THE HOUSING AUTHORITY OF THE BOROUGH OF HIGHLAND PARK

242 SOUTH SIXTH AVENUE, HIGHLAND PARK, NJ 08904
PHONE (732)572-4420

January 10, 2017

Roof Replacement at Samuel J Kronman Building

Addendum #1

Please be advised that the following addendum has been issued for the above referenced project:

1. In the original documents a large portion of the specifications were missing. The attached specifications are inclusive of all specifications that are to be considered when bidding on this project.
2. The drawings included in the original bidding documents are still applicable to this project.
3. All bidders are to include this Addendum #1 on the *Acknowledgement of Receipt of Addenda* form included in the original documents.
4. The bid opening date shall remain February 14, 2017 at 2:00 PM.

The complete Specifications begin on the following page and include the following sections:

1100	1450	7531
1200	1500	7595
1230	1565	7620
1260	1600	7720
1270	1700	7840
1300	1780	7900
1325	2223	
1400	5513	
1425	6100	

THANK YOU!

SECTION 01100

SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name:

ROOF REPLACEMENT for HIGHLAND PARK HOUSING AUTHORITY

B. Project Locations:
Highland Park Housing Authority
242 South Sixth Avenue
Highland Park, NJ 07095

Owner's Name: Highland Park Housing Authority

C. Architect's Name: Element Architectural Group.
12 Route 17 North, Suite 220, Paramus NJ 07652
ph: 201 368-7752 fax: 201 368-7758

D. Scope:
The scope of work for this project includes the replacement of existing Built up roofing at Highland Park Housing Authority, 242 South Sixth Avenue, Highland Park, NJ. The existing Built up roof, along with the existing polystyrene insulation, to be removed , new tapered insulation board to be installed on roofs, new TPO roofing material on roofs. New flashings and other roofing accessories will be replaced in order to provide a complete watertight installation.

E. The Bidders note: The Architect's bid set known as #2016-01 ROOF REPLACEMENT for HIGHLAND PARK HOUSING AUTHORITY contains project specifications and construction documents for the full scope of work as described above as one single project. This project shall be bid as a single base bid, and bids shall be received as a SINGLE PRIME CONTRACT from a Contractor pre-qualified for Roofing-Membrane TPO or a Contractor pre-qualified for General Construction with a sub-contractor pre-qualified for Roofing-Membrane TPO for a stipulated sum to include the following:

ROOFING-MEMBRANE TPO

F. The General Contractor shall coordinate the work of others engaged directly by the Owner.

G. Bidders shall refer to 1.07, F of this section for hours of work applicable to this project.

1.02 CONTRACT DESCRIPTION

A. Contract Type for each project shall be a single prime contract based on a Stipulated Price.
B. The work shall be performed by a single prime contractor who shall engage sub-prime contractors and any other subcontractors whose services and skills are required for the execution of the Work.
   1. Sub-Prime contractors for Plumbing, Mechanical and Electrical Work if applicable shall possess current state licenses for their respective work. Any other trade or work performed by a contractor or subcontractor which, by state statute, requires a license, shall only be performed by a duly licensed contractor or subcontractor.

1.03 WORK BY OWNER

A. The Owner may engage other contractors or vendors to perform work.

B. The Contractors and Vendors engaged by the Owner shall coordinate their respective work with that of the General Contractor.

C. The Owner shall provide the Contractor access to the existing school building where required for tie-ins, breakthrough and renovations.

D. Items noted “NIC” (Not in Contract) will be supplied and installed by Owner before substantial completion.

1.04 OWNER OCCUPANCY

A. The Contractor shall coordinate and schedule their work with occupants using the building on a regular basis.

1.05 HANDLING OF REGULATED MATERIALS

A. Asbestos: The Contractor shall notify the Owner’s field representative if they suspect asbestos containing materials affect their scope of construction work. Contractor shall stop work immediately so as to enable the Owner to make all arrangements for the safe removal before construction activities can resume.

B. Lead Paint: In areas noted on plans to be patched and repainted and that the affected area exceeds two square feet per room the owner shall have the existing surfaces tested for lead based paint prior to any paint being scraped or sanded. If lead based paint is found to be present the owner shall arrange to have lead based paint abated prior to any scraping or sanding being performed.

This project is not considered a ‘lead abatement project’ by the State of New Jersey. The possibility still exists that lead may be present in some of the existing paint materials scheduled to be demolished. For purposes of bidding, the contractor shall assume that they will encounter lead and/or lead-based materials on this project. As such, the contractor shall be prepared to conduct paint removal in such areas using ‘lead-safe practices’ as needed and such work shall be included in their base bid. These practices include the following:

1. Installation of plastic dust barriers and tarp ground coverings.
2. Use of HEPA vacuum attachments on all applicable tools.
3. Removal of lead-based materials in an intact state as much as possible.
4. Demolition without grinding, sawing and drilling of materials containing lead.
5. Wetting down of materials during removal process.
6. Wiping down all surfaces with a damp cloth after removal.
7. Cleaning all ground surfaces during clean up.

1.06 DEFINITIONS

For the purpose of establishing progress schedules and limitations to use of the site and the building and the project, the following definitions shall apply:

"Normal Hours": The hours between 7:30 am and 3:30 pm Monday – Friday throughout the calendar year, except legal holidays.

"OFF Hours": The hours between 3:30 pm and 10:30 pm Monday – Friday throughout the calendar year except legal holidays, and between 7:30 am and 10:30 pm on weekends and legal holidays.

"Work Area": The roof space above the building which is subject to alteration or renovation under this project or which shall be used by any contractor for field offices, staging, storage, or other construction related activity.

1.07 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings or as modified in agreement with the Owner in order to complete the Work.

B. Provide all Work and site mobilization from staging areas as designated and agreed to by Owner Representative. Contractor responsible for all site cleanup and restoration at the end of each work day as required until the completion of the project.

C. Arrange use of site to allow:
   1. Owner occupancy and use of the areas of the site outside of the designated work area.
   2. Use of site outside of the designated work area by the public.

D. Emergency Building Exits: Keep all exits from building open and unobstructed during construction. Provide temporary safety barriers, protection, exit signs if exit routes are temporarily altered.

E. Utility Outages and Shutdown:
   1. Disruption of utility services to be approved and coordinated with facility management.
   2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.

F. Hours of Work:
   1. Contractor shall follow the table below indicating the hours of work available to them depending upon the calendar dates.

HOURS OF WORK SCHEDULE	
DAYS	**WORK HOURS**
Any days while college is “In Session”	“Normal Hours” & “Off Hours”
Weekends, Legal Holidays, Summer Recess	“Normal Hours” & “Off Hours”

1.08 SITE ACCESS AFTER “NORMAL HOURS” OF WORK

A. Contractor shall notify Owner Representative of proposed time of work outside “Normal Hours” at a minimum of three days in advance for Owner Representative’s coordination.

B. Owner shall allow occupancy of building during “Off Hours” and shall provide personnel necessary to allow access as needed and required by Contractor.

1.09 CONTRACT FOR - GENERAL CONSTRUCTION: APPLICABLE DOCUMENTS

A. Specifications Division 01 – “General Requirements”

B. Specifications Division 02 through Division 16 – “Technical Sections”

C. Contract Drawings: as prepared by the Architect and the Architect's Engineering Consultants for the Project.

1.10 WORK HOURS

A. Contractor shall complete the project within the timeframe specified. Contractor shall allocate the required number of “Regular Hours” and “Off-Hours” to meet the completion date. The Contractor’s bid shall include utilization of “Regular Hours”, “Off Hours”, overtime hours or a combination in order to complete the project on time and the costs for these hours shall be included in the bid.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Correlation of Contractor submittals based on changes.

E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED SECTIONS

1.03 SCHEDULE OF VALUES

A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet.

B. Submit Schedule of Values in duplicate within 10 days after date of Owner-Contractor Agreement.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.

D. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

E. Include a separate line item with appropriate value(s) for General Conditions which shall include:
   1. Project administrative and management: superintendent services, field coordination, preparation and handling of submittals, attendance at meetings and similar field services.

F. Revise schedule to list approved Change Orders, with each Application for Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Once per calendar month, maximum according to the provisions contained in this Section and the related sections, where applicable. There is no minimum period; Contractor does not have to submit an Application for Payment every month.
   1. The Owner is obligated to process no more than one submission of an acceptable Formal Application for Payment per payment period.
   2. Formal Payment Submittals shall be submitted between the first and fifth day of the month and shall include work completed by the last day of the preceding month and which was not included in previous invoices.
      a. A Formal Application for Payment which is received after the fifth day of a month shall be held for action until the following month, unless, the Contractor voids or

supersedes said Application by submitting a new Application the following month which includes all prior work and materials which have not been formally invoiced.

b. Where the Contractor has issued a Preliminary Application for Payment (PAP) for a particular payment period, a Formal Invoice shall include information and values as found acceptable by the Architect following review of the Preliminary Request for Payment.

B. Present required information in typewritten form or on equivalent electronic media printout if acceptable to Architect.

C. Form: AIA G702 Application and Certificate for Payment and AIA G703 - Continuation Sheet including continuation sheets when required.

D. For each item, provide a column for listing each of the following:
1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Authorized Change Orders.
7. Total Completed and Stored to Date of Application.
8. Percentage of Completion.
9. Balance to Finish.
10. Retainage.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

H. Submit four copies of each Application for Payment and all supporting material

I. Include the following with the application:
1. Transmittal letter as specified for Submittals in Section 01300.

J. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 PRELIMINARY APPLICATION FOR PAYMENT

A. In order to facilitate payment review and processing, the Contractor, at his option, may elect to submit a Preliminary Application for Payment (PAP) for review prior to the end of the payment period. The following provisions apply to issuing a PAP.
1. Between 5 and 10 days of the end of a payment period, the contractor shall submit a PAP, which shall include the same information which will be included in the Formal application for Payment.
2. Submit one copy each for the Owner's Representative, Architect, and to each Consulting Engineer whose respective work was executed during the payment period.
3. For the purposes of submitting a PAP, the contractor may indicate work that he/she reasonably expects to complete and/or stored materials he expects to prior to the end of the payment period even though, at the time of preparing the PAP, such work is not yet competed or such materials have not yet been received.

a. In instances where any work and or any stored materials which were foreseen as being completed or received in the Formal Application for Payment have not been completed or received, the Owner shall offer the contractor two options.
   1) Withhold releasing the payment until all work and stored materials included in the current Formal Application for Payment are satisfied.
   2) Direct the Contractor to issue a revised Formal Application for Payment, within three days, which includes only work completed and stored materials which are in hand

4. The Owner, Architect/Engineer shall review the submission and indicate revisions to be made by the Contractor which will make the application acceptable.
   a. If the contractor disagrees with the evaluation, he may petition the Architect for additional review and assessment.
   b. The Architect upon re-review shall return to the Contractor the PAP with appropriate changes, if applicable.
5. The contractor shall prepare a Formal Application for Payment using the accepted PAP received from the Architect
6. Should the Contractor elect not to submit a PAP, he shall submit a Formal Application for Payment according to the schedule established herein.
   a. Upon review of such a Formal Application for Payment, any revisions required by the Architect must be incorporated in a revised Formal Application for Payment.
      1) Submission of a revised Formal Application for Payment must be in the hands of the appropriate parties no later than the fifth day of the month following the payment period. Submissions received after that date shall be executed in the next payment period.
      2) The Owner is obligated to process no more than one submission of an acceptable Formal Application for Payment per payment period.

1.06 RETAINAGE

A. Retainage shall be withheld from each progress payments according to the maximum permitted by Law. Except if amended in the Agreement, the following schedule shall apply for retainage.
   1. 10% of the payment amount for Projects with a contract value of less than $250,000.
   2. 5% of the payment amount for Projects with a contract value of $250,000 to $1,000,000.
   3. 2% of the payment amount for Projects with a contract value over $1,000,000.

1.07 MODIFICATION PROCEDURES

A. DISCREPANCIES WITHIN THE CONSTRUCTION DOCUMENTS

1. THE CONSTRUCTION DRAWINGS AND THE SPECIFICATIONS WORK TOGETHER IN CONCERT. THESE DOCUMENTS MAY BE ALTERED DURING BIDDING THRU ADDENDUM OR CLARIFICATION. TOGETHER, THE DRAWINGS, SPECIFICATIONS AND ALL ADDENDA AND CLARIFICATIONS FORM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL READ AND REVIEW THE SPECIFICATIONS AS CAREFULLY AS HE REVIEWS THE DRAWINGS. ITEMS IN THE SPECIFICATIONS MAY NOT BE SHOWN ON DRAWINGS AND VICE VERSA. THIS HOWEVER DOES NOT MEAN THAT A PRODUCT, PIECE OF EQUIPMENT OR OTHER CONSTRUCTION ITEM NOT SHOWN OR INDICATED ON ONE OR THE OTHER IS NOT PART OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR ALL ITEMS LISTED IN EITHER THE SPECIFICATIONS, THE DRAWINGS, ADDENDA OR CLARIFICATIONS.

2. DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL NOT CONSTITUTE JUSTIFICATION FOR A CHANGE ORDER FOR ADDITIONAL MONIES OR TIME.

3. ITEMS DETAILED OR INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS SHALL BE INCLUDED IN THE SCOPE OF WORK OF THE PROJECT REGARDLESS OF ANY PERCEIVED LACK OF LARGER SCALE DETAILS, WRITTEN SPECIFICATIONS, DETAILED DESCRIPTIONS OR OTHER ILLUSTRATED VIEWS OF THE SAME CONSTRUCTION ITEM. LACK OF ANY OR ALL OF THE ABOVE DOES NOT NEGATE THE FACT THAT THE ITEM, MATERIAL OR PIECE OF EQUIPMENT IS PART OF THE SCOPE OF WORK AND SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
4. LARGER SCALE OR MORE RESTRICTIVE SPECIFICATIONS SHALL GOVERN.
5. INDUSTRY STANDARD QUALITY COMMERCIAL GRADE PRODUCTS SHALL BE THE MINIMUM STANDARD UNLESS GREATER QUALITY OR MORE SPECIFIC OR RESTRICTIVE DETAILS OR DESCRIPTIONS ARE PROVIDED.
6. ITEMS OF WORK THAT THE CONTRACTOR FEELS ARE UNCLEAR IN THE CONSTRUCTION DOCUMENTS ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT DURING BIDDING FOR CLARIFICATION/INTERPRETATION. IF THE CONTRACTOR FAILS TO NOTIFY THE ARCHITECT DURING BIDDING, THE REQUIREMENTS IN ITEMS 1 THROUGH 5 SHALL APPLY.

B. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract by issuing supplemental instructions on AIA Form G710.

C. Construction Change Directive: Architect/Engineer may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.
   2. Promptly execute the change in Work.

D. Proposal Request: The Architect/Engineer may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10- days.

E. The Contractor may propose a change by submitting a request for change to the Architect/Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01600.

F. Computation of Change in Contract Amount:
   1. For change requested by Architect/Engineer for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
   2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect/Engineer.
   3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices unless a mutually agreed price is negotiated between the Owner and Contractor.
   4. For change ordered by Architect/Engineer without a quotation from the Contractor and executed under a Construction Change Directive, the amount will be determined by the Architect/Engineer based on the Contractor's substantiation of costs.

G. Substantiation of Costs: Provide full information required for evaluation of Change Directive/Change Order. (Include all of the following, whether change results in an increase or credit).
   1. Provide following data:
      a. Quantities of products, labor, and equipment.
      b. Insurance and bonds.
      c. Overhead and profit.
      d. Justification for any change in Contract Time.
      e. Credit for deletions from Contract, similarly documented.
   2. Support each claim for additional costs with additional information:
      a. Origin and date of claim.
      b. Dates and times work was performed, and by whom.
      c. Time records and wage rates paid.
      d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
   3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

H. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract on AIA G701.

I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

K. Promptly enter changes in Project Record Documents.

1.08 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01780.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01230
ALTERNATIVES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Alternative submission procedures.

B. Documentation of changes to Contract Sum.
   1. For each alternative as scheduled herein, indicate the difference to be either added to, or deducted from, the Base Bid price should the Owner elect to include the Alternative in the contract.

1.02 RELATED SECTIONS

A. Instructions to Bidders: Instructions for preparation of pricing for alternatives.

B. Form of Proposal

C. Document 00500 - Agreement: Incorporating monetary value of accepted alternatives.

1.03 ACCEPTANCE OF ALTERNATIVES

A. Alternatives quoted on Form of Proposal will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement and the Contract sum will be adjusted accordingly.

B. Include the Work of the selected alternative(s) with the work required for the Base Bid.

C. Include work of selected alternatives in the organization of the Construction Schedule.

D. Coordinate related work and modify surrounding work to integrate the Work of each alternative.

1.04 SCHEDULE OF ALTERNATIVES

<u>Alternate #1</u>: All work associated with the replacement of EPDM on Roof "B" of the construction documents. Including but not limited to: new flashings and other roofing accessories being replaced in order to provide a complete watertight installation.

<u>Alternate #2</u>: Repointing of all masonry at perimeter penthouse walls from deck of Roof "C" up to 3'-0" above finished roofing surface.

Alternate #3: Provide Add/Deduct to install TPO 60 mil Fleece-Back Membrane Roofing System in lieu of EPDM. Refer to drawings A-1, A-2, A-3, A-4, A-7 and A-8 for additional information and Specifications.

1.05 DEFINITIONS

A. The term "Alternative(s)" and "Alternate(s)" are used interchangeably in the documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 RECORDING OF ALTERNATIVE VALUES

A. Indicate the change in the value of the Base Bid for each alternative identified in this section in the appropriate location in the Form of Proposal

B. Indicate if the change in value is to be an ADD or a DEDUCT from the Base Bid value.

END OF SECTION

SECTION 01260 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

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

B. Related Requirements:
1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.03 MINOR CHANGES IN THE WORK

A. Architect 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, "Architect's Supplemental Instructions." OR STANDARD COMPANY LETTERHEAD.**

1.04 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: **Architect** 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. Work Change Proposal Requests issued by **Architect** are not instructions either to stop work in progress or to execute the proposed change.
2. IMMEDIATELY after receipt of Proposal Request, BUT NO LONGER THAN SEVEN (7) CALENDAR DAYS, 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. SUBMIT A DETAILED BREAKDOWN 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. LABOR RATES WILL BE THE PREVAILING WAGE RATE AS SET BY THE STATE OF NEW JERSEY.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

e. Quotation Form: Use **CSI Form 13.6B "Proposal Worksheet Summary" and 13.6C "Proposal Worksheet Detail"** OR OTHER SIMILAR **forms acceptable to Architect**.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to **Architect**.

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 Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use EITHER **CSI Form 13.6A "Change Order Request (Proposal)" with attachments CSI Form 13.6B "Proposal Worksheet Summary" and 13.6C "Proposal Worksheet Detail"** OR OTHER SIMILAR **forms acceptable to Architect**.

1.05 CHANGE ORDER PROCEDURES

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

B. WHEN A CHANGE IN THE WORK INCLUDES A CATEGORY OR CATEGORIES OF WORK BOTH ADDED TO AND DEDUCTED FROM THE CONTRACT, THE TOTAL QUANTITIES OF ADDED WORK AND OF DELETED WORK SHALL BE DETERMINED SEPARATELY FOR EACH CATEGORY AND THE APPROPRIATE UNIT PRICE OR NET COST OF THE WORK SHALL BE APPLIED TO THE DIFFERENCE BETWEEN THE TWO TOTAL QUANTITIES.

C. UNIT PRICES SHALL BE INCLUSIVE OF ALL COSTS AND SHALL BE APPLIED TO UNITS OF MEASURE AS DEFINED IN THE SPECIFICATIONS FOR EACH CATEGORY OF WORK.

D. THE ALLOWANCE FOR OVERHEAD AND PROFIT COMBINED SHALL BE BASED UPON THE FOLLOWING SCHEDULE:
1. FOR THE CONTRACTOR, FOR WORK PERFORMED BY HIS OWN FORCES, 10% OF COST
2. FOR EACH SUBCONTRACTOR, FOR THE WORK PERFORMED BY HIS OWN FORCES, 10% OF COST
3. FOR THE CONTRACTOR, FOR WORK PERFORMED BY A SUBCONTRACTOR, 5% OF COST.

(SEE PARAGRAPH 7.3.10 OF THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION)

E. NET COST OF EXTRA WORK SHALL BE THE ACTUAL OR PRO-RATED COST OF:

1. LABOR, INCLUDING FOREMAN AND SUPERINTENDENT, AT THE PREVAILING RATE OF WAGES, CONTRIBUTIONS AND TAXES. SEE SECTION 01260, PARAGRAPH 1.4A, 2, c.
2. MATERIALS ENTERING PERMANENTLY INTO THE WORK, INCLUDING DELIVERY TO THE SITE.
3. THE OWNERSHIP OR RENTAL COST OF CONSTRUCTION EQUIPMENT AND EXPENDABLE TOOLS, PRO-RATED FOR THE TIME NECESSARY FOR THE WORK.
4. POWER AND CONSUMABLE SUPPLIES FOR THE OPERATION OF POWER EQUIPMENT, PRO-RATED FOR THE TIME NECESSARY FOR THE WORK.
5. INSURANCE AND BONDS.

F. GROSS COSTS SHALL BE NET COSTS PLUS THE ALLOWANCES DESCRIBED ABOVE, SUCH ALLOWANCES BEING INCLUSIVE, OF ALL COST OF SUPERINTENDENCE, SUPERVISION, ENGINEERING, OVERHEAD, PROFIT, ADMINISTRATIVE AND SITE OFFICE EXPENSES AND ALL OTHER GENERAL EXPENSES.

G. CONTRACTOR SHALL INCLUDE SUPPORTING DOCUMENTATION FROM ALL SUBCONTRACTORS INVOLVED IN ANY PROPOSAL REQUEST. THIS DOCUMENTATION SHALL INCLUDE MANHOURS AND HOURLY RATES, MATERIAL LIST AND COSTS, AND OVERHEAD AND PROFIT. SUPPORTING DOCUMENTATION WILL BE ATTACHED TO CHANGE ORDER PREPARED BY ARCHITECT.

1.06 CONSTRUCTION CHANGE DIRECTIVE

A. **Construction** Change Directive: **Architect** may issue a **Construction** Change Directive on **AIA Document G714**. **Construction** Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01260

SECTION 01270

UNIT PRICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Unit Prices.

1.02 RELATED SECTIONS

A. Section 01200 – Price and Payment Procedures

B. Section 01400 – Quality Requirements

1.03 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, 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.

D. List of Unit Prices: A list of unit prices is included at the end of this Section. All bidders must fill out Unit Prices. Specification Sections referenced in the schedule contain information for products described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 LIST OF UNIT PRICES

A. **Unit Price No. U-1** – Roof Drains.
   1. Manufacturer: Zurn Z100 “Low Silhouette Dome”, D.C.C.I Body with Aluminum Dome, neoprene gasket, and pipe extender as required by new roof installation.
   2. Description: Complete replacement of roof drain per drawings.
   3. Unit of Measurement: per drain.

END OF SECTION

SECTION 01300

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-construction meeting.

B. Site Mobilization Meeting.

C. Progress meetings.

D. Coordination drawings.

E. Submittals for review, information, and project closeout.

F. Number of copies of submittals.

G. Submittal procedures.

H. Excessive submittals

I. Communications

J. Definitions

1.02 RELATED SECTIONS

A. Section 01100 - Summary: description of the Work, Stages of the Work, Work covered by each contract, and occupancy.

B. Section 01700 - Execution Requirements: Additional coordination requirements.

C. Section 01780 - Closeout Submittals: Project record documents.

1.03 SINGLE PRIME CONTRACT - STIPULATED SUM

A. The Contracts for this Project shall be awarded as Single Prime Contract for a Stipulated Sum as described in Section 01100 - Summary. The General Contractor shall be responsible to perform all the trades of work required for the project as indicated by drawings and specs.

B. The General Contractor, for the purposes of this Project shall be the Project Coordinator performing and/or managing the administrative and planning functions required for the proper execution of this Contract.
   1. The contractors which the General Contractor shall supervise and employ while technically considered as "sub contractors" may be referred to as "Contractor" "Sub-Prime" or Sub contractor". As such the terms “Contractor" and "Sub-contractor" are interchangeable.
   2. When the word "contractor" is used it shall be assumed to refer to the Prime Contractor or any number of, or all of the Sub-prime Contractor depending upon the context of the reference.
   3. In a Single Prime Contract, the term "contractor", when used without specific reference or

inference to a particular aspect of the Work, shall be assumed to refer to the Prime Contractor (General Contractor).

4. All communications, submittals, applications for payments and other administrative or management operations shall be issued by, and issued to, the General Contractor.

1.04 PROJECT COORDINATION

A. Project Coordinator: General Contractor.

B. The Project Coordinator shall be responsible for the allocation of mobilization areas of site; for field offices and sheds, for temporary offices, sheds, storage facilities, deliveries, removal, access, traffic, and parking facilities. The Project Coordinator shall be responsible for coordinating these activities as they may relate to the phases of the project.

C. During construction, the Project Coordinator shall coordinate use of site and facilities.

D. Project Coordinator shall establish procedures and responsibilities for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

E. The Project Coordinator shall coordinate field engineering and layout work.

F. The Prime Contractor shall make the following types of submittals to the Architect and/or other parties as the provisions of the Contract Documents may require.
   1. Applications for required Construction Permits
   2. Requests for Interpretation. (RFI)
   3. Requests for substitution.
   4. Shop drawings, product data, and samples.
   5. Test and inspection reports.
   6. Design data.
   7. Manufacturer's instructions and field reports.
   8. Applications for payment and change order requests.
   9. Progress schedules.
   10. Coordination drawings.
   11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Owner's Representative (Clerk of the Works or professional in similar capacity). Person responsible for administrative and management duties on behalf of the Owner during the course of the Project.
   3. Architect.
   4. Contractor: Prime Contractor and each Sub-prime Contractor.

C. Prior to this meeting, the following shall be completed:

1. Execution of Owner-Contractor Agreement and all supplemental documents as described in the Form of Proposal.
2. Construction Permits shall have been secured.
3. Submission of executed bonds and insurance certificates.
4. Affirmative Action documentation.
5. Distribution of Contract Documents.

D. Agenda:
1. Responsibilities of each party involved with the Project.
2. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
3. Designation of personnel representing the parties in Contract, Owner, Owner's Representative, and the Architect.
4. Review of the procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
5. Scheduling and Phasing of the work.
6. Use of premises by Owner and Contractor.
7. Owner’s requirements.
8. Construction facilities and controls provided by Owner.
9. Temporary utilities provided by Owner.
10. Survey and building layout.
11. Security and housekeeping procedures.
12. Application for payment procedures.
13. Procedures for testing.
14. Procedures for maintaining record documents.

E. The Architect shall record minutes and distribute copies within two business days after meeting to participants, with one copy each to the Architect, Owner, Owner's Representative, other participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Owner will schedule a meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
1. Contractor
2. Owner.
3. Architect.
4. Contractor's Superintendent.
5. Sub-prime Contractors.

C. Agenda:
1. Use of premises by Owner and Contractor.
2. Owner's requirements and occupancy prior to completion.
3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey and building layout.
6. Vehicular access requirements for the Owner and the Contractor.

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

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum semi-monthly intervals.

B. Attendance Required: Project coordinator, Job superintendent for each Sub-prime Contractor, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.

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

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

3.04 COORDINATION DRAWINGS

A. Each Prime Contractor shall prepare, as a submittal, any additional drawings required for the coordination of different, interfacing aspects of the work.

B. Review drawings prior to submission to Architect.

3.05 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
1. Product data.
2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 - CLOSEOUT SUBMITTALS.

3.06 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Certificates.

3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Copies of the applicable portions of reference standards to permit review by the Architect to verify compliance with the Contract Documents.
8. Other types indicated.

B. Submit for the Architect's knowledge as contract administrator or for the Owner. No action will be taken.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

B. Refer to Sections 01700 - Execution Requirements and 01780 - Closeout Submittals for additional closeout requirements.

3.08 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:
1. Small size sheets, not larger than 8-1/2 x 11 inches: Submit four (4) copies for action by Architect and/or their Consulting Engineers.

B. Documents for Information: Only submit two copies.

C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.

D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES

A. Transmit each submittal with AIA Form G810.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply Contractor's stamp, signed and dated by an authorized representative, certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
1. Submittals received without the Contractor's Stamp and Approval shall be rejected.

E. Deliver submittals to Architect at business address.

F. Schedule submittals to expedite the Project, and coordinate submission of related items.

G. For each submittal for review, allow 10 business days excluding delivery time to and from the Contractor.

H. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

I. Provide space for Contractor and Architect review stamps.
   1. Submittals will be marked by the Architect or his Consultants with one of four statements which will have language similar to the following.
      a. "No Exceptions Noted" which indicates the submission may be used in conjunction with the Project.
      b. "Corrections as Noted" which indicates the submission may be used in conjunction with the Project provided the reviewer's modifications on the submittal are incorporated into the Work as if they were part of the original submission.
      c. "Revise and Resubmit" which indicates the submission, in its present form, may not be used in conjunction with the Project and the submittal must be corrected and resubmitted.
      d. "Rejected" which indicates the submission may not be used in conjunction with the Project and does not comply with the Project Requirements. The contractor must submit a different item.
   2. Submission of a proposed substitution, if rejected, shall be considered as one submittal.

J. When revised for resubmission, identify all changes made since previous submission.

K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

L. Submittals not requested or required by the construction documents will not be recognized or processed.

3.10 EXCESSIVE SUBMITTALS

A. The Contractor is responsible for verifying that each submittal is complete, accurate, in compliance with the Project Requirements and presented in a manner which enables the Architect to determine compliance by referencing only the Drawings and/or Specifications.

B. The Contractor will be responsible for delays in the Work and the Construction Schedule caused by submittals that are rejected due to failure to demonstrate compliance with the Project Requirements, incompleteness, failure of the Contractor to sign and approve the submittal, or any other legitimate reason.

C. Submission of a proposed substitution, if rejected, shall be considered as one submittal of the two submissions permitted for each item.

D. The Architect is responsible to review a submission of any particular item no more than two times.
   1. If, after a second submission of a particular submittal the item is still marked "rejected" or "revise and resubmit", the Architect and his Consultants will be entitled to charge the Owner for ant time used to make further reviews of such submittals.
   2. The Owner may pass along the costs for such additional submittals reviews, as charged by the Architect, to the Contractor. The Owner may also add to the Architect's fees any additional administrative costs it incurs in processing the payments.
      a. The Owner shall invoice the Contractor for these costs and the Contractor shall

render full payment within 10 business days of receipt of the invoice.

b. If the contractor fails to make payment in the allotted time, the Owner may either with hold the Contractor's next progress payment until the matter is resolved or deduct the amount form the next progress payment. Deductions from progress payments will be formalized by a change order to the contract

3.11 COMMUNICATIONS

A. The official language to be used on this project is English, written and spoken.
   1. All communications shall be in English.

B. The Project Superintendent and the superintendents for Sub-prime Contractors shall be fluent in English, both written and verbal and shall be able to communicate effectively with all workers and with the Architect.
   1. At all times when work is underway at the jobsite, the Project Superintendent, or a person or persons as designated by the Superintendent, shall be able to communicate effectively with each worker.

END OF SECTION

SECTION 01325

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, with network analysis diagrams and reports.

1.02 RELATED SECTIONS

A. Section 01100 - Summary: Work sequence.

1.03 REFERENCES

A. M-H (CPM) - CPM in Construction Management - Project Management with CPM, O'Brien, McGraw-Hill Book Company.

1.04 SUBMITTALS

A. This Project shall be constructed in Phases as indicated and included in the Construction Documents.
   1. The requirements for scheduling shall apply to each phase and shall show Substantial Completion being attained for each Phase on or prior to the respective completion dates indicated.
   2. With each submission of a schedule, preliminary or final, the work of the future phase(s) shall be indicated in general terms; the work for the Phase which shall be under construction shall be indicated in specific terms as per these requirements.
   3. For the purposes of scheduling, "days" shall be defined as business days, excluding weekends and holidays

B. Within 10 days after date of Agreement, submit preliminary schedule of Phase One defining planned operations for the first 60 days of Work, with a general outline for remainder of Work. Thirty (30) days prior to the beginning of the work of each future phase submit a preliminary schedule.

C. If a preliminary schedule requires revision after review, submit revised schedule within 10 days.

D. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule of the Phase of work to commence, for review. Indicate and correlate the work of future Phases in general terms indicating that Substantial Completion shall be attained for each Phase on or prior to the completion date identified in the Documents for the respective Phase.

E. Within 10 days after joint review, submit complete schedule.

F. Submit updated schedule with each Application for Payment.

G. Submit the number of opaque reproductions the Contractor requires; two copies, which will be retained by Architect, and two copies for the Owner
   1. Display one copy of the current schedule in the contractor's on-site office trailer where it

shall be accessible to the Owner, Owner's representative and the Architect.

H. Submit under transmittal letter form specified in Section 01300.

1.05 QUALITY ASSURANCE

A. Contractor's Administrative Personnel: 5 years minimum experience in using and monitoring CPM schedules on comparable projects.

1.06 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

B. Diagram Sheet Size: Maximum 22 x 17 inches or width required.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a preliminary network diagram.

3.02 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Identify work of separate stages and other logically grouped activities.

D. Provide sub-schedules for each stage of Work identified in Section 01100.

E. Provide sub-schedules to define critical portions of the entire schedule.

F. Include conferences and meetings in schedule.

G. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.

I. Indicate delivery dates for owner-furnished products.

J. Coordinate content with schedule of values specified in Section 01200.

K. Provide legend for symbols and abbreviations used.

3.03 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method, under concepts and methods outlined in O'Brien's "CPM in Construction Management", McGraw-Hill.

B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
   1. Preceding and following event numbers.
   2. Activity description.
   3. Estimated duration of activity, in maximum 10 day intervals.
   4. Earliest start date.
   5. Earliest finish date.
   6. Actual start date.
   7. Actual finish date.
   8. Latest start date.
   9. Latest finish date.
   10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
   11. Monetary value of activity, keyed to Schedule of Values.
   12. Percentage of activity completed.
   13. Responsibility.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and floats.

E. Required Reports: List activities in sorts or groups:
   1. By preceding work item or event number from lowest to highest.
   2. By amount of float, then in order of early start.
   3. By responsibility in order of earliest possible start date.
   4. In order of latest allowable start dates.
   5. In order of latest allowable finish dates.
   6. Contractor's periodic payment request sorted by Schedule of Values listings.
   7. Listing of basic input data which generates the report.
   8. Listing of activities on the critical path.

3.04 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

3.06 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01400

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance submittals.

B. Mock-ups.

C. Control of installation.

D. Tolerances.

E. Testing and inspection and Testing services.

F. Manufacturers' field services.

1.02 RELATED SECTIONS

A. Section 01300 - Administrative Requirements: Submittal procedures.

B. Section 01425 - Reference Standards.

C. Section 01600 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCES

A. ASTM C 1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants.

B. ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

C. ASTM C 1093 - Standard Practice for Accreditation of Testing Agencies for Unit Masonry.

D. ASTM D 3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

E. ASTM E 329 - Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

F. ASTM E 543 - Standard Practice for Agencies Performing Nondestructive Testing.

G. ASTM E 548 - Standard Guide for General Criteria used for Evaluating Laboratory Competence.

1.04 SUBMITTALS

A. Testing Agency Qualifications: for agencies employed by parties other than the Owner.
   1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by Materials Reference

Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor. This requirement applies to testing, inspections or certifications to be performed by the Owner's testing agency or testing agency employed by the contractor or manufacturer.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test reports are submitted for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
   1. Submit report in duplicate within 10 calendar days of observation to Architect for information.
   2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.05 TESTING AND INSPECTION AGENCIES

A. Except where the responsibility is assigned to others, the Owner will employ and pay for services of an independent testing agency to perform certain on-site specified testing and inspection.

B. Tests and certifications to be performed off-site, as required by the Specifications, for materials, assemblies or products to be incorporated in this Project shall be the responsibility of the contractor and/or manufacturer of the items. Cost for such testing shall be included in the contractor's Base Bid.

C. Engineering services for specific products or assemblies as required by the Specifications shall be the responsibility of the contractor and/or manufacturer of the items. Cost for such services shall be included in the contractor's Base Bid.

D. Employment of agency, by any party, in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

E. Contractor Employed Agency:
1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 548, ASTM E 543, ASTM C 1021, ASTM C 1077, ASTM C 1093, and ASTM C 1021.
2. Inspection agency: Comply with requirements of ASTM D290.
3. Laboratory: Authorized to operate in State in which Project is located.
4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
5. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. See individual specification sections for testing and inspection required.

B. Refer to the provisions of Part 1 of this Section to determine who is responsible for each test and inspection.

C. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
   6. Perform additional tests and inspections required by Architect.
   7. Attend pre-construction meetings and progress meetings when critical issues concerning the quality of the work must be resolved.
   8. Submit reports of all tests/inspections specified.

D. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Except for an agency employed by the Owner that is expressly granted such powers, a testing inspection agency has no authority to stop the Work.

a. The Owner shall notify the other parties, in writing, of the identity of any agency empowered to stop the Work or to modify the methods being used by the contractor or his agents.

E. Contractor Responsibilities:
1. Advise the Owner, according to the progress of the Work, regarding when testing and inspecting will be required.
a. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by or the Owner. Payment for re testing will be charged to the by deducting testing charges from the Contract.
2. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
3. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
4. Provide incidental labor and facilities:
a. To provide access to Work to be tested/inspected.
b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
c. To facilitate tests/inspections.
d. To provide storage and curing of test samples.
5. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
6. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
7. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
8. Promptly correct or replace Work judged to be non-complying as a result of a test and/or inspection

F. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Payment for re testing will be charged to the Contractor by deducting testing charges from the Contract Price.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and to perform inspections or provide certifications, as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Architect, 30 days in advance of required observations.
1. Observer subject to approval of Architect.
2. Observer subject to approval of Owner.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace, as soon as possible, Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

1. Adjustments in payment or to the completion date for the Project or Phase of the Project thereof, shall be formalized by a Change Order.

C. Compensate Owner for any additional costs incurred or damages caused, including additional Architectural or Engineering services, to remedy defects in the Work.
   1. Payment shall be made directly to the Owner.
   2. Owner may withhold an equivalent sum of money from a contractor's application for payment until payment is tendered to the Owner.

END OF SECTION

SECTION 01425

REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements relating to referenced standards.

B. Reference standards full title and edition date.

C. Additional reference standards shall be found in Sections of Divisions 2.

1.02 RELATED SECTIONS

1.03 QUALITY ASSURANCE

A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue specified in the individual specification sections, except where a specific date is established by applicable code.

C. Obtain copies of standards when required by the Contract Documents.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 CONSTRUCTION INDUSTRY ORGANIZATION DOCUMENTS

2.01 AAMA -- AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

B. AAMA 1503.1 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

C. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site.

2.02 AASHTO -- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop.

2.03 ACI -- AMERICAN CONCRETE INSTITUTE INTERNATIONAL

A. ACI 301 - Specifications for Structural Concrete for Buildings.

B. ACI 302.1R - Guide for Concrete Floor and Slab Construction.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

D. ACI 305R - Hot Weather Concreting.

E. ACI 306R - Cold Weather Concreting.

F. ACI 308 - Standard Practice for Curing Concrete.

G. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary.

2.04 AFPA -- AMERICAN FOREST AND PAPER ASSOCIATION

A. AFPA WFCD No.1 - Manual for Wood Frame Construction.

2.05 ANSI -- AMERICAN NATIONAL STANDARDS INSTITUTE

A. ANSI A250.6 - Hardware on Standard Steel Doors (Reinforcement--Application).

B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames.

C. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

2.06 ASTM -- AMERICAN SOCIETY FOR TESTING AND MATERIALS

A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel.

B. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

C. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM A 185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

F. ASTM A 591/A 591M - Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Weight (Mass) Applications.

G. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

H. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

I. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric.

J. ASTM C 28/C 28M - Standard Specification for Gypsum Plasters.

K. ASTM C 33 - Standard Specification for Concrete Aggregates.

L. ASTM C 35 - Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster.

M. ASTM C 36/C 36M - Standard Specification for Gypsum Wallboard.

N. ASTM C 62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).

O. ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.

P. ASTM C 79 - Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board.

Q. ASTM C 91 - Standard Specification for Masonry Cement.

R. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.

S. ASTM C 150 - Standard Specification for Portland Cement.

T. ASTM C 171 - Standard Specification for Sheet Materials for Curing Concrete.

U. ASTM C 206 - Standard Specification for Finishing Hydrated Lime.

V. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.

W. ASTM C 216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale).

X. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.

Y. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.

Z. ASTM C 330 - Standard Specification for Lightweight Aggregates for Structural Concrete.

AA. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout.

AB. ASTM C 475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

AC. ASTM C 476 - Standard Specification for Grout for Masonry.

AD. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete.

AE. ASTM C 514 - Standard Specification for Nails for the Application of Gypsum Board.

AF. ASTM C 557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

AG. ASTM C 587 - Standard Specification for Gypsum Veneer Plaster.

AH. ASTM C 588/C 588M - Standard Specification for Gypsum Base for Veneer Plasters.

AI. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

AJ. ASTM C 630/C 630M - Standard Specification for Water-Resistant Gypsum Backing Board.

AK. ASTM C 631 - Standard Specification for Bonding Compounds for Interior Gypsum Plastering.

AL. ASTM C 635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

AM. ASTM C 636/C 630M - Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

AN. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members.

AO. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

AP. ASTM C 834 - Standard Specification for Latex Sealants.

AQ. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board.

AR. ASTM C 842 - Standard Specification for Application of Interior Gypsum Plaster.

AS. ASTM C 843 - Standard Specification for Application of Gypsum Veneer Plaster.

AT. ASTM C 844 - Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster.

AU. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

AV. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications.

AW. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.

AX. ASTM C 955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.

AY. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.

B. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

BA. ASTM C 1036 - Standard Specification for Flat Glass.

BB. ASTM C 1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base.

BC. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated

and Uncoated Glass.

BD. ASTM C 1193 - Standard Guide for Use of Joint Sealants.

BE. ASTM C 1364 - Standard Specification for Architectural Cast Stone.

BF. ASTM D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

BG. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

BH. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

BI. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)).

BJ. ASTM D 1667 - Standard Specification for Flexible Cellular Materials--Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).

BK. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

BL. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

BM. ASTM D 2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

BN. ASTM D 2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.

BO. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

BP. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

BQ. ASTM D 3597 - Standard Specification for Woven Upholstery Fabrics--Plain, Tufted, or Flocked.

BR. ASTM D 4637 - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.

BS. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

BT. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

BU. ASTM E 336 - Standard Test Method for Measurement of Airborne Sound Insulation in Buildings.

BV. ASTM E 413 - Classification for Rating Sound Insulation.

BW. ASTM E 580 - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.

BX. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

BY. ASTM E 662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

C. ASTM E 773 - Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units.

CA. ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units.

CB. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products.

CC. ASTM E 1352 - Standard Test Method for Cigarette Ignition Resistance of Mock-Up Upholstered Furniture Assemblies.

CD. ASTM E 1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems.

CE. ASTM E 1537 - Standard Test Method for Fire Testing of Upholstered Furniture.

CF. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

CG. ASTM F 1066 - Standard Specification for Vinyl Composition Floor Tile.

CH. ASTM F 1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing.

2.07 AWI -- ARCHITECTURAL WOODWORK INSTITUTE

A. AWI P-200 - Architectural Woodwork Quality Standards Illustrated.

2.08 AWPA -- AMERICAN WOOD-PRESERVERS' ASSOCIATION

A. AWPA C1 – All Timber Products -- Preservative Treatment by Pressure Processes.

B. AWPA C20 - Structural Lumber -- Fire-Retardant Treatment by Pressure Processes.

C. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes.

2.09 CRI -- CARPET AND RUG INSTITUTE

A. CRI 104 - Standard for Installation of Commercial Textile Floorcovering Materials.

2.10 DHI -- DOOR AND HARDWARE INSTITUTE

A. DHI A115.1G - Installation Guide for Doors and Hardware.

2.11 FM -- FACTORY MUTUAL RESEARCH CORPORATION

A. FM DS 1-28 - Insulated Steel Deck Construction.

B. FM P7825 - Approval Guide; current edition.

2.12 GA -- GYPSUM ASSOCIATION

A. GA-216 - Application and Finishing of Gypsum Board.

B. GA-600 - Fire Resistance Design Manual.

2.13 GANA -- GLASS ASSOCIATION OF NORTH AMERICA

A. GANA (GM) - GANA Glazing Manual.

B. GANA (SM) - FGMA Sealant Manual.

C. GANA (LGDG) - Laminated Glass Design Guide.

2.14 HPVA -- HARDWOOD PLYWOOD VENEER ASSOCIATION

A. HPVA HP-1 - Standard for Hardwood and Decorative Plywood.

2.15 ITS -- INTERTEK TESTING SERVICES NA, INC.

A. ITS (DIR) - Directory of Listed Products; current edition.

2.16 NFPA -- NATIONAL FIRE PROTECTION ASSOCIATION

A. NFPA 10 - Standard for Portable Fire Extinguishers.

B. NFPA 70 - National Electrical Code.

C. NFPA 72 - National Fire Alarm Code.

D. NFPA 80 - Standard for Fire Doors and Fire Windows.

E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

F. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

G. NFPA 261 - Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes; National Fire Protection Association.

H. NFPA 266 - Standard Method of Test for Fire Characteristics of Upholstered Furniture Exposed to Flaming Ignition Source; National Fire Protection Association.

2.17 NJSS -- NEW JERSEY DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION"

2.18 SDI -- STEEL DOOR INSTITUTE

A. SDI 113 - Test Procedure and Acceptance Criteria for Apparent Thermal Performance of Steel Door and Frame Assemblies.

2.19 SPIB -- SOUTHERN PINE INSPECTION BUREAU, INC.

A. SPIB (GR) - Standard Grading Rules for Southern Pine Lumber.

2.20 SSPC -- THE SOCIETY FOR PROTECTIVE COATINGS

A. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

2.21 UL -- UNDERWRITERS LABORATORIES INC.

A. UL (BMD) - Building Materials Directory; current edition.

B. UL (FPED) - Fire Protection Equipment Directory; current edition.

C. UL (FRD) - Fire Resistance Directory; current edition.

D. UL (RMSD) - Roofing Materials and Systems Directory; current edition.

E. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

2.22 WWPA -- WESTERN WOOD PRODUCTS ASSOCIATION

A. WWPA G-5 - Western Lumber Grading Rules.

PART 3 US GOVERNMENT AND RELATED AGENCIES DOCUMENTS

3.01 COE -- CORPS OF ENGINEERS, U.S. ARMY

A. COE CRD-C 513 - COE Specifications for Rubber Waterstops.

3.02 PS - PRODUCT STANDARDS

A. PS 1 - Construction and Industrial Plywood.

B. PS 20 - American Softwood Lumber Standard.

END OF SECTION

SECTION 01450

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for cutting and patching.
   1. Related Sections: The following Sections contain requirements that relate to this Section:
      a. Division 1 Section "Coordination" for procedures for coordinating cutting and patching with other construction activities.
      b. Division 2 Section "Minor Demolition" for demolition of selected portions of the building for remodeling.
      c. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.02 DEFINITIONS

A. Cutting and Patching is defined as the work necessary to incorporate the new Work of the Project with the existing building and/or site.

B. Cutting and Patching shall use any materials which are necessary to achieve incorporation of the new work with the existing conditions and, except where otherwise noted or impractical in terms of current building methodologies, shall use materials which are the same as those being cut and patched.

C. Cutting and Patching includes reconstruction of portions of the building as may be required to make transitions between new Work and the existing construction.

D. Cutting and Patching, shall, by its nature, involve demolition, removals, and salvaging of existing materials for reuse and reinstallation regardless of whether same are indicated in the Construction Documents.

E. Cutting and Patching shall include, but not be limited to, General Construction work, limited Structural work, Plumbing work, Mechanical work and Electrical work.

1.03 DESCRIPTION AND APPLICATION - SINGLE PRIME CONTRACT

A. The work of this Project includes the renovation and or addition to an existing building and, as such, will require Cutting and Patching in order to execute the Work.

B. Cutting and Patching is implied by the nature of the Work and, in general, is not specifically identified on the Drawings or described in other sections of the Specifications.

C. The Contractor is responsible for any and all Cutting and or Patching which may be required to execute the intent of the Construction Documents.
   1. Perform Cutting and Patching as the conditions of the Work require whether or not the Construction Documents indicate Cutting and Patching.
   2. Except where otherwise noted, perform Cutting and Patching to incorporate the new work with the existing construction such that, when completed, the transition between the new work and the existing construction is not visually and tactually perceptible.
   3. Perform Cutting and Patching using the appropriate methods and materials; employing the appropriate skilled labor and techniques as each situation may require.

4. Maintain the structural integrity of the existing construction which shall remain after the completion of the work.
5. Maintain existing Plumbing, Mechanical, Electrical, security, fire protection, communication, and other similar systems which are to remain in effect after the completion of the Work
6. Restore, to original or better condition, any existing Plumbing, Mechanical, Electrical, security, fire protection, communication, and other similar systems which are affected by the activities of the Work
7. Restore, to original or better condition, any existing construction, finishes, structural elements or other components of the building which are affected by the activities of the Work
8. Perform any refinishing, painting, coating, or similar surface treatment as required to produce an indistinguishable transition between the new Work and the existing construction.

D. Salvage and Preservation:
   1. An express goal of this Project to minimize the impact of the new Work upon the existing building.
   2. Where practical, and where not prohibited by the Construction documents, building code, or good practice, existing components, which are not readily replaced and which are suitable for reuses, shall be carefully removed, salvaged, suitably stored and, at the appropriate time, reinstalled.
      a. Items which the Owner wishes to save shall be carefully removed and protected and stored in a location, on site, as directed by the Owner.
   3. Items which the Owner does not wish to save shall be legally disposed.
   4. Unique or irreplaceable components of the existing building or site which are not to be used in the new work shall, prior to commencing the Work, be identified, listed and presented to the Owner for response. .

1.04 RELATED DOCUMENTS

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

1.05 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Cutting and Patching Proposal: Submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Owner requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:
   1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
   2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
   3. List products to be used and firms or entities that will perform Work.
   4. Indicate dates when cutting and patching will be performed.
   5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
   6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
   7. Approval by the Architect to proceed with cutting and patching does not waive the

Architect's right to later require complete removal and replacement of unsatisfactory work.

C. Materials and Products
   1. Materials and Products as may be listed herein are not inclusive of all the materials required to execute the Cutting and Patching required for this project
   2. Provide whatever materials and products that are necessary for the execution of the Cutting and Patching work whether or not such materials and products are included in any of the Section of the Project Specifications.
   3. Where products or materials are specified in the Project Specifications provide items which comply with the specifications, otherwise provide products and materials of the quality and type which are appropriate for each specific cutting and patching condition.
   4. Except for materials and products submitted and accepted pursuant to other sections of these specifications, furnish the following:
      a. Product Data: Provide data on plaster materials, characteristics, and limitations of products specified.
      b. Samples: Where required by the Architect based upon the nature of the cutting and patching condition, submit three samples, 6 x 6 inch in size illustrating finish color and texture.
   5. Shop Drawings:
      a. Where required by the Architect based upon the nature of the cutting and patching condition, furnish detailed shop drawing indicating the proposed work incorporating the affected existing conditions.
      b. Include field measurements of existing conditions and those of the related new construction. Include photographs of conditions which cannot be adequately described by other means.

D. Project Record Documents: Record actual locations of Cutting and Patching and include in the record drawings required for Project Closeout.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing any portion of the cutting and patching work with minimum 5 years of experience.

B. Plumbing, Mechanical and Electrical work shall be designed under the direct supervision of a Professional Engineer experienced in design of this Work and licensed in [New Jersey].

C. Design Structural Work under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in New Jersey.
   1. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
   2. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
      a. Foundation construction.
      b. Structural concrete
      c. Structural steel.
      d. Lintels.
      e. Timber and primary wood framing.
      f. Structural decking.
      g. Miscellaneous structural metals.
      h. Equipment supports.
      i. Piping, ductwork, vessels, and equipment.

D. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased

maintenance or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
    a. Primary operational systems and equipment
    b. Air or smoke barriers.
    c. Water, moisture, or vapor barriers.
    d. Membranes and flashings.
    e. Fire protection systems
    f. Noise and vibration control elements and systems.
    g. Control systems.
    h. Communication systems.
    i. Electrical wiring systems.

E. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1. If possible retain the original Installer or fabricator to cut and patch the exposed Work listed below. If it is impossible to engage the original Installer or fabricator, engage another recognized experienced and specialized firm.
    a. Processed concrete finishes.
    b. Stonework and stone masonry.
    c. Ornamental metal.
    d. Matched-veneer woodwork.
    e. Firestopping
    f. Window wall system.
    g. Stucco and ornamental plaster.
    h. Acoustical ceilings.
    i. Finished wood flooring.
    j. Fluid-applied flooring.
    k. Carpeting.
    l. Aggregate wall coating
    m. Wall covering.
    n. HVAC enclosures, cabinets, or covers.

F. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.

G. Engineered work or systems designed by the Contractor's engineer(s) shall be reviewed for coordination and compliance by the Engineer of record for the Project.

1.07 MOCK-UP

A. Provide as may be required by the Architect for one or more cutting and patching conditions, a mock-up, 5 feet long by 5 feet wide, illustrating a sample of the area to be cut and patched.

B. Locate where directed.

C. Mock-up may remain as part of the Work.

1.08 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a one year period after Date of Substantial Completion, except where other, superceding warranties apply.

C. Perform work in a manner which shall not void, diminish or compromise any warranties associated with this project or which pre-existed this project.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

B. Some materials and products mare mentioned in this section since they are common to typical patching applications. Other materials and products may be required to perform patching work. The fact that certain patching materials or products are not indicated within this section does not, in any way, preclude the use of such materials where conditions require.

C. Plaster: Comply with ASTM C 842
   1. Base Coat: Ready-mixed, sand aggregate gypsum plaster base
   2. Finish Coat: Ready-mixed gypsum finish plaster.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Temporary Support: Provide temporary support of work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 INSTALLATION

A. When using products or materials which are not specified which the Specifications, Install in accordance with manufacturer's instructions.

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

C. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
   1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
   3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
   4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
   5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

D. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
   1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
   2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
   4. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

E. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.
   1. Unless otherwise indicated, provide 3-coat work.
   2. Finish gypsum plaster to match existing adjacent surfaces. Sand lightly to remove trowel marks and arises.
   3. Cut, patch, point-up, and repair plaster to accommodate other construction.

3.04 CLEANING AND PROTECTION

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition

B. Protect patched areas in the same manner as for new work of an equivalent type.

C. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities.

B. Temporary Communication to the job site

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures.

E. Security requirements.

F. Vehicular access and parking.

G. Waste removal facilities and services.

H. Field offices.

1.02 TEMPORARY UTILITIES

A. Provide and pay for all electrical power, lighting, heating and cooling, and ventilation which may be required for construction purposes.
   1. Water may be obtained from existing services on site. Provide modifications of existing facilities where necessary to serve the needs of construction operations.
      a. Restore water service utilities to original condition or better condition at the completion of the Work.
   2. Provide security lighting in the Work area and in and around the building and site during non-working hours. Extent of security lighting shall be that as determined by the Owner and/or law enforcement authorities, whichever is more stringent.

B. Existing facilities may be used with limitations if permitted, in writing by the Owner. Contractor shall assume, when bidding, that no existing facilities will be available.

C. New permanent facilities may be used with limitations.

D. Remove all temporary facilities at the completion of the Work or sooner, where requirements of the work permit. Restore affected areas to original or better condition.

1.03 COMMUNICATION SERVICE

A. Contractor shall establish a means of communication which shall allow the Owner, his representative and the Architect to communicate with the job site during periods when work is underway.
   1. A cellular phone or a pager may be used for this purpose.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
   1. Provide portable toilet facilities of the type and number as acceptable to the local Board of Health. At no time shall less than two portable units be present at the job site.
   2. Have units serviced weekly or sooner as usage may require.
   3. Locate portable toilets within a fenced or secure area and to be convenient to the areas subject to work
   4. Set portable toilet on level grade and away from areas which collect rain water and away from vehicular traffic routes. Provide stabilizing anchors, chains, stakes to prevent tip over and to discourage vandalism.

B. Use of existing facilities is not permitted.

C. New permanent facilities may not be used during construction operations.

1.05 BARRIERS

A. Provide barriers and fencing to prevent unauthorized entry into construction area and to allow Owner to continue to use other areas adjacent to the Work Area, to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide protection for plants designated to remain. Replace damaged plants.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

(Not Used)

1.07 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Do not permit unauthorized persons within the protected Work Area.

C. The Owner, its designated representatives, the Architect and his consultants shall be permitted access to the Work Area and the new building at any time.

D. Coordinate with Owner's security program.

1.08 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

D. Existing on-site roads may be used for construction traffic.

E. A limited number of existing parking areas, as established by the Owner located at the Job site may be used for construction parking during the summer recess.
   1. At other times of the year, the contractor shall park off-site.

1.09 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Dispose of waste off-site weekly or more frequently as project activities may dictate.

C. Locate containers on stabilized earth or pavement to facilitate removal and replacement. Provide clear area around containers to facilitate access of vehicles servicing containers.
   1. Locate containers within protected Work Area.

1.10 FIELD OFFICES

A. At the contractor's option, a single field office may be located within the work area. Coordinate location with Owner.

B. Locate offices a minimum distance of 30 feet from existing and new structures.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01565

SECURITY MEASURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Site security measures.

1.02 RELATED SECTIONS

A. Section 01100 - Summary: use of premises and occupancy.

B. Section 01500 - Temporary Facilities and Controls: Temporary lighting, site fence, and barriers and enclosures.

1.03 SECURITY PROGRAM

A. Protect Work, existing premises and Owner's operations from theft, vandalism, and unauthorized entry.

B. Initiate program at project mobilization.

C. Maintain program throughout construction period until Owner acceptance precludes the need for Contractor security.

1.04 ENTRY CONTROL

A. Restrict entrance of persons and vehicles into Project site and existing facilities.

B. Allow entrance only to authorized persons with proper identification.

C. Maintain log of workers and visitors, make available to Owner on request.

D. Owner will control entrance of persons and vehicles related to Owner's operations.

E. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

1.05 PERSONNEL IDENTIFICATION

A. Each person who enters the jobsite and who is associated in any capacity with the work, shall, at all times, possess complete identification and any other security identification as the Owner may deem necessary.
   1. Each person at the jobsite shall produce identification when requested by the Owner, Owner’s Representative, Architect or any other person the Owner authorizes to maintain security.
   2. Persons without proper identification shall immediately leave the jobsite.
   3. The contractor shall assign security duties to the Project superintendent or other responsible person(s) in his employ. The person in charge of security shall be on site at all times when any work is underway.

B. The Project Superintendent shall maintain a daily record of the identification of workers for all contractors, subcontractors and other persons, under his control, who are associated with the

project.

C. Communications and Language: See Section - 01300, Administrative Requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTIONS - NOT USED

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Spare parts and maintenance materials.

1.02 RELATED SECTIONS

A. Document 00200 - Instructions to Bidders: Product options and substitution procedures prior to bid date.

B. Section 01400 - Quality Requirements: Product quality monitoring.

1.03 REFERENCES

A. NFPA 70 - National Electrical Code - 2014.

1.04 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit within 45 days after date of Agreement.
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

E. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Do not use products having any of the following characteristics:
   1. Made using or containing CFC's or HCFC's.

C. Provide interchangeable components of the same manufacture for components being replaced.

D. Motors: Refer to Section 15065, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

E. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

F. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.03 PRODUCT OPTIONS

A. Products specified by reference standard or by description only:
   1. Use any Product meeting those specified standards or description.

B. Products specified by naming two or more manufacturers with a provision for substitutions:
   1. Submit a request for substitution for any manufacturer not named.

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2.04 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Substitutions may be considered when a product becomes unavailable through no fault of the

Contractor.

1. Substitutions for Finish Materials and Products Specified Primarily for Appearance.
    a. Substitutions submitted for finish materials must equal or exceed performance and construction requirements of the specified product(s).
    b. Substitutions must match the appearance of the specified product(s) including, but not limited to, pattern(s), color(s) and texture(s) of the specified products.
    c. When matching the appearance of a specified product, a proposed substitution must be indistinguishable from the specified product and shall provide an equivalent range of colors, patterns textures to the range provided by specified product.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

D. A request for substitution constitutes a representation that the submitter:
    1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
    2. Will provide the same warranty for the substitution as for the specified product.
    3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
    4. Waives claims for additional costs or time extension which may subsequently become apparent.
    5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:
    1. Submit three copies of request for substitution for consideration and the comparable information for the specified product(s). Limit each request to one proposed substitution.
    2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
    3. The Architect will notify Contractor in writing of decision to accept or reject request.
        a. Requests for substitutions shall be submitted during the bidding period and, if accepted, will be formally accepted by means of issuing an Addendum to the Bid Documents.
        b. Failure to issue an Addendum during the bid period within five business days of receipt by the Architect shall constitute rejection of the substitution.
        c. In the unusual circumstance that a substitution must be considered after bids are received, notification of acceptance or rejection shall be in writing.
            1) For products which are accepted and for which a credit is due the client or for which the Contract Completion Date is to be changed, a Change Order shall represent formal acceptance of a substitution.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are

correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01600

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition.

C. Pre-installation meetings.

D. Cleaning and protection.

E. Starting of systems and equipment.

F. Demonstration and instruction of Owner personnel.

G. Closeout procedures, except payment procedures.

1.02 RELATED SECTIONS

A. Section 01100 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01300 - Administrative Requirements: Submittals procedures.

C. Section 01400 - Quality Requirements: Testing and inspection procedures.

D. Section 01500 - Temporary Facilities and Controls: Temporary interior partitions.

E. Section 01780 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

F. Section 07840 - Firestopping.

G. Individual Product Specification Sections:
   1. Advance notification to other sections of openings required in work of those sections.
   2. Limitations on cutting structural members.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

1.04 PROJECT CONDITIONS

A. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations both interior and exterior.

E. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work, infesting the site or any portion of the existing building and the addition constructed under any phase.
   1. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
   2. Where infestation of any kind is discovered, immediately notify Owner and advise him as to what steps will be immediately taken to eliminate the infestation and what periodic preventative means will be employed to prevent future infestations
      a. Submit a detailed plan for eliminating the infestation for review by the Owner. Follow procedures for submittals as found in Section 01300, Administrative Requirements.
   3. Do not use any chemicals to treat any infestation without obtaining the Owner's written approval
   4. Use only methods and materials, which have been submitted and accepted by the Owner.

F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

G. Contractor to provide exterior access to roofs. Contactor shall not transport tools, equipment and material through building at any time of construction.

1.05 COORDINATION

A. See Section 01100 for occupancy-related requirements.

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

C. Notify affected utility companies and comply with their requirements.

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

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

F. In all areas subject to new work, except as otherwise indicated, conceal pipes, ducts, and

wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of work of separate sections.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that demolition is complete in alterations areas and areas are ready for installation of new work.

C. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

D. Examine and verify specific conditions described in individual specification sections.

E. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or mis-fabrication.

F. Verify that utility services are available, of the correct characteristics, and in the correct locations.

G. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.

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

C. Notify Architect five business days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of installation, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.04 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Separate areas in which alterations are being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01500 in locations indicated on drawings.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, Alarm Systems and Security Systems): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
      a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
      b. Provide temporary connections as required to maintain existing systems in service.
   4. Verify that abandoned services serve only abandoned facilities.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.

3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

F. Adapt existing work to fit new work:

G. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

H. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

I. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.

J. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

K. Refinish existing surfaces as indicated:

L. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.

M. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
1. Patch as specified for patching new work.

N. Clean existing systems and equipment.

O. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

P. Do not begin new construction in alterations areas before demolition is complete.

Q. Comply with all other applicable requirements of this section.

3.05 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do no burn or bury.

3.06 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Prohibit traffic from landscaped areas.

H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.07 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect and owner seven days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.08 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Provide a qualified person who is knowledgeable about the Project to perform demonstration for, and instruction of owner personnel.

E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.09 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

B. Testing, adjusting, and balancing HVAC systems: See Section 01400 and Division 15.

3.10 FINAL CLEANING

A. Execute final cleaning after Substantial Completion but before making final application for payment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Use cleaning materials that are non-hazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
   1. Perform all final cleaning, polishing, conditioning and similar procedures as indicated in individual. Sections of finish materials.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean reusable filters of operating equipment; replace throw-away type filters.

F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

I. Clean Owner-occupied areas of work.

3.11 CLOSEOUT PROCEDURES

A. Make submittals for Substantial Completion of the project that are required by governing or other authorities.
   1. Provide copies to Architect and Owner.

B. Notify Architect when work is considered substantially complete

C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.
   1. Submit a detailed punch list of any unfinished or unacceptable work, if any, at the point of

Substantial Completion to be reviewed by the Architect and Owner. This list, and any amendments made by the Architect or Owner, shall be included in the Certificate of Substantial Completion.

D. Owner will occupy portions of the building as specified in Section 01100.

E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

F. Accompany Architect and Owner's Representative on preliminary final inspection.

G. Notify Architect and Owner when work is considered finally complete.
   1. The Architect, Owner and any other parties having jurisdiction shall inspect the completed work and, if necessary prepare a list of uncompleted or unacceptable Work

H. Complete items of work determined by Architect's final inspection.
   1. The Architect, Owner and any other parties having jurisdiction shall re-inspect the completed work and, if necessary prepare a list of uncompleted or unacceptable Work
   2. Should any additional inspections be required by the Architect, the Architect shall, as additional services, invoice the cost of the inspections and associated reports or lists to the Owner. The Owner shall pass along those costs to the contractor and deduct same, along with any other costs associated with the contractor's failure to complete the Work after the aforementioned inspection procedure, from the final payment due the contractor.
      a. These costs shall be administrated according to the provisions of the General and Supplementary Conditions

END OF SECTION

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

D. Submittals

1.02 RELATED SECTIONS

A. Conditions of the Contract: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01300 - Administrative Requirements: Submittals procedures, shop drawings, schedules, product data, and samples.

C. Section 01700 - Execution Requirements: Contract closeout procedures.

D. Individual Product Sections: Specific requirements for operation and maintenance data.

E. Individual Product Sections: Warranties required for specific products or Work.

1.03 CLOSEOUT PROCEDURES

A. When Substantial Completion is attained for the Project:
   1. All Closeout requirements shall be satisfied.
   2. A Certificate of Occupancy and any other governmental approvals which are necessary to permit the Owner full use of the entire Project, and which may not have been necessary at the completion of preceding Phases, shall be obtained upon the completion of the Project.
   3. Retainage: Retainage shall only be released at the Final Completion of the Project, unless the Owner agrees otherwise.

1.04 SUBMITTALS

A. Project Record Documents: Submit documents to Architect a minimum of 15 days prior to the submission of the Application for final Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final

inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
   2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment for that Phase.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.
   4. Maintenance Bond
      a. Submit a Maintenance Bond from a surety which is empowered to do business in the State of New Jersey.
      b. Bond Value: 10% of the final contract value of the Project.
      c. Bond shall be effective on date of Final Completion or Final Payment, whichever occurs first and shall be effective for a minimum of one year.
      d. The bond shall guarantee that should the contractor fail to satisfy any legitimate claim regarding warranties, guarantees or other defective work within 30 calendar days of written notice by the Owner, the surety shall satisfy the claim up to the value of the bond.
      e. The issuance of a Maintenance Bond shall in no way supersede or replace responsibilities of the contractor and its surety to satisfy claims by the Owner made subsequent to Final Completion.

D. Contractor Submittals
   1. Release of Lien: Submit a release of lien for the prime contractor, each sub-prime contractor and every other subcontractor who performed work on the Project. Submit a release of lien for any other party as the Owner may require.
      a. A release of lien shall be a separate instrument for one contracting party and shall be unconditional.
         1) The release shall not be conditional or dependent upon payment or any other act by the Owner or other party.
      b. Contractors or subcontractors shall submit a release of lien for every Phase of the Work in which they performed work.
      c. The prime contractor, each sub-prime contractor and every other subcontractor who performed work shall furnish a release of lien.
   2. Contractor's Affidavit of Payment of Debts and Claims: Submit AIA Document G706 for each prime contractor and sub-prime contractor.
      a. The prime contractor, each sub-prime contractor and every other subcontractor who performed work shall, furnish an affidavit.
   3. Architect Final Inspection List: At the completion of the Work, the prime contractor and each sub-prime contractor shall submit a copy of the Architect's Final Inspection List and certify in writing that all items on the list have been satisfied.
   4. Final Accounting Statement: Submit a final accounting statement indicating the Original Contract Sum and all change orders, construction change directives, liquidated damages (where applicable), retain ages and other documents which affected the cost or completion date of the Project.
      a. Include copies of all documents, arranged chronologically by prime contract.
      b. Liquidated Damages: where applicable, submit final accounting of liquidated damages.
   5. Contractor's Debts to Others: Show proof that all monies due the Owner or its consultants for services, fees, penalties or other costs incurred during course of the work have been satisfied.
   6. Consent of Surety for Final Payment: Submit a separate document from the issuing surety for each party for which separate bonds were obtained for the Project.
   7. Insurance: Submit proof of continuing insurance coverage for all contractors through Final

Completion.
   a. In situation where the insurance certificates are effective for a limited period of time, provide proof of continuing insurance coverage at regular intervals during the course of the Project. The intervals shall correspond with the effective periods on the certificates.
8. Submit any other documents or proofs as the Owner may require.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as

maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

C. Include color coded wiring diagrams as installed.

D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

F. Provide servicing and lubrication schedule, and list of lubricants required.

G. Include manufacturer's printed operation and maintenance instructions.

H. Include sequence of operation by controls manufacturer.

I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

J. Provide control diagrams by controls manufacturer as installed.

K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

N. Include test and balancing reports.

O. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Photocopies of warranties and bonds.

J. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

K. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 02223

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of designated building equipment and fixtures.

B. Removal of designated construction.

C. Disposal of materials.

D. Identification of utilities.

E. By definition, for the purposes of this Section, "Demolition" shall include work described as "Removals", "Removal and Salvage" and may include cutting and patching as described in another Section.

1.02 RELATED SECTIONS

A. Section 01100 - Summary: Work sequence, continued occupancy of the building and handling of regulated materials.

B. Section 01450 - Cutting and Patching

C. Section 01500 - Temporary Facilities and Controls: Temporary enclosures.

D. Section 01700 - Execution Requirements: Re-installation of removed components.

E. Section 01780 - Closeout Submittals: Project record documents.

1.03 DEMOLITION PLANS

A. The Demolition Plan(s) included in the Drawings shows only the general extent of the demolition required for the Project. Additional demolition and removals, not specifically indicated on the construction documents may be necessary for the proper execution of the Work and shall be assumed to be included in the Work of this Section.

B. Prior to proceeding with any demolition, review the Demolition Plan comparing it to the new Work indicated in the other Contract Documents to ascertain the specific extent and nature of the demolition.
   1. Determine the need for temporary shoring, bracing or other form of stabilization which may be necessary to support the remaining structure until new work is installed or until work of future Phases of the project are completed.
   2. Determine the relationship of the new work to the demolition to ascertain where new structural support or reinforcement may be required to accommodate the new work and which is necessary to support the existing structure to remain.
   3. Determine the relationship of existing Plumbing, HVAC, Electrical, Communications and Security systems to the requirements of the new work to ascertain what portions of the existing system must be maintained for incorporation into the new work. Review, where applicable, demolition drawings for the Plumbing, HVAC and Electrical Work and refer to notes regarding demolition which may be contained in the Drawings or Specifications

C. Coordinate the demolition work required for each stage of the Project with the requirements for future stages in order to identify the extent of the demolition for each stage.
   1. Provide temporary support or other provisions to maintain the integrity of the existing structure until the work of future phases is complete.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate demolition, removal sequence, and location of salvageable items; location and construction of temporary facilities.
   1. Failure to provide a Demolition Shop Drawing shall not relieve the contractor of compliance with the project requirements.

C. Project Record Documents: Accurately record actual locations of capped utilities.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable codes for demolition work, dust control, products requiring electrical disconnection and reconnection, and mechanical (HVAC and plumbing) equipment requiring disconnection and reconnection.

B. Obtain required permits from authorities.

C. Do not close or obstruct egress from any building exit or site exit.

D. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.
   1. In buildings where Asbestos Containing Materials (ACM) have been identified, review the Owner's documents and coordinate work according such that no ACM is disturbed during the course of demolition.
   2. Where asbestos abatement is to be performed as part of this project, coordinate the scheduling of the demolition work so that the asbestos abatement work has been completed prior to the commencement of the demolition work.
   3. Follow provisions of the specifications and applicable laws regarding asbestos and lead paint if these materials are encountered.

1.06 SEQUENCING

A. Sequence work under the applicable provisions of Section 01100.

B. In areas of the building which are currently in use, perform demolition immediately prior to the time when new work is scheduled thereby permitting the Owner the maximum time to use the existing portions of the building.

C. Coordinate planned sequence of the demolition with the Owner's Asbestos Abatement Plan.

1.07 SCHEDULING

A. Schedule work under the provisions of Section 01325 Construction Progress Schedule.

B. Schedule work to coincide with new construction.

C. Schedule work to permit the Owner access to and use of all part of the existing building up to the time where the Project Schedule indicates that new work shall commence.

D. Describe demolition removal procedures and schedule.

E. Perform noisy, malodorous, or dusty work which is deemed disruptive to the operation of the occupied portions of the building:
   1. “OFF Hours” unless other arrangements are approved, in writing, by the Owner's Representative.
      a. Comply with the provisions for work outside of "OFF Hours" as described in Section 01100 Summary.
      b. Do not perform such work during periods of after school or evening activities, unless permitted, in writing, by the Owner's Representative.
      c. Obtain, from the Owner's Representative, the school's schedule of such activities and schedule the demolition accordingly.

1.08 PROJECT CONDITIONS

A. Conduct demolition to minimize interference with adjacent and occupied building areas.

B. Cease operations immediately if, in the opinion of the Owner's Representative, the work is disruptive to, or in conflict with the use of the occupied portions of the building.

C. Cease operations immediately if structure appears to be in danger and notify Architect. Do not resume operations until directed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

A. Provide, erect, and maintain temporary barriers at locations indicated and at other locations as may be required to isolate the area of demolition and allow the balance of the building to be used by the Owner.

B. Erect and maintain weatherproof closures for exterior openings.

C. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued building occupancy.

D. Protect existing construction, finishes, plumbing, mechanical, electrical, communication, fire detection and other building systems that are not to be demolished.
   1. Where demolition disrupts the operation of an essential safety related building systems (communications, fire detection, security, emergency lighting, etc.) provide temporary means to maintain the operation of the system until the operation of the system(s) is restored.

E. Prevent movement of structure; provide bracing and shoring.

F. Notify affected utility companies before starting work and comply with their requirements.

G. Mark location and termination of utilities.

H. Provide appropriate temporary signage including signage for exit or building egress.

3.02 DEMOLITION

A. Disconnect, remove or cap as indicated on the drawings, and identify designated utilities within demolition areas.
   1. Where existing utilities are not identified on the drawings as being capped or removed, terminate or relocate same in a code complying manner as required to accommodate the new work.

B. Demolish in an orderly and careful manner. Protect existing supporting structural members and maintain the structural integrity of all structure which shall remain.

C. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.

D. Remove materials as demolition progresses. Upon completion of demolition, leave areas in clean condition.

E. Remove temporary facilities.

3.03 SCHEDULES

A. Remove, store and protect the following materials and equipment:
   1. Items identified on the drawings or on schedules.

B. Remove the following equipment and materials for Owner's retention. Deliver to location designated by Architect.
   1. Items identified on the drawings or schedules to be removed or salvaged and returned to the Owner.

C. Owner will remove and keep the following material and equipment:
   1. Existing unfixed furniture, furnishings, wall mounted items, furnishings, unfixed finish materials and similar items.

D. Protect the following materials and equipment to remain in place:
   1. Items identified as to remain in place, or if not so identified, which, in their existing condition, do not conflict with the new work.

END OF SECTION

SECTION 05513

METAL STAIRS AND LADDERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aluminum fixed vertical ladders.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Miscellaneous metal supports.

B. Section 06100 - Rough Carpentry: Roof framing and opening support.

1.3 REFERENCES

A. ANSI A14.3: Ladders - Fixed - Safety Requirements.

B. OSHA 1910.27: Fixed Ladders.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. [Product Data]: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings for Ladders:

1. Plan and section of ladder installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products until installation inside under cover. If stored outside, under a tarp or suitable cover.

1.6 WARRANTY

A. Limited Warranty: Five years against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Specification based on Precision Ladders, LLC, which is located at: P. O. Box 2279 ; Morristown, TN 37816-2279; Toll Free Tel: 800-225-7814; Tel: 423-586-2265; Email: info@PrecisionLadders.com; Web: www.PrecisionLadders.com

B. Other manufacturers will be considered if in strict accordance with the minimum standards as set forth in this specification.

C. Obtain all Aluminum fixed vertical ladder and components from a single

manufacturer and single source.

2.2 ALUMINUM FIXED VERTICAL LADDER

A. Aluminum Fixed Vertical Ladder and Components: Ladder, cage, rest platforms, floor mounting brackets, security doors, walk-thru, and side rails.
   1. Model: Model FL -*** (***= vertical height in inches) Aluminum Fixed Vertical Ladder as manufactured by Precision Ladders LLC.
   2. Capacity: Unit shall support a 1000 lb (454 kg) loading without failure.
   3. Performance Standard: Units designed and manufactured to meet or exceed ANSI A14.3 and OSHA 1910.27.

B. Components:
   1. Ladder Stringer: 2-1/2 inch by 1-1/16 inch by 1/8 inch (64 mm by 27 mm by 3 mm) extruded 6005-T5 aluminum channel. Pitch: 90 degrees.
   2. Ladder Tread: 2-1/4 inch by 3/4 inch by 1/4 inch (57 mm by 19 mm by 6 mm) extruded 6005-T5 aluminum with deeply serrated top surface.
   3. Ladder Mounting Bracket: 8-1/2 inch by 2 inch by 3 inch by 1/4 inch thick (216 mm by 51 mm by 76 mm by 6 mm) aluminum angle.
   4. Rest Platform (if applicable):
      a. 1/8 inch (3 mm) aluminum tread plate.
      b. Platform Size: 30” inches by 48 inches (762 mm by 1219 mm) standard.
      c. Toe Boards. 6005 T-5 aluminum.
      d. Handrails: 1-1/4 inch (32 mm) aluminum square tube 42 inches (1067 mm) high.
   5. Security Door (if applicable): 0.125 inch (3 mm) 3003-H14 aluminum panel 84 inches (2134 mm) tall with padlock provision.
   6. Security Gate (if applicable): Hinged gate at bottom of cage with padlock provision.
   7. Fall Prevention System (if applicable): Complete system with rail, sleeves, and harness to limit any fall to 6 inches (152 mm) or less.
   8. Floor Brackets: Floor bracket at foot of each stringer, 3 by 2 by 1/4 inch (76 by 51 by 6 mm).
   9. Finishes:
      a. Standard: Mill finish on aluminum ladder components.

2.3 FABRICATION

A. Completely fabricate ladder ready for installation before shipment to the site.

B. Completely fabricate handrail components, if applicable, and ship to site ready for field assembly and attachment to ladder.

PART 3 EXECUTION

3.1 EXAMINATION

A. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 05513

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preservative treatment of wood.

B. Miscellaneous framing, shims, battens, blocking and sheathing.

1.02 RELATED SECTIONS

A. Section 07531 – Thermoplastic Single-Ply Membrane Roofing

1.03 REFERENCES

A. AFPA WCD 1 T11 - Manual for Wood Frame Construction; American Forest and Paper Association.

B. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.

C. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce).

D. SPIB (GR) - Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau, Inc..

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials, and application instructions.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.

B. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB).

B. Sizes: Nominal sizes as indicated on drawings.

C. Moisture Content: Kiln-dry or MC15.

D. Specie and Grade: No. 2 Select Structural or Dense Select Structural, Southern Yellow Pine; preservative treated.

E. Miscellaneous Blocking, Furring, and Nailers; preservative treated.
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.02 EXPOSED DIMENSION LUMBER

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB).

B. Sizes: Nominal sizes as indicated on drawings.

C. Moisture Content: Kiln-dry or MC15.

D. Specie and Grade: For all other exposed applications No. 2 Select Structural or Dense Select Structural, Southern Yellow Pine; preservative treated.

2.03 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Hot-dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.

B. Joist Hangers and other metal anchors or connection devices: Hot dipped galvanized steel, sized to suit framing conditions. Provide recommended devices manufactured by Simpson or equal.

2.04 FACTORY WOOD TREATMENT

A. Pressure Treatment of Lumber Above Grade: AWPA Treatment C2 using waterborne preservative to 0.25 lb/cu ft retention.
   1. Kiln dry after treatment to maximum moisture content of 15 percent.
   2. Treat all wood to be used in an exterior environment.
   3. Treat wood in contact with masonry or concrete.
   4. Treat wood less than 18 inches above grade.
   5. Treat wood in contact with grade.

B. Pressure Treatment of Lumber in Contact with Soil: AWPA Treatment C2 using waterborne preservative designated in AWPA C2 as suitable for ground contact use to 0.4 lb/cu ft retention.

PART 3 EXECUTION

3.01 INSTALLATION

A. Set wood members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance or application.

B. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA WCD 1 T11.

C. Provide miscellaneous members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.02 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.03 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane (Other than Floors or Walkways): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION

SECTION 07531

THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermoplastic Single-Ply Roofing

B. Insulation, TAPERED AND FLAT.

1.02 RELATED SECTIONS

A. Section 06100 - Rough Carpentry

B. Section 07595 - Preparation for Re-Roofing

1.03 REFERENCES

A. Factory Mutual (FM Global) – Approved Guide.

B. Underwriters Laboratories (UL) – Roofing Systems and Materials Guide (TGFU R1306)

C. American Society for Testing and Materials (ASTM) – Annual Book of ASTM Standards.

D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) – Architectural Sheet Metal Manual.

E. National Roofing Contractors Association (NRCA)

F. American Society of Civil Engineers (ASCE)

1.04 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.05 PERFORMANCE REQUIREMENTS

A. Provide an installed roofing membrane and base flashing system that does not permit the passage of water and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.

B. All primary roofing materials that are to be physically and chemically compatible when installed in accordance with manufacturers current application requirements.

1.06 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's product specifications, installation instructions, and general recommendations for each product.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for insulation including slopes, and details at roof penetrations and mechanical equipment.

D. Details shown on the Drawings reflect the specified manufacturer's recommended details for some of the typical conditions, which may be encountered when installing the roof system. Not all conditions may be indicated.
   1. Prior to preparing the shop Drawings, the installer shall assess the existing conditions and the conditions that will occur due to the new work.
   2. Shop drawings shall identify every roofing condition, which is applicable for the new work whether or not such condition is detailed on the Drawings.
   3. Shop drawing details may deviate from the details indicated on the Drawings provided the proposed detail complies with the manufacturer's requirements for obtaining the specified warranty, will produce a watertight assembly and meets the minimum performance criteria as specified herein.

E. Samples for Verification:
   1. Provide samples of insulations, fasteners, membrane materials and accessories for verification of quality.

F. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, special procedures, and perimeter conditions requiring special attention.

G. Manufacturer's Certificate: Installer shall provide written documentation from the manufacturer of their authorization to install the roof system and eligibility to obtain the warranty specified in this section.

H. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, supplementary instructions given, and assessment of existing roofs to be re-roofed.
   1. Submit report by manufacturer's technical representative evaluating the existing roofs to be reroofed under this project. Include recommendations for testing, substrate preparations and repairs and installation details.

I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.07 QUALITY ASSURANCE

A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
   1. Maintain one copy on site.

B. System components shall be selected to comply with the roofing manufacturer's specifications for a Wind Speed Zone 2 based on ASCE 7-88 for speeds between 80-89 mph.

C. Roofing manufacturer's technical representative shall inspect the existing roofs, which are scheduled for new elastomeric membrane roof and prepare a report evaluating the conditions including recommendations for the new work.

D. Contractor shall perform pull out testing, as per the manufacturer's specifications for mechanical insulation fasteners.

E. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

F. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.
   1. Applicator (Installer) must have a performance rating from the Manufacturer which is equivalent to a better than average rating for the installation of the specified roof system.

G. Source Limitations : All components listed in this section shall be provided by a single manufacturer or approved by the primary roofing manufacturer.

H. Final Inspection: Manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors must be addressed and final punch list completed.

1.08 PRE-INSTALLATION CONFERENCE

A. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, architect, owner, and roofing manufacturer's representative and any other persons directly involved with the performance work. The installer shall record conference discussions to include decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to roofing work.

1.09 REGULATORY REQUIREMENTS

A. All work shall be performed in a safe, professional manner, conforming to all federal, state and local codes.

1.10 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact. Comply with manufacturer's written instructions for proper material storage.

B. Store products in weather protected environment, clear of ground and moisture.

C. Protect foam insulation from direct exposure to sunlight. Slit or remove packaging to permit ventilation and cover with breathable tarpaulin or other suitable waterproof coverings. Stack insulation on pallets above ground or roof deck and tightly covered with waterproof materials. Manufacturer's wrap does not provide sufficient waterproofing.

D. Materials shall be stored above 55 degrees F a minimum of 24 hours prior to application.

1.07 PROJECT COORDINATION

A. Coordinate and sequence the removal and installation of the work with installation of roof insulation, membrane covering and associated roof penetrations and counterflashings installed by other sections as work of this section proceeds.

B. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system

1.08 ENVIRONMENTAL REQUIREMENTS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 90 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Do not install insulation on roof deck when water of any type is present. Do not apply roofing materials when substrate is damp or wet or when proper adhesive temperature cannot be maintained.

1.09 SAFETY

A. The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related.

B. **Safety shall be the responsibility of the roofing contractor.** All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers and the occurrence of the general public on or near the site.

1.10 WARRANTY

A. Provide Manufacturer's standard guarantee with single source coverage and no monetary limitation where the manufacturer agrees to repair or replace components in the roofing system, which cause a leak due to a failure in material or workmanship.
   1. Duration: Twenty (20) years from the date of completion.*

   *Materials and workmanship of listed products within this section when installed in accordance with current manufacturer's application and specification requirements

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. GENERAL: All components of the specified roofing system shall be products of the selected membrane manufacturer or accepted by the membrane manufacturer as compatible. Unless otherwise approved by the Architect and accepted by the membrane manufacturer, all products (including insulation, fasteners, fastening plates and edgings) must be manufactured and supplied by the roofing system manufacturer and covered by the warranty

B. TPO Membrane Materials: This project has been designed according to the roofing system manufactured by:
   1. GAF Everguard TPO Induction welding
      a. System: EverGuard TPO 60 Mil fleeceback (20 Year Warranty)
   2. Equal roofing systems by the following manufacturers may be submitted for review.
      a. Firestone Building Products Co.
      b. GenFlex Roofing Systems.
   3. Substitutions: See Section 01600 - Product Requirements.

C. Rigid Roof Insulation: Insulation shall be tapered and non-tapered polyioscyanurate as

supplied by GAF. Equal insulation systems by the following manufacturers may be submitted for review with written acceptance for use and warranty by membrane manufacturer:

1. Apache Products Co.
2. Dow Chemical Co.
3. Owens Corning Corp.
4. Substitutions: See Section 01600 - Product Requirements.

2.02 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Membrane: A smooth type, polyester scrim reinforced thermoplastic polyolefin membrane with a nominal 0.060 inch (60 mil) thickness, for use as a single-ply roofing membrane. Meets or exceeds the minimum requirements of ASTM D6878. UL Listed, FM Approved.

B. Flashing Material: A smooth type, polyester scrim reinforced thermoplastic polyolefin membrane with a nominal 0.060 inch (60 mil) thickness, for use as a single-ply roofing membrane. Meets or exceeds the minimum requirements of ASTM D6878. UL Listed, FM Approved.

C. Adhesives, Sealants and Primers:
   1. Low VOC Solvent-based Bonding Adhesive: Solvent based rubberized adhesive for use with TPO membranes. Contains less than 250 grams per liter of Volatile Organic Content (VOC) and has been formulated using a blend of VOC exempt and non-exempt solvents to be in compliance with air quality regulations for single ply roofing adhesive.
   2. Acrylic emulsion copolymer based adhesive for use with TPO membranes.
   3. Solvent based liquid, required to protect field cut edges of TPO membranes. Applied directly from a squeeze bottle.
   4. Solvent based seam cleaner used to clean exposed or contaminated seam prior to heat welding.
   5. One part butyl based high viscosity sealant suitable for sealing between flashing membrane and substrate surface behind exposed termination bars and for sealing between roofing membrane and drain flange.
   6. 100% solids epoxy based two-part sealant suitable for filling sealant pans at irregularly-shaped penetrations. Epoxy is part A. Polyamide is part B.

2.03 INSULATION

A. FLAT INSULATION: Type: ASTM C1289, Type II/FS HH-I-1972, rigid polyioscyanurate faced both sides with glass fiber mat facings; faces finished with glass fiber, with the following characteristics:
   1. Board Thickness: 2 inch min.
   2. Thermal Resistance (LTTR value) of: 11.4
   3. Board Edges: Square.
   4. Manufacturer: roofing membrane manufacturer or a products approved by the roofing membrane manufacturer.

B. TAPERED INSULATION: Type: ASTM C1289, Type II/FS HH-I-1972, rigid polyioscyanurate faced both sides with glass fiber mat facings; faces finished with glass fiber, with the following characteristics:
   1. Board Thickness: varies
   2. Thermal Resistance (LTTR value) of: 11.4
   3. Board Edges: Square.
   4. Manufacturer: roofing membrane manufacturer or a products approved by the roofing membrane manufacturer.

2.04 ACCESSORIES

A. Mechanical Fasteners.
   1. HD Screws: Heavy gauge alloy steel fastener with CR-10 coating with a .245" diameter thread. Factory Mutual Standard 4470 Approved, #3 Phillips truss head for use on wood, concrete and steel decks.
   2. Insulation Plates: Galvalume, 3" diameter, specially coated for use in Induction welding attachment systems.

B. Extruded aluminum termination bar with angled lip caulk receiver and lower leg bulb stiffener. Pre-punched slotted holes at 6" on center or 8" on center. ¾" x 10 with 0.090" cross section.

C. A smooth type, unreinforced thermoplastic polyolefin based membrane for use as an alternative flashing/reinforcing material for penetrations and corners. Required whenever preformed vent boots cannot be used, 0.055 inches, nominal thickness.

D. An 8 inch wide smooth type, polyester scrim reinforced thermoplastic polyolefin membrane strip for use as a cover strip over coated metal and stripping in coated metal flanges and general repairs: 0.045 inches nominal thickness.

E. A 6 inch wide, smooth type, heat-weldable polyester scrim reinforced thermoplastic polyolefin membrane strip. Designed for use as a cover strip over non-coated metal edges and flanges.

F. 24 gauge stell with 0.025" thick TPO based film. Factory supplied in sheets and required for fabrication into metal gravel stop and drip edge profile, metal base and curb flashings, sealant pans, and scupper sleeves.

G. 0.075" thick molded TPO membrane sized to accommodate most common pipe and conduits, (1" to 6" diameter pipes), including square tube. Hot-air welded directly to TPO membrane, supplied with stainless steel clamping rings.

H. 0.45" thick molded TPO membrane boots are split to accommodate most common pipes and conduits and available in three standard sizes.

I. 0.060" thick molded TPO membrane designed to accommodate both inside and outside corners of base and curb flashing. Hot-air welded directly to TPO membrane. Size 4"x4" with 6" flange.

J. 0.055" thick smooth type, unreinforced thermoplastic polyolefin membrane deisnged for use as a conforming membrane seal over T-joints in 60 mil membrane applications.

K. Universal style expansion joint covers fabricated to accommodate both wall and field applications, made of .060" thick reinforced TPO membrane.

L. 0.045" reinforced TPO membrane with pressure sensitive adhesive, to be installed on horizontal surgaces using pplates and fasteners as a base attachment in fully adhered systems.

M. 0.045" thick reinforced TPO membrane fabricated corners.

N. 8" diameter, nominal 0.050" unreinforced TPO membrane for use in flashing outside corners of base and curb flashing.

O. 1/8" thick extruded and embossed TPO roll 30"x50' heat welds directly to roofing membrane. Unique herringbone traction surface.

PART 3 EXECUTION

3.01 EXAMINATION - AT INSTALLATION OVER ROOF DECK

A. Verify that surfaces and site conditions are ready to receive work.

B. Coordinate with work of Section 07595 - Preparation For Re-roofing

C. Verify deck is supported and secure.

D. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

E. Verify deck surfaces are dry and free of snow or ice.

F. Verify that roof openings, curbs, and penetrations through roof are solidly set and nailing strips and reglets are in place.

G. Verify that substrate and installation conditions are in compliance with recommendations indicated in the report prepared by the Manufacturer's technical representative

3.02 MANUFACTURER'S SPECIFICATIONS

A. This roofing system shall be furnished and installed to comply with the requirements for a 20-year total system warranty from the manufacturer.

B. Where the details or requirements of the Contract Documents conflict with the manufacturer's details or requirements for the specified system, the manufacturer's requirements shall govern

C. Some details on the drawings may be keyed back to applicable manufacturer details and may or may not be completely drawn and noted. By reference to a manufacturer's detail, the Drawings are requiring the complete compliance with the referenced detail(s).

D. Details and materials not specifically indicated on the Contract Documents, but necessary for the furnishing of the specified roofing system, shall be included and executed as if specified or indicated on the Drawings.

3.03 EXISTING ROOF SURFACE

A. Prepare surface as described in Section 07595 - Preparation for Re-Roofing

B. Install membrane as described herein for a fully adhered roofing system

3.04 INSULATION - UNDER MEMBRANE

A. Do not apply roof insulation or roofing until all other work trades have completed jobs that require them to transverse the deck on foot or with equipment. A vapor retarder coated lightly with asphalt may be applied to protect the inside of the structure prior to the insulation and final roofing installation. Before the application of the insulation, any damage or deterioration to the vapor retarder must be repaired.

B. Do no install wet, damaged or warped insulation boards.

C. Overlay/recover boards may be installed using all full-size overlay boards in a non-staggered manner. These overlay/recover include gypsum. If plywood or OSB is specified, it must be a minimum thickness of ¾”.

D. When installing the Induction welding Attachment System over tapered insulation, it is critical the Induction welding plates are flat and flush against the insulation surface to ensure proper welding of the plate to the membrane. For this reason, it is preferable to install the tapered insulation first and cover the tapered system with a overlay/recover board.

E. Do not install any more insulation than will be completely waterproofed each day.

F. Do not align seams with rows of plates, as the step down that is created will cause an incomplete weld of the Induction welding plate.

G. Do not straddle plates over insulation joints as the gaps will create an incomplete weld of the Induction welding plate.

H. Use the appropriate length and type of fastener for the structural deck.

I. Mechanical attachment for the three distinct areas or zones of a roof.
1. Roof areas have three distinct areas or zones. They are corners (either inside or outside), roof perimeter, and the field of the roof. Each of these areas have their own attachment rates.
2. These zones or areas have to be determined before the insulation, cover or overlay board's fasteners are installed. A building's perimeter edges and corners areas or zones are determined by the height and width and other conditions referenced by ASCE 7 and FM 1-19.

J. Securing the Plate and Fasteners
1. Insulation, overlay/recover boards are to be mechanically attached to the structural deck in accordance with the manufacturer's attachment table.
2. Install the proper number of fasteners per insulation overlay/recover board per roof zone or area.
3. Fasten to the substrate in an appropriate grid pattern as established by the attachment table. Using chalk lines to make the grids on the substrate is the easiest way to make sure the grid is consistent and plates are easy to find.
4. Fasteners must be tight enough that the plate does not turn or rock.
5. Over-driven fasteners that distort the face or top of the plate must be removed and discarded. A new plate and fastener must be reinstalled next to the original, but not into the same space and hole.
6. Under driven or "high fasteners" must be redriven to proper depth.
7. When installation of plates and fasteners are complete, the area should be blown or broomed clean to remove any dirt or debris from the substrate surface or contaminates from the plate's bonding surface. This is critical so as not to puncture the membrane from beneath or to impair the welding of the membrane to the plate.

3.05 INDUCTION WELDING OF MEMBRANE

A. Equipment:
1. Portable bonding machine (a minimum of two machines is recommended per project)
2. Minimum 5000 watt, continuous generator per two portable bonding machines.
3. 100' max length, #12 minimum gauge electrical cords.
4. 6 cooling clamps (stand-up magnets that put pressure on the newly welded plates.
5. Pliers
6. Heavy duty plunger
7. Lumber crayon

A. Equipment settings: See manufacturer requirements.

3.06 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate in direction of drainage.

C. Fully Adhered Application: Refer to manufacturer's requirements and systems details.

D. Mechanical Attachment: Apply membrane and mechanical attachment devices in accordance with manufacturer's instructions.
   1. Where indicated, run membrane up the inside surface of parapets and over top over wall below coping material.
      a. Mechanically fasten end of membrane to top of coping according to manufacturer's recommendations; apply sealant to tops of fasteners
      b. Seal penetrations through membrane for masonry or stone anchors with sealant approved by manufacturer.

E. Around roof penetrations, use preformed flashing accessories or, where preformed are not suitable, seal with flexible flashing.

F. Coordinate installation of scuppers and related flashings.

G. Install walkway pads as indicated on the drawings; installation as recommended by manufacturer.

3.07 DAILY SEAL

A. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.

B. Complete an acceptable membrane seal in accordance with the manufacturer's requirements

3.08 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for field quality control and inspection.

B. Require site attendance of roofing material manufacturer's technical representative daily during installation of the Work.

C. Prior to acceptance by the Owner, the manufacturer's technical representative shall perform a detailed inspection of the installation identifying, in writing, all defects or unacceptable work.
   1. The installer shall immediately correct all unacceptable work and shall provide an installation, which shall receive the specified manufacturer's warranty.

3.09 CLEANING

A. Remove markings from finished surfaces.

B. Remove errant adhesives or other surface irregularities from the membrane and flashings.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

3.10 PROTECTION OF FINISHED WORK

A. Protect installed roofing and flashings from construction operations. Refer to manufacturer's recommendations for temporary protections required during construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 07530

SECTION 07595

PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of existing membrane roofing membrane in selected areas in preparation for a new roofing and insulation.

B. Temporary protection

1.02 RELATED SECTIONS

A. Section 02223 - Selective Demolition

B. Section 06100 - Rough Carpentry; for repairs to substrate

C. Section 07531 – Thermoplastic Single-ply Membrane Roofing

D. Section 07620 - Sheet Metal Flashing And Trim

1.03 REFERENCES

A. ASTM C 208 - Standard Specification for Cellulosic Fiber Insulating Board.

1.04 DEFINITIONS

A. Flat Roof: for the purposes of this Project a flat roof shall be defined as a roof surface which has a pitch of up to 1 inch in 12 inches.

1.05 QUALITY ASSURANCE

A. This work shall be performed by the roofing applicator as specified in Section 07530 - Elastomeric Membrane Roofing

1.06 PROJECT CONDITIONS

A. Schedule work according to the Construction Schedule for the Project. Schedule work to coincide with commencement of installation of new membrane roofing system.

B. Coordinate the work with other affected mechanical and electrical work associated with roof penetrations.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.

B. Do not remove existing roofing when adequate protection measures cannot be completed before the end of the workday or before precipitation, whichever comes first.

C. Perform work of this section during periods when no precipitation is forecasted by the National

Weather Service for at least 24 hrs. after the commencement of the work.

1. Have, on site, and readily accessible sufficient tarps, other related protective materials and sufficient manpower to immediately cover and protect the building interior should unanticipated precipitation be encountered prior to the completion of any portion of the roofing removal or replacement work.

D. Maintain continuous temporary protection prior to and during installation of new roofing system.
   1. Protection includes, but is not limited to, temporary membranes, supporting structure and decking required to direct precipitation off the roof, away from the building and maintaining a dry building interior.

PART 2 PRODUCTS

2.01 MATERIALS

A. Temporary Protection: Sheet fiber reinforced plastic; provide weights to retain sheeting in position.

B. Sheathing materials and framing as may be required for temporary protection below protection sheeting for openings and other conditions where sheeting alone is not suitable.
   1. Minimum Sheathing: 1/2 inch. CDX Plywood
   2. Minimum Framing: 2" x 6" wood framing @ 16" o.c. Size and spacing of framing to be determined by structural requirements of opening.

C. Protection Board: ASTM C 208 cellulose fiberboard, one face finished with mineral fiber, asphalt and kraft paper, with the following characteristics:
   1. Board Density: 12-lb/cu ft.
   2. Board Size: 48 x 48 inch.
   3. Board Thickness: 1/2 inch.
   4. Thermal Conductivity: K factor of 0.36.
   5. Board Edges: Square.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing roof surface is clear and ready for work of this section.

3.02 PREPARATION

A. Sweep roof surface clean of loose matter.

B. Remove loose refuse and dispose off site.

C. Coordinate work of this section with the demolition work of other elements of the building.

D. Coordinate with the installation of any roof mounted equipment and the construction of curbs and roof openings.

3.03 MATERIAL REMOVAL - AT EXISTING FLAT ROOFS TO REMAIN

A. Remove existing membrane, cant strips, base flashing, and flashing for roof penetrations.

B. Remove metal counter flashing only where indicated and where counter flashing is deemed unsuitable for new work.

C. Remove existing roofing, insulation, fasteners, blocking, dunnage, and curbs down to existing sheathing.

D. Remove any other items, which are unsuitable or incompatible with the specified roofing system. Where applicable, replace such items with new materials or devices, which are compatible and suitable for specified roofing system.

E. Dispose of non-asbestos materials as per Section 02223 - Selective Demolition

3.04 FIELD QUALITY CONTROL

A. At the discretion of the Owner, independent agency inspection and testing may be engaged to evaluate the quality and compliance of the work.
   1. The Owner may elect to perform testing as a result of the manufacturer's technical representative's inspection report or for any other reason.
   2. The Owner shall pay for such testing, except in instances where non-complying work is discovered by testing or other means.

B. Testing will identify the conditions of existing materials and their reuse, repair or removal and the compliance of the new work with the project requirements.

C. Any new work found to be in non-compliance shall be immediately removed and corrected.
   1. In the instance of finding non-complying work, the contractor shall be responsible for the cost of the initial testing as well as any re-testing as may be required to verify compliance.

3.05 TEMPORARY PROTECTION

A. Provide temporary protective sheeting over uncovered deck surfaces.

B. Where protective sheeting alone is insufficient, provide structural support such as framing, bracing and sheathing as may be necessary.

C. Turn sheeting up and over parapets and curbing. Retain sheeting in position with temporary fasteners. Do not use weights.

D. Provide for surface drainage from sheeting to existing drainage facilities or to areas where drainage will be directed away from the building.

E. Inspect temporary protection as required, but, never less than once a day immediately prior to the end of the workday. Correct any inadequate conditions.

F. Do not permit traffic over unprotected or repaired deck surface.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING, COPINGS AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flashings, counterflashings and fabricated sheet metal items.

B. Copings.

C. Lead flashing.

D. Lead coated copper flashing.

E. Reglets and accessories.

1.02 RELATED SECTIONS

A. Section 06100 - Rough Carpentry

B. Section 07530 - Elastomeric Membrane Roofing

C. Section 07595 - Preparation For Re-Roofing

D. Section 07900 – Joint Sealers

1.03 REFERENCES

A. ASTM B 32 - Standard Specification for Solder Metal.

B. ASTM B 101 - Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction.

C. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

D. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

E. ASTM B 749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.

F. ASTM D 2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.

G. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.

H. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association.

1.04 PERFORMANCE REQUIREMENTS

A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction, and will not allow water infiltration into building assemblies or the building interior.

B. FM Approvals' Listing: Manufacture and install copings roof-edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-60. Identify materials with FM Approvals' markings.

C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.05 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples, 12-inch square in size illustrating material, finish, and fabrication details of typical counterflashing. Copings: 8 inches long. Reglets and Counterflashing: 8 inches long.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials which may cause discoloration or staining.

1.08 PROJECT CONDITIONS

A. Coordinate with work of Related Sections

PART 2 PRODUCTS

2.01 MANUFACTURERS: PRE-FORMED ITEMS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
   1. Architectural Products Co.
   2. B & B Sheet Metal Co
   3. Keystone Flashing Company, Inc
   4. W. P. Hickman Co
   5. Or approved substitute. See Section 01600 - Product Requirements

2.02 SHEET MATERIALS: CUSTOM FORMED AND PRE-FORMED ITEMS

A. Flashings, Copings, Counterflashing, Splice Connectors, Brakemetal and misc. exposed trim: Pre-Finished Aluminum ASTM B 209 (ASTM B 209M); 0.050 inch thick; plain finish shop precoated with fluoropolymer coating.

B. Lead for Flashing at Vent Pipes: ASTM B 749, 2.5 lb/sq ft thick.

2.03 FINISHES

A. Aluminum Flashings, Copings, Counterflashing, Splice Connectors, Brakemetal and misc. exposed aluminum trim (where exposed to public view, shall match existing flashing finish):
   1. 70 Percent Kynar 500(R) Coating (PermaColor 2000): Top Side.
      a. Color: as selected from manufacturer's standards.
   2. Welded or factory assembled components shall be finished after assembly.
   3. Aluminum Sheet:
      a. ASTM B209, alloy 3003, temper H14, 0.032 inch thick.
      b. Finish: Natural

2.04 ACCESSORIES

A. Fasteners: Stainless steel, with soft neoprene washers.

B. Waterproofing Underlayment: ASTM D 2178, Type VI, heavy duty, Federal Specification: SS-R620B, type III; Asphalt-saturated glass fiber roofing felt.

C. Primer: Type as recommended by flashing manufacturer and, where sealant comes in contact with roofing materials, acceptable to the roofing manufacturer.

D. Protective Backing Paint: Zinc chromate alkyd.

E. Sealant: Type as recommended by flashing manufacturer and, where sealant comes in contact with roofing materials, acceptable to the roofing manufacturer.

F. Plastic Cement: ASTM D 4586, Type I.

G. Reglets: Recessed type, rigid extruded PVC; face and ends covered with plastic tape.

H. Solder: ASTM B 32; Sn50 (50/50) type.

2.05 FABRICATION:

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Fabricate copings from aluminum sheet material as specified above unless otherwise

recommended by manufacturer. Length and size shall be as indicated on drawings.

C. Fabricate cleats of [24 gauge galvanized steel] type sheet metal. cleats shall run continuously, except where manufacturer recommends otherwise, interlocking with formed flashing or gravel stop.

D. Form pieces in longest possible lengths.

E. Vertical leg of counterflashing shall be a minimum of 4 inches long except where otherwise indicated.

F. Hem exposed edges on underside 1/2 inch; miter and seam corners.

G. Form counterflashing material with manufacture's recommended watertight seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet type or interlocking hooked seams.

H. Tin edges of sheet material to be soldered. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.

I. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip. Form leg to lock onto cleat where indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. For counterflashings, verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Sawcut new reglets in masonry where counterflashing is indicated. Cut to a depth of 3/4"; insert reglet strip and seal.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

A. Conform to drawing details; comply with applicable SMACNA details where details for special conditions are not shown on Drawings.
   1. Procedures which affect Elastomeric Roofing and /or where, flashing materials come in contact with Elastomeric Roofing shall be approved by the roofing system manufacturer prior to execution.

B. Insert flashings and/or roof membrane into roof terminations to form tight fit. Seal all terminations as per manufacturer’s recommendations.

C. Secure flashings in place using concealed fasteners. Use exposed fasteners only where

permitted.

D. Apply plastic cement compound between metal flashings and felt flashings as approved by roofing system manufacturer.

E. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

F. Seal metal joints watertight.

3.04 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for field inspection requirements.

B. Roofing Manufacturer's Technical Representative shall inspect and evaluate the work of this Section as it may impact upon the performance of the roofing system and the eligibility of obtaining the specified roofing warranties. See Section 07530 - Elastomeric Membrane Roofing

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.05 SCHEDULE

A. Use Aluminum counter flashings where roofing terminates at a location where the exterior wall is above the plane of the roof.

B. At mechanical equipment curbs and roof hatch curbs, run base flashing up bottom of curb and over top of curb; reset equipment over base flashing with new counterflashing where indicated.

D. At other pipe or vents, flash as per details on the Drawings.

END OF SECTION

SECTION 07720

ROOF ACCESSORIES

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 the following:

1. Roof curbs.
2. Equipment supports.
3. Roof hatches.

B. Related Sections include the following:
1. Division 6 Section "Rough Carpentry" for roof sheathing, wood cants, and wood nailers.
2. Division 7 Section "Sheet Metal Flashing and Trim" for shop- and field-fabricated metal flashing and counterflashing, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.

1.3 QUALITY ASSURANCE

A. Sheet Metal Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Pack, handle, and ship roof accessories properly labeled in heavy-duty packaging to prevent damage.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify required openings for each type of roof accessory by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 COORDINATION

A. Coordinate layout and installation of roof accessories with **roofing membrane and base flashing and** interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

1. With Architect's approval, adjust location of roof accessories that would interrupt **roof drainage routes** OR **roof expansion joints**.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers listed in other Part 2 articles.

2.2 METAL MATERIALS

A. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 coated **and mill FINISH**

B. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, AZ50 coated.

C. Aluminum Sheet: ASTM B 209, alloy and temper recommended by manufacturer for type of use and **mill** finish.

D. Stainless-Steel Shapes or Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304 or Type 316, No. 2D finish.

E. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized to comply with ASTM A 123/A 123M, unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

A. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

B. Polyethylene Sheet: **6-mil-** thick, polyethylene sheet complying with ASTM D 4397.

C. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

1. Slip Sheet: Rosin-sized paper, minimum **3 lb/100 sq. ft**.

D. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by roof accessory manufacturer. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners.

E. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, or PVC; or flat design of foam rubber, sponge neoprene, or cork.

F. Elastomeric Sealant: ASTM C 920, **silicone** sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

G. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, and heavy bodied for hooked-type expansion joints with limited movement.

H. Roofing Cement: ASTM D 4586, nonasbestos, fibrated asphalt cement designed for trowel application or other adhesive compatible with roofing system.

2.4 ROOF CURBS

A. Roof Curbs: Provide metal roof curbs, internally reinforced and capable of supporting superimposed live and dead loads, including equipment loads and other construction to be supported on roof curbs. Fabricate with welded or sealed mechanical corner joints, with **stepped integral metal cant raised the thickness of roof insulation** and integral formed mounting flange at perimeter bottom. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1. Manufacturers:

   a. FLAT (1/4" PER FOOT) INSULATED ROOF DECKS
      1) GREENHECK MODEL GPR or ATS/ATR/ATE/ATI
      2) APPROVED EQUAL.

   b. SLOPED (ABOVE ¼" PER FOOT) INSULATED ROOF DECKS:
      1) GREENHECK MODEL GPIP
      2) APPROVED EQUAL

2. Material: WELDED ALUMINUM OR GALVANIZED CANTED CONSTRUCTION

3. Curb height may be determined by adding thickness of roof insulation and minimum base flashing height recommended by roofing membrane manufacturer. Fabricate units to minimum height of **18 inches**, unless otherwise indicated.

2.5 EQUIPMENT SUPPORTS

A. Equipment Supports: Provide metal equipment supports, internally reinforced and capable of supporting superimposed live and dead loads, including equipment loads and other construction to be supported. Fabricate with welded or sealed mechanical corner joints, with **stepped integral metal cant raised the thickness of roof insulation** and integral formed mounting flange at perimeter bottom. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1. Manufacturers:

   a. GREENHECK, MODEL GESS/GESR/ES

   b. APPROVED EQUAL

2. Material: WELDED ALUMINUM OR GALVANIZED CANTED CONSTRUCTION.

3. Fabricate units to minimum height of **18 inches**, unless otherwise indicated.

2.6 ROOF HATCHES

A. Roof Hatches: Fabricate roof hatches with insulated double-wall lids and insulated **double**-wall curb frame with integral deck mounting flange and lid frame counterflashing. Fabricate with welded or mechanically fastened and sealed corner joints. Provide continuous weathertight perimeter gasketing and equip with corrosion-resistant or hot-dip galvanized hardware.

1. Manufacturers:
   a. Bilco Company (The). TYPE S
   b. APPROVED EQUAL.

2. Loads: Fabricate roof hatches to withstand **40-lbf/sq. ft.** external and **20-lbf/sq. ft.** internal loads.
3. Type and Size: Single-leaf lid, **30 by 36 inches**.
4. Curb and Lid Material: 14 GUAGE PAINT BOND GALVANIZED STEEL.
   a. Finish: ALKYD BASED RED OXIDE PRIMER.
5. Insulation: **Glass-fiber** board.
6. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
7. Fabricate units to minimum height of **12 inches**, unless otherwise indicated OR REQUIRED FOR ROOF WARRANTY.
8. Hardware: **Galvanized steel** spring latch with turn handles, butt- or pintle-type hinge system, and padlock hasps inside and outside.

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 work.

1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored and is ready to receive roof accessories.
2. Verify dimensions of roof openings for roof accessories.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install roof accessories according to manufacturer's written instructions. Anchor roof accessories securely in place and capable of resisting forces specified. Use fasteners, separators, sealants, and other miscellaneous items as required for completing roof accessory installation. Install roof accessories to resist exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Install roof accessories to fit substrates and to result in watertight performance.

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 manufacturer.

1. Coat concealed side of **uncoated aluminum** AND **stainless-steel** roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing exposed-to-view components of roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene underlayment.
3. Bed flanges in thick coat of asphalt roofing cement where required by roof accessory manufacturers for waterproof performance.

D. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.

E. Roof Curb Installation:

1. Set roof curb so top surface of roof curb is level.

F. Equipment Support Installation:

1. Set equipment support so top surface of equipment support is level.

G. Roof Hatch Installation:

1. Check roof hatch for proper operation. Adjust operating mechanism as required. Clean and lubricate joints and hardware.

H. Seal joints with **elastomeric** sealant as required by manufacturer of roof accessories.

3.3 TOUCH UP

A. Touch up factory-primed surfaces with compatible primer ready for field painting in accordance with Division 9 painting Sections.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.4 CLEANING

A. Clean exposed surfaces according to manufacturer's written instructions.

END OF SECTION 07720

SECTION 07840

FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping materials.

B. Firestopping of all penetrations and interruptions to fire rated assemblies, whether indicated on drawings or not, and other openings indicated.
   1. Firestopping shall be applied where required by code and/or where required by authorized code officials.
   2. Firestopping shall be applied to all penetrations through fire rated assemblies including, but not limited to, pipes, conduits, structural members, ducts, cables, and similar items.
   3. The application of firestopping is understood and typical for penetrations through fire rated assemblies, floors, walls, chases and otherwise, and is, generally, not specifically identified on the Drawings.
   4. Firestopping shall be applied to all such penetrations whether or not it is indicated on the Drawings.

1.02 RELATED SECTIONS

A. Section 01450 - Cutting and Patching

B. Section 01700 - Execution Requirements

1.03 REFERENCES

A. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

B. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

C. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.

D. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, firestopping test or design number, and type of firestopping which is appropriate for each type of penetration. Provide in all locations where required by code and whether or not "firestopping" is indicated on the Drawings.

C. Product Data: Provide data on product characteristics.

D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Certificate from authority having jurisdiction indicating approval of materials used.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs which provide the scheduled fire ratings when tested in accordance with methods indicated and ASTM E 119.
   1. Listing in the current classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
   2. Current evaluation reports published by CABO, ICBO, or BOCA will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

1.06 MOCK-UP

A. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.

B. Obtain approval of authority having jurisdiction before proceeding.

C. If accepted, mock-up will represent minimum standard for the Work.

D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 FIRESTOPPING ASSEMBLIES

A. Firestopping: Any material meeting the requirements ands which will be inconspicuous when used in conjunction with scheduled finishes and architectural details.
   1. Coordinate selection of materials with scheduled finishes to be applied to the surface.
   2. Do not use firestopping materials or methods which will conflict with finish systems.
   3. Fire Ratings: See Drawings for required systems and ratings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

B. Verify if firestopping will be used in conjunction with an architectural detail and/or finish. Select firestopping method which will be inconspicuous.

C. Verify method of firestopping to be used for each penetration. Drawings do not indicate type of firestopping.

D. Verify what finishes, if any, are scheduled for each area and coordinate firestopping work so as not to conflict with the scheduled finishes.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.

B. Remove incompatible materials which may affect bond.

C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authority having jurisdiction.

C. Coordinate installation to permit the installation of finishes and other subsequent work

D. Install labeling required by code.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces of firestopping materials.

B. Protect adjacent surfaces from damage by material installation.

C. Remove excess materials which may conflict with subsequent work and which are not necessary to provide required fire rating

END OF SECTION

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

B. Pre-compressed foam sealers.

1.02 RELATED SECTIONS

A. Section 07840 - Firestopping: Firestopping sealants.

1.03 REFERENCES

A. ASTM C 834 - Standard Specification for Latex Sealants; 2000.

B. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 1998.

C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 1998.

D. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2000.

E. ASTM D 1667 - Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam); 1997.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics.

C. Samples: Submit three samples, 3/8 x 6 inch in size illustrating sealant colors for selection.

D. Manufacturer's Installation Instructions: Indicate special procedures.

E. Schedule: Installer/applicator shall submit a detailed schedule of all conditions requiring sealant and the proposed sealant assembly to be used for each condition.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

C. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years experience.

1.06 MOCK-UP

A. Provide mock-up of sealant joints in conjunction with window under provisions of Section 01400.

B. Construct mock-up with specified sealant types and with other components noted.
   1. Provide mock-up for all exterior wall assemblies
   2. Provide mock -up for interior assemblies where sealant will be visible.

C. Locate where directed.

D. Mock-up may remain as part of the Work wherever the particular mock up may remain part of the Work.

1.07 ENVIRONMENTAL REQUIREMENTS

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

1.08 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five-year period after Date of Substantial Completion.
   1. Where the manufacturer, as a standard feature, provides a warranty which exceeds five years, that warranty shall become the warranty which shall apply to this Project.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, watertight seal, and acoustical, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silicone Sealants:
   1. Bostik: www.bostik.com.
   2. Dow Corning Corp: www.dowcorning.com.
   3. GE Plastics: www.geplastics.com.
   4. Pecora Corporation: www.pecora.com.
   5. Sonneborn Building Products, ChemRex, Inc: www.chemrex.com.
   6. Tremco, Inc: www.tremcosealants.com.
   7. Substitutions: See Section 01600 - Product Requirements.

B. Polyurethane Sealants:
   1. Bostik: www.bostik.com.
   2. Pecora Corporation: www.pecora.com.
   3. Sonneborn Building Products, ChemRex, Inc: www.chemrex.com.
   4. Tremco, Inc: www.tremcosealants.com.
   5. Substitutions: See Section 01600 - Product Requirements.

C. Polysulfide Sealants:
   1. Morton International, Inc.
   2. Pecora Corporation: www.pecora.com.
   3. Sonneborn Building Products, ChemRex, Inc: www.chemrex.com.

4. Substitutions: See Section 01600 - Product Requirements.

D. Acrylic Sealants:
1. Tremco, Inc: www.tremcosealants.com.
2. Substitutions: See Section 01600 - Product Requirements.

E. Butyl Sealants:
1. Bostik: www.bostik.com.
2. Tremco, Inc: www.tremcosealants.com.
3. Substitutions: See Section 01600 - Product Requirements.

F. Acrylic Emulsion Latex Sealants:
1. Bostik: www.bostik.com.
2. Pecora Corporation: www.pecora.com.
3. Sonneborn Building Products, ChemRex, Inc: www.chemrex.com.
4. Tremco, Inc: www.tremcosealants.com.
5. Substitutions: See Section 01600 - Product Requirements.

G. Preformed Compressible Foam Sealers:
1. Emseal Joint Systems, Ltd: www.emseal.com.
2. Sandell Manufacturing Company, Inc: www.sandellmfg.com.
3. Polytite Manufacturing Corporation: www.polytite.com.
4. Substitutions: See Section 01600 - Product Requirements.

2.02 SEALANTS

A. Type E2 - General Purpose Exterior Sealant: Acrylic, solvent release curing; ASTM C 920, Grade NS, Class 12-1/2, Uses M, G, and A; single or multi- component; paintable. To be used where sealant is to be painted along with the adjacent materials, otherwise use Type E1.
1. Applications: Use for Joints which will be field painted:

B. Type E3 - Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
1. Color: Black.
2. Size as required to provide weathertight seal when installed.
3. Provide product recommended by manufacturer for traffic-bearing use.
4. Applications: Use for:
a. Exterior wall expansion joints.

C. Type I-1 - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
1. Color: Standard colors matching finished surfaces, except where sealant is to be painted.
a. Color where sealant is to be painted: off-white color.
2. Applications: Use for:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Joints between countertops, without sinks, and wall surfaces.
d. Other interior joints for which no other type of sealant is indicated.

D. Type I-2 - Shower/Tile Sealant: White silicone; ASTM C 920, Uses M and A; single component, mildew resistant.
1. Applications: Use for:
a. Joints between plumbing fixtures and floor and wall surfaces.
b. Joints between countertops with sinks and wall surfaces.
c. Joints in tile work.

E. Type A-1 - Acoustical Sealant: Butyl or acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
   1. Applications: Use for concealed locations only at assemblies which have acoustical insulation or sound resistant doors and frames.
      a. Sealant bead between top stud runner and structure and between bottom stud track and floor.
      b. Seal electrical, mechanical and other items which penetrate partitions identified to have acoustical insulation.

F. Type SL-1 - Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C 920, Grade P, Class 25, Uses T, M and A; single component.
   1. Approved by manufacturer for wide joints up to 1-1/2 inches.
   2. Color: Standard colors matching finished surfaces.
   3. Applications: Use for:
      a. Expansion joints in floors.

G. Type S-1 - Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
   1. Color: Standard colors matching finished surfaces.
   2. Movement Capability: Plus and minus 25 percent.
   3. Service Temperature Range: -65 to 180 degrees F (-54 to 82 degrees C).
   4. Shore A Hardness Range: 15 to 35.
   5. Applications: Use for:
      a. Glazing applications, except where otherwise recommended by manufacturer of glazing or glazing framing system.

H. Unspecified Sealants

I. Provide sealants for each application which is not indicated in this Section but which is encountered during the Work. Provide sealants which are recommended by the manufacturer as the "best" product for the application.
   1. Where a sealant is not specified for a condition, provide a product which is compatible with the materials to be sealed and which is recommended by the sealant manufacturer for the specific application
      a. Provide colors sealants for applications which will be exposed to view. Furnish products from manufacturer's standard colors; Architect to select colors.
      b. Provide paintable sealant for applications which are scheduled for field painting.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify each assembly to be sealed and assign the proper sealant to the assembly.
   1. Verify if finished assembly will be painted, concealed or exposed and assign appropriate products

B. Verify that substrate surfaces are ready to receive work.

C. Verify that environmental conditions are suitable for sealant installation

D. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C 1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

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

B. Perform installation in accordance with ASTM C 1193.

C. Perform acoustical sealant application work in accordance with ASTM C 919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

I. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch (3 to 6 mm) below adjoining surface.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION OF FINISHED WORK

A. Protect sealants until fully cured and, where applicable, painted.

3.06 SCHEDULE

A. Applications of sealant shall be according to the general guidelines as indicated by the descriptions in Part 2 of this Section.

B. Installer/applicator shall furnish a schedule as identified in Part 1 of this Section, under "Submittals".

END OF SECTION