition of Owner as an additional insured upon Owner's request. Additionally, if stored offsite, the materials must also be clearly identified as property of buying Owner and be separated from other materials. Owner must be allowed reasonable opportunity to inspect and take inventory of stored materials, on or offsite, as necessary. Until final acceptance by the Owner, it shall be the Contractor's responsibility to protect all materials and equipment. The Contractor warrants and guarantees that title for all work, materials and equipment shall pass to the Owner upon final acceptance.
19. Disclosures: Contractor affirms that he/she has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor or service to a public servant in connection with this contract. Include a complete description of any and all relationships that might be considered a conflict of interest in doing business with the Owner. The Contractor affirms that, to the best of his/her knowledge, the offer has been arrived at independently, and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give an unfair advantage over other Contractors in the award of this contract.
20. Franchise Tax: The Contractor hereby certifies that he/she is not currently delinquent in the payment of any franchise taxes.
21. Certificates of Insurance: Certificates of insurance shall be delivered to Owner prior to commencement of work. The insurance company shall be licensed in the applicable state in which work is being conducted. The awarded Contractor shall give the Owner a minimum of ten (10) days' notice prior to any modifications or cancellation of policies. The awarded Contractor shall require all subcontractors performing any work to maintain coverage as specified.

22. Legal Obligations: It is the Contractor's responsibility to be aware of and comply with all local, state, and federal laws governing the sale of products/services identified in this RFP and any awarded contract and shall comply with all while fulfilling the RFP. Applicable laws and regulation must be followed even if not specifically identified herein.

1.5 SELECTION CRITERIA & PROPOSAL EVALUATION

A. Proposals are to include the information requested in the sequence and format prescribed. Organizations submitting may provide additional information further describing their capabilities and experience.

B. Award of the Contract resulting from this solicitation shall be under the selection process described herein. A committee appointed by the Owner will evaluate Proposals submitted in response to this solicitation.

C. Each of the criteria has been assigned an appropriate weight by the Owner as set forth below. Following an analysis and evaluation of the proposals, ranking of the Offeror's will be made based upon the selection criteria. Subjective judgment on the part of the Owner is implicit in the criteria selection process. The selection process permits placing technical considerations above total price. Therefore, the Owner reserves the right to award to other than the lowest proposed price.

D. Within 45 days after the opening of the proposals, the Owner shall evaluate and rank each proposal submitted in relation to the selection criteria. The Owner reserves the right to interview any proposer. Once the Offeror's have been ranked, the Owner may negotiate with the first ranked Offeror. If the Owner is unable to come to terms with the first ranked Offeror, discussions will be terminated, and the Owner will proceed to the next ranked Offeror and repeat the process until a contract agreement is reached or all proposals are rejected.

E. Any Proposal may be considered unacceptable if the committee determines it fails to comply with the specified criteria. Or if the proposal does not provide adequate information in technical and/or price proposals, as specified.

F. The Owner will evaluate the proposals submitted based upon the selection criteria described below:
   1. The purchase price. (10 points)
   2. The reputation of the vendor and of the vendors good and services. (10 points)
   3. The quality of the vendors' goods or services. (20 points)
   4. The extent which the goods or services meet the owner's needs. (20 points)
   5. The vendors past relationship with the owner. (10 points)
   6. The vendors' safety record. (10 points)
   7. The long-term cost to the owner to acquire the vendors' goods or services. (10 points)
   8. Any other relevant factor that a private business entity would consider in selecting a vendor. (10 points)

G. A proposal may not be modified, withdrawn, or canceled by an Offeror for a period of sixty (60) days after the last date specified for receipt of proposals. Prior to the last date specified for receipt of proposals, a proposal may be modified or withdrawn by notice to the Owner at the place designated for receipt of proposals. Such notice shall be in writing and executed by the Offeror. Any modification shall be worded so as not to reveal the amount of the original proposal. Any proposal withdrawn may be resubmitted within the time designated for the receipt of proposals.

1. The Owner may request from Offeror a written interpretation of any term or statement in the proposal that is or appears unclear or subject to more than one interpretation and may act upon such written interpretation. Conditional proposals will not be accepted. The Owner shall have the right to reject all proposals, to reject a proposal not accompanied by the required security, to reject a proposal that is in any way incomplete, irregular, or nonconforming, or to reject a proposal that may otherwise be legally rejected for any reason. To the extent allowed by law, the Owner may waive any informality in any proposal. Unless the Owner rejects all proposals, the Owner intends to award the Contract to the Offeror that offers the best value to the Owner based on the listed selection criteria. If the Owner is unable to reach a contract agreement with the selected Offeror, the Owner shall terminate further discussions and proceed to the next Offeror in the order of the selection ranking until a contract agreement is reached or all proposals are rejected. Time is of the essence, and the award of the contract to the successful Offeror is expressly conditioned upon (i) the Offeror's execution and delivery of the contract, and delivery of all required payment and performance bonds and evidence of insurance, within ten (10) calendar days after the successful Offeror is notified of the acceptance of its proposal, and (ii) the Offeror's timely fulfillment of any and all other preconditions expressly set forth in the Contract Documents. Should the Offeror fail to timely execute and deliver the contract, required bonds, evidence of insurance, or fail to timely fulfill any other such preconditions, the Owner may, at its option and discretion, without releasing, impairing, or affecting its right to receive the security as damages for such failure, rescind the award and thereafter negotiate with and award the contract to the next ranked Offeror, or may reject all proposals. There will be no contractual obligation on the part of the Owner to any Offeror, nor will any Offeror have any property interest or other right in the contract or work being proposed unless and until the contract is unconditionally executed and delivered by all parties, and all conditions to be fulfilled by the Offeror have either been so fulfilled by the Offeror or waived in writing by the Offeror or waived in writing by the Owner. Each Offeror by submission of a proposal waives any claims it has or may have against the Architect, its consulting engineers and their employees, or any other consultants, and the Owner, its trustees, officers, and employees, connected with or rising out of the proposal administration, proposal evaluation, proposal recommendation, the award of the contract, or the rejection of any proposals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 05 3123 - METAL ROOF DECK

PART 1 - GENERAL

1.1 SCOPE

A. Perform all work required to complete the metal roof deck work indicated by the Contract Documents and furnish all supplementary items necessary for its proper installation.

B. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 CODES AND STANDARDS

A. The work described in this section, unless otherwise noted on the Drawings or herein specified, shall be governed by the latest editions of the following codes or specifications:
   1. "Specification for the Design of Cold-Formed Steel Structural Members" - AISI.
   2. "Structural Welding Code" - AWS D1.3.
   3. "Roof Deck Specifications" - Steel Deck Institute.
   4. "Code of Recommended Standard Practice, Roof Deck Construction" - Steel Deck Institute.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed steel deck similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Qualifications of welders and welding operators, filler metal, welding techniques and procedures shall be in accordance with AISC Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings, and the AWS Structural Welding Code.

C. Certifications shall be no more than six (6) months old during the time of welding in the erection period.

D. Powder Driven Tool operators shall be trained by the tool manufacturer’s representative, (not distributor or agent), in accordance to American National Standards Institute. Powder-actuated Fastening Systems - Safety Requirements (ANSI A10.3). New York, New York.

1.4 SUBMITTALS

A. Shop Drawings:
   1. Submit shop drawings in accordance with Specifications.

2. Shop Drawings shall indicate decking plan, deck profile dimensions, anchorage requirements, projection, openings and reinforcement, finishes, applicable details and accessories.
3. Submit calculations for alternate power driven fasteners if used.

B. Manufacturer's Data: Submit two copies of manufacturer's specifications and installation instructions for Metal Roof Deck. Include manufacturer's certification as may be required to show compliance with these specifications.

C. Product Test Reports: From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:
1. Mechanical fasteners as required.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

C. Architect may reject any material that has become damaged because of improper storage.

1.6 SEQUENCING/SCHEDULING

A. Coordinate Work of this Section with work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
Steel Roof Deck:
a. Nucor Corp.; Vulcraft Div. or equal.

2.2 MATERIALS

A. Metal Roof Deck: Deck type and gauge shall be as shown on the Drawings and shall conform to the requirements adopted by the Steel Deck Institute.

B. Primer/Paint: Shop applied standard Vulcraft, light gray primer. Performance test standards shall meet or exceed requirements of Federal Specification TT-P-8GG, Types I and II.

Galvanized Steel Sheet: ASTM A 653/A653M, Structural Steel, Grade 33, G60 (Z180) zinc coating.

C. Welding Electrodes: Shall conform to AWS A5.1 and AWS A5.5.

D. Screws and Deck Fasteners: As an alternate for attachment of deck.

E. Powder Driven Fasteners: Fasteners shall have knurled shank to the tip; minimum ½" diameter steel washer; electroplated zinc conforming to ASTM B633, Sc. 1, Type III; meet SDI design requirements; Factory Mutual approval, such as Hilti X-ENP19L15, X-HSN24-THQ12HSN, X-EDN19-THQ12HSN, XEDNK22 THQ12 HSN or SDM22 THS12 FDN.

F. Accessories: Provide all accessories necessary to complete the entire installation, including cover plates required to cover all gaps where deck units abut or change direction, around columns, to cover access holes used for welding, and closures where required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Deck units shall be placed on supporting steel framework and adjusted to final position before being permanently fastened. Each unit shall lap a minimum of two inches (2") over supports.

B. Unless noted on the contract documents metal deck units shall be fastened to the steel framework at ends, side supports, and at intermediate supports by puddle welds not less than 5/8" diameter or mechanical fasteners spaced per drawings. Provide weld washers for welding all material lighter than or equal to 22 gage. Above noted weld pattern is minimum connection. Reference drawings for required weld pattern.

C. Install fasteners using a low velocity powder actuated tool such as the Hilti DX 860 HJN, DX 860 HSN, DX 460 SM, DX 76 or DX 860 ENP.
   1. The nail head stand off shall be according to the manufacturer's recommendations and verified with an inspection gauge. The power level shall be determined by jobsite testing.
   2. Installation of fasteners shall be in accordance to design requirements and installed by an operator licensed by the manufacturer.

D. Side joints of the deck unit shall be fastened by tack welding or mechanical fastening not to exceed the lesser of ½ the span or 36" apart. This shall be minimum side lap connection requirements. Reference structural drawings for actual connection requirements. Acceptable mechanical fasteners for sidelaps are as follows:
   1. Self-Drilling Screws: #10 or #12 TEK, or Hilti S-SLC01 or Hilti S-SLC02.

E. Tack weld or sheet metal screw all accessory cover plates adequately into place.

F. Weld metal shall penetrate all layers of deck material and shall have good fusion to the supporting members.

G. Deck fastenings indicated above are minimum requirements. Deck attachment shall be sufficient to develop diaphragm shear capacity indicated on Drawings,

and shall be in accordance with manufacturer's recommendations.

H. Roof Sump Pans and Sump Plates: Install over openings provided in roof decking and weld flanges to top of deck. Space welds not more than 12 inches (305 mm) apart with at least 1 weld at each corner.

I. Miscellaneous Roof Deck Accessories: Install ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer’s written instructions. Weld to substrate to provide a complete deck installation.

J. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer’s written instructions to ensure complete closure.

3.2 OPENINGS

A. Openings shall be provided where shown on the Drawings, along with any reinforcing required to strengthen the metal deck. Provide light gauge deck closures where required but not specifically noted on the Contract Documents.

B. Other openings and reinforcing not shown on Drawings will be made and reinforced by other trades and are subject to review by the Architect.

C. The Architect shall be immediately notified of any openings where supplemental framing is required but is not provided.

3.3 HANGING LOADS

A. Mechanical equipment or other loads shall not be hung from metal deck unless shown on the Drawings. Method of attachment subject to review by the Architect.

3.4 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damage galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer’s written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
   1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

3.5 FIELD QUALITY CONTROL

A. Provide all inspections and testing as required by the 2015 International Building Code.

B. A testing laboratory shall perform field inspection of metal deck for proper type, gage, finish, installation and attachment. Testing Laboratory shall provide a written report of their inspection.

C. Remove and replace work that does not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

End of Section 05 3123

SECTION 06 1055 - ROOFING CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:
   1. Wood blocking, cants, and nailers.

B. Refer to schedule at end of Section.

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
   1. NeLMA: Northeastern Lumber Manufacturers' Association.
   2. NHLA: National Hardwood Lumber Association.
   3. NLGA: National Lumber Grades Authority.
   4. SPIB: The Southern Pine Inspection Bureau.
   5. WCLIB: West Coast Lumber Inspection Bureau.
   6. WWPA: Western Wood Products Association.

1.4 REFERENCES

A. American Lumber Standards Committee (ALSC): National Design Specification for Wood Construction.

B. Product Standard of NBS (PS):
   1. PS 1 - Construction and Industrial Plywood.
   2. PS 20 - American Softwood Lumber Standard.

1.5 SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work.

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

C. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
1. Fire-retardant-treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.

1.6 QUALITY ASSURANCE

A. Rough Carpentry Lumber: Visible grade stamp, of agency certified by National Forest Products Association (NFPA).

B. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.

B. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional

20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

E. Application: Treat all miscellaneous carpentry unless otherwise indicated.

1. Framing for raised platforms.
2. Concealed blocking.
3. Roof framing and blocking.
4. Plywood backing panels.
5. Wood cants, nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.
6. Plywood backing panels.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Cants.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 15 percent maximum moisture content of any species.

1. Mixed southern pine; SPIB.
2. Spruce-pine-fir; NLGA.
3. Hem-fir; WCLIB, or WWPA.
4. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 304 stainless steel.
2. Where lumber is pressure-preservative treated with ACQ (Alkaline Copper Quaternary), provide fasteners of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1.

G. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
   1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
   2. Material (for fastening into ACQ treated lumber): Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that surfaces are ready to receive work and field measurements are as shown on shop drawings.

B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.2 INSTALLATION, GENERAL

A. Discard units or material with defects that might impair quality of work and units that are too small to use in fabricating work with minimum joints.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. Do not splice structural members between supports, unless otherwise indicated.

D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

E. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

F. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive

finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

G. Install components with fasteners suited to materials.
   1. Nailable Surfaces: Galvanized or galvanically compatible nails or stainless steel into ACQ treated lumber; sized as follows:
      a. 3/4 and 1-inch materials: 8d nails.
      b. 1-1/2 or 2-inch materials: 16d nails.
   2. Hollow Masonry Walls: Toggle bolts.
   3. Solid Masonry: Rawl Zamac pin drive.
   4. Steel Members: Bolts or Power actuated Hilti pin.
   5. Maximum Spacing: 12-inches on center, unless noted otherwise.
   6. Top of Hollow Masonry Wall: Set 12-inch minimum J-bolts in fully set bed of concrete; minimum 18-inches on center.

H. Remove all bent or deformed nails from finished work and dispose of.

3.3 PROTECTION

A. Protective Walkways - Traffic Area Protection: Install full sheets of 3/4-inch exterior grade plywood and minimum 1-inch EPS board insulation to those areas of new roof surface to be trafficked by personal and wheeled vehicles.
   1. Round corners of plywood sheets to prevent damage to roofing membrane.
   2. Ballast protection boards to prevent unplanned displacement.

3.4 CLEANING

A. Pick up spilled and unused nails and fasteners daily.

3.5 SCHEDULE

A. Roofing Carpentry Work:
   1. Miscellaneous blocking for single ply or modified bitumen roofing system and related flashings and sheet metal.
   2. Blocking for roof mounted mechanical items.

END OF SECTION 06 1055

SECTION 07 0150 – ROOF REPLACEMENT PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Roof membrane removal.
   2. Base flashings removal.
   3. Unused accessory removal.
   4. Modify rooftop appurtenances where required to achieve minimum recommended heights and clearances for new roof installation at Building 650 only.

B. Related Sections:
   1. Division 01 Section "Summary" for use of the premises and phasing requirements.
   2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental protection measures for roof replacement preparation.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Substrate Board: Rigid board or panel products placed over the roof deck that serve as thermal barriers, provide a smooth substrate, or serve as a component of a fire-resistance-rated roofing system.

C. Roof Removal: Removal of all existing roofing. Existing dry, in place insulation may remain and be re-used.

D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

E. Existing to Remain: Existing items of construction that are not indicated to be removed.

F. Materials Ownership: Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 ACTION SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work.

B. Product Data: For each type of product indicated or required to perform the Work.

1. Provide data for each required product indicating characteristics, performance criteria, mixing and preparation requirements, limitations, and Material Safety Data Sheets (MSDS).

C. Demolition and Removal Procedures and Schedule: Outline all work tasks and schedule them, showing clearly when each area is to be performed. Coordinate with Owner and other contractors to avoid impact to other work Owner's occupancy.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer is approved by warrantor of existing roofing system.

B. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by roof replacement operations. Submit before Work begins.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Indicate extent of work installed, actual locations of appurtenances and items that will be hidden from view at completion of work.

1.7 QUALITY ASSURANCE

A. Roof Replacement Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:
1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects roof replacement including installers of roof accessories and roof-mounted equipment.
2. Methods and procedures related to roof replacement preparation, including membrane roofing system manufacturer's written instructions.
3. Temporary protection requirements for existing roofing system that is to remain, during and after installation.
4. Roof drainage during each stage of roof replacement and roof drain plugging and plug removal requirements.
5. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
6. Existing deck removal procedures and Owner notifications.
7. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
8. Structural loading limitations of deck during roof replacement.
9. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect roof replacement.
10. HVAC shutdown and sealing of air intakes.
11. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
12. Discovery of asbestos-containing materials.
13. Governing regulations and requirements for insurance and certificates if applicable.
14. Existing conditions that may require notification of Architect before proceeding.

1.8 PROJECT CONDITIONS

A. Owner will occupy all or portions of buildings immediately below roof replacement or renovation areas. Conduct roof replacement so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
   1. Provide interior protection at areas designated by Owner. Coordinate schedules and activities with Owner.
   2. Coordinate work activities daily with Owner so Owner can place additional protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
   3. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.

B. Protect buildings scheduled for roof replacement, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from roof replacement operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   1. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

D. Limit construction loads on roof to 200 lb. rooftop equipment wheel loads and 20 PSF for uniformly distributed loads.

E. Weather Limitations: Proceed with roof replacement preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
   1. Remove only as much roofing in one day as can be made watertight in the same day.

F. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
   1. Hazardous materials will be removed by Owner before start of the Work. Existing roof will be left no less watertight than before removal.
   2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

PART 2 - PRODUCTS

2.1 INFILL MATERIALS

A. Deck Repair Materials:
   1. Match existing deck in material, profile, thickness, and finish.

B. All Decks: Align top plane with existing deck.

C. Curbs and Support Members: Wood or metal curbs and support items as indicated and required for existing conditions.

D. Miscellaneous Metals: Conform to existing Products and installations.

2.2 AUXILIARY ROOF REPLACEMENT MATERIALS

A. General: Auxiliary roof replacement preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.

B. Metal Flashing Sheet: Metal flashing sheet is specified in Division 07 Section "Sheet Metal Flashing and Trim."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that areas to be demolished are clear of encumbrances.

B. Examine existing mechanical and electrical items to determine conditions and operability.

C. Notify Owner's Representative in writing of any inoperable items or unsafe conditions.

D. Beginning work indicates acceptance of existing conditions, including operability of mechanical and electrical items.

3.2 PREPARATION

A. Prevent movement or settlement of adjacent structures and paving. Provide bracing and shoring.

B. Protect existing landscaping materials, appurtenances, structures, paving, roofing and siding, roof mounted equipment, roof deck and structures which are not to be demolished.

C. Coordinate installation of interior protection where designated.

D. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with roof replacement work that could affect indoor air quality or activate smoke detectors in the ductwork.

E. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

F. Verify that rooftop utilities and service piping have been shut off before beginning the Work. Coordinate with Owner.

3.3 REMOVAL

A. General: Notify Owner each day of extent of proposed work for that day.

B. Removal: Remove existing roof membrane, base flashings and other unused system components. Inspect wood blocking, curbs, and nailers for deterioration and damage. If wood blocking, curbs, or nailers have deteriorated or are damaged, immediately notify Architect.

3.4 PREPARATION

A. Inspect lightweight concrete deck surface after existing roofing and insulation material removal.

B. If loose securement of deck to structure is observed, or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.

C. If deck surface is not suitable for receiving new roofing, or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

3.5 DECK AND SUPPORT REPLACEMENT AND REPAIR

A. Replace damaged and deteriorated as required. Replacement deck to match existing.

B. Install new deck and accessories as required and directed by Architect.

C. Remove damaged and deteriorated deck by cutting in straight lines. Coordinate cuts with structural supports to ensure proper installation of replacement materials.

D. Install new deck repair materials with all edges properly supported on structural members or adjacent decking.

3.6 EXISTING BASE FLASHINGS

A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
   1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.

B. Do not damage existing curbs, counterflashings, or other components or equipment that are to remain. Replace items damaged during removal with new Products of same design, finish and quality. Replace items which do not comply with minimum flashing heights as indicated on the drawings.

3.7 EXISTING MECHANICAL AND ELECTRICAL ITEMS MODIFICATIONS

A. When required to achieve recommended clearances, minimum curb heights, or other modifications, disconnect, modify, and reconnect mechanical and electrical services using qualified and licensed personnel.

B. Do not disrupt any services unless specifically approved by Owner’s Representative and on-site personnel.

C. Restore services and verify proper operational conditions to satisfaction of Owner’s Representative.

3.8 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
   1. Storage or sale of demolished items or materials on-site is not permitted.

B. Coordinate removal of interior protection. Ensure that debris collected above protection membrane is contained during disassembly.

C. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 07 0150

SECTION 07 500

ROOF COATING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes repair procedures for the following:
   1. Asphaltic Multiply Roof System.
   2. Coal Tar Pitch Multiply Roof System.
   3. Bituminous Membrane Roofing.
   4. Sheet Metal Repairs.

B. Related Sections include the following:
   1. Division 1 Section “Unit Prices”
   2. Division 1 Section “Temporary Facilities and Controls” for temporary construction and environmental-protection measures for reroofing preparation.
   3. Division 1 Section “Execution” for Cutting and Patching Procedures for reroofing preparation.
   4. Division 6 Section “Carpentry (for Roofing)” for wood nailers, cants, curbs, and blocking.
   5. Division 7 Section “Fluid Applied Flashing”
   6. Division 7 Section "Sheet Metal Flashing and Trim" for gutters and downspouts.
   7. Division 7 Section "Roof Accessories."
   8. Division 22 Section “Common Work Results for Plumbing”
   9. Division 23 Section “Common Work Results for HVAC”
   10. Division 26 Section “Common Work Results for Electrical”

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Membrane Roofing System: Built-up asphalt, built-up coal tar pitch, bituminous roofing membrane, surfacing, and components and accessories between deck and roofing membrane.

C. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

D. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.4 SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work. B. Product Data: For each type of product indicated.

C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

E. Manufacturer's Installation Instructions: Include installation sequence, special instructions and precautions, and Material Safety Data Sheets (MSDS).

F. Fabricated Metal Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
   1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
   2. Metal Wall Panel: 36” wide by actual length of wall, including waterproofing underlayment, sub-girts, and closures.
   3. Trim, Metal Closures, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.

G. Accessories and Miscellaneous Materials: Full-size Sample

1.5 QUALITY ASSURANCE

A. Roofing Repair Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to roofing repairs including, but not limited to, the following:
   1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing repair preparation, including membrane roofing system manufacturer's written instructions.
   3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
   4. Review roof drainage during each stage of repairs and review roof drain plugging and plug removal procedures.
   5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

6. Review procedures to determine condition and acceptance of existing roofing and base flashing substrate to be repaired.
7. Review structural loading limitations of deck during reroofing.
8. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect repairs.
9. Review HVAC shutdown and sealing of air intakes.
10. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
11. Review procedures for asbestos removal or unexpected discovery of asbestos containing materials.
12. Review governing regulations and requirements for insurance and certificates if applicable.
13. Review existing conditions that may require notification of Architect before proceeding.

B. Perform Work in accordance with NRCA Manual of Roof Maintenance and Roof Repair, NRCA Roofing and Waterproofing Manual, and manufacturer's instructions. C. Maintain one copy of each document accessible to site.

D. Make all roofing repairs using personnel directly employed by Applicator (Roofing Contractor) with NDL certification from roofing material manufacturer - no SubContracting permitted.

E. Assign a qualified, full time, supervisor to be on Project site at all times during Work.

F. Designate a responsible Project Manager or Superintendent to inspect all installed Work, particularly tie-ins and temporary flashings, at end of each working day and as otherwise required to ensure water-tightness.
1. Verify Inspection by signature on approved Daily Inspection Form signifying installation is in accordance with specified requirements.

G. Maintain and operate all kettles, fume recovery systems, luggers, accessories, and other equipment in accordance with equipment manufacturer’s instructions.
1. Kettles: Utilize equipment with built-in, operable and visible thermostat to measure temperature of heated bitumen. Immediately replace or repair broken or malfunctioning thermostats.

H. Do not use same kettle for different bitumen materials or types. If two or more bitumens are required, provide a separate kettle for each type and clearly label each with bitumen type it contains.

I. Verify actual measurements by field measurements before fabrication or ordering materials/accessories;

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area. Conduct roof repairs so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC

and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area if desired.

2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated prior to proceeding with work over the impaired deck area.

B. Protect building to be repaired, adjacent roofing, accessories, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from repair operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Owner assumes no responsibility for condition of areas to be repaired.
1. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

E. Limit construction loads on roof to 200 pound rooftop equipment wheel loads and 20 PSF for uniformly distributed loads.

F. Weather Limitations: Proceed with repair preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

1.7 WARRANTY

A. Special Project Warranty: Work described in this section shall be included in Applicator's warranty, on warranty form in Division 01 "Applicator Warranty", signed by Installer, covering Work of this Section.
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.0 MANUFACTURER

ACRYLINK G Elastomeric Roof Coating

Isothermal Protective Coating, Inc

1950 Oday Rd, Pearland, TX 77581

(281) 485-4440

2.1 SURFACE PREPARATION

1. Make sure membrane has reasonable integrity and is secured to roof deck.

2. Pressure wash surface to be coated using TSP or other suitable cleaner and rinse with water.

3. Use brush while pressure washing to remove any aluminized asphalt present.

4. Spot prime with cutback asphalt any aluminized asphalt that cannot be removed.

5. Prime all non-painted or galvanized metal that will be coated (e.g., flashings, counterflashing, air handlers, penetrations, and the like).

6. Seal all gaps around roof deck, flashings, and holes with either two inch or four-inch-wide FleeceBite tape. Firmly press the material into place to ensure proper adhesion. With a weighted roller, roll out any air bubbles in surface to eliminate air entrapment.

7. Alternate Detailing method used instead of FleeceBite tape.

8. Bridge all gaps around roof deck, penetrations, flashings, holes, etc. with the following method to make sure that the ACRYLINK G membrane will be continuous:

    a. Brush a coat of ACRYCAULK along either side of gap.

    b. Embed a strip of non-woven polyester fabric in ACRYCAULK□.

    c. Brush heavy coat of ACRYCAULK□ over polyester, making sure that there are no wrinkles or fishmouths.

    d. Allow to cure overnight. Inspect and repair as necessary.

2.2.1 COATING APPLICATION

9. The surface to be coated must be clean and dry.

10. Apply ACRYLINK G□ elastomeric roof coating with an airless sprayer or roller, giving special attention to seams and bridged or repaired areas.

11. Use an appropriate number of coats to achieve the correct millage. For IPC purposes, “pitched” refers to a roof with at least 1 in 12 pitch.

    a. 20-year : 5.0 gallons of ACRYLINK G per square total.

12. Back roll the base coat as it is being applied.

13. Allow each coat to dry, inspect and repair as necessary before applying next coat.

2.2.2 LIMITATIONS

14. This procedure is to be used only in conjunction with commonly accepted roofing and waterproofing standards.

15. No material shall be applied to wet, dirty, or frozen surfaces, or to areas of gross ponding water.

16. ACRYLINK G□, ACRYCAULK□ and ISOPRIME□ shall not be applied during inclement weather, when a precipitation appears imminent, when the temperature is below 45 □F, when the relative humidity exceeds 85%, or within 4 hours of sundown.

17. In order to qualify for factory warranty, applicator must have Approved Applicator status, the roof must meet the square foot minimum, the ACRYLINK G□ membrane must be continuous, and the membrane must meet the TDM minimum.

18. In conjunction with the final inspection, all debris, material, and equipment are to be removed from the job site, leaving the area in an undamaged and acceptable condition.

The intention of this specification is to outline procedures for the application of an ACRYLINK G□ elastomeric coating membrane for the purposes of waterproofing, protecting, extending the life, and/or renewing an existing modified bitumen substrate. This specification describes materials, methods, and conditions necessary for the proper installation of this membrane.

1.1 This integrated system complies with all model building codes for roofing. Additionally, it constitutes one of the most cost-effective methods of waterproofing, protecting, extending the life, and/or renewing commercial and industrial roofs.

1.2 This system is only to be used in conjunction with commonly accepted roofing and waterproofing standards.

1.3 Any substantial deviation from these specifications shall be referred to an authorized representative of Isothermal Protective Coatings, Inc. (IPC).

Section 2.0 Materials

All materials shall be manufactured or approved by IPC, and shall meet the following minimum specifications:

2.1 ACRYLINK G□ Elastomeric Coating

Vehicle Type Crosslinking Acrylic

Pigment to Vehicle Ratio 1.5 to 1

Solids (Volume) 63%

Elongation360%

Tensile Strength psi

3.0 Permeance @ 45 mils 2.21 perms

Reflectivity (White) 79%

2.2 ACRYCAULK□ Brush or Trowel Grade Sealant

Vehicle Type 100% Acrylic

Pigment to Vehicle Ratio 1.97 to 1

Solids (Volume) 70%

Elongation325%

2.3 ISOPRIME□ Corrosion Inhibiting Primer

Vehicle Type Phenolic Modified Alkyd

Solids (Weight)57.5%

Weight (per gallon) 11.25 lbs.

Color White

2.4 ISOPHOS□ Phosphating Solution

Active Ingredient Phosphoric Acid (H3PO4)

2.5 Delivery and Storage

2.5.1 Materials shall be delivered in their original, tightly sealed containers or unopened packages, clearly labeled with the manufacturer's name, Underwriter's Laboratories file number, and—where appropriate—product identification and lot numbers.

2.5.2 Materials shall be kept from freezing, and shall be stored out of the weather, in their original tightly sealed containers or unopened packages, as recommended by the manufacturer.

3.0 CONTRACTOR

3.1 The ACRYLINK G□ elastomeric coating membrane shall be applied by a single, experienced, and competent contractor or applicator, approved by IPC.

3.2 Contractor or applicator shall be responsible for selecting and supplying all labor and supervision and shall be responsible for furnishing all materials required to complete the job satisfactorily, in accordance with manufacturer's specifications.

3.3 Contractor or applicator shall be responsible for assessing and determining the integrity of the existing substrate. All structural repairs—including, but not limited to, the installation or repair of insulation, crickets, scuppers, roof drains, one-way vents, and the like—as well as the elimination of areas of gross ponding water, shall be the exclusive responsibility of the contractor or applicator.

3.3.1 All installations or repairs shall be completed before coating application commences.

3.3.2 The industry standard definition of gross ponding water is

½ inch or more of water, standing on a 100 square foot or more area, 24 hours or more after a precipitation.

Contractor shall be responsible to address and eliminate all such areas before coating application commences.

3.3.3 All installations or repairs shall be performed in accordance with commonly accepted roofing and waterproofing standards and practices.

3.3.4 An authorized representative of IPC may be consulted for technical assistance in such matters.

4.0 SURAFCE PREPARATION—CLEANING

Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G elastomeric coating membrane to the substrate surface. Preparation shall include, but shall not be limited to, the following:

4.1 All unnecessary and non-functional equipment, conduit, and debris shall be removed from the roof.

4.2 All structural repairs or installations shall be completed before coating application commences.

4.2.1 Crickets, roof drains, insulation, one-way vents, scuppers, roof deck, and the like, shall all be installed or repaired before coating application commences.

4.2.2 Areas of gross ponding water shall have been addressed and eliminated before coating application commences. Consult section 3.3.2 of this specification for further details.

4.3 Contractor shall ensure that the modified bitumen membrane, whether fully adhered or torched down, is adequately secured to the roof deck and still retains reasonable integrity before commencing with coating application. An authorized representative of IPC may be consulted for technical assistance in such matters.

4.4 PLEASE NOTE: During coating application procedures, ACRYLINK G shall be applied a minimum of three (3) inches above the termination of all flashings, repairs, and bridges. That is, coating shall be applied to sections of parapet walls, the bases of air handling equipment, penetrations, and the like. Section 7.0 of this specification should be consulted for details. These surfaces must be adequately prepared in order to ensure adhesion of the ACRYLINK G membrane.

4.4.1 All masonry surfaces to be coated shall be wire-brushed before pressure washing in order to remove all dust.

4.4.2 All oxidized metallic surfaces to be coated shall be wire- brushed or otherwise abraded before pressure washing in order to remove as much rust and scale as possible.

4.5 The entire surface to be coated—including, but not limited to, sections of parapet walls, penetrations, air handling equipment, and the like—shall be pressure washed in order to remove all loose granules, dust, dirt, debris, chalk, oil, tar, and the like from the substrate surface. A suitable cleaner, such as TSP, and a broom shall be used as necessary. If a cleaner is required, the surface shall be rinsed with water to remove residue.

4.6 Special care shall be taken with surfaces coated with aluminized asphalt. All poorly adhered leafed aluminum shall be removed by vigorous brushing in addition to pressure washing.

4.7 The anti-blocking agent present on newly installed non- granulated modified bitumen shall be removed according to manufacturer's specifications. If manufacturer specifies that the agent requires weathering for a certain period of time before coating, contractor shall follow these instructions.

5.0 SURFACE PREPARATION—PRIMING

Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G elastomeric coating membrane to the substrate surface. Preparations shall include, but shall not be limited to, the following:

PLEASE NOTE: During coating application procedures, ACRYLINK G shall be applied a minimum of three (3) inches above the termination of all flashings, repairs, and bridges. That is, coating shall be applied to sections of parapet walls, the bases of air handling equipment, penetrations, and the like. Section 7.0 of this specification should be consulted for details. These surfaces must be adequately prepared in order to ensure adhesion of the ACRYLINK G membrane.

Metallic Surfaces:

5.1 All metal flashings, expansion joints, penetrations, and other metallic surfaces that are tbe coated shall be prepared according to the following procedure:

5.1.1 As much loose rust and scale as possible shall already have been removed by abrasion (wire brush or other suitable instrument) from oxidized areas that are to be coated.

5.1.2 All oxidized areas shall be pre-treated with ISOPHOS

phosphating solution, or equal, according to the following procedure:

5.1.2.1 ISOPHOS may be applied by brush, mop, low-

pressure hand pump sprayer, or another suitable instrument.

5.1.2.2 ISOPHOS shall be applied to all oxidized areas

and these surfaces shall be kept wet with ISOPHOS until the reddish color of the rust turns grayish in color. The amount of time required to complete this procedure will vary as the amount and degree of oxidization varies.

5.1.2.3 After the reaction has been completed, the areas treated with ISOPHOS shall be rinsed clean with water.

5.1.3 Phosphate surfaces shall be allowed adequate time to dry before primer application commences.

5.2 Primer application shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45°F, or when the relative humidity exceeds 85%. To provide adequate curing time, primer application shall terminate a minimum of two (2) hours before sundown.

5.3 All surfaces to be primed with ISOPRIME® corrosion inhibiting primer shall be free of dust, dirt, tar, oil, moisture, frost, or any other material that would impair the adhesion of the primer to the substrate surface.

5.4 Using conventional airless spray equipment or a brush, all galvanized, phosphated, and non-painted metallic surfaces that are to be coated—including, but not limited to, metal flashings, expansion joints, air handling equipment, penetrations, and the like—shall be primed with ISOPRIME® at a rate of 250 to 400 square feet per gallon.

5.5 Primer shall be allowed to cure for approximately two (2) hours, depending upon temperature and relative humidity, after which an inspection shall be performed. Additional ISOPRIME® shall be applied to any areas where there are voids in the primer coat, in order to make the coat continuous.

Aluminized Surfaces:

5.6 If aluminized asphalt cannot be completely removed by pressure washing and vigorous scrubbing, the area coated with aluminized asphalt shall be primed with a cutback asphalt or an asphalt primer, according to the following procedure:

5.6.1 Primer application shall not commence during inclement weather, when a precipitation appears imminent, or when the temperature is below 45 °F.

5.6.2 All surfaces to be primed with cutback asphalt or asphalt primer shall be free of dust, dirt, debris, degraded asphalt, moisture, or any other material that would impair the adhesion of the cutback asphalt or asphalt primer to the substrate surface.

5.6.3 Using conventional airless spray equipment, brushes, mops, or other suitable equipment, the entire aluminized asphalt surface shall be primed with cutback asphalt or asphalt primer at an approximate rate of 300 to 400 square feet per gallon.

5.6.4 Primer shall be allowed to cure for at least 24 hours.

Primer must be dry before coating application commences.

5.7 In order to minimize color bleed-through into the top coat, the following procedure should be followed (bleed-through will only affect the appearance, and not the integrity, the performance, nor any other physical property of the ACRYLINK G® membrane):

5.7.1 If the entire surface to be coated has been primed, all surface preparation procedures (sections 4.0-6.0) shall be completed before starting this procedure. However, if only part of the entire surface to be coated has been primed, it may be desirable to complete this procedure before completing the rest of the surface preparations to allow additional time for curing.

5.7.2 Using conventional airless spray equipment or rollers, apply a base coat of ACRYLINK G® to the surfaces primed with cutback asphalt at an approximate application rate of 1 gallon per 100 square feet. IPC recommends that a darker color, like gray, be used for this procedure, since this accelerates the curing process.

5.7.3 It is possible that bleed-through will occur in this base coat, producing discoloration (“coffee stains”). Allowing the base coat sufficient extra curing time tends to lock the bleed into the base coat, preventing the bleed-through from continuing into the topcoats.

5.7.4 The base coat should be allowed to cure for at least ten

(10) days, longer if possible, before a subsequent coat is applied.

Section 6.0 Surface Preparation—Detailing

Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G elastomeric coating membrane to the substrate surface. Preparation shall include, but shall not be limited to, the following:

6.1 All structural repairs (including, but not limited to, the installation or repair of insulation, crickets, scuppers, roof drains, one-way vents, and the like) shall have been completed prior to detail work commencement. Areas of gross ponding water shall have been addressed and eliminated prior to detail work commencement.

6.2 Detail work shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45 F, or when relative humidity exceeds 85%. To provide adequate curing time, detail work shall terminate a minimum of four (4) hours before sundown.

6.3 All asphaltic surfaces to be coated shall have already been primed, if necessary, with cutback asphalt or asphalt primer and shall have been allowed adequate curing time before detail work commences. Refer to section 5.0 of this specification for further details.

6.4 All galvanized, phosphated, and non-painted metallic surfaces to be coated—including, but not limited to, metal flashings, expansion joints, air handling equipment, penetrations, and the like—shall have already been primed with ISOPRIME corrosion inhibiting primer, or equal, and shall have been allowed adequate curing time before detail work commences. Refer to section 5.0 of this specification for further details.

6.5 The entire surface to be coated shall be free of dust, dirt, tar, oil, moisture, frost, or any other material that would impair the adhesion of ACRYLINK G or ACRYCAULK to the substrate surface.

6.6 All penetrations, expansion joints, transitions, gaps on or adjacent to the roof deck, small holes, and the like, shall be flashed, bridged, or repaired according to the following procedure:

6.6.1 Narrow gaps, small holes and well maintained seams may be sealed with ACRYCAULK alone, without the use of polyester fabric.

6.6.2 To bridge wider gaps, fish mouths, tears and visible openings, ACRYCAULK shall be used in conjunction with non-woven polyester roof fabric.

6.6.2.1 On a clean, dry surface, a light coat of ACRYCAULK shall be applied to both sides of the area to be flashed, bridge, or repaired.

6.6.2.2 A strip of non-woven or spun polyester roofing cloth, of an appropriate width, shall be pressed down into the caulk, thus bridging the gap. It is important to ensure that there are no fishmouths or wrinkles in the polyester.

6.6.2.3 The polyester cloth shall then be completely covered with a second coat of ACRYCAULK. This second coat shall completely cover the polyester cloth and shall be applied within the same working day as the application of the polyester cloth.

6.6.3 As an alternate to the above three coarse you may use the appropriate size FleeceBite tape. On a clean dry surface use FleeceBite to bridge over wider gaps, fish mouths, tears, and visible openings.

6.7 After completing this procedure, the newly flashed or bridged areas shall be allowed to cure overnight. Before coating application commences, all such areas shall be inspected and repaired, as necessary, with ACRYCAULK or an approved building sealant.

6.8 ACRYLINK G coating shall be applied over these areas during normal coating operation procedures.

7.0 COATING APPLICATION

7.1 Coating application shall not commence during inclement weather, when a precipitation appears imminent, when temperature is below 45 F, or when relative humidity exceeds 85%. To provide adequate curing time, coating application shall terminate at least four (4) hours before sundown.

7.2 Entire surface to be coated shall be free of dust, dirt, tar, oil, moisture, frost or any other material that would impair the adhesion of ACRYLINK G elastomeric coating to the substrate surface.

7.3 All metallic, asphaltic, or aluminized surfaces to be coated shall have been prepared in accordance with the procedures specified in sections 4.0-6.0 of this specification.

7.4 ACRYLINK G elastomeric coating: Base Coat

7.4.1 The base coat of ACRYLINK G shall be applied at 1½ gallons per 100 square feet using conventional airless spray equipment or rollers.

7.4.2 Coating shall be applied so as to cover the substrate uniformly. All flashed, bridged, or repaired areas (as described in section 6.0) shall be coated again at this time, and during each subsequent coat.

7.4.3 Wherever possible, coating shall be applied at least three

(3) inches beyond the termination of polyester flashings or bridges, especially along parapet walls, penetrations, air handling equipment, and the like.

7.4.4 The base coat may be applied in more than one pass, if desired, to accelerate curing, provided adequate curing time has been allowed between passes to prevent damage from being done to the membrane when it is walked upon.

7.4.5 IPC recommends the use of a darker color, like gray, for the base coat, as it cures much faster than a lighter color, such as white.

7.4.6 If sprayed, the base coat (the first pass of the base coat if applied in multiple passes) shall be back rolled as it is being applied in order to maximize adhesion to the substrate and to eliminate voids.

7.4.7 The base coat shall be allowed to cure for at least two (2) hours, depending on temperature and humidity conditions, after which an inspection shall be performed. Any defects in the coating membrane shall be repaired with ACRYLINK G or an approved building sealant.

7.5 ACRYLINK G elastomeric coating: Subsequent Coats

7.5.1 IPC recommends that ACRYLINK G coating be applied in contrasting color coats to improve coverage and spray pattern. Order of application shall be as contractor specifies.

7.5.2 The surface of the ACRYLINK G base coat, and all subsequent coats, shall be free of all moisture, dirt, and debris before a subsequent coat is applied.

7.5.3 The second coat of ACRYLINK G shall be applied as soon as practical, within 24-72 hours of the application of the base coat.

7.5.4 The second coat, and all subsequent coats, shall be applied at a right angle to the direction in which the previous coat was applied. For example, if the previous coat was applied with a north-south motion, the subsequent coat shall be applied with an east-west motion.

7.5.5 The second coat, and all subsequent coats, shall be applied by conventional airless spray or roller at the rate specified to achieve the TDM minimum in a reasonable number of coats. Each coat shall completely mask the color of the previous coat.

7.5.6 The second coat, and all subsequent coats, may be applied in more than one pass, if desired, to accelerate curing, provided adequate curing time has been allowed between passes to prevent damage from being done to the membrane when it is walked upon.

7.5.7 Subsequent coats shall be applied by conventional airless spray or roller at the rate required to achieve the TDM minimum. It is essential to realize that the true surface area may be greater than the apparent surface area because of surface texture or profile. In order to achieve the TDM minimum on such a surface, the application rate must be increased appropriately.

7.5.8 Each coat shall be allowed to cure for at least four (4) hours, depending upon temperature and humidity conditions, and inspected and repaired as necessary, before a subsequent coat is applied.

7.6 The cured ACRYLINK G elastomeric coating system

membrane shall be TDM minimum in all areas and shall be free of all pinholes and defects.

7.7 Required spread rates for the ACRYLINK G membrane are

as follows:

7.7.1 5-year application: 3.0 gallons per 100 square feet of ACRYLINK G total (30 dry mil average, 25 dry mil minimum).

7.7.2 10-year application (pitched): 3.5 gallons per 100 square feet of ACRYLINK G total (35 dry mil average, 30 dry mil minimum).

7.7.3 10-year application (flat): 4.0 gallons per 100 square feet of ACRYLINK G total (40 dry mil average, 35 dry mil minimum).

7.7.4 15-year application (pitched): 4.0 gallons per 100 square feet of ACRYLINK G™ total (40 dry mil average; 35 dry mil minimum).

7.7.5 15-year (flat): 4.5 gallons per 100 square feet of ACRYLINK G™ total (45 dry mil average, 40 dry mil minimum).

7.7.6 20-year application (pitched): 5.0 gallons per 100 square feet of ACRYLINK G total (50 dry mil average, 45 dry mil minimum).

7.7.7 20-year application (flat): 6.0 gallons per 100 square feet of ACRYLINK G total (60 dry mil average, 55 dry mil minimum).

7.7.8 For the purposes of IPC specifications, “pitched” refers to

a roof with at least a 1 in 12 slopes.

7.8 Having completed the procedures specified above, and having achieved the TDM minimum in all areas, the ACRYLINK G membrane shall be given adequate time to cure.

7.9 For a minimum of thirty (30) days after the ACRYLINK G membrane has been applied, contractor shall be responsible to inspect the membrane after every precipitation.

7.9.1 Contractor shall carefully remove water from small ponding areas (“birdbaths”) with an air blower, without damaging the ACRYLINK G membrane.

7.9.2 Areas of gross ponding water shall have been addressed and eliminated prior to coating application, in accordance with commonly accepted waterproofing and roofing practices.

7.10 Isoclear™ shall be used on any areas susceptible to ponding water. All surfaces to be coated must be clean, dry and completely free of loose particles, grease, oil and/or any substance that would interfere with proper bond. The Isoclear™ Hardener should be emptied into the Isoclear™ Resin and properly mixed for 3 minutes, then allowed to sit for 10 minutes or a long as necessary for all air to escape. Isoclear™ may be applied over ACRYLINK G Acrylic Roof Coating after it has been thoroughly dry for at least 24 hours.

8.0 CLEAN-UP

Upon completion of all work covered in this specification, and before the job is inspected, the contractor shall remove all equipment, material, and debris, leaving the area in an undamaged and acceptable condition. In no case shall the job be considered complete before the job site has been properly cleaned.

Section 9.0 Limitations

This system is to be used only in conjunction with commonly accepted waterproofing and roofing standards including but not limited to the following:

9.1 In order to qualify for a factory warranty, applicator must have Approved Applicator status, the roof must meet the square foot minimum, the ACRYLINK G membrane must be continuous, and the membrane must meet the TDM minimum.

9.2 No application of component materials shall commence during inclement weather, when a precipitation appears imminent, when temperature is below 45 F, or when relative humidity exceeds 85%.

9.3 No material shall be applied to wet, dirty, or frozen surfaces.

9.4 Coating application shall not commence until all other trades are off of the roof.

9.5 Coating shall not be applied to areas of gross ponding water. Contractor shall address and eliminate areas of gross ponding water prior to coating application.

9.6 In conjunction with the final inspection, all debris, material, and equipment are to be removed, leaving the area in an undamaged and acceptable condition.

END OF SECTION 07 5910

SECTION 07 5216

STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Qualifications, Standards and Materials for existing roof overlay.
2. Cleaning existing roof membrane.
3. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing.
4. Traffic pads.

B. Related Sections:
1. Division 06 Section “Roofing Carpentry” for wood nailers, cants, curbs, and blocking.
2. Division 07 Section “Sheet Metal Flashing and Trim” for metal roof penetration flashings, flashings, and counterflashings.

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. C-728 – Perlite Thermal Insulation Board
2. D 41 - Asphalt Primer Used in Roofing.
3. D 312 - Asphalt Used in Roofing.
4. D 2824 - Aluminum-Pigmented Asphalt Roof Coatings, Non-Fibered, Asbestos Fibered, and Fibered without Asbestos.
5. D 4586 - Asphalt Roof Cement - Asbestos Free.
6. D 4601 - Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
7. D 6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.

B. National Roofing Contractors Association (NRCA):
1. Manual of Roof Maintenance and Roof Repair.
2. Roofing and Waterproofing Manual.

C. Underwriters’ Laboratories (UL): Fire Hazard Clarifications.

1.5 ACTION SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work.

B. Product Data: For each type of product indicated.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
   1. Base flashings, liquid flashings, and membrane terminations.
   2. Tapered insulation, including slopes.
   3. Crickets, saddles, and tapered edge strips, including slopes.
   4. Walk pad locations to match existing locations, as well as indicated on the drawings.

D. Samples for Verification: For the following products:
   1. Sheet roofing materials, including base-ply sheet, roofing membrane sheet, flashing backer sheet, and flashing sheet, of color specified.
   2. Walkway pads or rolls.
   3. Six insulation fasteners of each type, length, and finish.

1.6 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certification: Provide current letter(s) on membrane manufacturer's letterhead, signed by an authorized employee or corporate officer attesting to following:
   1. Products: Certify that roofing system complies with requirements specified in "Performance Requirements" Article. Submit evidence of meeting performance requirements, including that:
      a. Fastener patterns prescribed by manufacturer in Submittal will resist specified uplift pressures, including Safety Factor (times two), calculated according to ASCE 7.
      b. Roofing system components are physically and chemically compatible for installation as designed, and;
      c. All proposed materials, including those by other manufacturer, are acceptable to membrane manufacturer for use in system, and;
      d. Proposed system meets all criteria for issuance of required manufacturer's warranty.
      e. Specifically identify and define any deviations.

   2. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

B. Manufacturer's Installation Instructions: Include installation sequence, special instructions and Material Safety Data Sheets (MSDS).

C. Warranties: Sample of special warranties.

1.7 CLOSEOUT SUBMITTALS

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

B. Project Record Documents: Accurately record exact location of all roof membrane penetrations.

C. Warranties: Executed copies of special warranties.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project, with minimum five years documented experience, including:

B. Installer Qualifications: A qualified firm that has been continuously certified, approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product for minimum of three years prior to Bid Date, and that is eligible to receive manufacturer's warranty; with minimum three years documented experience, including:
   1. Minimum three projects of comparable size and specified systems during that time.

C. Workers: All roofers and laborers to be direct employees of Primary Contractor.
   1. Project Manager and Superintendent: Minimum five years roofing experience and employed by Contractor for a minimum one year prior to Bid Date.
   2. Tradesmen: Minimum 50-percent of installation crew to have been employed by Contractor for a minimum six months prior to Bid Date.

D. Source Limitations: Obtain components for roofing system manufacturer.

E. Perform Work in accordance with NRCA Roofing and Waterproofing Manual, and manufacturer's instructions.

F. Maintain one copy of each document accessible to site.

G. Install all roofing materials using personnel directly employed by Applicator (Roofing Contractor) with NDL certification from roofing material manufacturer - no Sub-Contracting of Roofing work is permitted.

H. Designate a responsible Project Manager or Superintendent to inspect all installed Work, particularly tie-ins and temporary flashings, at end of each working day and as otherwise required to ensure water-tightness.

I. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
   1. Meet with Architect, Owner's representative, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, liquid flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.9 REGULATORY REQUIREMENTS

A. Conform to applicable local codes for roof assembly fire hazard requirements and application procedures.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
1. Inspect for damage. Remove from site and replace any damaged materials.
2. Store products in weather protected environment, clear of ground and moisture.
3. Stand and store roll materials on end.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
1. Do not store more materials on roof than can be installed within two days, unless specifically approved otherwise.
2. Maximum Allowable Loading on Roof: 20 pounds per square foot.

1.11 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1. Do not apply roofing membrane during inclement weather or when threat of inclement weather exists.
2. Do not apply roofing membrane to damp or frozen deck surface.
3. Observe wind chill and other cold weather conditions for proper bituminous application.

B. Do not permit contaminants such as grease, fats, and oils to come in direct contact with roofing membrane.

1.12 COORDINATION

A. Coordinate work under provisions of Division 01 Section outlining coordination requirements.

B. Coordinate with demolition work and with work of other trades to ensure sufficient materials and manpower are available to completely replace and make watertight all roofing removed each day.

C. Limit tear off of existing roof system, including flashings, and insulation, to amount that can be completely covered with new roof system by end of day.

D. Coordinate installation of associated metal flashings, and roof-related items as work of this Section proceeds. Strip-in all flanged metal components to roof membrane on same day they are installed.

E. Schedule and execute Work to prevent leaks and excessive traffic on completed roof sections. Provide protection for interior of building and to ensure water does not flow beneath any completed membrane system sections.

F. Schedule work to avoid storage on and traffic over finished work.

1.13 WARRANTY

A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
1. Special warranty includes membrane roofing, base flashings, membrane roofing accessories, roof insulation, fasteners, cover boards, substrate board, walkway products, roofing accessories, and other components of membrane roofing system.
2. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on MRCA warranty form, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation, fasteners, and miscellaneous products for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Provide installed membrane roofing, base flashings, and liquid flashings that withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7-10.
1. Design Wind speed: **90** miles-per-hour (3 second gust).
2. Exposure Category: **B.**
3. Importance Factor: **1.0**
4. Safety Factor: **Two (2)**

D. FM Approvals Listing: Facility is NOT Factory Mutual (FM) insured. FM listing and references are used as standards of quality. Roofing, all flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a built-up roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Fire/Windstorm Classification: **Class 1A-90**
2. Hail Resistance: **MH**.

2.3 SBS-MODIFIED ASPHALT-SHEET MATERIALS

A. SBS-Modified Bituminous Membrane Roofing:
1. Manufacturers: Subject to compliance with requirements, provide products by the following, or approved equal:
   a. Siplast, Inc.
   b. Johns Manville
   c. Soprema

B. Roofing Membrane Base Ply Sheet: ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified;
1. Siplast; Paradiene 20 TG
2. Johns Manville: DynaWeld Base XT

3. Soprema: Elastophene Flam

C. Granule-Surfaced Roofing Membrane Cap Ply Sheet: ASTM D 6163, Grade G, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); granule or ceramic surfaced; with factory applied coating capable of achieving initial solar reflectance of 0.78, suitable for application method specified, follows
1. Siplast; Paradiene 30 TG FR CR
   a. Granule Color: White – Cool Roof Highly Reflective
2. Johns Manville; DynaWeld Cap FR XT
   a. Granule Color: White – Cool Roof Highly Reflective
3. Soprema; Elastophene Flam FR GR
   a. Granule Color: White – Cool Roof Highly Reflective

2.4 BASE FLASHING SHEET MATERIALS

A. Backer Sheet: ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified. Basis of design, Siplast Paradiene 20
1. Siplast; Paradiene 20
2. Johns Manville: DynaWeld Base XT
3. Soprema: Sopralene Flam 180

B. Foil-Faced Flashing Sheet: ASTM D 6298, SBS-modified asphalt sheet (reinforced with glass fibers);; suitable for application method specified, and as follows:
1. Siplast;
2. Johns Manville:
3. Soprema: Sopralast

2.5 AUXILIARY ROOFING MEMBRANE MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Liquid Flashing System: Roofing system manufacturer's proprietary liquid flashing system for use at curbs, pipe penetrations and the like; capable of receiving full coverage under manufacturer's extended warranty.
1. Siplast: ParaPro 123 Flashing
2. Johns Manville: Permaflash System
3. Soprema: Alsan Flashing

C. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, one- or two-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with roofing membrane and base flashings.

D. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.

E. Metal Flashing Sheet: Metal flashing sheet is specified in Division 07 Section "Sheet Metal Flashing and Trim."

F. Roofing Granules: Matching chips/flakes or ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 sieve and 98 percent of mass retained on No. 40 sieve, color to match roofing membrane.

G. Termination Bar: Hot-dipped galvanized steel; 1/8-inch x 1-inch bar stock, pre-drilled holes.

H. Night Seal: Compatible with materials on which it is used and approved by membrane manufacturer.

I. Pitch Pocket (Pourable) Sealant: Single component, self-leveling silicone sealant approved by membrane manufacturer.

J. Expansion Joint Filler:
1. Flexible Waterproof Membrane: Minimum 45 mil thick EPDM sheet, or approved equal.
2. Compressible Insulation: Fiberglass batt insulation, or approved equal.

K. Miscellaneous Accessories: Provide necessary pipe and conduit supports with rollers as detailed; spacing as per manufacturer's requirements for weights encountered.

2.6 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application.

B. Gypsum Cover Board: Meeting physical requirements of ASTM C 1177, with factory-applied primer, 1/2 inch thick.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Georgia-Pacific Corporation; DensDeck Prime.
b. USG Corporation; Securock Glass Mat Roof Board.

C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated or required for sloping to drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Spray Applied Insulation Adhesive: Insulation manufacturer's recommended adhesive approved and listed in the approved Factory Mutual RoofNAV assembly.

C. Mechanical Insulation Fasteners: Insulation screws and metal plates as recommended by the approved roofing system manufacturer and as listed in the approved Factory Mutual RoofNAV assembly.

D. Insulation Cant Strips: ASTM C 728, perlite insulation board.

2.8 WALKWAYS

A. Walkway Pads: Reinforced asphaltic composition pads with slip-resisting mineral-granule surface, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 1/2 inch thick, minimum; as manufactured by primary roofing materials manufacturer.
   1. Pad Size: 24 x 36-inches.
   2. Roll material may be submitted for consideration.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work and that existing roofing is supported and secured.

B. Verify the roof is free of depressions, waves, or projections, properly sloped to scuppers

C. Verify that membranes are dry and free of snow or ice. Confirm deck dryness by moisture meter; maximum allowable: 12-percent.

D. Verify that roof openings, curbs, pipes, sleeves, ducts, and vents through the roof are solidly set and wood nailing strips are in place.

E. Beginning of installation means installer accepts existing surfaces.

3.2 PREPARATION

A. Protect all building surfaces against damage from roofing work.

B. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions and maintain free from all deleterious material during roofing operations. Remove sharp projections.

C. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSULATION INSTALLATION

A. Comply with roofing system manufacturer's written instructions for installing roof insulation.

B. Apply insulation to match existing.
   1. Apply foam adhesive in accordance with the requirements of the approved Factory Mutual RoofNAV Assembly to attain the tested wind uplift resistance.

C. Install tapered insulation under area of roofing to conform to slopes indicated on all areas as shown on roof plans for crickets and saddles.

D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4-inch with insulation.
   1. Cut and fit insulation within 1/4-inch of nailers, projections, and penetrations.

E. Apply no more insulation than can be sealed and made watertight with membrane in same day.

3.4 COVER BOARD INSTALLATION

A. All areas must have a finish layer of 1/2" Gypsum Cover Board, adhered in insulation adhesive to provide adequate substrate for new two ply SBS based modified bitumen roof system.

3.5 ROOFING MEMBRANE INSTALLATION, GENERAL

A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
   1. Deck Types: Steel
      a. Adhering Method: T (torch-applied)
      b. Number of Base-Ply Sheets: One.
      c. Number of SBS-Modified Cap Sheets: One.
      d. Surfacing Type: White – highly reflective

B. Cooperate with testing and inspecting agencies engaged or required to perform services for installing roofing system.

C. Coordinate installation of roofing system so insulation and other components of the roofing membrane system, not permanently exposed, are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
   1. At end of each day's work, provide tie-offs to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt, with joints and edges sealed.
   2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
   3. Remove and discard temporary seals before beginning work on adjoining roofing.

D. Substrate-Joint Penetrations: Prevent roofing adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.6 SBS-MODIFIED BITUMINOUS MEMBRANE CAP SHEET INSTALLATION

A. Install modified bituminous roofing membrane cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
   1. Torch Applied.
   2. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.

B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Staggered end laps. Completely bond and seal laps, leaving no voids.
   1. Repair tears and voids in laps and lapped seams not completely sealed.

C. Install roofing membrane sheets so side and end laps shed water.

D. Apply membrane sheets smooth, free from air pockets, wrinkles, fishmouths, lap joints, or tears. Do not lay any membrane sheets that buck water.

E. Extend membrane sheets up cant strips and a minimum of 2 inches onto vertical surfaces. Torch an additional ply of sheet products as recommended to act as base flashing over roofing membrane. Secure to nailing strips at 4 inches o.c.

F. Prohibit foot and cart traffic from newly applied membrane sheets. Do not "walk-in" membrane sheets.

3.7 FLASHING AND STRIPPING INSTALLATION

A. Remove base flashings, strip-in plies, and cants to expose substrate. Clean and prepare as required to receive new cants, flashings, and strip-in plies. Do not remove more flashing components than can be sealed and made watertight with membrane in same day.

B. Install new base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
   1. Prime substrates with asphalt primer if required by roofing system manufacturer.
   2. Backer Sheet Application: Attach backer sheet to substrate with capped roofing nails at 9" on center staggered.
   3. Flashing Sheet Application: Adhere flashing sheet to backer sheet by torch application.
   4. Maximum flashing base and top ply width: Width of roll (39-inches).

C. Extend base flashing up walls or parapets a minimum of 8-inches above roofing membrane and 4-inches onto field of roofing membrane.

D. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
   1. Maximum Fastener Spacing:
      a. Wood: 4-inches on center.
      b. Masonry or Concrete: Provide termination bars and fasten 6-inches on center.

E. Inspect flashing seams and repair unsealed locations, voids, and fishmouths with three course seal or as recommended by membrane manufacturer.

F. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.

G. Apply metallic coating over all bitumen overruns on flashing surface.

3.8 WALKWAY INSTALLATION

A. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.
   1. Set walkway pads in cold-applied adhesive.
   2. Locations: Where indicated and at each rooftop unit (RTU) with operable components, at base and top of each roof ladder, and at each roof hatch.
   3. Install a minimum of two pads adjacent to each RTU access panel; roof ladder, and on three sides of each roof hatch; or match width of access panel, ladder, or hatch plus 12-inches each side. Set joints 6 inches apart.

3.9 FIELD QUALITY CONTROL

A. Do not perform demolition during roofing operations.

B. Field inspection and testing will be performed under provisions of Division 01 Section "Quality Requirements".

C. Upon substantial completion, Owner may have Work inspected using infrared scanning and other appropriate means to establish conditions of completed Project.

D. Correct identified defects or irregularities. Cut out and repair membrane defects before end of each day.

E. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
   1. Notify Architect and Owner 72 hours in advance of date and time of inspection.

F. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

G. Roofing system will be considered defective if it does not pass tests and inspections.
   1. Perform additional testing and inspecting, at Contractor's expense, to determine if replaced or additional work complies with specified requirements.

3.10 CLEANING

A. Remove bituminous markings from finished surfaces.

B. In areas where finished surfaces are soiled by asphalt or any other source of soiling caused by work of this Section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

C. Repair or replace defaced or disfigured finishes caused by work of this Section.

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

3.11 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Division 01 Section "Temporary Facilities and Controls."

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

C. Where traffic must continue over finished roof installation, protect surfaces.
   1. Minimum Protection: Cushion layer of insulation, minimum 1-inch thick, and one layer of plywood minimum 3/4-inch thick. Ballast plywood for site and personnel protection.

D. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

3.12 FINAL TOUCH-UP

A. Upon completion of all roof systems, flashing, accessory work and sheet metal applications, apply two coats of approved aluminum roof coating to accessories not replaced and items as directed by Owner's Representative.
   1. Paint existing pipes, drain strainers, metal vents, and other accessories with Type I aluminum roof coating.
   2. Paint exposed bituminous membrane surfaces with Type II aluminum roof coating.

END OF SECTION 07 5216

SECTION 07 5400
PVC MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. RE-Cover Roof Systems

1. Substrate preparation-removal of all existing roof membranes flashing at all walls, curbs and penetrations down to substrate Existing roof assembly to be kept and associated fasteners which are to remain. Removal of all flashings, existing leads and metal jacks.

B. Demolition:

1. Remove all abandoned roof penetrations (pipes, curbs, etc.) as designated by the Owner, from roof surface and patch roof deck to match existing. Raise all curbs as required by code to accommodate new roof system.

C. Preparation (or removal) of existing roof insulation, installation of new roof insulation.

D. Installation of new ½-inch tapered roof insulation (crickets) at high side of curbs.

E. Install new **[[½-inch]]** gypsum cover board over existing roofing system and mechanically fasten down and through existing metal decking.

F. Blocking:

1. Furnish and install new wood blocking as shown or specified.

G. Membrane Installation:

1. Furnish and install a new fully adhered Thermoplastic PolyVinyl Chloride/Ketone Ethylene Ester (PVC/KEE) single ply roofing membrane with flashings and other components that comprises a complete roofing system.

H. Upon successful completion of work the following warranties will be obtained:

1. Manufacturer's Warranty
2. Roofing Contractor's Warranty

1.2 SUBSTITUTIONS

A. Substitutions shall comply with procedures specified in Division One.

1.3 SEQUENCING AND SCHEDULING

A. Coordinate work with owner so as to not disrupt tenants.

B. Access to roof areas for construction, disposal, etc., will be as directed by the owner.

C. Coordinate the work of installing associated metal flashing while roofing operations proceed.

1.4 REFERENCES

A. Underwriters Laboratories, Inc. (UL).

B. Local and National Regulatory Agencies.

C. ICC Evaluation Service Reports.

1.5 SYSTEM DESCRIPTION

A. PVC Membrane Roofing System – Fully Adhered.

1.6 QUALITY ASSURANCE

A. Current proof of Installers status letter from the proposed Manufacturer, showing that the installer is a:
   1. Carlisle Centurion Contractor.

B. Installer:
   1. [[Approved in writing by manufacturer of accepted roofing system.]]
   2. [[This roofing system shall be applied only by a Roofing Contractor authorized by the roof manufacturer prior to bid ("Installer").]]
   3. Contractor must have been in business providing low-slope roofing services for the last 10-years prior to bidding the project.
   4. Contractor must have completed a minimum of ten (10) fully adhered PVC roof membrane systems of like size, manufacturer warranty issued, installations, within the last 5-years, prior to bidding this project.
   5. All the Installer's personnel on property shall be "employees" of the Installers. The Installer is not permitted to sub-contract out the labor to another firm or use independent contractors on this project.
   6. Shall maintain a permanent office within 65 miles distance of project site to satisfy Owner that projects can be properly supported during warranty phase.

C. A technical representative of the approved manufacturer shall visit the job site on a weekly basis during the application of the roofing system to confirm its application is proceeding in compliance with the specifications and in a manner that will permit issuance of the specified manufacturer's system warranty.

D. Upon completion of the installation and the delivery to the manufacturer by the Installer of a certification that all work has been done in strict accordance with the contract specifications, building permit, and the manufacturer's requirements, an inspection shall be made by a Technical Representative of the manufacturer to review the installed roof system.

E. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Owner's Representative, and the manufacturer.

F. All work pertaining to the installation of the manufacturer membrane and flashings shall only be completed by Installer's personnel trained and authorized by the manufacturer in those procedures.

G. Pre-Installation Conference:
   1. Prior to installation of roofing system, conduct a Pre-Installation conference at the project site.
   2. Attendance: Owner, Roofing Consultant, Contractor, project superintendent, project foreperson, and Roof Manufacturer's Technical Representative. Allow 14 days' notice to manufacturer for scheduling of their representative.

H. Daily Job Reports:
   1. Contractor is responsible for providing daily job reports which will include a minimum of the following information: Crew size, weather conditions, description of work completed, date, change order items, job problems, etc. Contractor will email daily job reports daily to the roof consultant.

I. Work in this Section to conform to:
   1. Manufacturer's instructions.
   2. National Roofing Contractors Association (NRCA): Roofing Manual Consisting of:
   3. NRCA Roofing Manual: Membrane Roof Systems 2015

4. NRCA Roofing Manual: Architectural Metal Flashing, Condensation & Air Leakage, and Reroofing 2014
5. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA): Architectural Sheet Metal Manual, 7 Edition, 2012.

1.7 CODE REQUIREMENTS

A. The Installer shall submit evidence that the proposed roof system meets the requirements of the local building code, project code requirements, and has been tested and approved or listed by the following test organizations. These requirements are minimum standards and no roofing work shall commence without written documentation of the system's compliance, as required in the "Submittals" section of this specification.

B. Governing Building Department is the Building Department, meeting all applicable local, state and national building code requirements.
1. **[[2018]]** International Existing Building Code.
2. **[[2018]]** International Building Code.
   a. Class A Exterior Fire Exposure Rating
   b. Severe Hail (SH) exposure rating.
3. **[[2018]]** International Energy Conservation Code.

C. Roof Membrane shall meet or exceed the requirements of ASTM D4434, Type III or IV.

Commented [DD1]: Need to Confirm.

Commented [SJ2R2]: Updated

D. Factory Mutual Research Corporation (FM) - Class 1-90 (for high wind exposure)

E. Underwriters Laboratories, Inc. - Class A assembly

F. ICC-ES ESR Report stating the roof system meets the wind loads defined on Drawing.

1.8 SUBMITTALS

A. Shop Drawings:
1. Digitally submit, in PDF format, roof drawing indicating roof size, location and type of penetrations, perimeter and penetration details. Hard copies are to be available upon request at no expense to the Owner or Owner's Consultant. Indicate complete installation details of roofing and flashing, including roof slopes, flashing details, penetration details and accessories. Reproduced copies of the consultant's drawings and details do not constitute acceptable shop drawings.
   a. Dimensioned shop drawings which shall include:
      1) Outline of roof with roof size and elevations above grade shown.
      2) Details of flashing methods for penetrations.
      3) Technical acceptance from approved Manufacturer.
2. Digitally submit, in PDF format, MSDS data directly to the owner for their files, on all roofing, insulation and flashing materials. Hard copies are to be available upon request at no expense to the Owner or Owner's Consultant.
3. Submit samples of:
   a. Roof Membrane and Flashing: Three (3) pieces each, 12-inch x 12-inch, taken from rolls on the roof.
   b. Insulation Board: Two (2) pieces, 6-inch X 6-inch.
   c. Sheet metal in conjunction with roofing: Two pieces of each type, 4-inch X 4-inch.
   d. Cover Tape: Two (2) pieces, minimum 3-inch wide.
   e. Provide "Lot Numbers" from roll goods taken from rolls on the roof.

B. Product Data:

1. Digitally submit, in PDF format, the latest edition of manufacturer's roofing and flashing specifications (deleting non-applicable information), including list of materials proposed for use, and manufacturer's data sheets for other products. Hard copies are to be available upon request at no expense to the Owner or Owner's Consultant.

C. Progress Schedule Plan:

1. At the Pre-Construction Conference on site the Installer shall provide their Work Plan defining the areas they are to work from the start to the end defined by work week.
2. Submit a complete progress schedule and phasing plan indicating complete sequence of removal and replacement of roofing for each area defined in the Work Plan.
3. Include a roof plan with layout indicating amount of roof area included in each day/week to be worked.
4. Indicate dates for beginning and completing each roof area and activity.
5. Identify other related work affecting roof replacement and phasing.

D. Warranty:

1. Submit specimen copy of contractor and/or manufacturer's roofing warranty with Product Data submittal, including evidence of application/approval for guaranty to maintain existing warranties.

E. Manufacturer's Review:

1. Concurrent with Shop Drawings submittal; submit (in writing) roof manufacturer's review and acceptance of Contract Documents (plans, specifications, application requirements, etc.) and approval of Installer. Certifications by manufacturers of roofing and insulating materials that all materials supplied exceed the requirements of the identified ASTM and industry standards or practices.
2. Certification from the Installer that the system specified meets all identified code and insurance requirements as required by the Specification.

F. Manufacturer's Reports:

1. Concurrent with Shop Drawing submittal; submit roof manufacturer's review of Contract Documents and acceptance of applicator.

G. Maintenance Data:

1. Compile and submit maintenance instructions in accordance with Division One. Include complete manufacturer's instructions for periodic inspection and maintenance of roofing system, including precautions and warnings to prevent damage and deterioration to roofing system.

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible, including required fire resistance classification labels.

B. Store rolled goods on end on clean raised platforms with weather protective covering. Load roof daily to prevent damage to the existing roof system. Visqueen/plastic is not an acceptable watertight material for protecting roof materials.

C. Provide continuous protection of materials against wetting and absorption; remove wet materials and marked materials that have been wet, from project site.

D. Materials loaded on roof levels for immediate (same week) use shall be:

1. Distributed to prevent concentrated loads that would impose excessive strain on deck or structural members.
2. Positively secured to prevent displacement by excessive wind forces.

E. Deliver materials in sufficient time and quantity to allow continuity of work.

F. All materials, except membrane and metal, must be stored between 60° F and 80° F. If exposed to lower temperatures, restore at 60° F minimum temperature before using.

G. Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.

H. Provide continuous protection of materials against wetting and absorption. All materials which are determined to be damaged (i.e. wet materials and marked materials that have been wet) by the Owner's Representative or the manufacturer are to be removed from the job site and replaced at no cost to the Owner.

I. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.

1.10 JOB CONDITIONS

A. Consult Material Safety Data Sheets (MSDS) for applicable cautions and warnings prior to the use of materials.

1. Complete roof installation during dry weather on a roof surface that is free of ponded water, ice, or snow.

a. Proceed with roofing only when existing forecasted weather conditions are in compliance with manufacturer’s recommendations and warranty requirements.

2. Avoid traffic on completed work.

B. Existing Conditions:

1. Examine existing building and existing roofing to determine existing physical conditions that affect removal of existing roofing and installation of new roofing.

2. Photographically document all work areas prior to starting the work.

3. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. Do not remove existing roofing and flashing in inclement weather or when rain is predicted (30% or more possibility). All seams shall be cleaned and heat welded before leaving the job site that day.

4. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks at all times.

5. All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Installer shall provide the necessary equipment to dry the surface prior to application.

6. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

7. Uninterrupted water-stops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Water-stops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

C. The Installer is cautioned that certain roof membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with the manufacturer membranes. The Installer shall consult the manufacturer regarding compatibility, precautions and recommendations.

D. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Installer shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over tarps or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

E. Prior to and during application, all dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air and/or similar methods.

F. The Installer shall follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.

G. All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable City, State and Federal requirements.

H. All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Installer and properly transported to a legal dumping area authorized to receive such material.

I. The Installer shall take precautions that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.

J. Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks, and excessive heat.

K. All rooftop contamination that is anticipated or that is occurring shall be reported to the manufacturer to determine the corrective steps to be taken.

L. The Installer shall verify that all roof drain pipes/lines are functioning correctly (not clogged or blocked) before starting work. Installer shall report any such blockages in writing (letter copy to the manufacturer) to the Owner's Representative for corrective action prior to installation of the roof system.

M. Installer shall immediately notify the owner’s representative if any unusual or concealed condition is discovered that adversely affects the work, for determination of how to proceed.

N. Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.

O. All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.

P. The Installer shall conduct fastener pullout and/or adhesive pull tests in accordance with the latest revision of the ANSI/SPRI Fastener Pullout Standard to help verify condition of deck/substrate prior to beginning the reroof work, and to confirm expected pullout values.

Q. Contractor is required to coordinate with both Owner and Owner’s Consultant prior to any work that will be conducted around vents and air intakes. No work around these areas will be allowed prior to approval from both the Owner and the Owner’s Consultant.

R. Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Installer’s crew shall keep lids on unused cans at all times.

   1. The work plan must be meet when planned work shall be occurring around the outside air intakes into the labs of the building!

S. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

T. Emergency Equipment:

1. Maintain on-site equipment necessary to apply emergency temporary edge seal in the event of sudden storms or inclement weather.

U. Restrictions: Comply with requirements of Division One on use of site.

1. Smoking is prohibited on roof areas or in existing buildings or on grounds.
2. Radios, boom boxes, etc. are not allowed on the job site.

V. Continuation of Services: Comply with requirements of Division One.

1.11 BIDDING REQUIREMENTS

A. Pre-Bid Meeting:

1. An onsitepre-bid meeting shall be held with the Owner, Owner's Representative, Manufacturer’s Representative, and any other involved trades to discuss all aspects of the project. The Installer's representative for the work shall be in attendance.

B. Site Visit:

1. Bidders shall visit the site and carefully examine the areas in question as to conditions that may affect proper execution of the work. All dimensions and quantities shall be determined or verified by the Contractor. No claims for extra costs will be allowed because of lack of full knowledge of the existing conditions unless agreed to in advance with the Owner or Owner's Representative

1.12 WARRANTIES

A. The Contractor shall warrant all materials and workmanship furnished for a period of two (2) years for the date placing the Work in service regardless of the terms of any manufacturer or supplier warranties. This warranty is in addition to and not a replacement of Owner’s statutory rights under Colorado law to discover a construction defect and take action to correct same

B. Installer/Roofing Contractor [[five-year (5)]] Year Craftsmanship Warranty - The Installer shall supply the Owner with a separate materials and workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Installer warranty term, defective or otherwise not in accordance with the Contract Documents, the Installer shall repair that defect at no cost to the Owner. The Installer's warranty obligation shall run directly to the Owner.

C. The Manufacturer shall provide (for all products furnished and installed) beginning at the date of final acceptance by the owner: The Manufacturer’s **[[Twenty-Year (20)]] WITH A 2” HAIL WARRANTY** No Dollar Limit (NDL) Total System Warranty letter shall be issued covering all materials and workmanship including the following:

1. Repairs required to maintain roof and flashing in a watertight condition.
2. Make repairs at no expense to Owner.
3. Guaranty coverage to include:
    a. All roof insulations, insulation fasteners, insulation adhesives, vapor retarders (where applicable), membrane fasteners, and adhesives.
    b. Roof membrane components and adhesives. All accessory products required for installation of membrane roofing system, including bonding adhesive, flashing membrane, stripping plies, clad metal, pipe boots, pourable sealant pockets, etc.
4. The warranty shall not exclude coverage as a result of small areas of standing or ponding water.
5. Warranty shall include hail **[[(up to 2-inch)]]** coverage with a **[[60-mil]] (Not Including the Fleece Back Mil Thickness)**membrane.

6. Warranty shall not exclude coverage, as a result, of winds less than 90 mph ultimate.
7. Warranty shall not be limited by a dollar amount.

D. Owner Responsibility
1. Owner shall notify both the manufacturer and the Installer of any leaks as they occur during the warranty time period when both warranties are in effect.

PART 2 - PRODUCTS

2.1 POLYVINYL-CHLORIDE/KETONE ETHYLENE ESTER SHEET ROOFING COMPONENTS

1. Membrane shall conform to ASTM D4434-12 (or latest revision), "Standard for Polyvinyl Chloride Sheet Roofing". Classification: Type III.

B. Carlisle SureFlex KEE HP **[[60-mil]]** with Fleece Backing (certified minimum) thermoplastic reinforced membrane.
1. Membrane shall conform to ASTM D4434-12 (or latest revision), "Standard for Polyvinyl Chloride Sheet Roofing". Classification: Type III.

C. Certified Polymer Thickness
1. The membrane manufacturer is to certify that the polymer thickness is of the polymer thickness specified. Certification is to be signed by the membrane manufacturer's quality control manager. ASTM +/- tolerance for membrane thickness is not acceptable.

D. Color of Membrane
1. Carlisle - **[[White]]**

2.2 RELATED MATERIALS AND ATTACHMENT COMPONENTS

A. Membrane flashings will be **[[0.060-inch (60 mil)]]** thick membrane to match the field membrane of the chosen manufacturer.

B. Bonding Adhesive for Field Membrane
1. Carlisle - PVC Low-VOC Bonding Adhesive – A Low VOC solvent-based contact adhesive

C. Bonding Adhesive for Flashing Membrane
1. Carlisle - PVC Low-VOC Bonding Adhesive – A Low VOC solvent-based contact adhesive

D. Liquid Flashing:
1. A two-component polyurethane-based resin or polymethyl methacrylate-based resin, cold-applied with a reinforced flashing fleece.
a. Carlisle – LIQUISEAL Liquid Flashing.

E. Vertical Base Flashing Transition – Securement Plates:
1. 2-inch round stamping of SAE 1010 steel with an AZ 55 Galvalume coating.
2. Approved manufacturers are:
a. Carlisle – 2-inch Galvalume Coated-Steel Seam Fastening Plates.

F. Vertical Base Flashing Transition – Fasteners:
1. Number 14 (minimum) corrosion-resistant fastener with a buttress thread, used with seam fastening plates to attach the field membrane to the appropriate vertical substrate:
a. Carlisle – HP-X Fastener.

2.3 WALKWAY PROTECTION:

A. A layer of specified walkway installed around all curbs and at all roof access locations, adhered to the prepared roof surface per manufacturers requirements and specifications.

1. Sarnafil:
2. Carlisle:
    a. Sure-Flex PVC Walkway Rolls – A textured surface to resist slipping formulated with a weathering packaged. Use in areas exposed to heavy foot traffic.
    b. Sure-Flex PVC Crossgrip Walkway - A two-layer constructed walkway with a cross directional top rib and a diamond cut surfacing, loose laid on the membrane surface. Use in areas exposed to heavy foot traffic.

2.4 MISCELLANEOUS ACCESSORIES

A. Miscellaneous accessories for the project are as follows, but not limited to:

1. Manufacturer Approved – Termination Bar, Prefabricated Vent Pipe Flashings, T-Joint Membrane Patches, Urethane Sealants, Prefabricated Inside and Outside Corner Flashings, Aluminum Tape, Sealing Tape Strip, Multi-Purpose Tape, Solvent Cleaner, Caulking/Sealant, and Pourable Sealant.

2.5 MISCELLANEOUS FASTENERS AND ANCHOR

A. All fasteners, anchors, nails, straps, bars, etc. shall be post-galvanized steel, aluminum or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. All concrete fasteners and anchors shall have a minimum embedment of 1¼-inch and shall be approved for such use by the fastener manufacturer. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1-inch and shall be approved for such use by the fastener manufacturer.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION CONFERENCE

A. The Installer, Owner's Representative, Designer of Record, and Manufacturers shall attend a preconstruction conference.

B. The meeting shall discuss all aspects of the project including but not limited to:

1. Set up
2. Current property condition
3. Construction schedule
4. Contract conditions
5. Coordination of the work

3.2 SUBSTRATE CONDITION/EXAMINATION

A. Installer shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.

1. Beginning installation means acceptance of all existing surfaces conditions.

B. Installer shall verify that the work done under related sections meets the following conditions:

1. Roof drains and/or scuppers have been reconditioned and/or replaced and installed properly.
2. Roof curbs, nailers, equipment supports, vents and other roof penetrations are properly secured, prepared to receive new roofing materials, and have proper placement.
3. All deck/substrate surfaces are dry, clean, smooth and free of sharp edges, burrs, deep depressions, loose material, oil, grease or other foreign material.
4. All roof surfaces shall be free of water, ice and snow.

3.3 SUBSTRATE PREPARATION

A. Comply with manufacturer's instructions for preparation of substrate to receive repair elastomeric sheet roofing.

B. Preparation (or removal) of existing roof insulation, flashing, etc. down to the existing substrate.

C. Inspect existing roof insulation, (that is scheduled to remain) and repair/replace all deteriorated/damaged roof insulation to ensure that the substrate is suitable to receive the new roofing system.

D. Clean substrate of dust, debris, and other substances detrimental to elastic sheet roofing work.

E. Beginning of installation means acceptance of conditions as satisfactory.

F. Thoroughly clean all surfaces against or into which work will be installed. Ensure that all surfaces are clean and dry before starting and during performance of work. Follow roofing system manufacturer's recommendations.

G. The roof deck and existing roof construction must be structurally sound to provide support for the new roof system. The Installer shall load materials on the rooftop in such a manner to eliminate risk of deck overload due to concentrated weight.

H. RE_COVER

1. All base flashing, deteriorated wood blocking or deteriorated metal flashings shall be removed down to the existing structural substrate diaphragm. Remove only that amount of roofing and flashing which can be made weathertight with new materials during a one-day period and before the onset of inclement weather.
2. Exercise care in removal so as not to damage existing roof deck or adjacent surfaces.
3. Do not stockpile debris on roof surface. Promptly remove debris each day. Use chutes to transfer debris from roof surface.
4. Do not haul debris over newly installed roof membranes. Keep debris well downwind of prevailing wind.
5. Provide a clean tarp over the previous days roofing, prior to tear-off start, to protect new roofing from dust, dirt, debris, etc., and from current days tear-off.

3.4 SUBSTRATE INSPECTION

A. A dry, clean and smooth substrate shall be prepared to receive the thermoplastic adhered roof system.

B. The Installer shall inspect the substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect the quality of work.

C. The substrate shall be clean, smooth, dry, free of flaws, sharp edges, loose and foreign material, oil and grease. Roofing shall not start until all defects have been corrected.

D. All roof surfaces shall be free of water, ice and snow.

E. The roof membrane shall be applied over compatible and accepted substrates only.

3.5 INSTALLATION OF THERMOPLASTIC MEMBRANE

A. The surface of the insulation or substrate shall be inspected prior to installation of the thermoplastic roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

B. Field and Flashing Membrane Application:

1. Application shall be continuous and uniform, avoiding globs or puddles.
2. Do not install in wet weather or to a wet surface.
3. Do not install when air temperature is within 5º F of dew point. Solvent evaporation time increases significantly when temperatures drop.
4. Ambient temperatures must be 40º F and rising.
5. Product temperature must be between 70º F and 90º F prior to application.
6. Apply a 100% continuous coat of bonding adhesive to the exposed bottom side of the membrane and a mirrored area of the substrate.
7. After thorough stirring (min 5 minutes), apply bonding adhesive by roller or spraying.
    a. Roller applied adhesive shall utilize a solvent resistant ¾" nap roller, spreading the adhesive to insure a smooth, even 100% coverage of the substrate and membrane.
    b. Spray applied adhesive must be spread out by roller to insure a smooth, even 100% of the substrate and membrane with no holidays, globs, puddles or similar irregularities.
8. Allow the adhesive to dry to a point of being tacky, but not stringy to the touch. Do not allow adhesive to "dry out" completely. The membrane and substrate will be dry (non-tacky) to the finger touch.
9. When sufficiently dry, carefully maneuver the glued portion of the membrane onto the glued substrate surface, avoiding any wrinkles or air pockets.
10. No adhesive shall be applied to the lap "seam" areas of the membrane where heat welding will occur.
11. Press the bonded sheet firmly in place with a minimum 100 lb (45 kg) steel roller by rolling in two directions. Use a hand roller on vertical flashings.
12. Precautions should be taken to prevent odors and/or vapors from entering the building/structure. Especially around outside air intakes.
13. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and the manufacturer. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Installer's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent- resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.
14. Adhesive for Membrane Flashings:
    a. Over the properly installed and prepared flashing substrate, approved bonding adhesive shall be applied according to instructions found on the Product Data Sheet. The bonding adhesive shall be applied in smooth, even coats with no gaps, globs or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.

b. No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.

15. Install termination bars and batten/peel bars according to the Shop and Detail Drawings with approved fasteners into the structural deck at the base of parapets, walls and curbs.
16. The manufacturer's requirements and recommendations and the specifications shall be followed. All material submittals shall have been accepted by the manufacturer prior to installation.
17. All flashings shall extend a minimum of 8-inches above roofing level unless otherwise accepted in writing by the Owner's Representative and the manufacturer Technical Department.
18. All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the thermoplastic membrane.
19. All flashing membranes shall be mechanically fastened along the counter-flashed top edge with a termination bar at 6-inches on center.
20. Roof flashings shall be terminated according to the manufacturer recommended details.
21. All flashings that exceed 30 inches in height shall receive additional securement. Consult the manufacturer technical department for securement methods.

3.6 HOT-AIR WELDING OF SEAM OVERLAPS

A. General:

1. All seams shall be hot-air welded. All field seams exceeding 10 feet in length shall be welded with an approved automatic temperature compensating welder. Seam overlaps should be 3-inches wide when automatic machine-welding and 4-inches wide when hand-welding, except for certain details.
2. Welding equipment shall be provided by or approved by the manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by the manufacturer Technical Representative prior to welding.
3. All membranes to be welded shall be clean and dry.

B. Hand-Welding:

1. Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.
2. The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot-air during the final welding.
3. The nozzle shall be inserted into the seam at a 45-degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1½-inch wide nozzle is recommended for use. For corners and compound connections, the ¾-inch wide nozzle shall be used.

C. Machine Welding:

1. Machine welded seams are achieved by the use of the manufacturer's automatic welding equipment. When using this equipment, the manufacturer's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated off the generator.

2. Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

D. Quality Control of Welded Seams:

1. The Installer shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark grey material from the underside of the top membrane.
2. On-site evaluation of welded seams shall be made daily by the Installer to locations as directed by the Owner's Representative or the manufacturer's representative.
3. One-inch-wide cross-section samples of welded field seams shall be taken at least two (2) times a day and labeled with date and time.
    a. Correct welds display failure from shearing of the membrane prior to separation of the weld.
4. Each test cut shall be patched by the Installer at no extra cost to the Owner.

3.7 METAL FLASHINGS

A. Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:

1. Factory Mutual Loss Prevention Data Sheet 1-49 (latest issue).
2. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue.

B. Metal, other than that provided by the manufacturer, is not covered under the manufacturer warranty.

C. Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

D. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

E. Metal joints shall be watertight.

F. Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 1-inch.

G. Airtight and continuous metal hook strips are required behind metal fascias. Hook strips are to be fastened 6-inches on center into the wood nailer or masonry wall.

H. Counter flashings shall overlap base flashings at least 4-inches.

I. Hook strips shall extend past wood nailers over wall surfaces by 1½-inch minimum and shall be securely sealed from air entry.

3.8 CLAD METAL EDGE METAL:

A. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and the manufacturer. Acceptance shall only be for specific locations on specific dates. If any water intrudes under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Installer's expense.

B. Clad metal flashings shall be formed and installed per the Shop and Detail Drawings.

1. All metal flashings shall be fastened into solid wood nailers with two rows of post galvanized flat head annular ring nails, 4-inches on center staggered. Fasteners shall penetrate the nailer a minimum of 1½-inch.
2. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.

C. Adjacent sheets of clad metal shall be spaced ¼-inch apart. The joint shall be covered with 2-inch wide aluminum tape. A 4-inch minimum wide strip of roof flashing membrane shall be hot-air welded over the joint.

3.9 WALKWAY INSTALLATION

A. Specified Walkway:

1. Roofing membrane to receive walkway shall be clean and dry. Place chalk lines on deck sheet to indicate location of Walkway. Apply a continuous coat of bonding adhesive to the deck sheet and the back of Walkway in accordance with the manufacturer's technical requirements and press Walkway into place with a water-filled, foam-covered lawn roller. Clean the deck membrane in areas to be welded. Hot-air weld the entire perimeter of the Walkway to the thermoplastic deck sheet. Check all welds with a rounded screwdriver. Re-weld any inconsistencies.

a. Important:

1) Do not run Walkway over field/deck membrane seams or termination/batten/peel bars.

2) Cut back walkway pads 4-inches to 6-inches at all seams and flashings.

3.10 TEMPORARY CUT-OFF

A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary water-stops shall be constructed to provide a 100% watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the water-stop. The water-stop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant as described in this section. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.

B. If inclement weather occurs while a temporary water-stop is in place, the Installer shall provide the labor necessary to monitor the situation to maintain a watertight condition.

C. If any water intrudes under newly completed roofing, the affected area shall be removed and replaced at the Installer's expense.

3.11 FIELD QUALITY CONTROL:

A. Roofing Contractor’s Quality Control:

1. During construction, contractor is to provide daily supervision of the project, performed by the contractor’s field superintendent (not to be confused with the project foreperson who is on site at all times).

2. Contractor’s project manager is to perform regular site inspections at the minimum rate of one site visit per week.

3. Upon completion of installation, contractor is to perform their own final inspection by their quality control person to confirm that roofing system has been installed in accordance with the construction documents and manufacturer's requirements. Contractor is to produce a written punch list and roof diagram of deficiencies found during their final inspection. A copy of this punch list, diagram and signed completion letter, will be provided to the consultant prior to the owner and consultant performing their final inspection.

B. Manufacturer's Field Service:

1. During installation, provide for a minimum of weekly on-site inspections of roof installation by qualified distributor technical representatives of roofing manufacturer and submit an e-mail status.
2. During the work the manufacturer's area representative (not manufacturer's qualified distributor representative) shall visit the site two (2) times a month and issue a report of observed work.
3. Upon completion of installation, provide a final inspection by a technical representative of roofing manufacturer to confirm that roofing system has been installed in accordance with manufacturer's requirements. The Installer, owner, and roof consultant are required to be present for this inspection. The manufacturer is to produce a written punch list and roof diagram of deficiencies found during their final inspection. A copy of this punch list, diagram and signed completion letter, will be provided to the owner's roof consultant prior to the owner and consultant performing their final inspection.

C. The manufacturer and Installer are to perform an 18-month inspection of the entire guaranteed roof system 18 months after the warranty issuance date. The Installer, owner, and roof consultant are required to be present for this inspection.

3.12 CLEANING AND PATCHING:

A. Clean up debris, excess materials and equipment and remove from site.

B. Remove drippage or spills of coatings, sealant, adhesives or primers from finish surfaces.

C. Patch misaligned or inadequately lapped seams, inadequately adhered areas, punctures or other damage to membrane with a patch of membrane sheet that extends at least 6-inches in each direction from deficiency.

3.13 PROTECTION:

A. Provide special protection (i.e. use of tarps and plywood) and avoid heavy traffic on completed work.

B. Restore to original condition or replace work or materials damaged during handling of roofing materials.

3.14 COMPLETION

A. Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Installer. All defects noted and non-compliance with the Specifications or the recommendations of the manufacturer shall be itemized in a punch list. These items must be corrected immediately by the Installer to the satisfaction of the Owner's Representative and the manufacturer prior to demobilization.

B. All punch-lists shall have been completed, and warranties referenced in this Specification shall have been delivered to the Owner's Representative prior to the Owner accepting the project for final payment.

END OF SECTION 07 5400

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Formed Products:
      a. Formed roof drainage sheet metal fabrications.
      b. Formed low-slope roof sheet metal fabrications.
      c. Formed equipment support flashing.
      d. Formed parapet coping caps and parapet scuppers.
      e. Miscellaneous sheet metal accessories.

B. Related Sections:
   1. Division 06 Section "Roofing Carpentry," for wood nailers, curbs, and blocking.
   2. Division 07 Section “Roof Replacement Preparation,” for removal procedures for existing materials.
   3. Division 07 Section "SBS Modified Bitumen Roofing," for installing sheet metal flashing and trim integral with membrane roofing.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   2. A 755 - Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
   3. B 32B - Solder Metal.
   4. C 920 - Elastomeric Joint Sealants.
   5. D 4397 - Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.

B. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.

C. Sheet Metal and Air Conditioning Contractor’s National Association (SMACNA): Architectural Sheet Metal Manual.

D. National Association of Architectural Metal Manufacturers (NAAMM): Metal Finishes Manual for Architectural and Metal Products.

1.4 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Edge Design: Fabricate and install roof edge flashing that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist roof edge design pressure (P) calculated according to ANSI/SPRI-ES-1.
   1. Wind Speed: **120 mph**

C. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
   1. Temperature Change (Range): 120º F, ambient; 180º F, material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.5 ACTION SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

C. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work. Where shop drawing details coincide with details shown in Contract Documents, key the shop drawings to the corresponding Contract Document details. Include the following:
   1. Identification of material, thickness, weight, and finish for each item and location in Project.
   2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
   3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
   4. Details of termination points and assemblies, including fixed points.
   5. Details of edge conditions, including eaves, ridges, crickets and counter-flashings, as applicable.
   6. Details of special conditions.
   7. Details of connections to adjoining Work.
   8. Detail formed flashing and trim at a scale of not less than 3 inches per 12 inches.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
   1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
   2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
   3. Accessories and Miscellaneous Materials: Full-size Sample.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified fabricator, including ANSI/SPRI-ES-1 certification.

B. Warranty: Sample of Installer two-year special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing, trim and accessories to include in maintenance manuals.

B. Warranty: Executed Installer two-year special warranty.

1.8 QUALITY ASSURANCE

A. General: Work of this Section to physically protect membrane roofing, base flashings, and expansion joints from damage that would permit water leakage to building interior.

B. Fabricator Qualifications: Shop that employs skilled Workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance, with three years minimum experience.
   1. Certified by an approved testing and inspecting agency to fabricate roof edge trim to meet specified design pressure (P) calculated according to ANSI/SPRI-ES-1.

C. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

D. Preinstallation Conference:
   1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose Work interfaces with or affects sheet metal flashing and trim including installers of roofing materials and roof accessories, and other roof-mounted equipment.
   2. Review methods and procedures related to sheet metal flashing and trim.
   3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
   4. Review special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect sheet metal flashing.
   5. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

D. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

1.10 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

B. Coordinate with demolition Work and with Work of other trades to ensure sufficient materials and manpower are available to completely replace and install make watertight all roofing removed each day.

C. Limit removal of existing sheet metal components, to ensure new membrane installation can be made watertight by end of day.

D. Coordinate installation of flanged metal components, including gravel guards, pitch pans, and accessories to ensure strip-in with hot bitumen (where applicable) on same day they are installed.

E. Schedule Work to avoid storage on, and traffic over finished Work.

1.11 WARRANTIES

A. Manufacturer's Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. Installer's Warranty: Warranty for materials and labor, on Installer's company letterhead, executed by an authorized officer.
   1. Period of Warranty: Two (2) years from the Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

B. Sheet Metal – **Type 1**: Pre-Painted, Metallic-Coated Steel Sheet, of restricted-flatness steel sheet, metallic-coated by the hot-dip process and pre-painted by the coil-coating process to comply with ASTM A 755.
   1. Aluminum-Zinc Alloy-Coated (Galvalume®) Steel Sheet: ASTM A 792, class AZ50 coating designation, Grade 40; structural quality.
   2. Surface: Smooth and flat.
   3. Exposed Coil-Coating Finish:
      a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.
      b. Minimum Exposure Tests:

1) Humidity Resistance: 2,000 hours.
2) Salt-Spray Resistance: 2,000 hours.

4. Color: As selected by Architect from manufacturer's standard color range.
5. Concealed Surfaces Finish: Pre-treat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

C. Sheet Metal – **Type 2**: Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation.

2.2 UNDERLAYMENT MATERIALS

A. Self-Adhering, High temperature Sheet: Minimum 30 to 40mils thick, consisting of slip-resisting polyethylene-film top sheet laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
1. Thermal Stability: ASTM D 1970; stabe after testing at 240 deg F.
2. Low Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
3. Products:
a. Carlisle coatings & Waterproofing, Inc.; CCW WIP 300HT.
b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
c. Henry Company; Blueskin PE200HT.

B. Slip Sheet: Building paper, 3-lb/100 sq. ft. minimum rosin sized.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer heads.
a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
2. Fasteners for Metallic-Coated and Pre-painted Metallic-Coated Steel Sheet: Hot-dip galvanized steel according to ASTM A 153 or ASTM F 2329 or Series 300 stainless steel.
3. Rust-resistant and compatible with materials to be joined.
4. Length: As required for thickness of material to penetrate substrate 1/2-inch minimum.

C. Mechanical Fasteners for Sheet Metal to Substrate Anchorage:
1. Masonry: One-step, screw-type drive anchor (nailin); heat-treated, stress relieved, stainless steel pin; zinc jacketed; sized for intended application; minimum 1-1/4-inch length x 1/4-inch diameter; Hammer-Screw® manufactured by Powers Fasteners, Inc.

2. Wood Blocking: Hexagonal head screws, stainless steel, with neoprene rubber washers; jacket color to match pre-painted sheet metal.
3. Concrete: Same as masonry or other power actuated fasteners, suitable for application.

D. Roofing Nails: Stainless steel (for fastening into AC or ACQ treated lumber), hot-dipped galvanized or non-ferrous type for fastening into non-treated lumber); with annular rings, size as required to suit application; minimum 11-gage with 3/8-inch diameter heads.

E. Mechanical Fasteners for Sheet Metal to Metal Fabrications (Support Framing) Anchorage: Appropriate for purpose intended, size as required to suit application and achieve positive anchorage to substrate material.

F. Solder:
1. For Metallic-Coated Steel (**Type 2**): ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.

G. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

H. Elastomeric Sealant: One-component, polyether, gun-grade sealant, meeting F.S. TT-S-0230-C, Type II, Class A and ASTM C 920-79; “Sonolastic® 150,” by Sonneborn, “GreatSeal PE-150,” by STS Coatings, Inc., or an approved equal.

2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
1. Obtain field measurements for accurate fit before shop fabrication.

C. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

D. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

E. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant.

F. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with elastomeric sealant concealed within joints.
1. Fabricate all components with allowance for expansion at joints. Provide enlarged or oval holes at all piercing fasteners.

G. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

H. Form all sheet metal components (except corners) in longest practical length up to 10-feet maximum; true to shape, square, accurate in size, and free from distortion or defects detrimental to appearance or performance.

I. Fabricate corners on all sheet metal components (gravel guards, copings, cap flashings, etc.) to form one piece with minimum 18-inch and maximum 36-inch long legs.

J. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
   1. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.

K. Soldered Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

L. Unsoldered Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

M. Hem exposed edges of metal 1/2-inch; miter and seam corners.

N. Fabricate vertical faces with bottom edge formed outward 3/4-inch at 30 degrees and hemmed to form drip.
   1. Where vertical height exceeds 8-inches, fabricate with stiffing grooves in accordance with SMACNA, unless specifically approved otherwise.

O. Form all sheet metal material to provide watertight joints:
   1. Unprotected Horizontal Surfaces (expansion joint covers, etc.): Standing seam or drive-cleat joints.
   2. Vertical Surfaces (copings, cap flashings, gravel guards, etc.): Cover and backer plate seams.

P. Miter all sheet metal corners and solder, weld, or fasten and seal all joints watertight:
   1. Stainless Steel, where applicable: Solder joints watertight.
      a. After soldering, remove flux. Wipe and wash solder joints clean.
   2. Pre-Painted Metallic-Coated Steel Sheet (**Type 1**): Apply minimum 1/4-inch bead of sealant between connecting metal flanges and drill and fasten with rivets at 2-inches on centers.
   3. Metallic-Coated Steel Sheet (**Type 2**): Solder joints watertight.
   4. Install sealant so it will not be visible on outside of joints.

Q. Fabricate elements complete with required connection pieces.

R. Fabricate all components with horizontal (flat) surfaces with built-in slope for drainage toward roof unless indicated otherwise.

S. Do not use graphite pencils to mark metal surfaces.

2.5 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Copings: Fabricate in minimum 96-inch-long, but not exceeding 10-foot-long sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight.
   1. Joint Style: Butt, with 12-inch-wide, concealed backup plate and 6-inch-wide, exposed over plates.
   2. Fabricate coping from the following materials:
      a. Prepainted, Metallic-Coated Steel: 0.028 inch (22-gauge) thick.
   3. Fabricate coping cleats from the following material:
      a. Metallic-coated (Gavanized or Galvalume) Steel: 0.028 inch (22-gauge) thick.

B. Roof-Edge Flashing (Gravel Stop): Fabricate in minimum 96-inch-long, but not exceeding 10-foot-long, sections. Furnish with 6-inch-wide, joint cover plates.
   1. Joint Style: Butt, with 6-inch- wide exposed cover plates.
   2. Fabricate roof edge flashing from the following material:
      a. Pre-finished Metallic-Coated Steel (**Type 1**): 0.022 inch (24-gage) thick.
   3. Fabricate roof edge cleats from the following material:
      a. Metallic-Coated (Galvanized) Steel (**Type 2**): 0.028 inch (22-gage) thick.

C. Roof and Roof to Wall Transition Roof to Roof Edge Flashing Transition Expansion-Joint Cover: Fabricate from the following materials:
   1. Prepainted Metallic-Coated Steel (**Type 1**): 0.022 inch (24-gauge) thick.

D. Counter-flashing: Fabricate from the following materials:
   1. Sheet Steel (**Type 2**): Galvanized, 0.022-inch (24-gauge) thick.

E. Flashing Receivers: Fabricate from the following materials:
   1. Sheet Steel (**Type 2**): Galvanized, 0.022-inch (24-gauge) thick.

F. Roof Penetration Flashing: Fabricte from the following materials;
   1. Sheet Steel (Type 2): Galvanized, 0.022-inch (24-gauge) thick.

G. Roof-Penetration Flashing Assemblies: “ChemCurb System,” by ChemLink, or an approved equal.
   1. Assembly to consist of 2-inch high, pre-formed polyester curb and single component pourable polyurethane sealant filler.
   2. Provide a warranty against leakage for a period of not less than ten (10) years from the Date of Substantial Completion for the overall project.

H. Lead Flashings; at soil pipe vents and roof drains. Liquid flashing may be substituted for lead flashing. Refer to Section 07 5216, 2.3, B.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Exposed to View (Unfinished) Galvanized Steel Components (**Type 2**): ***Paint to match-pre-painted metallic-coated steel prior to installation:
   1. Cleaner: Comply with SSPC-1 - Solvent Wipe.
   2. Primer: Apply specified or finish paint manufacturer's recommended primer in accordance with manufacturer's instructions.
   3. Finish Coat: Apply powder coating or approved urethane enamel in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
   1. Verify compliance with requirements for installation tolerances of substrates.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
   3. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
   4. Verify membrane termination and base flashings are in place, sealed, and secure.

B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. General: Install underlayment as recommended by SMACNA.

B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than six inches staggered in 24 inches between courses. Overlap side edges not less than 3-½ inches. Roll laps with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

A. Field measure site conditions prior to fabricating Work.

B. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Provide continuous cleats fastened not more than 12-inches on center. Anchor cleats with a minimum two fasteners.
4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
5. Install sealant tape where indicated.
6. Torch cutting of sheet metal flashing and trim is not permitted.
7. Do not use graphite pencils to mark metal surfaces.

C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
1. Coat back side of stainless-steel and lead sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
    a. Minimum Dry Film Thickness: 15-mils.
2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install underlayment per section 3.2.
3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws:
1. Metallic-Coated or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.
2. Stainless Steel: Use stainless-steel fasteners.

E. Seal joints as shown and as required with elastomeric sealant for watertight construction.
1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1-inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40º and 70º F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40º F.

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pretin edges of sheets to be soldered to a width of 1-1/2 inches except reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder pre-painted metallic-coated steel sheet.
2. Pre-tinning is not required for lead.
3. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

G. Rivets: Rivet joints where indicated and where necessary for strength.

H. Protect all membrane penetrations as indicated and as recommended in SMACNA and NRCA manuals.

3.4 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

3.5 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weather resistant.
   1. Install starter and edge strips, and cleats before starting installation.
   2. Strip in all sheet metal flanges the same day they are installed.

B. Copings: Anchor to resist uplift and outward forces specified in Part 1 and as indicated.
   1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 12-inch centers.
   2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.

C. Roof Edge Flashing: Anchor to resist uplift and outward forces specified in Part 1 and as indicated.
   1. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 12-inch staggered 3-inch centers.
   2. Apply 1/4-inch bead of sealant between each layer of metal at each edge.
   3. Cover Plates: Hook front or exposed face of cover plate over drip edge.
   4. Do not use mastic between sheet metal components.

D. Pipe or Post Counter-flashing: Install counter-flashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4-inches over base flashing. Install stainless-steel draw band and tighten.

E. Counter-flashing: Coordinate installation of counter-flashing with installation of base flashing. Insert counter-flashing in reglets or receivers and fit tightly to base flashing. Extend counter-flashing 4-inches over base flashing. Lap counter-flashing joints a minimum of 4-inches and bed with elastomeric sealant.
   1. Sawcut new reglets where required.
      a. Provide bayonet style lap joints, minimum 4-inch overlap.
      b. Fill voids between wedges with backer rod.
      c. Seal receiver to vertical face of wall.
   2. Secure in a waterproof manner by means of snap-in installation and sealant or plastic wedges and sealant.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
   1. Install lead flashings at all roof drains.
   2. Install lead flashings at all soil pipe penetrations. Turn lead flashing down inside piping, being careful not to block vent piping with flashing. Coat exposed lead with flashing cement. Alternate to lead flashing: Liquid Flashing system per 07 5216, 2.3, B.
   3. Provide Penetration Seal System at all small penetrations not otherwise detailed.

a. Clean roof surfaces to receive Penetration Seal Systems.
b. Clean pipes and penetrating elements to remove plastic cement, bitumen, and other contaminants by wire brushing and scraping.
c. Caulk around penetrating elements with curb adhesive.
d. Apply beads of curb adhesive to flat side of first pre-cast curb component. Place caulked curb onto roof surface to form a half-circle around penetrating element.
e. Apply beads of curb adhesive to flat side and to scarf joints of second pre-cast curb component. Place second section of curb onto roof surface to form circle with first section. Press scarf joints together firmly and press both sections down.
f. Apply continuous bead of curb adhesive around outside edge of curb at roof.
g. Fill around penetrating element with pourable sealant to top of curb.

4. Pitch pans are not desired. Install only where specifically indicated, or approved by Architect. Provide flanged umbrellas at all pitch pans.
   a. Fill with non-shrink grout to 1-inch rom top of flange.
   b. Top with Pitch Pan Filler – Sealant Type ES-2.
   c. Alternate to pitch pans: Liquid Flashing system per 07 5216, 2.3, B.
5. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

G. Protect all membrane penetrations as indicated and as recommended in SMACNA and NRCA manuals.

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.7 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

3.9 SCHEDULE - MATERIALS

A. Exposed to View Components:

1. Gravel Guards and Copings: Pre-finished metallic-coated steel sheet (**Type 1**). Face Plate, prepainted metallic-coated steel sheet.
2. One-Piece Flashing and Expansion Joint Terminations: Metallic-coated steel sheet powder-coated to match adjacent prepainted metallic-coated steel sheet components.
3. All Other Components: Pre-painted metallic-coated steel sheet (**Type 1**).

B. Through-Wall and Roof Penetration Flashings: Min. 24 gage galvanized sheet steel.

C. Rain Hoods and Umbrellas: Stainless steel sheet.

END OF SECTION 07 6200

SECTION 23 0500 – COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Common Work Results for HVAC specifically applicable to Division 23 Work, in addition to Division 01 - General Requirements.
   2. Lifting, moving, re-installation, and minor modifications to existing equipment, curbs, and service lines and connections.
   3. Anchors, brackets, fasteners, hardware, and accessories for related Work.

B. Related Sections:
   1. Division 07 Section “Sheet Metal Flashing and Trim.”

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Existing, modified, or replaced HVAC equipment shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, modification, or other defects in construction. Ductwork shall remain watertight and airtight.

1.4 ACTION SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work.

B. Product Data: For each type of product required.

C. Shop Drawings: For required modifications. Include plans, elevations, sections, details, and attachments to other work.
   1. Provide layout of affected ductwork and piping, including:
      a. Riser diagrams.
      b. Hanger diagrams indicating proposed attachment and locations.
      c. Ductwork jointing and all special sheetmetal and insulating conditions.
   2. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   3. Wiring Diagrams: For power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Samples: For each exposed product and for each color and texture specified, 12 inches square in size.

B. Schedule: List each area of work and all systems or equipment affected. Indicate proposed time of disconnection, re-connection, and duration for shutdowns.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For products or materials to include in maintenance manuals.

1.7 QUALIFICATIONS

A. Installer: Company specializing in installing the work of this Division with a minimum of five (5) years documented experience working with the systems and Products in place and proposed or required. Licensed by jurisdictions having authority to perform the required work.

B. Obtain permits, and request inspections from authority having jurisdiction.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Preinstallation Conference: Conduct conference at Project site.

1.8 PROJECT CONDITIONS

A. Install Work in existing locations and as required or as directed unless prevented by Project conditions.

B. Prepare drawings showing proposed re-arrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect before processing.

C. Do not install Insert products or materials that are wet, moisture damaged, or mold damaged.

D. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation to be performed according to manufacturer's written instructions and warranty requirements.

E. Field Measurements: Verify actual dimensions of openings, and contiguous construction by field measurements before fabrication.

1.9 COORDINATION

A. Construct Work in sequence under provisions of Division 01 Section “Project Management and Coordination.”

B. Coordinate disconnections to minimize disruptions to Owner’s occupancy.

C. Ensure sufficient materials and workforces are on hand for all operations. Do not take equipment or systems out of operation longer than one day, unless specifically authorized in writing by Owner’s Representative.

1.10 PROJECT RECORD DOCUMENTS

A. Submit in accordance with Division 01 Sections “Submittals” and “Closeout Procedures”.

B. Accurately record locations of utilities remaining, rerouted utilities, and new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Primary Products: Those required for original installation.

B. Ductwork Materials:
   1. Galvanized Steel: ASTM A 446, Grade A, G90, 24-gage minimum core steel, or as required for conditions.
   2. Duct Lining: Mat faced duct liner; neoprene coated one side; minimum 1-inch thick; Linacoustic manufacturerd by Manville.
      a. Average Thermal Conductivity: Maximum 0.26 BTU in/sq ft/degree F at mean temperature of 75 F.
   3. Interior and Exterior Duct Joints Sealer: Kingco Seal-Rite 18-120, Blue Glue, and Hardcast.

C. Product Substitution: For any proposed change in materials or for any new materials, submit request for substitution under provisions of Division 15 Section “Product Requirements”.

2.2 FABRICATION

A. Provide ductwork extensions or modifications where required due to movement or raising of mechanical equipment, in accordance with recognized industry standards and the following:
   1. Low Pressure Ducts: SMACNA HVAC Duct Construction Standards, Latest Edition.
   2. Pressure Class: 1-inch w.g., unless otherwise indicated.
   3. Elbows: Match existing or square, with factory-fabricated turning vanes.
   4. Changes in Direction: Rounded elbows with centerline radius equal to 1-1/2 times duct width, in plane of bend.
   5. Transitions in Size or Shape: Gradual slopes on all sides.
      a. Increases in Dimensions in the Direction of Air Flow: Maximum slope of 1:7 on any side.
      b. Decreases in Dimensions in the Direction of Air Flow: Maximum slope of 1:4.
   6. Ducts in Excess of 36-inches: Use SMACNA "J" and "F" connections.

B. Install duct liner in accordance with manufacturer's instructions using weld pins or Tuffbond adhesive and adhesive type metal clips.
   1. Do not reduce airflow area of existing ductwork.

C. Seal all joints water and air tight.

2.3 TESTS

A. Provide testing of all relocated or modified systems and equipment under provisions of Division 01 Section “Quality Requirements.”

B. Test in accordance with recognized standards and as recommended by equipment manufacturers.

C. Notify Owner’s Representative 24 hours prior to all testing.

D. Record all test results and corrective measures taken. Provide results to Owner with Project Record Documents under provisions of Division 01 Section “Closeout Procedures.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during Work.

B. After uncovering existing work, inspect conditions affecting performance of Work.

C. Confirm operational condition of equipment and systems. Notify Owner in writing of any deficiencies prior to Work

D. Beginning Work means acceptance of existing conditions and responsibility to return system or equipment to operating condition upon completion of Work.

3.2 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work.

B. Provide devices and methods to protect other portions of Project from damage, debris, or contamination.

C. Provide protection from elements for areas that may be exposed by uncovering work.

3.3 PERFORMANCE

A. Execute work by methods that will avoid damage to other Work, and provide proper surfaces to accommodate reinstallation and reconnection.

B. Employ skilled and experienced installer to perform all operations.

C. Employ original installer to perform operations on systems or equipment under warranty.

D. Cut rigid materials using masonry saw or core drill. Pneumatic impact tools not allowed without prior approval.

E. Restore Work with new Products, as required for original installation, and in accordance with requirements of Contract Documents.

3.4 TESTING AND ADJUSTING

A. Test all modified and relocated systems and equipment.
   1. Pressure test refrigerant piping prior to covering and recharging.

2. Test gas lines in areas of Work in accordance with applicable codes and Utility Company recommendations.

B. Correct all deficiencies identified, including replacement of parts and components when required.

C. Adjust all Products and equipment to ensure proper operation and function.

3.5 CLEANING

A. Clean work under provisions of Division 01 Section “Execution.”

B. Clean Owner occupied areas when soiled by Work or operations of this Division.

End of Section 23 0500

SECTION 26 0500 – COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Common Work Results for Electrical specifically applicable to Division 26 Work, in addition to Division 01 - General Requirements.
   2. Lifting, moving, re-installation, repairs, and minor modifications to existing equipment, and service lines and connections.
   3. Anchors, brackets, fasteners, hardware, and accessories for related Work.

B. Related Sections:
   1. Division 07 Section “TPO Roofing”
   2. Division 07 Section “Sheet Metal Flashing and Trim”

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Existing, modified, or replaced electrical equipment and appliances shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, modification, or other defects in construction. Electrical components shall remain watertight.

1.4 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.5 ACTION SUBMITTALS

A. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 – Products or otherwise required by the Work.

B. Product Data: For each type of product required.

C. Shop Drawings: For required modifications. Include plans, elevations, sections, details, and attachments to other work.
   1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   2. Wiring Diagrams: For power, signal, and control wiring.

1.6 INFORMATIONAL SUBMITTALS

A. Schedule: List each area of work and all systems or equipment affected. Indicate proposed time of disconnection, re-connection, and durations for shutdowns.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For Insert products or materials to include in maintenance manuals.

1.8 QUALIFICATIONS

A. Installer: Company specializing in installing the work of this Division with a minimum of five (5) years documented experience working with the systems and Products in place and proposed or required. Licensed by jurisdictions having authority to perform the required work.

B. Conform to NFPA 70 and applicable Building Code for all electrical work.

C. Obtain permits, and request inspections from authority having jurisdiction.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. Preinstallation Conference: Conduct conference at Project site.

1.9 PROJECT CONDITIONS

A. Repair electrical conduit and devices as required by roofing replacement Work in existing locations and as directed or as required unless prevented by Project conditions.

B. Prepare drawings showing proposed re-arrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect before proceeding.

C. Do not install products or materials that are wet, moisture damaged, or mold damaged.

D. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit work to be performed according to manufacturer's written instructions and warranty requirements.

E. Field Measurements: Verify actual dimensions of openings and contiguous construction by field measurements before fabrication.

1.10 COORDINATION

A. Construct Work in sequence under provisions of Division 01 Section “Project Management and Coordination.”

B. Coordinate disconnections to minimize disruptions to Owner’s occupancy.

C. Coordinate with other Trades and Owner to ensure electrical installation does not inhibit other Work.

D. Ensure sufficient materials and workforces are on hand for all operations. Do not take equipment or systems out of operation longer than one day, unless specifically authorized in writing by Owner’s Representative.

1.11 PROJECT RECORD DOCUMENTS

A. Accurately record locations of electrical equipment, appliances, and conduits remaining, rerouted conduits, and new electrical equipment and wiring by horizontal dimensions and elevations.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Primary Products: Those required for original installation.

B. Product Substitution: For any proposed change in materials or for any new materials, submit request for substitution under provisions of Division 01 Section “Product Requirements.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during Work.

B. After uncovering existing work, inspect conditions affecting performance of Work.

C. Confirm operational condition of equipment and systems. Notify Owner in writing of any deficiencies prior to Work

D. Beginning Work means acceptance of existing conditions and responsibility to return system or equipment to operating condition upon completion of Work.

3.2 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work.

B. Provide devices and methods to protect other portions of Project from damage, debris, or contamination.

C. Provide protection from elements for areas that may be exposed by uncovering work.

D. Provide temporary connections and maintain operational capacity of systems or equipment that will be displaced more than one day, unless instructed otherwise.

3.3 PERFORMANCE

A. Execute work by methods that will avoid damage to other Work, and provide proper terminations to accommodate reinstallation and reconnection.

B. Employ skilled and experienced installer to perform all operations.

C. Employ original installer to perform operations on systems or equipment under warranty.

D. Cut rigid materials using masonry saw or core drill. Pneumatic impact tools not allowed without prior approval.

E. Restore Work with new Products, as required for original installation, and in accordance with requirements of Contract Documents.

F. Fit Work water tight to adjacent elements and around penetrating elements.

3.4 ELECTRICAL WIRING AND SYSTEMS REPAIRS

A. Verify need and extent of all repairs with Owner's Representative. Coordinate shut down and start-up requirements for each system and each occurrence.

B. Remove conduit and associated materials from point of damaged to nearest pull box or other connection point in both directions, unless instructed otherwise by Owner's Representative.

C. Replace with new conduit and wiring of same diameter and gage as original.

D. Use screwed or welded connections to match existing conditions.

E. After repairs are completed, but prior to covering or concealing repaired elements, test repairs at full load or power, under observation by Owner's Representative.

F. Seal all connections watertight, including those between new and existing materials.

3.5 TESTING AND ADJUSTING

A. Test all modified and relocated systems and equipment.

B. Correct all deficiencies identified, including replacement of parts and components when required.

C. Adjust all Products and equipment to ensure proper operation and function.

3.6 CLEANING

A. Clean work under provisions of Division 01 Section "Execution."

B. Clean Owner-occupied areas when soiled by Work or operations of this Division.

END OF SECTION 26 0500